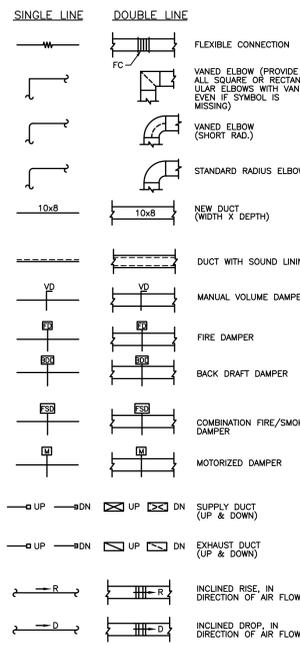


GENERAL NOTES:

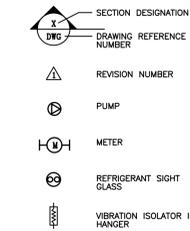
- ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- ALL DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISSES OF RISERS. THE CONTRACTOR SHALL ALLOW IN HIS PRICES FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS SUBJECT TO APPROVAL OF ENGINEER.
- SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL STEEL FRAMING.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP WORK PROPOSAL.
- PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMAL INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER. INSTALL ISOLATION VALVES AT POINT OF CONNECTION TO THE EXISTING PIPING. PROVIDE TEMPORARY DUCT CAPS AND/OR CONNECTIONS TO MINIMIZE SHUTDOWN TIME. ALL SHUT DOWNS SHALL BE ON OFF HOURS & INCLUDED IN BID.
- CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED WHILE INSTALLING NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY ENGINEER.
- DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.
- THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL. SEE SPECIFICATIONS.
- PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, CONDUIT, AND EQUIPMENT.
- ALL EXISTING MATERIAL AND EQUIPMENT TO BE REMOVED UNDER THIS CONTRACT WILL REMAIN THE PROPERTY OF THE OWNER OR SHALL BE DISPOSED OF BY THIS CONTRACTOR AS DIRECTED BY THE OWNER.
- PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
- INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED.
- SUBMISSION OF A PROPOSAL SHALL BE CONSIDERED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC. WHICH AFFECT THIS WORK AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION.
- PROVIDE ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE AND SAFE INSTALLATION OF HVAC IN FULL CONFORMANCE WITH REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION; ALL AS INDICATED ON DRAWINGS AND/OR HEREIN SPECIFIED FOR THE SYSTEMS INCLUDED. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER. INCLUDE ALL COSTS FOR PERMITS, LICENSES, CERTIFICATES, FILING AND INSPECTIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
- THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF ACCEPTANCE BY OWNER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

MECHANICAL SYMBOLS:

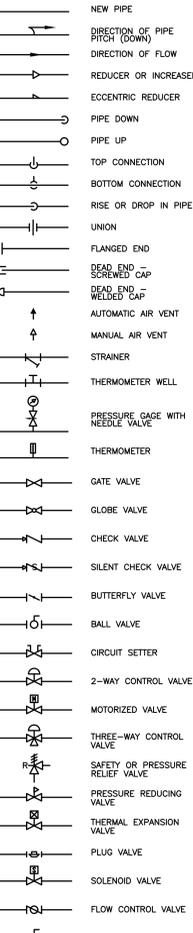
DUCTWORK SYMBOLS



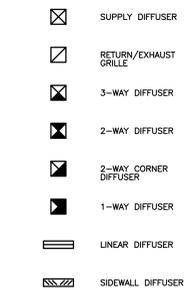
GENERAL SYMBOLS



PIPING SYMBOLS



DIFFUSER SYMBOLS



MECHANICAL ABBREVIATIONS:

A	AMPERES	G	GAUGE	SA	SUPPLY AIR SOUND ATTENUATOR
AC	AIR CONDITIONING	GAL	GALLON	SD	SMOKE DETECTOR
ACCU	AIR COOLED CONDENSING UNIT	GPH	GALLONS PER HOUR	SENS	SENSIBLE
ACC	AIR COOLED CONDENSER	GPM	GALLONS PER MINUTE	SF	SUPPLY FAN
ACS	AUTOMATIC CONTROL SYSTEM	H	HEIGHT	SP	STATIC PRESSURE
ACU	AIR CONDITIONING UNIT	HC	HEATING COIL	SPEC	SPECIFICATION
AD	ACCESS DOOR	HD	HEAD	SQ FT	SQUARE FEET
AFF	ABOVE FINISHED FLOOR	HR	HOUR	SS	STAINLESS STEEL
AHU	AIR HANDLING UNIT	HUM	HUMIDIFIER	TDH	TOTAL DYNAMIC HEAD
AL	ACOUSTICAL LINING	HV	HEATING AND VENTILATING	TEMP	TEMPERATURE
AP	ACCESS PANEL	HWP	HOT WATER PUMP	TF	TRANSFER FAN
B	BOILER	HWS&R	HOT WATER SUPPLY & RETURN	TOO	TOP OF DUCT
BDD	BACKDRAFT DAMPER	HP	HEAT PUMP, HORSEPOWER	TR	TOP REGISTER
BHP	BRAKE HORSEPOWER	HX	HEAT EXCHANGER	TRD	TRANSFER DUCT
BOD	BOTTOM OF DUCT	HZ	HERTZ	TX	TOILET EXHAUST
BTU	BRITISH THERMAL UNIT	IPS	IRON PIPE SIZE	TYP	TYPICAL
BTU/H	BTU PER HOUR	KW	KILOWATT	UH	UNIT HEATER
CAP	CAPACITY	L	LENGTH	V	VOLTS
CC	COOLING COIL	LAT	LEAVING AIR TEMP.	VAV	VARIABLE AIR VOLUME
CD	CEILING DIFFUSER	LBS	POUNDS	VD	VOLUME DAMPER
CFM	CUBIC FEET PER MINUTE	IN	INCHES	VFD	VARIABLE FREQUENCY DRIVE
CFSD	COMBINATION FIRE/SMOKE DAMPER WITH AD	LD	LINEAR DIFFUSER, LEAK DETECTOR	W	WIDTH
CG	CEILING GRILLE	LDB	LEAVING DRY BULB TEMP.	W/	WITH
CH	CHILLER	LN FT	LINEAR FEET	W/O	WITHOUT
CHWP	CHILLED WATER PUMP	LWB	LEAVING WET BULB TEMP.	WB	WET BULB
CHWR	CHILLED WATER RETURN	LRA	LOCKED ROTOR AMPS	WG	WATER GAUGE
CHWS	CHILLED WATER SUPPLY	LWT	LEAVING WATER TEMP.	WMS	WIRE MESH SCREEN
CLG	CEILING	M	AUTOMATIC DAMPER MOTOR ACTUATOR	WSA	WIRE SIZE AMPS
COND	CONDENSATE	MAU	MAKEUP AIR UNIT	WTS	WEIGHTS
COOL	COOLING	MAX	MAXIMUM	XA	EXHAUST AIR
CP	CONDENSATE PUMP	MB	MIXING BOX	XT	EXPANSION TANK
CR	CEILING REGISTER	MBH	THOUSAND BTU PER HR		
CT	COOLING TOWER	MCA	MINIMUM CKT AMPACITY		
CUH	CABINET UNIT HEATER	MCC	MOTOR CONTROL CENTER		
CV	CONSTANT VOLUME	MD	MOTORIZED DAMPER		
D	DROP	MER	MECHANICAL EQUIPMENT ROOM		
DB	DRY BULB	MFS	MAXIMUM FUSE SIZE		
DIAM	DIAMETER	MHP	MOTOR HORSEPOWER		
DMPR	DAMPER	MIN	MINIMUM		
DN	DOWN	MTR	MOTOR		
DSR	DIGITAL SWITCH ROOM	MW	MAKEUP WATER		
DWG	DRAWING	NC	NORMALLY CLOSED		
DX	DIRECT EXPANSION	NIC	NOT IN CONTRACT		
E	EXISTING	NK	NECK SIZE		
EAT	ENTERING AIR TEMP.	NO	NORMALLY OPEN, NUMBER		
EDB	ENTERING DRY BULB TEMPERATURE	NPSH	NET POSITIVE SUCTION HEAD		
EF	EXHAUST FAN	NTS	NOT TO SCALE		
EFF	EFFICIENCY	OA	OUTSIDE AIR		
EG	EXHAUST GRILLE	OAF	OUTSIDE AIR FAN		
EL	ELEVATION	OAI	OUTSIDE AIR INTAKE		
ELEC	ELECTRIC	OB	OPPOSED BLADE DAMPER		
EQ	EQUAL	OC	ON CENTER		
EWB	ENTERING WET BULB TEMPERATURE	OD	OUTSIDE DIAMETER		
ER	EXISTING TO BE RELOCATED	OED	OPEN END DUCT		
ESP	EXTERNAL STATIC PRESSURE	OPD	OVERCURRENT PROTECTION DEVICE		
EWT	ENTERING WATER TEMP.	PH	PHASE		
EXH	EXHAUST	PRV	PRESSURE REDUCING VALVE		
EXP	EXPANSION	PSI	POUNDS PER SQUARE INCH		
F	FILTER, FAN	PSIA	POUNDS PER SQUARE INCH ABSOLUTE		
'F	DEGREES FAHRENHEIT	PSIG	POUNDS PER SQUARE INCH GAUGE		
FA	FREE AREA	PVC	POLYVINYL CHLORIDE		
FC	FLEXIBLE CONNECTION, FAN COIL	R	RISE		
FD	FIRE DAMPER, FLOOR DRAIN	RA	RETURN AIR		
FLA	FULL LOAD AMPS	RE	RELOCATED POSITION OF EXISTING EQUIPMENT		
FBM	FEET PER MINUTE	RF	RETURN FAN		
FPS	FEET PER SECOND	RH	RELATIVE HUMIDITY		
FSD	FIRE/SMOKE DAMPER	RHC	REHEAT COIL		
FT	FEET	RM	ROOM		
FV	FACE VELOCITY	RPM	REVOLUTIONS PER MINUTE		

MECHANICAL DRAWING LIST

DRAWING #	TITLE
M-001	MECHANICAL SYMBOLS, NOTES, AND ABBREVIATIONS
M-101	MECHANICAL SCHEDULES
M-201	MECHANICAL SPECIFICATION #1
M-202	MECHANICAL SPECIFICATION #2
M-301	MECHANICAL GROUND FLOOR PLAN
M-302	MECHANICAL 2ND FLOOR PLAN
M-303	MECHANICAL 3RD FLOOR PLAN
M-304	MECHANICAL ROOF PLAN
M-401	MECHANICAL DETAILS SHEET #1
M-501	MECHANICAL BMS CONTROL SHEET #1

- CODES:**
- INTERNATIONAL BUILDING CODE 2018, INCLUDING 2020 NYS SUPPLEMENTAL CODE.
 - INTERNATIONAL MECHANICAL CODE 2018, INCLUDING 2020 NYS SUPPLEMENTAL CODE.
 - NY STATE CODE CODE 2020, INCLUDING LATEST SUPPLEMENTS.
 - NY STATE ENERGY CONSERVATION CODE 2020, BASED ON 2018 IECC.
 - NEW YORK STATE FIRE CODES 2020 INCLUDING LATEST SUPPLEMENTS

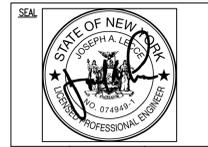
- SHOP DRAWINGS**
- PROVIDE SHOP DRAWINGS FOR ALL EQUIPMENT, DUCTWORK LAYOUTS, & PIPING LAYOUTS. ALL SHOP DRAWINGS ARE TO BE FULLY COORDINATED WITH ALL INSTALLING TRADES PRIOR TO SUBMITTAL. NO WORK SHALL BE INSTALLED PRIOR TO REVIEW AND ACCEPTANCE OF SHOP DRAWINGS BY ENGINEER AND CLIENT. ALLOW FOR (6) BUSINESS DAY TURN-AROUND FOR ALL SUBMITTALS. SUBMIT (3) HARD COPIES FOR REVIEW.

ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING MANAGEMENT BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

- HEATING/COOLING LOAD CALCULATIONS**
- ALL HEATING AND COOLING LOAD CALCULATIONS HAVE BEEN PERFORMED IN ACCORDANCE WITH LATEST NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE BY APPLICATION OF ASHRAE 90.1
 - 2018 INTERNATIONAL ENERGY CONSERVATION CODE
 - 2013 ASHRAE 90.1
 - 2020 SUPPLEMENT TO THE NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE
- ALL CALCULATIONS ARE IN ACCORDANCE WITH NYS ENERGY CODE SECTION C403.2.1
- HVAC DESIGN IS IN COMPLIANCE WITH THE ENERGY CODE PER NYS 2020 ENERGY CODE SUPPLEMENT C103.2.2

PROPOSED A/C UNIT REPLACEMENT FOR
MAMARONECK COURT CLERK
TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: NONE	DATE: 05/21/20	PROJECT NO.: #2020-084
DRAWN BY: DK	CHECKED BY: JL	APPROVED BY:

DRAWING TITLE:
MECHANICAL SYMBOLS & NOTES

DRAWING NO:
M-001

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM OF THE PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 2209 OF THE NEW YORK STATE EDUCATION LAW.

THESE PLANS ARE INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFRINGEMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK.

NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

SPLIT SYSTEM TYPE HEAT PUMP UNIT: EVAPORATOR SECTION SCHEDULE																											
UNIT NO	DX COIL DATA - EVAPORATOR						HW COIL		SUPPLY FAN						UNIT ELECTRICAL DATA				SEER NO.								
	AIR TEMPERATURE (95°F AIR OVER COND.)		TONS	TOTAL MBH	SENS. MBH	HEAT MBH	HW TEMP (°F)	GPM	MANUFACTURER/ MODEL NUMBER	CFM	ESP (IN)	RPM	EVP. MOTOR			COMPRESSOR				V/ Ph/Hz	MCA	MFS SYSTEM	SYSTEM FLA	FILTERS	DIMENSIONS L" x W" x H"	TOTAL WEIGHT (EVP. ONLY) (LBS)	
	ENT (°F)	LVG (°F)											BHP	HP	FLA	QTY.	RPM	RLA/LRA									MCA
DB	WB	DB	WB																								
AC-1-1	75	62.5	-	-	4.0	48.0	-	70	180	7.0	LENNOX CB27UHE-048	1465	.8	825	-	-	-	-	-	208-1-60	10	-	7.6	(MERV-13)	59"Lx22"Wx25"H	186	-
AC-1-2	75	62.5	-	-	3.0	36.0	-	61	180	6.1	LENNOX CB27UHE-036	1230	.8	825	-	-	-	-	-	208-1-60	5.0	-	4.1	(MERV-13)	51"Lx22"Wx23"H	150	-
AC-2-1	75	62.5	-	-	3.0	36.0	-	61	180	6.1	LENNOX CB27UHE-036	1230	.8	825	-	-	-	-	-	208-1-60	5.0	-	4.1	(MERV-13)	51"Lx22"Wx23"H	150	-
AC-2-2	75	62.5	-	-	5.0	60.0	-	84	180	8.4	LENNOX CB27UHE-060	1860	.8	900	-	-	-	-	-	208-1-60	10	-	7.6	(MERV-13)	63"Lx22"Wx25"H	199	-
AC-3-1	75	62.5	-	-	1.5	24.0	-	35	180	3.5	LENNOX CB27UHE-018	760	.8	775	-	-	-	-	-	208-1-60	5.0	-	4.1	(MERV-13)	50"Lx22"Wx21"H	137	-

- NOTES:
- FACTORY SHALL PROVIDE NECESSARY ADDITIONAL OIL TO EACH REFRIGERATION SYSTEM TO ACCOMMODATE PIPING AND ALL REQUIRED PIPING TRAPS.
 - AC UNITS SHALL COMPLY WITH THE NEW YORK STATE ENERGY CODE ENERGY EFFICIENCY REQUIREMENTS.
 - REFRIGERANT PIPE SIZES TO BE SIZED AS PER MANUFACTURER'S RECOMMENDATIONS.
 - AC UNIT SHALL BE INTERLOCKED WITH ITS ASSOCIATED CONDENSING UNIT.
 - AC UNITS TO BE CONNECTED TO EXISTING HONEYWELL HEAD END DDC SYSTEM
 - PROVIDE AC-UNITS WITH DISCONNECT SWITCH.
 - REFRIGERANT TO BE R410
 - AC UNITS TO HAVE MANUFACTURERS HOT WATER COIL PROVIDED, COPPER CONNECTIONS

SPLIT-SYSTEM TYPE AC-UNIT: AIR COOLED CONDENSER UNIT SECTION SCHEDULE																			
UNIT NO.	SERVING AC UNIT	MANUF.	MODEL NUMBER	CFM	TONS	REFRIGERANT	UNIT ELECTRICAL DATA				COMPRESSOR			CONDENSER FAN MOTOR			WEIGHT (#'S)	DIMENSIONS L" x H" x D"	SEER
							V/ PH/ HZ	FLA	MCA	MOC	QTY.	RPM	RLA/LRA	HP	FLA	UNIT FLA			
ACCU-1-1	AC-1-1	LENNOX	SSB048H4	-	4.0	410A	208/1/60	2.8	20.3	30	1	-	-	-	-	-	268	35W"x39H"x31D"	16.5
ACCU-1-2	AC-1-2	LENNOX	SSB036H4	-	3.0	410A	208/1/60	1.7	16.2	25	1	-	-	-	-	-	243	35W"x31H"x31D"	16.5
ACCU-2-1	AC-2-1	LENNOX	SSB036H4	-	3.0	410A	208/1/60	1.7	16.2	25	1	-	-	-	-	-	243	35W"x31H"x31D"	16.5
ACCU-2-2	AC-2-2	LENNOX	SSB060H4	-	5.0	410A	208/1/60	1.8	22.4	35	1	-	-	-	-	-	332	40W"x45H"x36D"	16.5
ACCU-3-1	AC-3-1	LENNOX	14CX-018	-	1.5	410A	208/1/60	1.4	12	20	1	-	-	-	-	-	137	24W"x30H"x24D"	15.5

- NOTES:
- ALL CONDENSER UNITS SHALL COMPLY WITH THE NEW YORK STATE ENERGY CODE ENERGY EFFICIENCY REQUIREMENTS.
 - PROVIDE CORROSION PROTECTION COIL SEALER AND CONTROL CIRCUIT TRANSFORMER.
 - CONTRACTOR TO PROVIDE A DISCONNECT, COORDINATE WITH ELECTRICIAN TO POWER ALL UNITS AS REQUIRED.
 - PROVIDE EXTERIOR PACKAGE WITH FACTORY PAINT FOR ACCU'S

PACKAGED ROOFTOP AIR CONDITIONING UNIT SCHEDULE (ADD ALTERNATE #1)																													
UNIT No.	SERVICE	LOCATION	MODEL NO.	SUPPLY FAN DATA				MOTOR DATA				EVAPORATOR COIL				ELECTRIC HEATER		OVERALL ELECT. DATA				FILTER		O.A ECONOMIZER	BUILT-IN ERV	VFD	UNIT WT. (LBS.)	DIMENSIONS	REMARKS
				AIR CFM	O/A CFM	EXT. SF IN. (WG)	RPM	HP	V/Ph/Hz	TOTAL CAPACITY (MBH)	SENS. ENT. AIR (MBH)	ENT. AIR DB (°F)	WB (°F)	LVG. AIR DB (°F)	WB (°F)	CAPACITY (KW)	VOLTS	Ph	Hz	MCA	MOC	TYPE	EFFICIENCY						
AHU-R-1	COURTROOM	ROOF	CARRIER 50TCD12A24SDA000	4000	925	1.0	942	2.41	208/3/60	124.10	96.20	80.0	67.0	57.7	57.2	12	208	3	60	56	60	PLEATED	MERV 13	YES	NO	YES	865	50"Hx89"Lx60"W	ADD ALTERNATE

- NOTE:
- ALL UNITS TO BE EQUIPPED WITH LOW AMBIENT TEMP. PROTECTION CAPABILITY.
 - PROVIDE ACOUSTICAL ROOF CURBS
 - AHU TO BE SUITED FOR OUTDOOR USE. COLOR BY ARCHITECT.
 - BASED ON 95°F AMBIENT TEMPERATURE
 - PROVIDE WITH BUILT IN ERV
 - PROVIDE VARIABLE POSITION RETURN, EXHAUST & OAI DAMPER
 - PROVIDE DIGITAL CONTROL SYSTEM BACK-NET CAPABLE TO EXISTING HONEYWELL DDC
 - NOT USED
 - REFRIGERANT IS R410A
 - PROVIDE HOT GAS BYPASS
 - COMPRESSORS TO HAVE 5 YEAR WARRANTY
 - ADJUSTABLE V-BELT DRIVE
 - PROVIDE WEATHERHOOD FOR OAI
 - PROVIDE 2" PLEATED FILTERS FOR EACH AC UNIT, MERV-13. ALL FILTERS TO BE UL-900 LISTED.
 - PROVIDE AHU-R-1 WITH VARIABLE FREQUENCY DRIVE

ENERGY RECOVERY VENTILATOR SCHEDULE																	
UNIT No.	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	SUPPLY FAN DATA				MOTOR DATA				FILTER		UNIT WT. (LBS.)	DIMENSIONS	REMARKS
					EXHAUST AIR CFM	O/A CFM	EXT. SF IN. (WG)	RPM	WATTS	V/Ph/Hz	TYPE	EFFICIENCY					
ERV-1-1	AC-1-1	STORAGE	FANTECH	SER3204D	175	200	.40	-	300	120/1/60	PLEATED	1"PREFILTER & 65% FINAL	50	21"Hx17.5"Dx33.5"W			
ERV-1-2	AC-1-2	YOUTH	FANTECH	SER3204D	175	200	.40	-	300	120/1/60	PLEATED	1"PREFILTER & 65% FINAL	50	21"Hx17.5"Dx33.5"W			
ERV-2-1	AC-2-1	STORAGE	FANTECH	SER1504D	80	100	.40	-	300	120/1/60	PLEATED	1"PREFILTER & 65% FINAL	50	17"Hx17.5"Dx28.5"W			
ERV-2-2	AC-2-2	RECEPT	FANTECH	SER3204D	175	200	.40	-	300	120/1/60	PLEATED	1"PREFILTER & 65% FINAL	50	21"Hx17.5"Dx33.5"W			
ERV-3-1	AC-3-1	LIBRARY	FANTECH	SER704N	40	50	.40	-	300	120/1/60	PLEATED	1"PREFILTER & 65% FINAL	50	18"Hx10.5"Dx18.5"W			

- NOTE:
- ALL UNITS TO HAVE FROST CONTROL.
 - UNITS TO BE SUITED FOR INDOOR USE.
 - BASE ON 95°Fdb/78°Fwb SUMMER AND 7°Fdb/AMBIENT TEMPERATURE
 - PROVIDE 1" PLEATED FILTERS FOR EACH UNIT. ALL FILTERS TO BE UL-900 LISTED.



740 W Boston Post Road
UVC SPECIFICATIONS

PART 1 EQUIPMENT

- MANUFACTURERS: SteriAire Air Enhanced or RSE-1 UVC Kits with GTS High output lamps best applied to:
 - To maximize UVC exposure on the entire cooling coil and drain pan surfaces.
 - To maximize UVC intensity field to increase air disinfection capability.
 - To allow proper access to inspect, service, and/or repair UVC & HVAC systems safely.
- Performance:
 - Verified in field testing by start-up representative that UVC system is providing a minimum intensity of 1000-1250 µW/cm² at all points of the cooling coil and drain pan surfaces when the downstream side of the coil is operating in cooling mode (50-55° F leaving air temperature).
 - UVC Emitters shall operate a minimum of one year with a maximum loss of intensity not to exceed 50% of start-up intensity as field measured.
 - UVC lamps shall produce no ozone or other secondary contamination.
- Warranty: UVC Ballasts shall have a 5-year parts warranty. UVC Lamps shall have a 1-year parts warranty.

PART 2 INSTALLATION OF UVC FIXTURES/EMITTERS.

- Coordinate installation with HVAC equipment and install UVC fixtures and lamps as recommended by manufacturer's representative and installing contractor, adhering to all local and state electrical codes.
- When possible, UVC Emitters shall be installed downstream of cooling coils and above drain pans to maximize exposure on all surfaces per manufacturer's recommendations.
- UVC provider to provide an inspection view panel, constructed of UVC protected glass, to allow visual inspection of UVC without opening unit.
- Install Safety Danger & Caution Labels on all access doors and to identify that a UVC system is installed in AC unit and that eye and skin protection is always to be worn.
- All electrical accessories, inc. junction boxes, all connections inside cooling coil section will be weathertight and moisture resistant.
- All penetrations and junction boxes will be sealed with Duct Seal to avoid any humidity passing through the conduit and junction boxes from one section to another.

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UVC Specifications - December 2020 (Pg. 2)
PART 3 UVC CONTROL PANEL (For York Rooftop Unit)

- UL 508 Control Panel with monitoring and safety capabilities.
- The panel can monitor the amperage drawn by the UVC system and be visually read or documented by a connected device or Building Management System.
- UVC control panel enclosure, NEMA3R (indoors), 4X(outdoors) rated, as follows:
 - Panel mounted amp display to permit personnel to view amperage for surveys, maintenance, recording, and service repairs.
 - Manual ON/OFF switch and RESET safety devices insure that personnel entering the UVC section must reset the lights by physically leaving the air handling unit, closing all access doors, and then resetting the system at the UVC control panel before the UVC is energized.
 - Current transducer and Digital/Analog Amperage Display factory mounted and pre-wired by factory with a 24VDC power supply and available for 4-20ma output to connect and/or alarm at building automation system.
 - Lock Out /Tag Out capability to prevent tampering and unauthorized entry.
 - As recommended by ANSI and OSHA, install safety interlock switch Honeywell BZE6-2RN or approved equal on all access doors to all HVAC sections with UVC exposure. All power to UVC system must be disconnected before opening any access door to the UVC system.
- UL 508 Ballast Enclosure - NEMA 3R enclosures with UVC ballasts to be mounted inside AHU units (if space permits) and be weathertight for operating in cooling coil/fan section.

PART 4 - COMMISSIONING

- UVC provider will verify onsite after completed installation that UVC system is provided the minimum intensity of 1000-1250 µW/cm² at all points of the cooling coil and drain pan surfaces with an ILT1400 Calibrated radiometer that adheres to NIST standards in the 254-nm wavelength range.
- UVC provider shall be capable of providing a comprehensive maintenance contract to include:
 - Regular inspections to verify intensity levels.
 - Contact plates to illustrate the cleanliness of surfaces inside the cooling coil and drain pan section.
 - Inspection of all parts of the UVC system for proper operation.
 - Provide UVC service of lamps and ballasts as required.
 - Provide warranty and full service to insure proper operation per design specifications and manufacturers recommendations.
- UVC provider shall be authorized and trained to provide design, installation, service, and repair services to the end user upon request.

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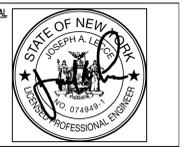
UVC Schedule - 740 Boston Post Road

Unit No.	Location	Type	H	W	Coil Face Area	CFM @ 400fpm	FPM	Qty	UVC	UVC Lamp	Control Panel	DS	VP	Amps @110v Note 1/2	Comment
AC-1-1	Ceiling	Lennox CB27-UHE-48	12	48	4.0	1600	400	2	SteriAire RSE-2	RGTS24	No	0	Flat	1.4	
AC-1-2	Ceiling	Lennox CB27-UHE-36	12	36	3.2	1200	379	2	SteriAire RSE-2	RGTS20	No	0	Flat	1.2	
AC-2-1	Ceiling	Lennox CB27-UHE-36	12	36	3.2	1200	379	2	SteriAire RSE-2	RGTS20	No	0	Flat	1.2	
AC-2-2	Ceiling	Lennox CB27-UHE-60	12	60	5.0	2000	400	2	SteriAire RSE-2	RGTS24	No	0	Flat	1.4	
AC-3-1	Ceiling	Lennox CB27-UHE-18	10	30	2.1	600	288	2	SteriAire RSE-2	RGTS20	No	0	Flat	1.2	
AHU-R-1	Roof	York J102C	40	40	11.1	4000	360	4	SteriAire EUVC	EGTS42	X-902-A	1	1*	4.0	Outdoor Panel/Weatherproof

- NOTES:
- Legend: UVC Door Switch Interlock, DS; UVC View Panel, VP

PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: NONE DATE: 08/21/20 PROJECT NO.: #2020-054
DRAWN BY: DK CHECKED BY: JL APPROVED BY:

DRAWING TITLE: MECHANICAL SCHEDULES #1

DRAWING NO: M-101

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THE PLAN IN ANY WAY, IF ALTERATION TO THIS PLAN IS MADE. THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
THESE PLANS ARE INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFRINGEMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK.
NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

MECHANICAL SPECIFICATIONS:

GENERAL REQUIREMENTS:

- A. INSTALL ALL NEW WORK IN A NEAT WORKMANLIKE MANNER READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR.
1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF 2020 NEW YORK STATE & 2018 INTERNATIONAL BUILDING CODE, LOCAL BUILDING DEPARTMENT, BUILDING MANAGEMENT, AND ALL AUTHORITIES HAVING JURISDICTION, APPLICABLE NATIONAL, STATE, AND LOCAL CODES, LAWS, AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK SHALL BE INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS.

- C. SITE VERIFICATION:
1. PRIOR TO SUBMISSION OF THE BID, THIS CONTRACTOR SHALL VISIT THE JOB SITE TO ASCERTAIN THE ACTUAL FIELD CONDITIONS AS THEY RELATE TO THE WORK INDICATED ON THE DRAWINGS AND DESCRIBED HEREIN. DISCREPANCIES, IF ANY, SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO SUBMISSION OF THE BID, AND IF NOT RESOLVED TO SATISFACTION, SHALL BE SUBMITTED AS A WRITTEN QUALIFICATION OF THE BID. SUBMISSION OF A BID SHALL BE EVIDENCE THAT SITE VERIFICATION HAS BEEN PERFORMED AS DESCRIBED ABOVE.
D. CONTRACT DOCUMENTS:
1. PRIOR TO SUBMISSION OF THE BID, THIS CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THE ENTIRE PROJECT INCLUDING GENERAL CONSTRUCTION, DEMOLITION, ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND SEWERAGE, AND SHALL INCLUDE ANY WORK REQUIRED IN THE BID WHICH IS INDICATED OR IMPLIED TO BE PERFORMED BY THIS TRADE IN OTHER SECTIONS OF THE WORK.

- E. GUARANTEE:
1. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE MECHANICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER, AND IS UNDER CARE, CUSTODY, AND CONTROL OF THE OWNER.
2. THIS CONTRACTOR SHALL GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN THE GUARANTEE PERIOD. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL INCLUDE RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THIS CONTRACTOR.
3. THIS CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF ALL SYSTEMS UNTIL THE FINAL ACCEPTANCE OF THE WORK.
4. ALL AIR CONDITIONING UNIT COMPRESSORS AND REFRIGERATION COMPONENTS SHALL HAVE A 5-YEAR WARRANTY.

- F. DEFINITIONS:
1. MECHANICAL CONTRACTOR: THIS CONTRACTOR; THE PARTY OR PARTIES THAT HAVE BEEN DULY AWARDED THE CONTRACT FOR AND ARE THEREBY MADE RESPONSIBLE FOR THE MECHANICAL WORK AS DESCRIBED HEREIN.
2. THIS CONTRACT; THE CONTRACT; THE AGREEMENT COVERING THE WORK TO BE PERFORMED BY THIS CONTRACTOR.
3. APPROVED; EQUAL; SATISFACTORY; ACCEPTED; ACCEPTABLE; EQUIVALENT; SUITABLE FOR USE ON THE PROJECT, AS DETERMINED BY THE ENGINEER BASED ON DOCUMENTS PRESENTED FOR SUCH DETERMINATION.
4. THESE SPECIFICATIONS: THIS SECTION, PART, DIVISION (OF THE SPECIFICATION); THE DOCUMENT SPECIFYING THE WORK TO BE PERFORMED BY THIS CONTRACTOR.
5. THE MECHANICAL WORK; THIS WORK; ALL LABOR MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES, AND OTHER ITEMS REQUIRED FOR A PROPER AND COMPLETE INSTALLATION BY THE MECHANICAL CONTRACTOR.
6. ARCHITECT; ENGINEER; OWNER'S REPRESENTATIVE; THE PARTY OR PARTIES RESPONSIBLE FOR INTERPRETING, ACCEPTING AND OTHERWISE RULING ON THE PERFORMANCE UNDER THIS CONTRACT.
7. FURNISH; PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT, ALL AS PART OF THE MECHANICAL WORK.
8. INSTALL; UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING INSTALLATION AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT, ALL AS PART OF THE MECHANICAL WORK.
9. PROVIDE; FURNISH AND INSTALL.
10. NEW; MANUFACTURED WITHIN THE PAST TWO YEARS AND NEVER BEFORE USED.
11. RELOCATE; MOVE EXISTING EQUIPMENT AND ALL ACCESSORIES AS REQUIRED.
12. REMOVE; DISMANTLE AND CART AWAY FROM SITE INCLUDING ALL RELATED ACCESSORIES. ALL ITEMS SHALL BE LEGALLY DISPOSED OF ALL OTHER EQUIPMENT AND OPERATIONS IN ANY WAY AFFECTED BY THE REMOVAL IS TO REMAIN IN FULL OPERATION. PROVIDE ALL NECESSARY COMPONENTS TO MAINTAIN SUCH OPERATION.

- A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND CONTRACTOR'S SERVICES NECESSARY FOR THE COMPLETE, SAFE INSTALLATION OF ALL MECHANICAL WORK. THE SCOPE OF WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
1. DEMOLITION AND REMOVAL OF ITEMS AS REQUIRED.
2. DUCTWORK AND DUCTWORK ACCESSORIES.
3. AIR DISTRIBUTION SYSTEM (AIR OUTLETS, VAV BOXES, DUCTWORK, FAN POWERED BOXES, ETC.).
4. PIPING AND PIPING ACCESSORIES INCLUDING ALL VALVING.
5. EQUIPMENT (ROOF AHU'S, EVAPORATORS & ACCU'S, ERV'S, DAMPERS, LOUVERS, UVG LIGHTS, ETC.).

- 6. INSULATION OF PIPING, EQUIPMENT & DUCTWORK.
7. SOUND ATTENUATORS AND SOUND LINING.
8. AUTOMATIC TEMPERATURE CONTROLS.
9. TESTING AND BALANCING.
10. CUTTING AND PATCHING.
11. SHOP DRAWINGS.
12. AS-BUILT DRAWINGS.
13. OPERATING AND MAINTENANCE MANUALS.
14. FULL COORDINATION WITH OTHER TRADES.
15. AIR & WATER BALANCING.
16. WARRANTY AND GUARANTY.
D. PHASING AS REQUIRED BY OWNER, CONSTRUCTION MANAGER, GENERAL CONTRACTOR, OR BUILDING MANAGEMENT.
E. PREMIUM TIME FOR WORK TO BE PERFORMED AFTER-HOURS AS REQUIRED BY BUILDING MANAGEMENT AND/OR OWNER.
F. FILING, PERMITS, CONTROLLED INSPECTIONS.
G. FULL TESTING AND STARTUP OF ALL SYSTEMS.
H. SECURE CERTIFICATES, PAY ALL FEES AND CHARGES FOR ALL WORK INSTALLED, CERTIFYING COMPLIANCE WITH ALL AUTHORITIES. CONTRACTOR SHALL PERFORM REQUIRED CONTROLLED INSPECTION AND OBTAIN ALL EQUIPMENT USE PERMITS. DELIVER CERTIFICATES TO OWNER FOR SCHEDULING BEFORE FLING.

- A. THE CONTRACTOR SHALL OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS PRIOR TO BID SUBMISSION TO DETERMINE REQUIREMENTS AND THE EXTENT OF PREMIUM TIME WORK REQUIRED BY THE BUILDING. FOR THE PURPOSE OF THE BID, ASSUME ANY NOISY WORK (E.G., CHOPPING, CORE DRILLING, ETC.) AND BASE BUILDING SYSTEM INTERRUPTIONS ARE TO BE PERFORMED OUTSIDE NORMAL BUSINESS HOURS.
B. THE CONTRACTOR SHALL ADHERE TO THE BUILDING OWNER'S RULES AND REGULATIONS. ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND THE BUILDING RULES AND REGULATIONS SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT/ENGINEER FOR REVIEW, WITH BID SUBMISSION.
C. COORDINATE WITH BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS OR A MINIMUM OF TWO (2) DAYS PRIOR TO ANY WORK, WHICHEVER IS MORE STRINGENT.

- A. SUBMIT SHOP DRAWINGS CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN COMPLETED. SUBMIT ALL CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS AND AUTOMATIC TEMPERATURE CONTROL REQUIREMENTS. SHOP DRAWINGS SUBMISSION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
1. DUCTWORK - PROVIDE DUCT SHOP STANDARDS AND LEAKAGE TEST CERTIFICATION, AS REQUIRED, AND 3/8" SCALE DUCT LAYOUT.
2. PIPING LAYOUT AND APPURTENANCES - PROVIDE PIPING, VALVING, CHEMICAL TREATMENT, SHOP STANDARDS AND 3/8" SCALE PIPING LAYOUT WITH ALL VALVING.
3. INSULATION FOR DUCTWORK, PIPING AND EQUIPMENT.
4. CERTIFIED AIR AND WATER BALANCING REPORT.
5. EQUIPMENT CATALOG CUTS FOR ALL ITEMS TO BE UTILIZED ON PROJECT (ROOF AHU'S, EVAPORATORS & ACCU'S, ERV'S, DAMPERS, LOUVERS, UVG LIGHTS, ETC.)
6. AIR OUTLETS (DIFFUSERS, REGISTERS, GRILLES, ETC.)
7. AUTOMATIC TEMPERATURE CONTROL DIAGRAMS, DEVICES AND SEQUENCE OF OPERATION.

- A. AS-BUILT DRAWINGS IN THE LATEST AUTOCAD FORMAT AT PROJECT COMPLETION SHOWING THE INSTALLED CONDITION OF WORK.
C. THE QUANTITY OF SHOP DRAWINGS SHALL AS A MINIMUM BE FOUR (4) COPIES OF 8-1/2"x11" SUBMISSIONS AND ONE (1) REPRODUCIBLE AND ONE (1) PRINT OF ALL DRAWINGS. SPECIFIC JOB REQUIREMENTS MAY BE MORE STRINGENT AND CONTRACTOR IS RESPONSIBLE TO OBTAIN REQUIREMENTS FROM CONSTRUCTION MANAGER, GENERAL CONTRACTOR OR ARCHITECT. PROVIDE FOUR (4) DISKS WITH ALL PDF PLOTS AND AUTOCAD ELECTRONIC DRAWINGS FILES INCLUDED.

SUBSTITUTIONS

- A. NO SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER WHICH INCLUDES ALL DIMENSIONAL, PERFORMANCE AND MATERIAL SPECIFICATIONS, ANY CHANGES IN LAYOUT, ELECTRICAL CHARACTERISTICS, STRUCTURAL REQUIREMENTS, OR DESIGN DUE TO THE USE OF A SUBSTITUTE SHALL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM SUBSTITUTION. ALL ITEMS SHALL BE SUBMITTED FOR REVIEW IN CONJUNCTION WITH THE SUBMITTAL OF THE SUBSTITUTION. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN EXPLANATION WHY A SUBSTITUTION IS BEING UTILIZED. IF THE SUBSTITUTED ITEM DEVIATES FROM THE SPECIFIED ITEM, THOSE DEVIATIONS ARE TO BE IDENTIFIED ON A LINE BY LINE BASIS. IF THE SUBSTITUTE IS BEING UTILIZED FOR FINANCIAL REASONS, THE ASSOCIATED CREDIT MUST BE SIMULTANEOUSLY SUBMITTED TO THE ENGINEER.
B. ALL SUBSTITUTED EQUIPMENT SHALL CONFORM TO SPACE REQUIREMENTS AND PERFORMANCE REQUIREMENTS SHOWN ON CONTRACT DOCUMENTS. CONTRACTOR SHALL REPLACE ANY EQUIPMENT THAT DOES NOT MEET THESE REQUIREMENTS. ANY SUBSTITUTIONS MUST BE MODIFIED TO ASSOCIATED SYSTEMS OR ADDITIONAL COSTS ATTRIBUTED TO THIS SUBSTITUTION SHALL BE AT THIS CONTRACTOR'S EXPENSE.
C. CONTRACTOR SHALL SUBMIT BID BASED ON SPECIFIED ITEMS AND SHALL SUPPLY AS AN ALTERNATE PRICE ANY SUBSTITUTIONS.

- CHASING, CHOPPING OR CORE DRILLING:
A. PRIOR TO ANY CHASING, CHOPPING, OR CORE DRILLING BEING PERFORMED, THIS CONTRACTOR SHALL FIELD INVESTIGATE EXISTING CONDITIONS AND COORDINATE WITH ALL APPROPRIATE TRADES AND BUILDING MANAGEMENT TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECT ANY NEW BUILDING SYSTEMS. THIS WORK MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO PROCEEDING.
DEMOLITION, REMOVAL AND RELOCATION
A. GENERAL CONTRACTOR TO REMOVE ALL CEILING IN AREAS WHERE NEW DUCTWORK OR PIPING IS TO BE INSTALLED OR EXISTING IS ALTERED, AS PER ARCHITECT'S INSTRUCTIONS.

- B. NECESSARY CUTTING AND PATCHING TO ACCOMMODATE THE NEW HVAC WORK SHALL BE PERFORMED BY THIS CONTRACTOR AND COORDINATE WITH THE CONSTRUCTION MANAGER SO AS TO MINIMIZE DISRUPTION. RESTORE ALL ITEMS TO MATCH EXISTING CONDITIONS.
C. ALL EXISTING MATERIAL AND EQUIPMENT TO BE REMOVED UNDER THIS CONTRACT WILL REMAIN THE PROPERTY OF THE OWNER OR SHALL BE LEGALLY DISPOSED OF BY THIS CONTRACTOR AS DIRECTED BY THE ARCHITECT OR OWNER. REFRIGERATION CONTAINED IN EXISTING EQUIPMENT TO BE REMOVED SHALL BE RECLAIMED OR LEGALLY DISPOSED OF IN ACCORDANCE WITH EPA REGULATIONS AND ASHRAE.
D. PROVIDE FOR LEGAL REMOVAL AND DISPOSAL OF ALL RUBBISH AND DEBRIS FROM THE BUILDING AND SITE. COORDINATE ALL DEMOLITION AND REMOVALS WITH BUILDING MANAGEMENT. AS-BUILT DRAWINGS
A. CONTRACTOR SHALL MAINTAIN RECORD DRAWING PRINTS ON JOB SITE AND RECORD, AT TIME OF OCCURRENCE, DEVIATIONS FROM CONTRACT DOCUMENTS DUE TO FIELD COORDINATION, BULLETINS, OR ADDENDA.
B. CONTRACTOR SHALL REVISE SHOP DRAWINGS TO CONFORM TO RECORD DRAWINGS AND SUBMIT AS-BUILT CONDITION (PIPING AND DUCTWORK) DRAWINGS UPON COMPLETION OF THE PROJECT. FINAL SUBMISSION OF REPRODUCIBLE AS-BUILT DRAWINGS ARE TO BE SIGNED AND CERTIFIED BY INSTALLING CONTRACTOR THAT THIS IS THE AS-BUILT CONDITION OF THE WORK. CONTRACTOR SHALL SUPPLY THE RECORD DRAWINGS IN THE LATEST AUTOCAD FORMAT.

- A. SUBMIT FOUR (4) LOOSE-LEAF BOUND OPERATING AND MAINTENANCE MANUALS WITH INDEX AND INDEX TABS TO AFFECT THE FOLLOWING:
1. OPERATING AND MAINTENANCE INSTRUCTIONS ON ALL SYSTEMS.
2. MANUFACTURER'S CATALOG CUTS ON ALL EQUIPMENT.
3. AUTOMATIC TEMPERATURE CONTROL SYSTEMS WITH SEQUENCE OF OPERATIONS, CATALOG CUTS OF ALL DEVICES, AND POINT-TO-POINT WIRING DIAGRAMS.
4. CERTIFIED FINAL AIR AND WATER BALANCING REPORT.
5. DUCT AND PIPING AS-BUILT DRAWINGS WITH VALVE CHART AND KEY PLAN DRAWINGS INSERTED IN BINDER.
6. ALL ITEMS SUBMITTED FOR REVIEW IN SHOP DRAWING SECTION.

- SERVICE AND WARRANTY (MAINTENANCE CONTRACT)
A. ALL NEW EQUIPMENT, MATERIALS, INSTALLATIONS, BY THIS CONTRACTOR SHALL BE WARRANTED FOR A PERIOD OF ONE (1) YEAR FROM THE TIME OF FINAL ACCEPTANCE OF ALL COMPLETED SYSTEMS FROM OWNER AND ENGINEER.
B. THIS CONTRACTOR SHALL PROVIDE AS AN ADD ALTERNATE PRICE, A FULL ONE YEAR SERVICE CONTRACT OF ALL MECHANICAL COMPONENTS AND SYSTEMS, WITH PRICES FOR YEARS 2, 3 AND 4 FOLLOWING THIS FIRST YEAR. AT THE TIME OF ACCEPTANCE OF PROJECT, THE OWNER REPRESENTATIVE WILL DECIDE TO ACCEPT WHICH ALTERNATE, IF ANY.

- ACCESS DOORS IN GENERAL CONSTRUCTION
A. THIS CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL A PLAN INDICATING THE SIZE (MINIMUM 20" X 20") AND LOCATION OF ALL ACCESS DOORS REQUIRED FOR OPERATION AND MAINTENANCE. ALL CONCEALED EQUIPMENT, DEVICES, VALVES, DANGERS AND CONTROLS, ACCESSORIES, AND OTHER ITEMS REQUIRED FOR A PROPER AND COMPLETE INSTALLATION IN FINISHED CONSTRUCTION AND INCLUDE COSTS IN THE BID.
MECHANICAL EQUIPMENT
A. PROVIDE ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS.
B. INSTALL EQUIPMENT IN ACCORDANCE WITH APPROVED SHOP DRAWINGS, MANUFACTURERS RECOMMENDATIONS, INSTRUCTIONS, AND ALL AUTHORITIES HAVING JURISDICTION.
C. PROVIDE EQUIPMENT SUPPORTS AND MOUNTINGS AS INDICATED ON THE DRAWING, IN VIBRATION SPECIFICATION AND AS FOLLOWS:
1. FLOOR MOUNTED EQUIPMENT - PROVIDE DIMENSIONS FOR A 4" CONCRETE HOUSEKEEPING PAD WITH ALL REQUIRED WATERPROOFING TO THE CONSTRUCTION MANAGER.
2. EQUIPMENT ON FLOOR STANDS - PROVIDE FLOOR STAND OF STRUCTURAL STEEL OR STEEL PIPES AND FITTINGS AND BOLT TO FLOOR.
3. ROOF MOUNTED EQUIPMENT - PROVIDE PREFABRICATED ISOLATED ROOF CURB WITH BRONZE FITTINGS AND BOLT TO FLOOR.
4. CEILING MOUNTED EQUIPMENT - PROVIDE SUPPORTS WITH APPROVED SUITABLE ANCHORS SUSPENDED DIRECTLY FROM BUILDING STEEL STRUCTURE.
5. CHILLERS TO HAVE STRUCTURAL CONCRETE PAD.

- D. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE EQUIPMENT LOAD.
E. EQUIPMENT SHALL BE INSTALLED WITH VIBRATION ISOLATION, REFER TO VIBRATION ISOLATION SECTION.
HANGERS AND SUPPORTS:
A. PROVIDE ALL PIPE HANGERS, HANGER RODS SUPPORTS, INSERTS, ATTACHMENTS, CLAMPS, GUIDES, BRASS, STEEL, AND ANCHORS AS REQUIRED TO INSTALL PIPE SYSTEM USED TO ACCOMMODATE THE SYSTEM LOADS. HANGERS AND SUPPORTS ARE TO BE IN ACCORDANCE WITH MSS RECOMMENDATIONS.
B. PROVIDE INSULATED PROTECTIVE SADDLES FOR INSULATED PIPING.
C. PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH RECOMMENDATIONS OF MSS SP-69 AND ALL APPLICABLE CODES. ALL THREADED ROD IS TO BE GALVANIZED. PROVIDE 2" VERTICAL ADJUSTMENT FOR ALL HANGERS. PROVIDE ADDITIONAL SUPPORTS AT CHANGES IN DIRECTION, BRIDGE PIPING OVER 6 FEET, AND CONCENTRATED LOADS DUE TO VALVES, STRAINERS AND OTHER ACCESSORIES.
D. HANGER AND SUPPORTS SHALL BE MANUFACTURED BY GRINNELL OR APPROVED EQUAL.
E. ALL HANGERS AND SUPPORTS TO BE SEISMICALLY DESIGNED AND INSTALLED PER THE LOCAL BUILDING CODE.
VIBRATION ISOLATION
A. FURNISH AND INSTALL ALL NECESSARY VIBRATION ISOLATORS, VIBRATION HANGERS, MOUNTING PADS, BALLS, ETC., TO ISOLATE VIBRATION AND SOUND FROM BEING TRANSMITTED TO THE BUILDING CONSTRUCTION. ALL VIBRATION ISOLATION PRODUCTS SHALL BE SPECIFICALLY DESIGNED FOR THEIR INTENDED USE.
B. MANUFACTURER OF VIBRATION ISOLATION EQUIPMENT SHALL HAVE THE FOLLOWING RESPONSIBILITIES:
1. DETERMINE VIBRATION ISOLATOR SIZES AND LOCATIONS.
2. PROVIDE SUITABLE PIPING AND EQUIPMENT VIBRATION ISOLATION SYSTEMS.
3. GUARANTEE SPECIFIED ISOLATION SYSTEM ATTENUATION AND SMOKE DEVELOPED INDEX OF 50 OR LESS.
4. PROVIDE INSTALLATION INSTRUCTIONS, DRAWINGS AND FIELD SUPERVISION TO ASSURE PROPER INSTALLATION AND PERFORMANCE. STARTERS SHALL BE SELECTED TO SUIT MOTOR RUNNING AND STARTING CHARACTERISTICS.
C. ISOLATION SYSTEMS SHALL BE MANUFACTURED BY MASON INDUSTRIES OR APPROVED EQUAL. MOUNTING TYPES:
1. STATIC DEFLECTION OF ISOLATORS SHALL BE A MINIMUM OF 90% EFFICIENT. PROVIDE CORROSION PROTECTION FOR EQUIPMENT MOUNTED OUTDOORS.
2. MOUNTING OF CEILING-SUPPORTED FANS, IN-LINE PUMPS, HEAT EXCHANGERS, AND AIR HANDLING UNITS - SPRING ISOLATORS - (TYPE DNHS).
3. ROOFTOP AC UNITS OR FANS - SPRING ROOF CURB - TYPE RSC.
4. SUPPORT OF PIPING IN EQUIPMENT ROOMS AND WHERE EXPOSED ON ROOF
a. ALL WATER PIPING OUTSIDE OF SHAFTS WITHIN 50 FEET OF CONNECTED ROTATING EQUIPMENT TO BE SUPPLIED WITH ISOLATORS.
b. HANGER ROD ISOLATORS (TYPE 30N) MOUNTINGS.
c. FLOOR SUPPORTED PIPING ISOLATORS (TYPE SLR).
d. VERTICAL RISER PIPING ANCHOR AND GUIDES (TYPE ADA).
5. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL FANS AND DUCTWORK (REFER TO DUCTWORK SECTION FOR SPECIFICATIONS).

- INSULATION
A. ALL INSULATION SHALL MEET THE REQUIREMENTS OF ASTM, NFPA NEW YORK STATE ENERGY CODE AND ALL AUTHORITIES HAVING JURISDICTION. ALL MECHANICAL INSULATION, JACKETING, COVERINGS, ADHESIVES, MASTICS, FACINGS, TAPES, ETC.) SHALL HAVE RATINGS NOT EXCEEDING A "FLAME SPREAD" OF 25 OR LESS AND "SMOKE DEVELOPED" INDEX OF 50 OR LESS.
B. BEFORE APPLYING INSULATION, ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED. FURNISH AND INSTALL AS PER MANUFACTURERS REQUIREMENTS.
C. INSULATION FOR FITTINGS OR ACCESSORIES REQUIRING INSPECTION OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

- DUCT INSULATION
A. GENERAL
1. INSULATION SHALL BE APPLIED WITH MASTICS, ADHESIVES, COATINGS, WITH COVERS, WEATHER PROTECTION AND OTHER WORK AS REQUIRED BY MANUFACTURER'S RECOMMENDATIONS. DO NOT INSULATE SOUND LINED DUCTWORK. MATERIALS SHALL MEET REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMCMA. ALL INSULATION SHALL MEET THE REQUIREMENTS OF ASTM, NFPA NEW YORK STATE ENERGY CODE AND ALL AUTHORITIES HAVING JURISDICTION. ALL MECHANICAL INSULATION (JACKETING, COVERINGS, ADHESIVES, MASTICS, FACINGS, TAPES, ETC.) SHALL HAVE RATINGS NOT EXCEEDING A "FLAME SPREAD" OF 25 OR LESS AND "SMOKE DEVELOPED" INDEX OF 50 OR LESS.

- B. CONCEALED DUCTWORK
1. INSULATE SUPPLY AND FRESH AIR DUCTS AND PLENUMS IN CONCEALED SPACES AND RETURN DUCTS NOT IN CEILING PLENUM WITH AT LEAST 1-1/2" THICK 0.75 LB./CU. FT. FIBROUS GLASS DUCT WRAP HAVING A MINIMUM R-VALUE OF 5.0, WITH FOLK-KRAFT FLAME RESISTANT VAPOR BARRIER.
C. EXPOSED DUCTWORK
1. INSULATE EXPOSED SUPPLY, RETURN, FRESH AIR DUCTS, AND EXPOSED PLENUM WITH 2" THICK, SEA-ROD FIBROUS GLASS BOARDS WITH FACTORY APPLIED FIRE RETARDANT FOLK-KRAFT VAPOR BARRIER FACING HAVING A MINIMUM R-VALUE OF 5.0. PROVIDE WELD PINS AND VAPOR SEAL ALL JOINTS WITH TAPE.
D. OUTDOOR DUCTWORK
1. FOR OUTDOOR DUCTWORK OR DUCTWORK EXPOSED TO THE ELEMENTS PROVIDE 3" THICK, 1.50 LB./CU. FT DENSITY FIBROUS GLASS DUCT WRAP WITH AN R-VALUE OF R-8, WITH FOLK-KRAFT FLAME RESISTANT VAPOR BARRIER. APPLY TWO (2) COATS OF WEATHERPROOF MASTIC AND EMBED INTO MET COAT TWO (2) LAYERS OF GLASS CLOTH OVER INSULATION JACKET. SMOOTH MEMBRANE TO AVOID WRINKLES AND OVERLAP ALL SEAMS AT LEAST 3" APPLY A SECOND COAT OF SAME COATING TO THE ENTIRE SURFACE. TOP CENTER OF RECTANGULAR DUCT SHALL PITCH TO AVOID TRAPPING OF WATER IN THE CENTER.

- EQUIPMENT INSULATION
A. PROVIDE FIBROUS GLASS BOARD, 2 INCH THICK, 6 LB. DENSITY, FOLK-KRAFT FACING, VAPORSEAL. INSULATION SHALL BE SEGMENTED TO FIT CURVATURE OF EQUIPMENT.
B. APPLICATION AND FINISH
1. ROUND EQUIPMENT: BAND IN PLACE WITH 1/2 INCH BY .020 INCH STAINLESS STEEL BANDS ON 12 INCH CENTERS. FLAT OR IRREGULAR SHAPED EQUIPMENT: INSTALL INSULATION ON WELDED PINS OR CLIPS ON 12 INCH CENTERS.
2. EQUIPMENT WITH VAPOR BARRIER: TACK COAT INSULATION WITH A FULL COAT OF VAPOR BARRIER-RESISTIVE MASTIC, EMBED A LAYER OF GLASS FABRIC OVERLAPPING ENDS, THEN APPLY A FULL FINISH COAT OF FIRE-RESISTIVE MASTIC.
3. ALL EQUIPMENT: APPLY HEXAGONAL METAL MESH AND TWO 1/4 INCH THICK COATS OF HYDRAULIC SETTING CEMENT. TROWEL TO A SMOOTH FINISH. USE CORNER BEADS ON EDGES.
4. APPLY A FULL COAT OF LAGGING CEMENT, EMBED A LAYER OF GLASS FABRIC AND FINISH WITH A SECOND COAT OF LAGGING CEMENT.
5. PROVIDE WEATHERPROOF FINISH AS REQUIRED FOR SERVICE.
C. THE INSULATION OF ALL REMOVABLE HEADS, MANHOLES, INSPECTION PLATES, ACCESS DOORS, ETC., SHALL BE INSTALLED IN REMOVABLE ALUMINUM HOUSING ARRANGED IN SUCH A MANNER THAT IT CAN EASILY BE REMOVED AND REPLACED WITHOUT ANY DAMAGE TO THE INSULATION.

- PIPE INSULATION:
A. FIBERGLASS PIPE INSULATION: ONE-PIECE MOLDED SECTIONAL FIBER GLASS INSULATION, CONFORMING TO ASTM C-547, CLASS 1, 2, 3 TO 856F WITH A 1.83(CU. FT. DENSITY WITH A THERMAL CONDUCTIVITY OF NOT OVER 0.23 AT 756F MEAN. PROVIDE WITH FACTORY-APPLIED ALL SERVICE JACKET AND DOUBLE ADHESIVE SELF-SEALING LAP. COLD WATER PIPE INSULATION JACKET SHALL BE OF THE CONTINUOUS VAPOR BARRIER TYPE. THE INSULATION SHALL BE SIMILAR TO OWENS-CORNING FIBERGLASS ASJ/52-H PIPE INSULATION.
B. INSULATION FOR FITTINGS, FLANGES, AND VALVES: PROVIDE INSULATION FOR FITTINGS, FLANGES, AND VALVES PREMOULDED, PRECUT, OR FOLK FABRICATED OF THE SAME THICKNESS AND CONDUCTIVITY AS USED ON ADJACENT PIPING.
C. PROVIDE INSULATION FOR PIPING, FITTINGS, FLANGES AND VALVES OF THE THICKNESSES LISTED BELOW.

Table with columns: SERVICE, MATERIAL, 1" AND LESS, 1-1/4", 2", 2-1/2", 5" TO 6", 8" OR LARGER. Rows include HOT WATER SUPPLY & RETURN, COLD WATER MAKEUP AND FILL, and REFRIGERANT.

- VALVES:
A. VALVES SHALL HAVE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY A SINGLE MANUFACTURER. VALVES LOCATED 7 FEET OR MORE ABOVE OPERATING FLOOR OR PLATFORM SHALL BE PROVIDED WITH CHAIN OPERATED HANDWHEELS, RUSTPROOF CHAIN AND CHAIN GUIDE. GASKETS AND PACKINGS SHALL NOT CONTAIN ASBESTOS.
B. ALL VALVING AND VALVE MATERIALS SHALL BE SUITABLE FOR THE OPERATING TEST AND MAXIMUM PRESSURE AND TEMPERATURE REQUIREMENTS OF THE PIPING SYSTEM FOR WHICH THEY ARE BEING UTILIZED.
C. ALL VALVING SHALL BE RATED AS FOLLOWS FOR EACH SYSTEM TYPE:
SYSTEM PRESSURE RATING
HOT WATER 150 PSIG
D. VALVING SHALL BE AS SHOWN ON THE DRAWINGS AND INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
1. BALL VALVES, 4 INCHES AND SMALLER: MSS SP-110, CLASS 150, 600-PSI CWP, ASTM B 584 BRASS BODY AND BONNET, 2-PIECE CONSTRUCTION, CHROME-PLATED BRASS BALL, STANDARD PORT FOR 1/2-INCH VALVES AND SMALLER AND CONVENTIONAL PORT FOR 3/4-INCH VALVES AND LARGER; BLOWOUT PROOF; BRONZE OR BRASS STEM; TEFLON SEATS AND SEALS; THREADED OR SOLDERED END CONNECTIONS; WYVE-COVERED STEEL LEVER HANDLE WITH MEMORY STOP; STEM EXTENSION FOR VALVES INSTALLED IN INSULATED PIPING.
2. PLUG VALVES: MSS SP-78, 175-PSI CWP, ASTM A 126 CAST-IRON BODY AND BONNET, CAST-IRON PLUG, BUNA N, VITON, OR TEFLON PACKING, FLANGED OR GROOVED END CONNECTIONS; SQUARE HEAD OPERATOR AND LOOSE WRENCH.
3. GLOBE VALVES, 2-1/2 INCHES AND SMALLER: MSS SP-80, CLASS 125, 200-PSI CWP, OR CLASS 150, 300-PSI CWP; ASTM B 62 CAST-BRONZE BODY AND SCREWED BONNET, RUBBER, BRONZE, OR TEFLON DISC, SILICON BRONZE-ALLOY STEM, TEFLON-IMPREGNATED PACKING WITH BRONZE NUT, THREADED OR SOLDERED END CONNECTIONS; AND WITH ALUMINUM OR MALLEABLE-IRON HANDWHEEL.
4. GLOBE VALVES, 3 INCHES AND LARGER: MSS SP-85, CLASS 125, 200-PSI CWP, ASTM A 126 CAST-IRON BODY AND BOLTED BONNET WITH BRONZE FITTINGS, RENEWABLE BRONZE SEAT AND DISC, BRASS-ALLOY STEM, OUTSIDE SCREW AND YOKE, TEFLON-IMPREGNATED PACKING WITH CAST-IRON FOLLOWER, FLANGED END CONNECTIONS; AND WITH CAST-IRON HANDWHEEL.
5. SWING CHECK VALVES, 2-1/2 INCHES AND SMALLER: MSS SP-80; CLASS 125, 200-PSI CWP, OR CLASS 150, 300-PSI CWP; HORIZONTAL SWING, Y-PATTERN, ASTM B 62 CAST-BRONZE BODY AND CAP, ROTATING BRONZE DISC WITH RUBBER SEAT OR COMPOSITION SEAT, THREADED OR SOLDERED END CONNECTIONS.
6. SWING CHECK VALVES, 3 INCHES AND LARGER: MSS SP-71; CLASS 125, 200-PSI CWP, ASTM A 126 CAST-IRON BODY AND BOLTED CAP, HORIZONTAL-SWING BRONZE DISC, FLANGED OR GROOVED END CONNECTIONS.
7. ALL VALVE MANUFACTURERS SHALL BE AS LISTED OR APPROVED EQUAL BY THE ENGINEER.
8. VALVES USED FOR THROTTLING OR CONTROLLING FLOW SHALL BE GLOBE, BALL, OR PLUG TYPE VALVES. BALL VALVES SHALL BE USED FOR SHUT-OFF FOR SIZES 2-1/2 AND SMALLER. BUTTERFLY VALVES SHALL BE LUG TYPE AND SHALL BE USED FOR SHUT-OFF FOR SIZES 3" AND LARGER. BUTTERFLY VALVES SHALL NOT BE USED FOR MODULATING SERVICE OR STEAM SERVICE.
9. CONTROL VALVES: REFER TO AUTOMATIC TEMPERATURE CONTROL SECTION.

- HYDRONIC PIPING
A. ALL PIPING, FITTINGS, VALVES, SPECIALTIES, THERMOMETERS, AND PRESSURE GAUGES REQUIRED FOR THE OPERATING AND MAXIMUM PRESSURE AND TEMPERATURE OF THE PIPING SYSTEMS.
B. ALL PIPING SHALL BE NEW, STANDARD SIZE, FREE FROM SCALE OR RUST WITH ENDS CAPPED FOR DELIVERY AND STORAGE. EACH LENGTH OF PIPE SHALL BE PROPERLY MARKED AT THE MILL FOR PROPER IDENTIFICATION WITH NAME OR SYMBOL OF MANUFACTURER.
C. PIPE APPLICATION SCHEDULE:

Table with columns: SERVICE, SIZE, MATERIAL, WEIGHT, STANDARD, JOINT TYPE. Rows include COLD CONDENSATE, HOT WATER TO 220 DEG F, and COLD WATER MAKEUP AND FILL.

- D. FITTING MATERIALS AND APPLICATION SCHEDULE:
1. ALL FITTING JOINT TYPE SHALL BE THE SAME AS THE PIPING JOINT TYPE REQUIRED FOR SERVICE, BASED ON THE PIPING APPLICATION SCHEDULE.
2. FITTING CLASS SHALL MEET THE PRESSURE AND TEMPERATURE REQUIREMENT OF THE PIPING SYSTEM BASED ON ITS MAXIMUM OPERATING PRESSURE AND TEMPERATURE OR TEST PRESSURE, WHICHEVER IS MORE STRINGENT. PRESSURE AND TEMPERATURE RATINGS OF A FITTING SHALL BE DETERMINED BY ITS CLASS AND THE CORRESPONDING ANSI STANDARD.
3. FITTING APPLICATION TABLE

Table with columns: PIPE MATERIAL, PIPE SIZE INCHES, JOINT TYPE, FITTING MATERIAL, FITTING CLASS. Rows include BLACK STEEL, GALV STEEL, and COPPER TUBING HARD DRAWN TYPE K OR L.

- E. PROVIDE DIELECTRIC FITTING AT ALL PIPING CONNECTIONS JOINING DISSIMILAR METALS, SUCH AS STEEL AND COPPER.
1. ALL INSTRUMENTATION (PRESSURE GAUGES AND THERMOMETERS) SHALL BE RATED FOR THE SAME PRESSURE AND TEMPERATURE AS PIPING SYSTEM AND RATED SPECIFICALLY FOR THE SAME SERVICE AS THE PIPING. PRESSURE GAUGES ARE TO BE LIQUID FILLED WITH 1% ACCURACY. SELECT GAUGES AND THERMOMETERS SO THAT THE WORKING PRESSURE AND TEMPERATURE ARE AT THE MIDPOINT OF THE SCALE.
2. INSTRUMENTS TO BE MANUFACTURED BY WESS INSTRUMENTS OR APPROVED EQUAL.
a. PROVIDE THERMOMETERS IN PIPING AS INDICATED ON THE DRAWINGS AND AT THE INLET AND OUTLET OF EACH HYDRONIC COIL, HEAT EXCHANGER AND PIECE OF EQUIPMENT THAT INVOLVES A DIFFERENTIAL TEMPERATURE.
b. PROVIDE PRESSURE GAUGES IN PIPING AS INDICATED ON THE DRAWINGS AND AT SUCTION AND DISCHARGE OF EACH PUMP AND AT INLETS AND OUTLETS OF EACH HYDRONIC COIL, HEAT EXCHANGER AND PIECE OF EQUIPMENT THAT INVOLVES A DIFFERENTIAL PRESSURE.
3. ALL PIPING TO BE VENTED AT HIGH POINTS AND PROVIDED WITH ASSOCIATED DRAIN VALVES AT LOW POINTS.
4. PROVIDE CORE DRILLED OPENINGS WITH PIPE SLEEVES AT ALL SLAB AND SHAFT PENETRATIONS. PROVIDE FIREPROOFING AS REQUIRED TO MAINTAIN WALL, SHAFT AND SLAB FIRE RATINGS.
5. PROVIDE WATERPROOF SLEEVES (LUM SEAL (LS) TYPE) AT ALL EXTERIOR WALL, FLOOR PENETRATIONS AND AS REQUIRED OR AS NOTED ON PLANS.
6. PROVIDE LABELING OF ALL PIPING (BOTH EXPOSED AND CONCEALED) IN ACCORDANCE WITH ANSI STANDARDS AND COLOR CODED AS PER ANSI STANDARDS. LABELS SHALL SECURELY FASTENED TO PIPING WITH LETTERING OF SUFFICIENT SIZE FOR EASY IDENTIFICATION BY OPERATING PERSONNEL. LABELS SHALL BE PROVIDED WITH FLOW ARROWS, EVERY 30 FT FOR ALL PIPING.
7. ALL PIPING TO BE MAINTAINED AT HIGHEST ELEVATIONS POSSIBLE SO AS NOT TO INTERFERE WITH EXISTING OPERATIONS AND SERVICE/MAINTENANCE REQUIREMENTS.

- G. TESTING
a. ALL PIPING SHALL BE HYDROSTATICALLY TESTED AT 1-1/2 TIMES THE OPERATING PRESSURE. SYSTEM SHALL HOLD PRESSURE FOR 24 HOURS, DURING WHICH TIME PIPING IS TO SHOW NO LEAKS. ALL PIPING WHICH IS NOT TIGHT UNDER THE TESTS SHALL BE TAKEN DOWN AND REASSEMBLED. ALL TESTING SHALL BE DONE USING WATER AS A TEST MEDIUM.
b. TESTS SHALL BE CONDUCTED AFTER COMPLETION AND ASSEMBLY OF PIPING SYSTEM, BEFORE ANY INSULATION OR PAINT IS APPLIED TO JOINTS, INCLUDING WELDS AND PRIOR TO MAKING THE SYSTEM OPERATIONAL. INSULATING MATERIALS INSTALLED PRIOR TO THE TESTS SHALL BE REMOVED.
c. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY PIPING CONNECTIONS, TEES, VALVES, EQUIPMENT, AND LABOR TO PRESURE TEST PIPING AND EQUIPMENT.
d. EQUIPMENT THAT IS NOT TO BE SUBJECTED TO THE PRESSURE TEST SHALL BE EITHER DISCONNECTED FROM THE SYSTEM OR ISOLATED BY A BLANK OR SIMILAR MEANS. VALVES MAY BE USED FOR THIS PURPOSE PROVIDED THAT VALVE CLOSURE IS SUITABLE FOR THE PROPOSED TEST PRESSURE.
e. SUBMIT TO THE ENGINEER AND OWNER REPRESENTATIVE A RECORD OF TEST PRESSURE APPLIED TO EACH PIPING SYSTEM.

- REFRIGERANT SYSTEMS:
A. PROVIDE ALL REFRIGERANT PIPING REQUIRED FOR A COMPLETE REFRIGERATION SYSTEM, WITH ALL VALVES, FITTINGS AND SPECIALTIES NECESSARY FOR SATISFACTORY OPERATION IN ACCORDANCE WITH ASHRAE STANDARD 15 LATEST EDITION AND ALL AUTHORITIES HAVING JURISDICTION. REFRIGERATION SYSTEM SHALL INCLUDE ALL REQUIRED ITEMS FOR CHARGING, DRAINING AND PURGING THE SYSTEM.
B. JOINTS IN REFRIGERATION PIPING SHALL BE BRAZED. REFRIGERANT PIPING SHALL BE OF THE SIZE RECOMMENDED BY THE MANUFACTURER AND AS APPROVED BY THE ENGINEER.
C. HORIZONTAL PIPING OF THE COMPRESSOR SUCTION AND DISCHARGE LINES AND THE CONDENSER DISCHARGE LINES SHALL BE PITCHED A MINIMUM OF 1/2" IN 10', IN THE DIRECTION OF REFRIGERANT FLOW. EACH SUCTION GAS VERTICAL RISER SHALL BE TRAPPED AT ITS EVAPORATOR WITH A TRAP AS RECOMMENDED BY THE COMPRESSOR MANUFACTURER.
D. INSTALL REFRIGERANT PIPING TO PREVENT EXCESSIVE OIL FROM BEING TRAPPED IN THE SYSTEM. ANY ADDITIONAL RISERS OR EQUALIZER LINES REQUIRED BY THE MANUFACTURER OF THE EQUIPMENT FOR THE PROPER SYSTEM OPERATION SHALL BE INSTALLED AS PART OF THE CONTRACT. PROVIDE A FULLY PIPED OIL SEPARATOR FOR EACH REFRIGERANT SYSTEM AS PER MANUFACTURER'S RECOMMENDATIONS.
E. VALVES TO BE DESIGNED FOR REFRIGERANT SERVICE. SHUTOFF VALVES SHALL BE BRASS PACKLESS TYPE. INSULATED FLANGED VALVES OR FITTINGS SHALL BE PROVIDED FOR DISCONNECTING EQUIPMENT, CONTROLS, ETC., FOR MAKING REPAIRS. PIPING SHALL BE RUN IN A SINGLE LAYER, WITH EACH LINE ISOLATED FROM ANOTHER TO PREVENT RUBBING. PROVISION SHALL BE MADE FOR CLEANING OF PIPING AND CONTRACTION OF PIPING PASSING THROUGH WALLS, PARTITIONS, ETC., SHALL BE FURNISHED WITH SLEEVES AS REQUIRED.
F. REFRIGERANT PIPING PASSING THROUGH RATED FLOORS OR DEMISING WALLS SHALL BE ENCLOSED IN A RIGID AND GAS-TIGHT CONTINUOUS FIRE-RESISTING PIPE DUCT OR SHAFT VENTED TO THE OUTSIDE, IN ACCORDANCE WITH ASHRAE STANDARD 15 LATEST EDITION. PIPE CONDUIT SHALL BE COPPER TUBE TYPE L WITH SOLDERED FITTINGS.
G. PIPE APPLICATION SCHEDULE:

Table with columns: REFRIGERANT, ALL, HARD COPPER, TYPE ACR OR TYPE L, ASTM B280 OR ASTM B88, BRAZED OR SILVER SOLDER.

- H. TESTING: TEST REFRIGERANT PIPING FOR TIGHTNESS AND LEAKS UNDER PRESSURE OR VACUUM. THE DURATION OF EACH TEST SHALL BE TWENTY-FOUR (24) HOURS. TEST JOINTS IN ACCORDANCE WITH ASHRAE 15-1994. THERE SHALL BE NO OBSERVABLE LEAKS OR CHANGES IN PRESSURE. IF EITHER IS OBSERVED, SEAL LEAKS, AND REPEAT TEST PROCEDURES.

- WATER TREATMENT AND PIPE CLEANING:
A. NEW PIPING SYSTEMS SHALL BE ISOLATED, CLEANED AND CHEMICALLY TREATED WHEN THE INSTALLATION IS COMPLETED TO REMOVE ANY CONSTRUCTION DEBRIS AND PROVIDE CORROSION PROTECTION.
B. PROVIDE THE NECESSARY APPARATUS, COMPLETE WITH RELIEF VALVES, ISOLATING VALVES, CHECK VALVES, PIPING, POWER, WIRING, CHEMICALS, FEED TANKS, AND SERVICE TO PROVIDE PROPER WATER TREATMENT FOR THE CONTROL OF SCALE, CORROSION AND MICROBIOLOGICAL GROWTHS IN THE PIPING SYSTEMS. ALL CHEMICALS USED SHALL COMPLY WITH POLLUTION CONTROLS ESTABLISHED BY ALL AUTHORITIES HAVING JURISDICTION. CHLORATES SHALL NOT BE USED.

- C. PIPE CLEANING:
1. FURNISH ALL REQUIRED PIPE CLEANING CHEMICALS, PORTABLE PUMPS, CHEMICAL FEED EQUIPMENT, MATERIALS, AND LABOR NECESSARY TO CLEAN ALL PROJECT PIPING SYSTEMS.
2. PROVIDE A PRE-STARTUP NON-FOAMING, LIQUID DETERGENT DISPERSANT CLEANER FOR CLEANING OF ALL SYSTEMS TO REMOVE OIL AND FOREIGN MATTER FROM THE PIPING AND EQUIPMENT PRIOR TO THE FINAL FILLING OF THE SYSTEMS. USE CHEMICAL THAT IS NOT INJURIOUS TO PERSONS, PIPING, PIPE JOINT COMPOUNDS, PACKING, COILS, VALVES, PUMPS AND THEIR MECHANICAL SEALS OR OTHER PARTS OF THE SYSTEM. AFTER FINAL FILL, PERFORM A CHEMICAL TEST TO TEST THAT THE PH OF THE NEW SYSTEM IS WITHIN 0.5 OF FRESH INCOMING WATER.
3. PROVIDE ALL BYPASS PIPING AND VALVING TO ISOLATE ALL NEW EQUIPMENT (CHILLERS, COILS, ETC.) FROM THE CLEANING PROCESS.
4. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY PIPING CONNECTIONS, TEES, VALVES, EQUIPMENT AND LABOR TO PERFORM PIPE CLEANING.
D. WATER TREATMENT CHEMICALS:
1. PROVIDE ONE YEAR'S SUPPLY OF NECESSARY WATER TREATMENT CHEMICALS FOR NEW SYSTEM TO THE OWNER OR TENANT INCLUDING THE FOLLOWING:
2. CLOSED SYSTEM TREATMENT (CHILLED WATER, SECONDARY WATER, AND HOT WATER). PROVIDE AGENTS TO REDUCE SCALE DEPOSITS, TO ADJUST PH AND TO INHIBIT CORROSION. TREATMENT SHALL NOT CONTAIN ANY CHROMATES OR OTHER TOXIC SUBSTANCES. USE PROPER CHEMISTRY TO CONTROL BACTERIA COUNTS BELOW 100 COLONIES PER MILLILITER (AEROBIC & NON AEROBIC), PH LEVELS TO BE BETWEEN 7.0 AND 9.0. CORROSION RATE TO BE LESS THAN 1/2 MILS/YEAR STEEL, 1/10 MILS/YEAR COPPER.

PROPOSED A/C UNIT REPLACEMENT FOR
MAMARONECK COURT CLERK
TOWN OF MAMARONECK
1ST, 2ND, AND 3RD LEVEL
740 WEST BOSTON POST ROAD
MAMARONECK, NY

PROJECT:

Table with columns: DATE, 01/14/21, 02/11/21, 05/19/21.

Table with columns: NO., ISSUE, 1. ISSUED FOR REVIEW, 2. ISSUED FOR BIDDING, 3. ISSUED FOR BID AND PERMIT.



Table with columns: SCALE, DATE, PROJECT NO., DRAWN BY, CHECKED BY, APPROVED BY.

MECHANICAL SPECIFICATION #1

DRAWING NO: M-201

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY PART OF THIS PLAN OR DRAWING. ANY ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 2709 OF THE NEW YORK STATE EDUCATION LAW.
THESE PLANS ARE INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INSTRUMENT WILL BE PROSECUTED, WITHIN REASONABLE LIMITS, TO ENFORCE THE RIGHTS OF THE ENGINEER. ANY REUSE OF THESE PLANS WITHOUT THE WRITTEN CONSENT OF THE ENGINEER IS STRICTLY PROHIBITED. NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

DUCTWORK AND ACCESSORIES

- ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE, LATEST EDITION, SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL, LATEST EDITION, AND NEW YORK CITY BUILDING CODE (NFC 90A-1981 MODIFIED). THE MORE STRINGENT REQUIREMENT OF ANY CODES SHALL APPLY.
- PROVIDE ALL SUPPLYING AND HANGING DEVICES IN ACCORDANCE WITH NEW YORK CITY BUILDING CODE AND SMACNA.
- DUCTWORK LAYOUT AND ROUTING IS SCHEMATIC AND THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL DUCT SIZE CHANGES AND RELOCATIONS TO ACCOMMODATE SPACE AND STRUCTURAL CONDITIONS. OFFSETS AND TRANSFORMATIONS SHALL PRESERVE THE FULL INSIDE CROSS-SECTIONAL AREA OF DUCTWORK SHOWN ON THE DRAWINGS.
- DUCTWORK SHALL HAVE PRESSURE CLASSIFICATION, SEALING REQUIREMENTS AND LEAKAGE TESTING IN ACCORDANCE WITH SMACNA AND AS LISTED BELOW UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS:

4th CLASS: ALL SUPPLY DUCTWORK FROM DISCHARGE OF AIR UNITS (ESP GREATER THAN 1.5') TO INLETS OF TERMINAL BOXES. SEAL CLASS 'A'; LEAKAGE CLASS 6 (RECTANGULAR) OR CLASS 3 (ROUND).

3rd CLASS: ALL SUCTION AND DISCHARGE OF KITCHEN HOOD, SEAL CLASS 'B'; LEAKAGE CLASS 12 (RECTANGULAR) OR CLASS 6 (ROUND).

2nd CLASS: ALL OTHER LOW PRESSURE DUCTWORK. SEAL CLASS 'C'; LEAKAGE CLASS 24 (RECTANGULAR) OR CLASS 12 (ROUND).

- E. LEAKAGE TESTING:**
- ALL TESTING SHALL BE DONE IN THE PRESENCE OF THE ENGINEER OR OWNER'S REPRESENTATIVE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL COLLARS, CAPS, ELECTRIC POWER, ETC. NECESSARY TO PERFORM THE TESTS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR SCHEDULING THE TEST NO LESS THAN THREE (3) BUSINESS DAYS PRIOR TO ITS INTENDED OCCURRENCE. LOW PRESSURE DUCTWORK (2nd CLASS) SHALL BE TESTED ON AN AS-NEEDED BASIS AT THE ENGINEER'S DIRECTION. LEAKAGE TEST PROCEDURES SHALL FOLLOW THE OUTLINES AND CLASSIFICATIONS IN THE SMACNA HVAC DUCT LEAKAGE TEST MANUAL. IF SPOWEN FAILS TO MEET ALLOTTED LEAKAGE LEVEL, THE CONTRACTOR SHALL MODIFY TO BRING IT INTO COMPLIANCE AND SHALL RETEST IT UNTIL ACCEPTABLE LEAKAGE IS DEMONSTRATED. TESTS AND NECESSARY REPAIR SHALL BE COMPLETED PRIOR TO CONCEALMENT OF DUCTS.
 - LEAK TEST ALL NEW SUPPLY AIR DUCTWORK.

F. MATERIALS:

- SHEET METAL: UNLESS OTHERWISE SPECIFIED OR INDICATED, DUCTS SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED SHEETMETAL WITH G60 COMMERCIAL COATING ACCORDING TO ASTM A653 & A924.
 - STAINLESS STEEL: PROVIDE DUCTWORK OF STAINLESS STEEL CONSTRUCTION, WHERE INDICATED. DUCTWORK SHALL BE 316/NO. 4 FINISH FOR EXPOSED DUCT. 304/NO. 1 FINISH FOR CONCEALED DUCTS. PROVIDE FOR ALL CORROSIVE EXHAUST SYSTEMS INCLUDING FUME HOODS.
 - ALUMINUM: PROVIDE DUCTWORK OF ALUMINUM CONSTRUCTION, WHERE INDICATED. DUCTWORK SHALL BE ALLOY 3003-H14, OF THICKNESS REQUIRED BY THE SMACNA DUCT LEAKAGE TEST MANUAL. PROVIDE FOR ALL DUCTWORK EXPOSED TO WEATHER AND MOISTURE INCLUDING OUTSIDE AIR DUCTS WITHIN 10 FEET OF LOUVERS AND DISHWASHER EXHAUST.
 - BLACK IRON (CARBON STEEL): PROVIDE DUCTWORK OF BLACK IRON (CARBON STEEL), WHERE INDICATED. DUCTWORK SHALL BE BLACK IRON (CARBON STEEL) SHEET COMPLYING WITH ANSI/ASTM 415. PROVIDE FOR ALL KITCHEN EXHAUST AND KITCHEN HOOD SYSTEMS.
 - IN WELDED CASES FOR ALL METAL DUCTWORK, THE FILLER ROD MATERIAL SHALL EQUAL OR EXCEED THE BASE METAL PROPERTIES.
 - WELDED DUCTWORK SHALL BE SEALED AIR, WATER AND GAS TIGHT.
 - FLEXIBLE CONNECTIONS AT FANS SHALL BE NEOPRENE COATED, FLAME RETARDANT GLASS FABRIC (COMPLYING WITH NFPA 90), 30 OZ./SQ. YD. WITH SEWED AND CEMENTED SEAMS.
 - FLEXIBLE DUCTWORK SHALL NOT BE USED ON THIS PROJECT.
- G. FABRICATION:**
- CONFORM TO SMACNA REQUIREMENTS FOR METAL THICKNESS, REINFORCING, JOINTS, AND SEALING FOR MAXIMUM STATIC PRESSURES INVOLVED. ALL SEAMS AND JOINTS SHALL BE SEALED AND TAPPED.
 - ELBOWS SHALL CONFORM TO SMACNA REQUIREMENTS AND THE FOLLOWING:
 - PROVIDE LONG RADIUS TYPE WITH CENTERLINE RADIUS MINIMUM 1.5 TIMES DUCT WIDTH. PROVIDE SHORT RADIUS OR SQUARE ELBOWS WHERE INDICATED OR WHERE REQUIRED TO FIT RESTRICTED SPACES.
 - PROVIDE TURNING VANES ON ALL SHORT RADIUS AND MITERED ELBOWS. CONFORM TO SMACNA FOR THE NUMBER OF VANES FOR FITTINGS.
 - BRANCH CONNECTIONS: PROVIDE 45 DEGREE ENTRY OR CONICAL TAPS. PROVIDE RADIUS TYPE FITTINGS FOR DIVIDED FLOW BRANCHES.

- H. ACoustically Lined Ductwork:**
- PROVIDE MAT-FACED GLASS DUCT LINER, 1-INCH THICK, 2 LB/CF DENSITY. DUCT DIMENSIONS INDICATED ARE CLEAR (NET) INSIDE DIMENSIONS. FOR DUCT VELOCITIES GREATER THAN 2,000 FPM, FACE DUCTLIER WITH 24 GAUGE PERFORATED ALUMINUM OR GALVANIZED STEEL, FULLY COVERING DUCTLIER, AND SUPPORTED 12" ON CENTER. DO NOT EXTERNALLY INSULATE ACOUSTICALLY LINED DUCTWORK. CONFORM TO SMACNA REQUIREMENTS FOR INSTALLATION. PROVIDE ACOUSTICALLY LINED DUCT WHERE LISTED BELOW AND/OR SHOWN ON THE DRAWINGS:
 - ALL TRANSFER DUCTS
 - WITHIN MINIMUM 20 FEET OF ALL AC UNIT DISCHARGES
 - WITHIN MINIMUM 20 FEET OF FAN INLET AND DISCHARGES
 - WITHIN MINIMUM 15' DOWNSTREAM OF TERMINAL BOXES (ERV'S, VAV, DUAL DUCT, CVAV OR FAN POWERED)

- I. VOLUME DAMPERS:**
- DAMPERS SHALL BE GALVANIZED STEEL OR SAME MATERIAL AS DUCT CONSTRUCTION, CONFORM TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS, LATEST EDITION, OPPOSED BLADE TYPE. PROVIDE BEARING AT BOTH ENDS OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCKSCREW, AT ONE END. INSTALL WITH LEVERS ACCESSIBLE THROUGH INSULATION. SPLITTER DAMPER OR AIR EXTRACTORS SHALL NOT BE USED ON THIS PROJECT.
 - PROVIDE MANUAL BALANCING VOLUME DAMPERS AS REQUIRED TO PROPERLY BALANCE THE AIR DISTRIBUTION SYSTEM. IF THE LOCATIONS OF BALANCING DAMPERS ARE NOT DEFINED ON THE DRAWINGS, THE FOLLOWING MINIMUM STANDARDS SHALL GOVERN:
 - LOW PRESSURE: ALL SUPPLY AIR MAIN BRANCHES FROM TRUNK, EACH SPLIT, AND ALL SUB-BRANCHES FROM MAINS SHALL BE PROVIDED WITH BALANCING DAMPERS.
 - LOW PRESSURE: ALL EXHAUST AND RETURN BRANCHES FROM TRUNK, EACH SPLIT AND ALL SUB-BRANCHES FROM MAINS SHALL BE PROVIDED WITH BALANCING DAMPERS.
 - MEDIUM PRESSURE: ALL BRANCHES AND TAKEOFFS DOWNSTREAM OF TERMINAL BOXES (VAV OR FAN POWERED) SHALL BE PROVIDED WITH BALANCING DAMPERS.
 - AS NOTED ON PLANS.
 - DUCT ACCESS DOORS:
 - CONFORM TO SMACNA WITH PIANO TYPE HINGES, TWO SASH LOCKS AND DOOR GASKETS. SCREWED ACCESS PANELS ARE NOT PERMITTED. PROVIDE REMOVABLE ACCESS DOORS WHERE DOOR SWING CAN NOT BE ACCOMMODATED.
 - SIZE: MINIMUM 20" x 20" EXCEPT DUCTS LESS THAN 16", ONE DIMENSION 20" AND THE OTHER DIMENSION, 2" LESS THAN THE DUCT WIDTH.
 - PROVIDE ACCESS DOORS: AT ENTERING AND LEAVING SIDES OF COILS IN DUCTS; AUTOMATIC DAMPERS ON LINKAGE SIDE, MANUAL VOLUME DAMPERS 2 SQ. FT. AND LARGER, FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS, SMOKE DETECTION HEADS, FAN BEARINGS ENCLOSED IN DUCTS, SUCTION AND DISCHARGE SIDES OF CEILING MOUNTED FANS, FILTERS, REPEAT COILS, AT ALL EQUIPMENT REQUIRING ACCESS AND AS INDICATED ON DRAWINGS.

- K. FIRE DAMPERS:**
- FUSIBLE LINK FIRE DAMPERS SHALL BE INSTALLED AS INDICATED ON DRAWINGS AND AS REQUIRED BY THE NEW YORK CITY BUILDING CODE. DAMPER SHALL BE UL LISTED AND LABELED AND IN CONFORMANCE WITH NFPA.
 - FIRE DAMPERS SHALL BE FACTORY FABRICATED WITH FUSIBLE LINK SHUTTER TYPE MECHANISM OUT OF AIRSTREAM. THE HVAC CONTRACTOR SHALL PROVIDE AN ACCESS DOOR AT EACH DAMPER.
 - DAMPER SHALL BE MANUFACTURED BY RUSKIN MODEL 1B02 (1 1/2 HR RATED, VERTICAL, STATIC) OR MODEL 1B02 (1 1/2 HR RATED, HORIZONTAL DYNAMIC) AS REQUIRED, TYPE 'B'; BSA #297-715A OR APPROVED EQUAL.

L. COMBINATION FIRE/SMOKE DAMPERS:

- COMBINATION FIRE/SMOKE DAMPERS SHALL BE INSTALLED AS INDICATED ON DRAWING AND AS REQUIRED BY NEW YORK CITY BUILDING CODE. DAMPERS SHALL BE UL 555S LATEST EDITION LISTED AND LABELED AND IN CONFORMANCE WITH NFPA.
 - COMBINATION FIRE/SMOKE DAMPERS SHALL BE CLASS 1 (ONE), DUAL OVERRIDE REMOTE RESETTABLE, OPPOSED MULTIBLADE TYPE WITH FUSIBLE MECHANICAL HEAT RESPONSIVE DEVICE, 120-VOLT OR PNEUMATIC ACTUATOR AS REQUIRED MOUNTED OUT OF THE AIR STREAM, WITH DAMPER OPERATOR AND BLADE POSITION INDICATOR SWITCHES.
 - THE HVAC CONTRACTOR SHALL PROVIDE ALL DEVICES, RELAYS, END SWITCHES, E/P SWITCHES, CONTROL COMPONENTS, AIR PIPING, POWER WIRING, CONTROL WRING AND INTERLOCK WIRING AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF OPERATION FOR THESE DAMPERS.
 - DAMPERS SHALL BE MANUFACTURED BY RUSKIN MODEL FSD-60 (MEA #176-82-SM) OR APPROVED EQUAL.
- M. MODULATING COMBINATION FIRE/SMOKE DAMPERS:**
- COMBINATION FIRE/SMOKE DAMPERS SHALL BE INSTALLED AS INDICATED ON DRAWING AND AS REQUIRED BY LOCAL CITY BUILDING CODE. DAMPERS TO BE UL 555S LISTED AND LABELED "ALSO SUITABLE FOR USE AS A VOLUME CONTROL DAMPER" AND IN CONFORMANCE WITH NFPA. DAMPER AND ACTUATOR ARE TO BE UL LISTED AS A PACKAGE.
 - COMBINATION FIRE/SMOKE DAMPERS SHALL BE UL CLASS 1 (ONE), DUAL OVERRIDE REMOTE RESETTABLE, OPPOSED MULTI-BLADE TYPE, WITH FUSIBLE MECHANICAL HEAT RESPONSIVE DEVICE, ELECTRONIC BELMO ACTUATOR, MOUNTED OUT OF THE AIR STREAM, WITH DAMPER OPERATOR AND BLADE POSITION INDICATOR SWITCHES. PROVIDE MOTOR MOUNT BRACKET STRENGTHENER FOR DAMPERS OVER 10' IN HEIGHT. PROVIDE A 10 GAUGE WELDED VERTICAL STIFFENER AT EACH CORNER TO PREVENT DAMPER MISALIGNMENT. VERTICAL STIFFENER AT EACH CORNER TO PREVENT DAMPER MISALIGNMENT.
 - THE HVAC CONTRACTOR SHALL PROVIDE AN ACCESS DOOR AT EACH DAMPER, ALL DEVICES, RELAYS, END SWITCHES, E/P SWITCHES, CONTROL COMPONENTS, AIR PIPING, POWER WIRING, CONTROL WRING AND INTERLOCK WIRING AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF OPERATION FOR THESE DAMPERS. DAMPERS ARE TO BE USED FOR MODULATING SERVICE.
 - DAMPERS SHALL BE MANUFACTURED BY RUSKIN MODEL FSD-60 WITH MECHANICAL FUSIBLE LINK (MEA/BSA #176-82-SM).

N. SEAL OPENINGS AROUND DUCTS THROUGH WALLS WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL. SEAL ALL DUCT PENETRATIONS THROUGH WALLS AIRTIGHT.

- ALL DUCTS EXPOSED TO MOISTURE SHALL BE ALUMINUM, SLOPED, DRAINED, AND SHALL NOT BE INTERNALLY LINED.

P. AUTOMATIC CONTROL DAMPERS:

- PROVIDE DAMPERS WITH PARALLEL BLADES FOR 2-POSITION CONTROL, OR OPPOSED BLADES FOR MODULATING CONTROL OF CONSTANT OR VARIABLE VOLUME SYSTEM.
 - AUTOMATIC DAMPERS ARE TO BE VERY LOW LEAKING TYPE WITH JAMB AND BLADE SEALS RATED FOR SMOKE DAMPER APPLICATION. CONSTRUCT BLADES OF 16 GAUGE GALVANIZED STEEL, PROVIDE HEAVY-DUTY MOLDED SELF-LUBRICATING NYLON BEARINGS, 1/2" DIAMETER STEEL AXLES SPACED ON 9" CENTERS. BLADES TO BE MAXIMUM 4" HIGH. FRAME SHALL BE CONSTRUCTED OF 16 GAUGE X 4 1/2" GALVANIZED HAT SHAPED STEEL PROPERLY BRACED WITH GALVANIZED STEEL FINISH AND ALUMINUM TOUCH-UP.
 - DAMPERS INSTALLED IN ALUMINUM DUCTS SHALL BE ALUMINUM WITH WEATHERPROOF COMPONENT.
 - DAMPER TO BE MANUFACTURED BY IMPERIAL OR APPROVED EQUAL.
- Louvers:**
- ALL INTAKE AND EXHAUST LOUVERS SHALL BE PER BUILDING STANDARD. PROVIDE ALL LOUVERS WITH BIRD SCREENS. ALL LOUVERS AND BIRD SCREENS SHALL CONFORM TO SMACNA. CONTRACTOR SHALL CONNECT DUCTWORK AND PLENUMS TO LOUVERS. REFER TO ARCHITECTURAL PLANS FOR LOUVER SPECIFICATION. SUBMIT SHOP DRAWINGS OF LOUVERS AND INSTALLATION DETAILS TO THE ARCHITECT, OWNER AND ENGINEER FOR REVIEW AND APPROVAL, PRIOR TO COMMENCING WORK.
 - THE FIXED LOUVER PANELS SHALL BE MADE OF EXTRUDED ALUMINUM. LOUVER BLADES SHALL BE SPACED AT 4", 0.081" THICK AT 45 DEGREE ANGLE DIRECTED FOR INTAKE OR DISCHARGE CONFIGURATION AS REQUIRED. FRAMES AND HEAD/SILL SHALL BE EXTRUDED ALUMINUM AND 0.081" THICK BY 4" DEEP. FRAMES SHALL BE 1/8" NICH THICK, BOX TYPE AND DRAINABLE WITH NECESSARY BRACES FOR RIGID REINFORCEMENT. PROVIDE STATIONARY TOP AND BOTTOM STOPS TO PREVENT AIR LEAKAGE. PROVIDE DIAMOND MESH BIRD/INSECT SCREEN. THE NET FREE AREA SHALL NOT BE LESS THAN 50% OF GROSS LOUVER AREA.
 - COORDINATE LOUVER SIZES WITH DUCTWORK OR EQUIPMENT TO BE CONNECTED TO LOUVERS.
 - ALL UNUSED SECTIONS OF LOUVERS TO BE PROVIDED WITH A MANUFACTURERS INSULATED BACKPLATE 2" THICK MINIMUM.
- R. LOUVERS SHALL BE MANUFACTURED BYRUSKIN, IMPERIAL OR APPROVED EQUAL BY THE ENGINEER, COLOR AND FINISH TO BE AS PER BUILDING STANDARDS AND SELECTED BY THE ARCHITECT.**

EXPOSED DUCTWORK:

- WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS, INCLUDING FITTINGS, SEAM MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS. PROVIDE FINISHES WHICH WILL ALLOW PAINTING. EXPOSED FLAT TYPE SEAMS AND JOINTS FOR ALL EXPOSED DUCT CONSTRUCTION.
- EXPOSED KITCHEN EXHAUST DUCTWORK AT ROOF TO BE PRIMED AND PAINTED (2 COATS) WITH OUTDOOR OIL BASED PAINT. COLOR BY ARCHITECT.

DIFFUSERS, GRILLES AND REGISTERS:

- GENERAL:**
- GRILLES, REGISTERS AND DIFFUSERS SHALL BE TESTED IN ACCORDANCE WITH ASHRAE STANDARD 70-1991 OR LATEST EDITION. THE MANUFACTURER SHALL PROVIDE PUBLISHED PERFORMANCE DATA FOR ALL AIR INLETS AND OUTLETS TO BE USED ON PROJECT AS PART OF SUBMISSION.
 - MECHANICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH OTHER TRADES AND WITH CEILING AND WALL CONSTRUCTION. THE MECHANICAL CONTRACTOR SHALL VERIFY THAT ALL DIFFUSERS, GRILLES AND REGISTERS ARE COMPATIBLE WITH CEILING CONSTRUCTION TO WHICH THEY ARE TO BE INSTALLED.
 - COORDINATE ALL WORK WITH GENERAL CONTRACTOR AND REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION, LENGTHS AND FOR FRAMING AND WIRING ARRANGEMENTS THAT MAY DIFFER FROM THOSE SHOWN ON HVAC DRAWINGS. PROVIDE ALL REQUIRED GENERAL CONSTRUCTION, FRAMING, BLOCKING, PLASTERING AND SUPPORTS TO MATCH CEILING, SOFFIT OR WALL CONSTRUCTION AS PART OF PROJECT.
 - INLETS AND OUTLETS SHALL HANDLE AIR QUANTITIES INDICATED AT OPERATING VELOCITIES WITH SOUND PRESSURE LEVEL NOT TO EXCEED NC-30, UNLESS NOTED OTHERWISE. ALL OUTLETS AT HOTEL ROOMS ARE NOT TO EXCEED ZONC.
 - DIFFUSERS, GRILLES AND REGISTERS SHALL BE INSTALLED WITH FACES SET LEVEL AND PLUMB AND MOUNTED TIGHTLY AGAINST MOUNTING SERVICE.
 - ALL AIR INLETS AND OUTLETS TO BE STEEL OR ALUMINUM IF EXPOSED TO MOISTURE UNLESS OTHERWISE INDICATED. FINISHES SHALL BE SELECTED BY ARCHITECT.
 - DIFFUSERS, GRILLES AND REGISTERS SHALL BE MANUFACTURED BY TITUS OR ANEMOSTAT.
 - SUBMITS FOR APPROVAL. A COMPLETE SCHEDULE OF ALL AIR INLETS AND OUTLETS TO BE USED ON PROJECT INCLUDING MANUFACTURERS MODELS, SIZES, PERFORMANCE, ACCESSORIES, ACOUSTIC INFORMATION, FINISHES, ETC., BEFORE RELEASE FOR FABRICATION. NOTE ANY DEVIATIONS FROM SPECIFICATIONS AND SCHEDULES SHALL BE INDICATED ON SUBMITTAL.

B. AIR INLET AND OUTLET DEVICES:

- PROVIDE DIFFUSERS, GRILLES AND REGISTERS FOR SUPPLY, RETURN AND EXHAUST INLETS AND OUTLETS. OF THE SIZE, TYPE, AND DESIGN INDICATED ON DRAWINGS.
- ALL SUPPLY RETURN AND EXHAUST AIR INLETS AND OUTLETS SHALL BE PROVIDED WITH AN OPPOSED BLADE DAMPER AND GRID. SCREW OPERATED THRU FACE(ADJUSTABLE THROUGH THE FACE) FOR TRIM BALANCING.
- EXHAUST GRILLES FOR HOTEL ROOM TOLER ROOMS SHALL HAVE A FIRE DAMPER INSTALLED AT THE FACE OF THE GRILLE.
- DIFFUSERS AND REGISTERS SHALL HAVE TWO SETS OF DIRECTIONAL CONTROL BLADES.
- ONLY 4 WAY DIFFUSERS SHALL BE USED, PROVIDE BLANK OFF SHEETMETAL Baffle FOR ALL 4-WAY, 2-WAY AND 3-WAY DIFFUSERS.
- ALL LINEAR DIFFUSERS SHALL BE PROVIDED WITH CABLE OPERATED OPPOSED BLADE DAMPER ADJUSTABLE THROUGH THE FACE OF THE DIFFUSER. DAMPERS AND PLENUM TAPS SHALL BE SPACED AT A MAXIMUM OF 4 FEET ON CENTER. PROVIDE DIFFUSERS WITH ADJUSTABLE AIR PATTERN CONTROL VANES.
- ALL SUPPLY DIFFUSERS TO R-7 INSULATED BACK PANELS INSULATED.

AUTOMATIC TEMPERATURE CONTROLS:

- A. GENERAL:**
- FURNISH AND INSTALL AS HERIN SPECIFIED, A COMPLETE AUTOMATIC TEMPERATURE CONTROL SYSTEM OF THE DDC ELECTRIC AS REQUIRED, MANUFACTURED BY HONEYWELL, CONTROLS, OR APPROVED EQUAL, BY THE ENGINEER. ALL WORK TO BE PERFORMED BY THE BUILDING DEDICATED DDC CONTROL CONTRACTOR. MANUFACTURER SHALL BE SUBMITTED WITH BID AND APPROVED BY ENGINEER BEFORE BID AWARD. THE ATC CONTRACTOR SHALL BE AN INDEPENDENT CONTRACTOR NOT AFFILIATED WITH THE MECHANICAL CONTRACTOR.
 - ALL TEMPERATURE CONTROL SYSTEMS AND COMPONENTS UNDER THIS SUBCONTRACT ARE TO BE OF MODULATING TYPE, EXCEPT WHERE NOTED OTHERWISE. THE SYSTEM SHALL BE COMPLETE IN ALL RESPECTS INCLUDING ALL ASSOCIATED CONTROL EQUIPMENT, THERMOSTATS, CONTROL VALVES, VALVE ACTUATORS, DAMPER OPERATORS, CONTROL WRING, SWITCHES, INTERLOCK WIRING, ELECTRICAL CONTROL COMPONENTS AND ASSOCIATED WIRING, APPOINTMENTS, ETC., TO PROVIDE THE FUNCTIONS DESCRIBED IN THESE SPECIFICATIONS AND PLANS, REGARDLESS OF WHETHER OR NOT SAID DEVICE RELAY, ETC., IS SPECIFICALLY MENTIONED HEREIN.
 - THE SYSTEM SHALL BE SUPERVISED AND CHECKED OUT COMPLETELY IN ALL RESPECTS BY COMPLETE MECHANICAL, EXCEPT WHERE NOTED OTHERWISE.
 - ALL CONTROLS MUST BE THE PRODUCT OF ONE MANUFACTURER. ALL AUTOMATIC CONTROL VALVES, SENSORS AND DAMPER OPERATORS SHALL BE MANUFACTURED BY THE MANUFACTURER OF THE AUTOMATIC CONTROL SYSTEM TO BE FOLLOWED.
 - THE CONTROL SYSTEMS SHALL BE IN ACCORDANCE WITH THE FOLLOWING DESCRIPTION OF SYSTEM OPERATIONS AND/OR DETAIL INFORMATION SHOWN ON THE PLANS AND AS DESCRIBED HEREIN.
 - THE MANUFACTURER OF THE AUTOMATIC CONTROL EQUIPMENT SHALL SUBMIT THE FOLLOWING FOR APPROVAL: A SCHEMATIC DIAGRAM OF EACH CONTROL SYSTEM WHICH SHALL INDICATE THE PROPER SEQUENCE OF OPERATION AND RANGE OF THE CONTROLS FOR ALL CYCLES. A COMPLETE DESCRIPTION OF THE AUTOMATIC OPERATION OF EACH SYSTEM. THE DESCRIPTION SHOULD INCLUDE THE DUTY OF EACH THERMOSTAT, VALVE, SWITCH, ETC., INCORPORATED IN THE CONTROL SYSTEM WITH A SCHEDULE AND ILLUSTRATION OF ALL CONTROL INSTRUMENTS AND EQUIPMENT INCLUDING CONTROL PANELS AND DEVICES FOR EACH SYSTEM.

B. ELECTRIC WIRING:

- ALL ELECTRICAL WORK (EXCEPT FOR MOTOR FEEDERS, WIRING BETWEEN MOTORS, MOTOR CONTROLLERS, FEEDER PANELS, FUSES, CIRCUIT BREAKERS AND BUS BARS) REQUIRED FOR THE AUTOMATIC TEMPERATURE CONTROL SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR. SWITCHES SHALL INCLUDE BUT NOT BE LIMITED TO TIME SWITCHES, DAMPER MOTORS, DAMPER SWITCHES, ELECTRIC THERMOSTATS, ELECTRIC RELAYS, INTERLOCKING WIRING, CONDUT, ETC.
- ALL 115 VOLT POWER REQUIRED FOR CONTROL PURPOSES SHALL BE PROVIDED BY THE CONTROL CONTRACTOR FROM A SOURCE ESTABLISHED BY THE ELECTRICAL CONTRACTOR.
- THE CONTROL MANUFACTURER SHALL INCLUDE WIRING DIAGRAMS IN HIS SHOP DRAWINGS SUBMITTALS FULLY COORDINATED WITH THE ELECTRICAL CONTRACTORS WORK. IT SHALL BE THE AUTOMATIC TEMPERATURE CONTROL CONTRACTORS RESPONSIBILITY TO PROVIDE ALL WIRING AND CONDUIT AS REQUIRED TO ACHIEVE THE FUNCTION CALLED FOR IN THESE SPECIFICATIONS, CONFORMING WITH LOCAL CODES FOR MATERIAL AND INSTALLATION. THE ELECTRICAL SPECIFICATION FOR THE PROJECT ELECTRICAL WORK IS TO BE FOLLOWED.
- FURNISH A CERTIFICATE INDICATING METHOD OF WIRING COMPLIANCE WITH LOCAL CODES AS PART OF FIRST SHOP DRAWING SUBMITTAL.

C. ROOM THERMOSTAT AND SWITCH LOCATIONS:

- ALL ROOM THERMOSTATS AND SWITCH LOCATIONS (WHETHER SHOWN ON PLANS OR NOT) SHALL BE SELECTED AND SUBMITTED BY THE TEMPERATURE CONTROL MANUFACTURER FOR APPROVAL BY THE ARCHITECT AND ENGINEER PRIOR TO ACTUAL INSTALLATION.
- ALL AUTOMATIC CONTROL VALVES SHALL BE OF THE ELECTRONIC TYPE, FULLY PROPORTIONING, UNLESS OTHERWISE SPECIFIED, QUIET IN OPERATION, AND SHALL BE ARRANGED TO FACE SAFE IN EITHER A NORMALLY OPEN OR NORMALLY CLOSED POSITION, IN THE EVENT OF POWER FAILURE. THE OPEN OR CLOSED POSITION SHALL BE AS SPECIFIED OR AS REQUIRED TO SUIT JOB CONDITIONS. PROVISIONS SHALL BE MADE FOR VALVES OPERATING IN SEQUENCE, WITH OTHER VALVES OR DAMPER OPERATORS TO HAVE ADJUSTABLE OPERATING RANGES AND STARTING POINTS TO PROVIDE FLEXIBILITY OF ADJUSTMENT IN SEQUENCING AND THROTTLING RANGE. MODULATING VALVES SHALL BE PROVIDED WITH PILOT POSITIONERS. VALVES SHALL BE SIZED BY THE TEMPERATURE CONTROL MANUFACTURER AND GUARANTEED TO MEET THE HEATING OR COOLING REQUIREMENTS AS SPECIFIED. ALL VALVE BODIES SHALL HAVE THE SAME PRESSURE CHARACTERISTICS AS THE PIPE IN WHICH IT IS INSTALLED. ALL VALVES AT EQUIPMENT TO HAVE VALVE INDICATORS FOR REMOTE INDICATION TO BMS.
- VALVES 2 INCHES AND SMALLER UNLESS OTHERWISE SPECIFIED SHALL HAVE BRONZE BODIES WITH SCREWED CONNECTIONS. VALVES SHALL BE FISHER TYPE ED, WARREN TYPE 20/70, K&M SERIES GCG, OR AS APPROVED.
- VALVES BETWEEN 2 1/2" AND 4 INCH UNLESS OTHERWISE SPECIFIED, SHALL HAVE CAST IRON OR CARBON STEEL BODIES WITH FLANGED CONNECTIONS IN ACCORDANCE WITH THE PIPING SPECIFICATIONS. VALVES SHALL BE FISHER STYLE ED, WARREN TYPE 20/70 OR 1600 SERIES GCG, K & M SERIES GCG OR AS APPROVED.
- CONTROL VALVES 4" AND LARGER UNLESS OTHERWISE SPECIFIED SHALL BE FISHER V100, K & M C-PORTBALL, WARREN 3800 SERIES, OR AS APPROVED.
- ALL BUTTERFLY CONTROL VALVES, WHERE SHOWN ON THE DRAWINGS OR SPECIFIED SHALL CONFORM TO THE PIPING SPECIFICATION.
- AUTOMATIC CONTROL VALVES EXPOSED TO THE ELEMENTS SHALL HAVE ELECTRIC ACTUATORS WITH ALL REQUIRED ACCESSORIES.

E. AUTOMATIC DAMPERS:

- PROVIDE CONTROLS FOR ALL THE AUTOMATIC DAMPERS, AS SPECIFIED IN THE DUCTWORK SECTION, AND SHOWN ON THE DRAWINGS.
- CONTROL MOTORS OR ACTUATORS SHALL BE OF THE ELECTRONIC TYPE, BELMO, UNLESS OTHERWISE NOTED, OF APPROPRIATE SIZE AND QUANTITIES TO PROVIDE TWO-POSITION OR PROPORTIONING CONTROL, ACTION AS SPECIFIED.
- SPECIFIED PROPORTIONING TYPE SHALL BE EQUIPPED WITH PILOT TYPE POSITIONERS. PILOT POSITIONERS SHALL BE SELECTED FOR WAVED SPRING RANGES AND ADJUSTABLE WITHOUT DISMANTLING POSITIONER AND CONTROL MOTOR.
- AUTOMATIC DAMPERS EXPOSED TO THE ELEMENTS SHALL HAVE ELECTRIC ACTUATORS WITH ALL REQUIRED ACCESSORIES.

F. CONTROL PANELS:

- FURNISH AND INSTALL IN THE MECHANICAL ROOM, AS HERIN SPECIFIED, CONTROL PANELS OF STEEL, WITH WELDED ANGLE IRON BRACKETS, FOR WALL OR FLOOR MOUNTING.
- THE BACK GROUND COLOR OF THE PANEL SHALL BE AS APPROVED BY THE ARCHITECT AND ENGINEER.
- PANELS SHOULD BE FULLY ENCLOSED, WITH HINGED LOCKING FRONT DOOR FOR EACH PANEL. THE PANELS SHALL CONTAIN ALL CONTROLLERS, RELAYS, SWITCHES, ETC. PROVIDE ENGRAVED NAMEPLATES TO LABEL THE CONTROLLED EQUIPMENT AND FOR EACH PANEL MOUNTED CONTROL DEVICE. PLASTIC LAMINATED CONTROL SCHEMATIC DRAWINGS FOR THE SYSTEM SHALL BE HUNG AT EACH LOCAL CONTROL PANEL.
- DETAILS OF EACH OF THESE PANELS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION. LOCATIONS OF EACH PANEL ARE TO BE CONVENIENT FOR ADJUSTMENT AND SERVICE AND ALL SUCH LOCATIONS ARE TO BE APPROVED PRIOR TO INSTALLATION.
- FRONT END COMPUTER:
 - PROVIDE THE FOLLOWING FRONT END EQUIPMENT FOR THE CONTROL SYSTEM. THE FRONT END EQUIPMENT SHALL BE LOCATED IN THE MER ROOM AS DIRECTED BY THE ARCHITECT.
 - DELL OR EQUIVALENT, PENTIUM III OR LATEST PROCESSOR, OR LATEST MODEL, 4.0MB MEMORY CACHE, CD ROM, DVD READER/WRITER, 22"LCD DIGITAL MONITOR, EXTERNAL HARD DRIVE, SERIAL CABLES, SURGE PROTECTION, MINI UPS.
 - HEWLETT PACKARD LASERJET, SERIES, LATEST MODEL WITH CABLE.
 - PROVIDE 56 K BAUD MODEM, OR LATEST GENERATION WITH SOFTWARE.
 - PROVIDE MICROSOFT OFFICE PROFESSIONAL FOR WINDOWS LATEST EDIT SOFTWARE PACKAGE, INSTALLED. EMS NENDOR SOFTWARE AND MICROSOFT WINDOWS LATEST VERSION INSTALLED. PROVIDE ALL DISKS AND DOCUMENTATION.
 - SOFTWARE PACKAGE FOR GRAPHICS, ARCHIVING AND MANAGEMENT APPLICATION LIBRARY. ALL SHALL BE MOUSE DRIVEN.

A. REFER TO DRAWINGS FOR ALL SEQUENCES OF OPERATIONS TESTING AND BALANCING

- A. GENERAL:**
- TESTING AND BALANCING WORK SHALL BE PERFORMED BY AN INDEPENDENT COMPANY (NOT ASSOCIATED WITH THE HVAC CONTRACTOR), AABC CERTIFIED OR AS APPROVED BY THE ENGINEER. PROVIDE COMMENCEMENT OF WORK. APPROVED COMPANIES INCLUDE MEREDON ASSOCIATES, R.H. MOERWOTT, INTERNATIONAL TESTING AND BALANCING OR AS APPROVED BY THE ENGINEER AND BUILDING MANAGEMENT.
 - AFTER ALL PROJECT HVAC WORK IS COMPLETE, TESTED AND IN FULL WORKING ORDER, THE AGENCY SHALL PERFORM THE BALANCING AND TESTING OF THE PROJECT HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS.
 - ON THE COMPLETION OF THE AIR CONDITIONING SYSTEM, THE BALANCING AGENCY SHALL PERFORM TESTING AND BALANCING AND COMPLETE ALL TEST DATA IN A CERTIFIED REPORT AND SUBMIT FOUR (4) COPIES FOR REVIEW AND APPROVAL TO THE ENGINEER.
 - THE REPORT SHALL INCLUDE DESIGN AND ACTUAL READINGS FOR ALL EQUIPMENT AND LOCATION PLAN INDICATING WHERE ALL WORK HAS BEEN PERFORMED, AND METHODS OF BALANCING AND DETAILER OF THE INSTRUMENTS USED.
 - IF DISCREPANCIES EXIST IN THE REPORT THAT REQUIRE FIELD VERIFICATION, THE TESTING AND BALANCING COMPANY IN THE PRESENCE OF THE ENGINEER SHALL VISIT THE JOBSITE FOR FIELD VERIFICATION OF THE REPORT.
 - AFTER SUBMISSION OF THE FIELD VERIFIED BALANCING REPORT, THE AIR BALANCING COMPANY SHALL RETURN TO THE JOB SITE TO PERFORM TWO (2) OCCUPANT COMFORT BALANCES AS DIRECTED BY THE OWNER OR ENGINEER.
 - THE FINAL REPORT AFTER THE COMFORT BALANCE IS TO BE INCLUDED IN PROJECT OPERATING AND MAINTENANCE MANUAL.
 - THE TESTING AND BALANCING AGENCY SHALL INCLUDE AS PART OF THEIR WORK AN EXTENDED WARRANTY OF 90 DAYS AFTER COMPLETION OF TEST AND BALANCE WORK. THE ENGINEER AT HIS DISCRETION DURING THE WARRANTY PERIOD MAY REQUEST A RECHECK, OR RESETTING OF ANY EQUIPMENT. THE MECHANICAL CONTRACTOR AND THE BALANCING CONTRACTOR SHALL PROVIDE THE NECESSARY TECHNICIANS TO FACILITATE THIS WORK.
 - BALANCING AGENCY SHALL PERMANENTLY MARK ALL ADJUSTMENT DEVICES (VALVES, DAMPERS, ETC.) TO ENABLE THE SETTING TO BE RESTORED.

B. AIR BALANCING

- HVAC CONTRACTOR SHALL ENSURE THAT A FIRST SET OF AIR FILTERS ARE IN PLACE, BE EXTENDED WARRANTY OF 90 DAYS AFTER COMPLETION OF TEST AND BALANCE WORK. BEFORE TESTING IS COMMENCED.
- TEST, ADJUST, REPLACE SHEAVES, AND BALANCE ALL EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE AIR QUANTITIES INDICATED ON PLANS WITHIN PLUS OR MINUS 5 PERCENT DURING TEST.
- TEST REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
 - FLOW, LEAKAGE CLASS, TEMPERATURE, STATIC PRESSURE OF AIR AT ALL TRUNK DUCTS AND FLOW AREAS OF WORK.
 - TEMPERATURE OF AIR LEAVING OUTLETS AT TWO (2) TYPICAL AIR OUTLETS.
 - QUANTITY OF AIR AT EACH AIR INLET AND OUTLET AFTER BALANCING.
 - PROVIDE FOR ALL FANS, FAN MOTOR HP, AMPS, VOLTS, FAN RPM, CFM, INLET AND DISCHARGE STATIC PRESSURE, SHEAVE POSITION.
 - PROVIDE FOR ALL AIR CONDITIONING UNITS, SUPPLY CFM, OUTSIDE AIR CFM, RETURN AIR CFM, MIXED AIR CFM. PROVIDE OUTSIDE AIR, MIXED AIR AND SUPPLY AIR TEMPERATURES (DRY BULB – COOLING AND HEATING, WET-BULB-COOLING.) INDICATE UNIT OPERATING MODE DURING TEST.
 - CALIBRATE ALL NEW AND EXISTING TO BE REUSED TERMINAL BOXES (VAV, FAN POWERED OR DUAL DUCT) AS REQUIRED TO MEET SPECIFIED MINIMUM/MAXIMUM CFM FOR BOTH HEATING & COOLING.
 - LISTING OF DESIGN AND ACTUAL READINGS AS WELL AS ALL MANUFACTURERS DATA FOR EQUIPMENT.
 - LIST ALL MANUFACTURERS AND ACTUAL FIELD TEST MOTOR RPM'S, AMPERES, MOTOR SIZE, SHEAVE POSITIONS, FAN STATIC PRESSURES.
 - LIST WITH OUTSIDE AIR ECONOMIZERS SHALL HAVE ALL MODES OF OPERATION TESTED AND BALANCED.

C. WATER BALANCING

- TEST, ADJUST, AND BALANCE NEW AND EXISTING TO BE REUSED DISTRIBUTION SYSTEMS TO PROVIDE FLOW QUANTITIES INDICATED ON THE DRAWINGS WITHIN PLUS OR MINUS 2 PERCENT.
- PLACE SYSTEM IN FULL AUTOMATIC OPERATION, WITH AUTOMATED CONTROLS SET IN ACCORDANCE WITH DESIGN CONDITIONS, AND ALLOW WATER TO REACH DESIGN TEMPERATURE AND PRESSURE.
- ALL PIPE TESTING SHALL BE COMPLETED BEFORE COMMENCING BALANCING.
- SET ZONE OR CIRCUIT BALANCING VALVES AT EACH PIECE OF EQUIPMENT (AIR HANDLING UNIT HW COIL, ETC.), TO HANDLE THE DESIGN FLOW.
- AIR HANDLING UNITS CONTAINING COILS, CHECK AND ADJUST EACH UNIT TO INSURE THE PROPER VOLUME OF AIR IS PASSING THROUGH THE COILS, WHILE THE BALANCING PROCEDURE IS IN PROGRESS.
 - THE TEST REPORT SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
 - THE PRESSURE DROP ACROSS AND FLOW AT EACH PIECE OF EQUIPMENT AND AT EACH RISER AND MAIN.
 - TEST PUMPS AND BALANCE FLOW. RECORD THE FOLLOWING ON PUMP REPORT SHEETS:
 - PUMP IDENTIFICATION AND SYSTEM SERVED.
 - SUCTION AND DISCHARGE PRESSURES
 - IRRUNING AMPS, AND BRAKE HORSEPOWER OF PUMP MOTOR UNDER FULL FLOW AND NO FLOW CONDITIONS.
 - PRESSURE DROP ACROSS PUMP IN FEET OF WATER OR PSIG AND TOTAL GPM PUMP IS HANDLING UNDER FULL FLOW CONDITIONS.
 - PROVIDE FLOW DIAGRAMS INDICATING PIPING LAYOUT, FLOW BALANCING VALVES AND WHERE THE RECORDING OF EACH INDIVIDUAL PIECE OF EQUIPMENT HAS BEEN TAKEN.
 - MARK VALVE TAG AFTER BALANCING OF EACH BALANCING VALVE TO INDICATE POSITION OF VALVE.

SYSTEM COMMISSIONING

- A. PRIOR TO FULL OPERATION, A COMPLETE DEMONSTRATION AND TESTING OF THE SYSTEM OPERATING FUNCTIONS AND ALARMS SHALL BE PERFORMED BY THIS CONTRACTOR IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE AND ENGINEER. THIS TESTING SHALL TAKE PLACE AFTER HAVING SATISFACTORILY MET THE REQUIREMENTS OF SHOP DRAWING ACCEPTANCE. COMMISSIONING OF THE SYSTEMS SHALL BE SCHEDULED BEFORE SPACE IS OCCUPIED LEAVING ENOUGH TIME TO CORRECT SYSTEM DEFICIENCIES AND AFTER SHOP DRAWING ACCEPTANCE. UPON SUCCESSFUL COMPLETION OF SYSTEM OPERATION, THE CONTRACTOR SHALL SUBMIT A STATEMENT STATING THAT THE FULL OPERATION OF ALL SYSTEMS, FUNCTIONS AND ALARMS HAS BEEN DEMONSTRATED AND ARE OPERATIONAL AS WELL AS A LISTING OF ALL SYSTEMS, ALARMS AND FUNCTIONS THAT HAVE BEEN COMMISSIONED. ALL ITEMS SHALL BE SUBMITTED FOR REVIEW AND ACCEPTANCE TO THE OWNER, OWNER'S REPRESENTATIVE AND ENGINEER BEFORE FINAL ACCEPTANCE CAN TAKE PLACE.**

- B. PROVIDE COMPLETE PRE-FUNCTIONAL AND FUNCTIONAL COMMISSIONING FOR THE FOLLOWING EQUIPMENT. PROVIDE PRE-FUNCTIONAL AND FUNCTIONAL TESTS FROM MANUFACTURERS AND COMPLETELY FILL OUT ALL DATA BASED ON THE ACTUAL FIELD TESTING. CONTRACTOR TO PERFORM ALL TESTING WITH THE MANUFACTURER AND SHALL COMPLETE ALL DATA. DATA WILL BE USED FOR NYSDORA REBATES AND LEED CERTIFICATION. PROVIDE (8) COPIES OF ALL REPORTS, BINDER, TO OWNER.**

- C. PROVIDE COMPLETE PRE-FUNCTIONAL AND FUNCTIONAL TESTING FOR**
- ROOFTOP OUTDOOR AIR CONDITIONING UNIT
 - ALL CONTROLS INCLUDING DDC ,
 - ALL ERV'S
 - ALL EVAPORATOR UNITS
 - ALL AIR COOLED CONDENSING UNITS

MEP ENGINEER
Leccce Engineering
 Joseph A. Leccce P.E., P.C.
 297 WALL STREET 15TH FLOOR
 NEW YORK, NY 10007
 (212) 477-4663

**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK**
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21

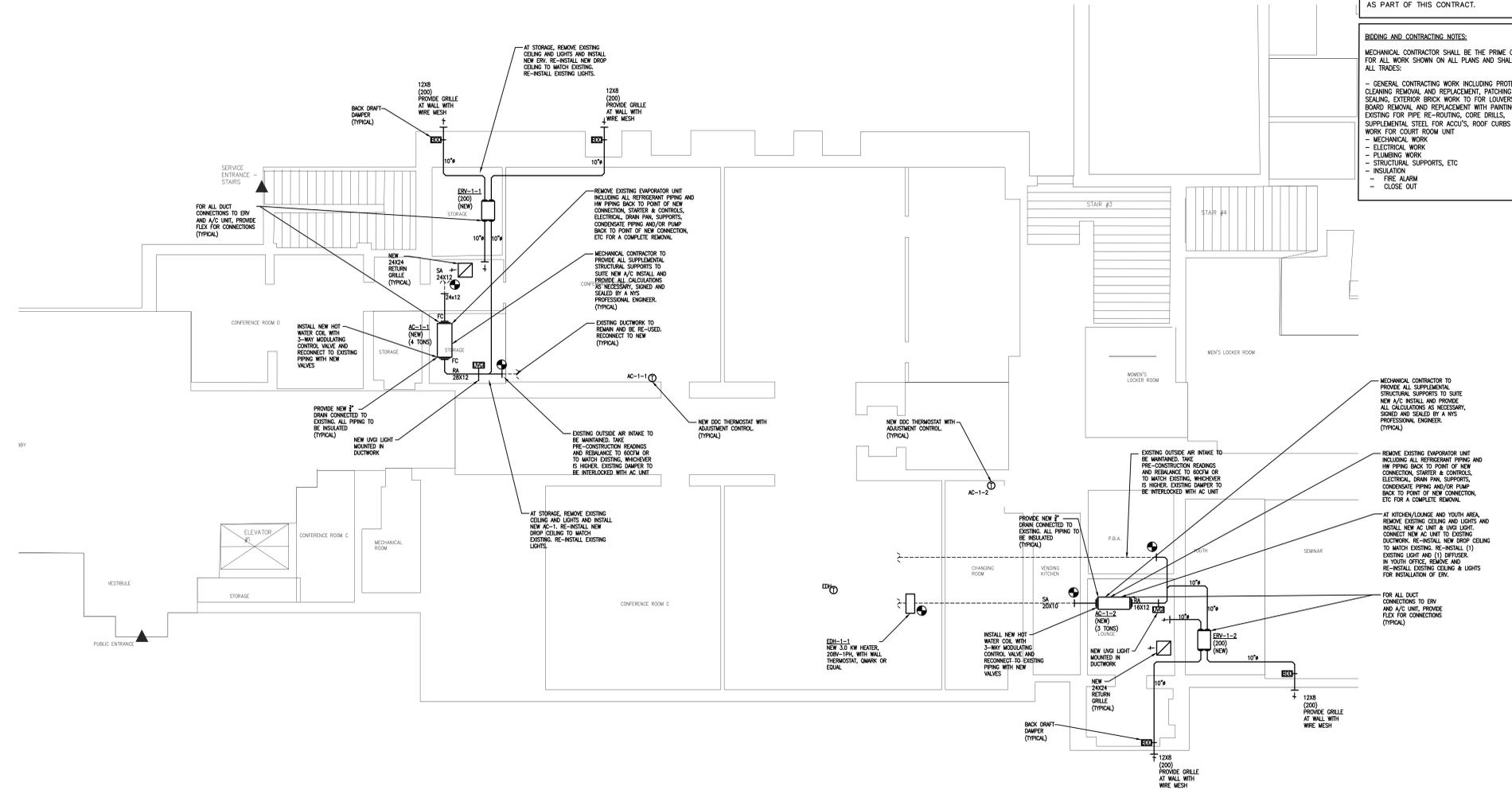
SCALE: N.T.S. DATE: 08/21/20 PROJECT NO.: F2020-084
 DRAWN BY: JAL CHECKED BY: JAL APPROVED BY: JAL
 DRAWING TITLE: MECHANICAL SPECIFICATION #2
 DRAWING NO: M-202

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM OF THIS PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7200 OF THE NEW YORK STATE EDUCATION LAW.
 THESE PLANS ARE INSTRUMENTS OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFIRMMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK.
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- NOTES:**
1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL BUILDING RULES AND REGULATIONS.
 2. PROVIDE NEW DDC CONTROLLER AND DDC WALL THERMOSTAT FOR EACH NEW AC UNIT & TIE INTO BUILDING DIGITAL CONTROL SYSTEM (HONEYWELL BMS).
 3. PROVIDE AND INSTALL CONDENSATE PUMP AND 3/4" INSULATED PIPING FOR A/C UNITS TO DISCHARGE AT FUNNEL DRAIN. ALL CONDENSATE PIPE TO HAVE 1" THICK FIBER INSULATION WITH VAPOR BARRIER.
 4. NEW ACCU'S TO BE MOUNTED AT ROOF ON EXISTING STEEL DUNNAGE. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED. PROVIDE 1" NEOPRENE ISOLATORS, MASON INDUSTRIES, SUPER "W". PROVIDE PROPER OIL TRAPS FOR REFRIGERANT RISERS AND ADDITIONAL OIL AS REQUIRED. PROVIDE WIND BRACING AS REQUIRED.
 5. ACCESS TO BE PROVIDED FOR NEW AC & ACCU UNITS.
 6. NEW CEILING AC'S TO BE MOUNTED TIGHT TO SLAB ABOVE. PROVIDE SPRING ISOLATORS FOR MOUNTING, MASON INDUSTRIES & SUPPLEMENTAL STEEL. PROVIDE 2" DEEP DRAIN, WATERTIGHT DRAIN PAN WITH LEAK DETECTOR TO SHUT AC UNIT DOWN UPON DETECTION OF WATER.
 7. PROVIDE BMS CONTROLS BY HONEYWELL. PROVIDE ALL PROGRAMMING AND TIE ALL CONTROLS INTO EXISTING HEAD END SYSTEM. PROVIDE ALL GRAPHICS AT HEAD END SYSTEM FOR ALL NEW AND EXISTING EQUIPMENT.
 8. MAXIMUM LENGTH OF FLEXIBLE DUCTWORK TO BE USED IS 5'-0" MAXIMUM FOR DIFFUSER CONNECTIONS ONLY AND SHALL BE UL181 LISTED.
 9. PROVIDE LOCKABLE, PLASTIC, VENTILATED ENCLOSURES FOR ALL NEW THERMOSTATS.
 10. ALL HW PIPING TO BE COPPER TYPE L WITH SILVER SOLDER. PROVIDE 1" FIBERGLASS INSULATION FOR ALL PIPING INCLUDING ALL FITTING AND VALVES COVERS. LABEL ALL NEW PIPING.
 11. ALL EXTERIOR PENETRATIONS TO BE SEALED WITH HILTI 2 HOUR FIRE RATED FILL, AND ASSURE PENETRATIONS ARE WATERTIGHT.
 12. INSULATE ALL PIPING AND SUPPLY AIR DUCTWORK PER NYS ENERGY CODES.
 13. AIR BALANCE NEW AC UNITS, NEW ERV EXHAUST & OUTSIDE AIR INTAKES, EXISTING BUILDING OUTSIDE AIR INTAKES.
 14. FOR HW COILS, INSTALL NEW HW CONTROL VALVES AND WATER BALANCE ALL NEW HW COILS TO DESIGN GPM. RECONNECT TO EXISTING HWS&R PIPING.

ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

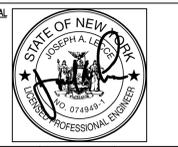
- BIDDING AND CONTRACTING NOTES:**
- MECHANICAL CONTRACTOR SHALL BE THE PRIME CONTRACTOR FOR ALL WORK SHOWN ON ALL PLANS AND SHALL INCLUDE ALL TRADES:
- GENERAL CONTRACTING WORK INCLUDING PROTECTION, CLEANING, REMOVAL AND REPLACEMENT, PATCHING AND SEALING, EXTERIOR BRICK WORK TO FOR LOUNGES, TOP BOARD REMOVAL AND REPLACEMENT WITH PAINTING TO MATCH EXISTING FOR PIPE RE-ROUTING, CORE DRILLS, SUPPLEMENTAL STEEL FOR ACCU'S, ROOF CURBS & ROOF WORK FOR COURT ROOM UNIT
 - MECHANICAL WORK
 - ELECTRICAL WORK
 - PLUMBING WORK
 - STRUCTURAL SUPPORTS, ETC
 - INSULATION
 - FIRE ALARM
 - CLOSE OUT



**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY**

PROJECT:

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	07/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



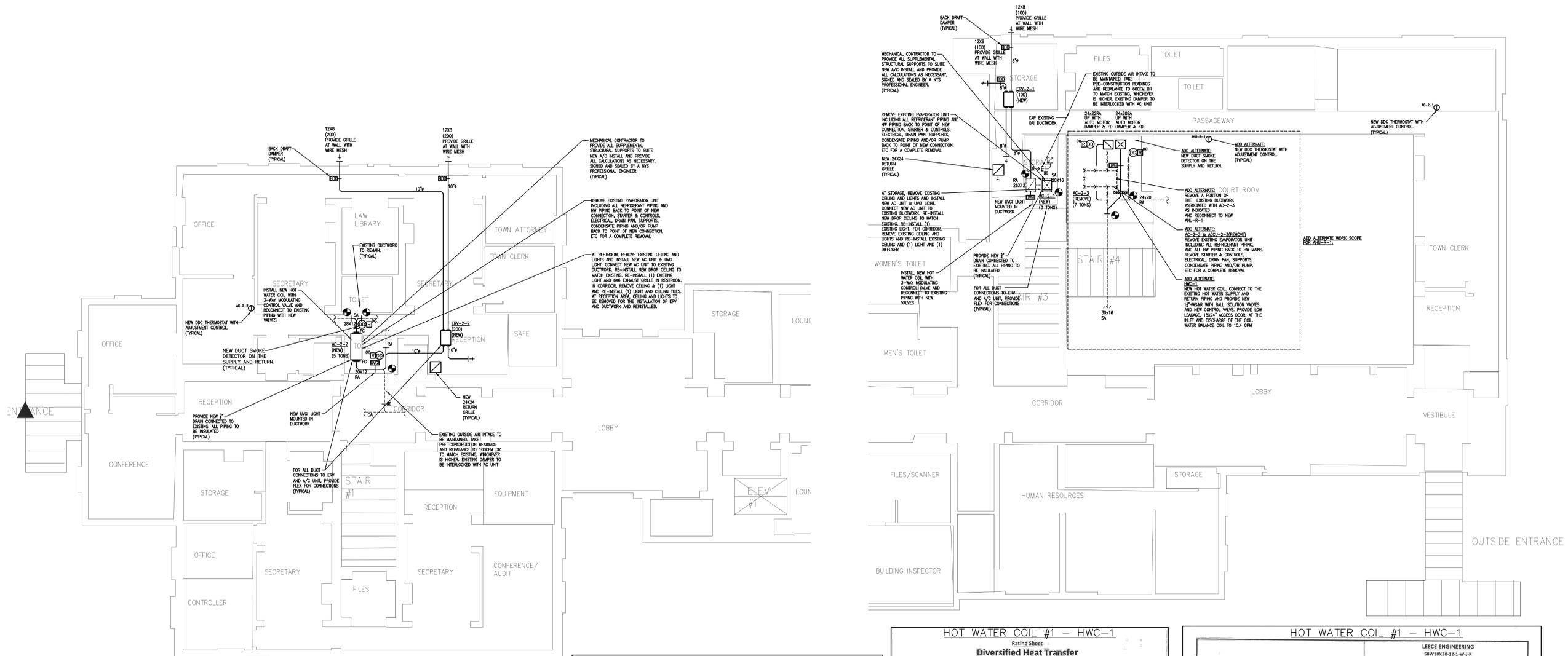
SCALE: 1/8"=1'-0"
 DATE: 08/21/20
 PROJECT NO.: #2020-064
 DRAWN BY: EB
 CHECKED BY: JL
 APPROVED BY: JL
 DRAWING TITLE: MECHANICAL PLAN 1ST LEVEL

DRAWING NO: M-301

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THIS PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.

THESE PLANS ARE INSTRUMENTS OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFRINGEMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK.

NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLECT ON HIS PART.



- NOTES:**
1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL BUILDING RULES AND REGULATIONS.
 2. PROVIDE NEW DDC CONTROLLER AND DDC WALL THERMOSTAT FOR EACH NEW A/C UNIT & TIE INTO BUILDING DIGITAL CONTROL SYSTEM (HONEYWELL BMS).
 3. PROVIDE AND INSTALL CONDENSATE PUMP AND 3/4" INSULATED PIPING FOR A/C UNITS TO DISCHARGE AT FUNNEL DRAIN. ALL CONDENSATE PIPE TO HAVE 1" THICK FIBER INSULATION WITH VAPOR BARRIER.
 4. NEW ACCU'S TO BE MOUNTED AT ROOF ON EXISTING STEEL DUNNAGE. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED. PROVIDE 1" NEOPRENE ISOLATORS, MASON INDUSTRIES, SUPER "W", PROVIDE PROPER OIL TRAPS FOR REFRIGERANT RISERS AND ADDITIONAL OIL AS REQUIRED.
 5. ACCESS TO BE BRACED FOR NEW AC & ACCU UNITS.
 6. NEW CEILING AC'S TO BE MOUNTED TIGHT TO SLAB ABOVE. PROVIDE SPRING ISOLATORS FOR MOUNTING, MASON INDUSTRIES & SUPPLEMENTAL STEEL. PROVIDE 2" DEEP DRAIN, WATER TIGHT DRAIN PAN WITH LEAK DETECTOR TO SHUT AC UNIT DOWN UPON DETECTION OF WATER.
 7. PROVIDE BMS CONTROLS BY HONEYWELL. PROVIDE ALL PROGRAMMING AND TIE ALL CONTROLS INTO EXISTING HEAD END SYSTEM. PROVIDE ALL GRAPHICS AT HEAD END SYSTEM FOR ALL NEW AND EXISTING EQUIPMENT.
 8. MAXIMUM LENGTH OF FLEXIBLE DUCTWORK TO BE USED IS 5'-0" MAXIMUM FOR DIFFUSER CONNECTIONS ONLY AND SHALL BE UL181 LISTED.
 9. PROVIDE LOCKABLE, PLASTIC, VENTILATED ENCLOSURES FOR ALL NEW THERMOSTATS.
 10. ALL HW PIPING TO BE COPPER TYPE L WITH SILVER SOLDER. PROVIDE 1/2" FIBERGLASS INSULATION FOR ALL PIPING INCLUDING ALL FITTING AND VALVES COVERS. LABEL ALL NEW PIPING.
 11. ALL EXTERIOR PENETRATIONS TO BE SEALED WITH HILTI 2 HOUR FIRE RATED FILL, AND ASSURE PENETRATIONS ARE WATER TIGHT.
 12. INSULATE ALL PIPING AND SUPPLY AIR DUCTWORK PER NYS ENERGY CODES.
 13. AIR BALANCE NEW AC UNITS, NEW ERV EXHAUST & OUTSIDE AIR INTAKES, EXISTING BUILDING OUTSIDE AIR INTAKES.
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ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

BIDDING AND CONTRACTING NOTES:

MECHANICAL CONTRACTOR SHALL BE THE PRIME CONTRACTOR FOR ALL WORK SHOWN ON ALL PLANS AND SHALL INCLUDE ALL TRADES:

- GENERAL CONTRACTING WORK INCLUDING PROTECTION, CLEANING REMOVAL AND REPAIRMENT, PATCHING AND SEALING, EXTERIOR BRICK WORK TO FOR LOUVERS, COP ROADS REMOVAL AND REPLACEMENT WITH PAINTING TO MATCH EXISTING FOR PIPE RE-ROUTING, CORE DRILLS, SUPPLEMENTAL STEEL FOR ACCU'S, ROOF CURBS & ROOF WORK FOR COURT ROOM UNIT
- MECHANICAL WORK
- ELECTRICAL WORK
- PLUMBING WORK
- STRUCTURAL SUPPORTS, ETC
- INSULATION
- FIRE ALARM
- CLOSE OUT

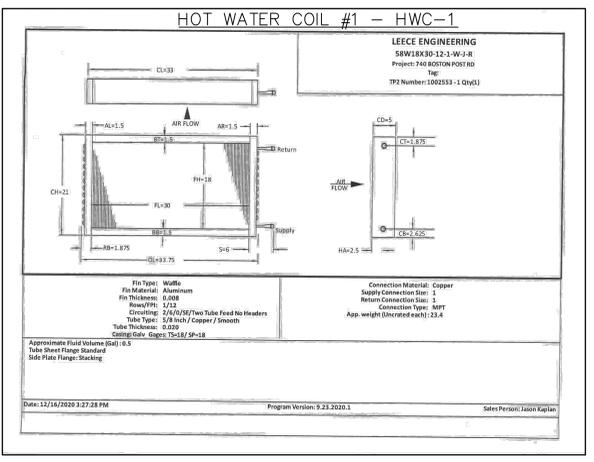
HOT WATER COIL #1 - HWC-1
 Rating Sheet
Diversified Heat Transfer
 439 Main Road / Towaco, NJ 07082
 Phone # - 7183866666 / Fax # - 7183867809
 Jason Kaplan

Customer: LEECE ENGINEERING Job: 740 BOSTON POST RD Item # 1
 Quote #: 1002553

No. Coils:	1	Coil Type:	Water - Heating
Fin Height (in.):	18	Fin Mat./Thickness/Type:	Aluminum/ 0.008/ Waaffle
Fin Length (in.):	30	Tube Mat./Wall/OD:	Copper/ 0.020/ 5/8 inch
Air Flow/Coil (ACFM/SCFM):	3401 / 3500 (5)	Tube Spacing:	1.5 x 1.259
ACFM/SCFM Velocity (fpm):	906.9 / 933.3	Tube Surface:	Smooth
COB (°F):	55	Casing Material:	Galv
EWI (°F):	180	Fluid Type:	Water
Fluid Temp. Drop (°F):	20	FF Inside":	0
Rows/FF:	1/12	FF Outside":	0
Circulating:	2/6/0/5E/Two Tube Feed No Headers		

	Per Coil	Total All Coils
LDB (°F):	82.5	104.004
Total Heat (BTUH):	104,004	104,004
Sensible Heat (BTUH):	104,004	104,004
LWT (°F):	160.0	
Fluid Flow (GPM):	10.7	
Fluid Press. Drop (Head):	7.61	
Tube Velocity (fps):	5.83	
Reynolds number:	72,628.04	
Air Pressure Drop (in. W.G.):	0.24	
Connection Size (in.):	3	
Approximate Fluid Volume (Gall):	0.6	0.6
	Uncrated, Dry Coil Weight:	23.4

Printed on 12/16/2020 using Total Package 8 program version 9.23.2020.3-01/Flows 1.0.5.6/0200811
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**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY**

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR PERMIT	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: 1/8"=1'-0"
 DATE: 08/21/20
 PROJECT NO.: #2020-054
 DRAWN BY: EB
 CHECKED BY: JL
 APPROVED BY: JL
 DRAWING TITLE: MECHANICAL PLAN 2ND LEVEL

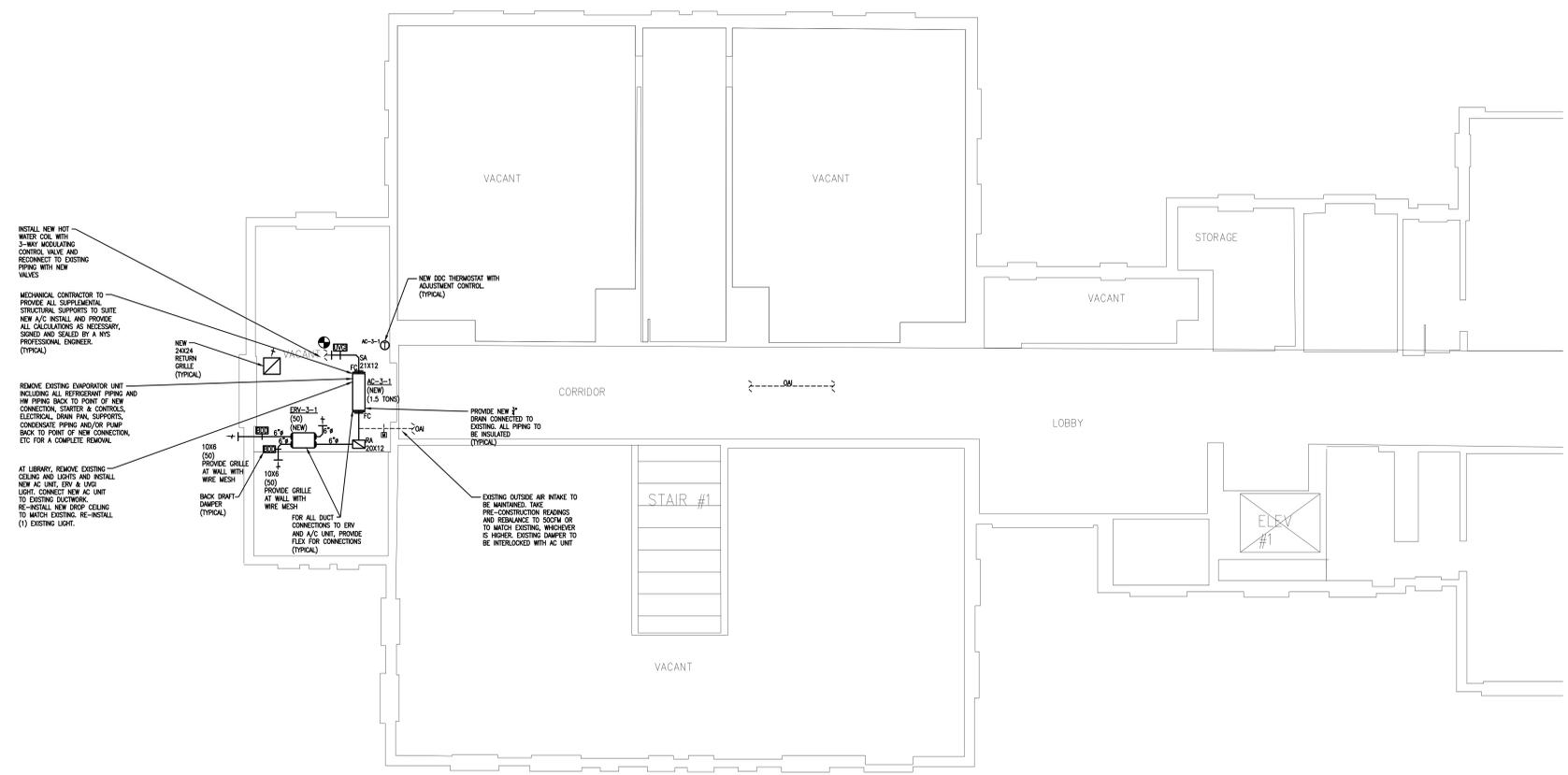
DRAWING NO: **M-302**

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THIS PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
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- NOTES:**
1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL BUILDING RULES AND REGULATIONS.
 2. PROVIDE NEW DDC CONTROLLER AND DDC WALL THERMOSTAT FOR EACH NEW AC UNIT & TIE INTO BUILDING DIGITAL CONTROL SYSTEM(HONEYWELL BMS)
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BIDDING AND CONTRACTING NOTES:
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 - GENERAL CONTRACTING WORK INCLUDING PROTECTION, CLEANING REMOVAL AND REPLACEMENT, PATCHING AND SEALING, EXTERIOR BRICK WORK TO FILL LOUVERS, GYP BOARD REMOVAL AND REPLACEMENT WITH PAINTING TO MATCH EXISTING FOR PIPE RE-ROUTING, CORE DRILLS, SUPPLEMENTAL STEEL FOR ACCU'S, ROOF CURBS & ROOF WORK FOR COURT ROOM UNIT
 - MECHANICAL WORK
 - ELECTRICAL WORK
 - PLUMBING WORK
 - STRUCTURAL SUPPORTS, ETC
 - INSULATION
 - FIRE ALARM
 - CLOSE OUT



INSTALL NEW HOT WATER COIL WITH 3-WAY MODULATING CONTROL VALVE AND RECONNECT TO EXISTING PIPING WITH NEW VALVES

MECHANICAL CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STRUCTURAL SUPPORTS TO SUITE NEW A/C INSTALL AND PROVIDE ALL CALCULATIONS AS NECESSARY, SIGNED AND SEALED BY A NYS PROFESSIONAL ENGINEER. (TYPICAL)

REMOVE EXISTING EVAPORATOR UNIT INCLUDING ALL REFRIGERANT PIPING AND HW PIPING BACK TO POINT OF NEW CONNECTION, STARTER & CONTROLS, ELECTRICAL, DRAIN PAN SUPPORTS, CONDENSATE PIPING AND/OR PUMP BACK TO POINT OF NEW CONNECTION, ETC FOR A COMPLETE REMOVAL.

AT LIBRARY, REMOVE EXISTING CEILING AND LOUVERS AND INSTALL NEW AC UNIT, ERV & DDC LIGHT, CONNECT NEW AC UNIT TO EXISTING DUCTWORK RE-INSTALL NEW DRIP CEILING TO MATCH EXISTING. RE-INSTALL (1) EXISTING LIGHT.

1006 (50) PROVIDE GRILLE AT WALL WITH WIRE MESH

1006 (50) PROVIDE GRILLE AT WALL WITH WIRE MESH

BACK SHIRT DAMPER (TYPICAL)

FOR ALL DUCT CONNECTIONS TO ERV AND A/C UNIT, PROVIDE FLEX FOR CONNECTIONS (TYPICAL)

NEW DDC THERMOSTAT WITH ADJUSTMENT CONTROL (TYPICAL)

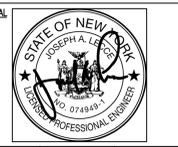
AC-3-1 (1.5 TONS) NEW

PROVIDE NEW 2" DRAIN CONNECTED TO EXISTING ALL PIPING TO BE INSULATED (TYPICAL)

EXISTING OUTSIDE AIR INTAKE TO BE MAINTAINED. TAKE PRE-CONSTRUCTION READINGS AND BALANCE TO SUCH OR TO MATCH EXISTING, WHICHEVER IS HIGHER. EXISTING DAMPER TO BE INTERLOCKED WITH AC UNIT

**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY**

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: 1/8"=1'-0"
 DATE: 08/21/20
 PROJECT NO.: #2020-054
 DRAWN BY: EB
 CHECKED BY: JL
 APPROVED BY: JL

DRAWING TITLE:
**MECHANICAL PLAN
 3RD LEVEL**

DRAWING NO.:
M-303

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM OF THE PLAN IN ANY WAY, IF ALTERATION TO THIS PLAN IS MADE. THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.

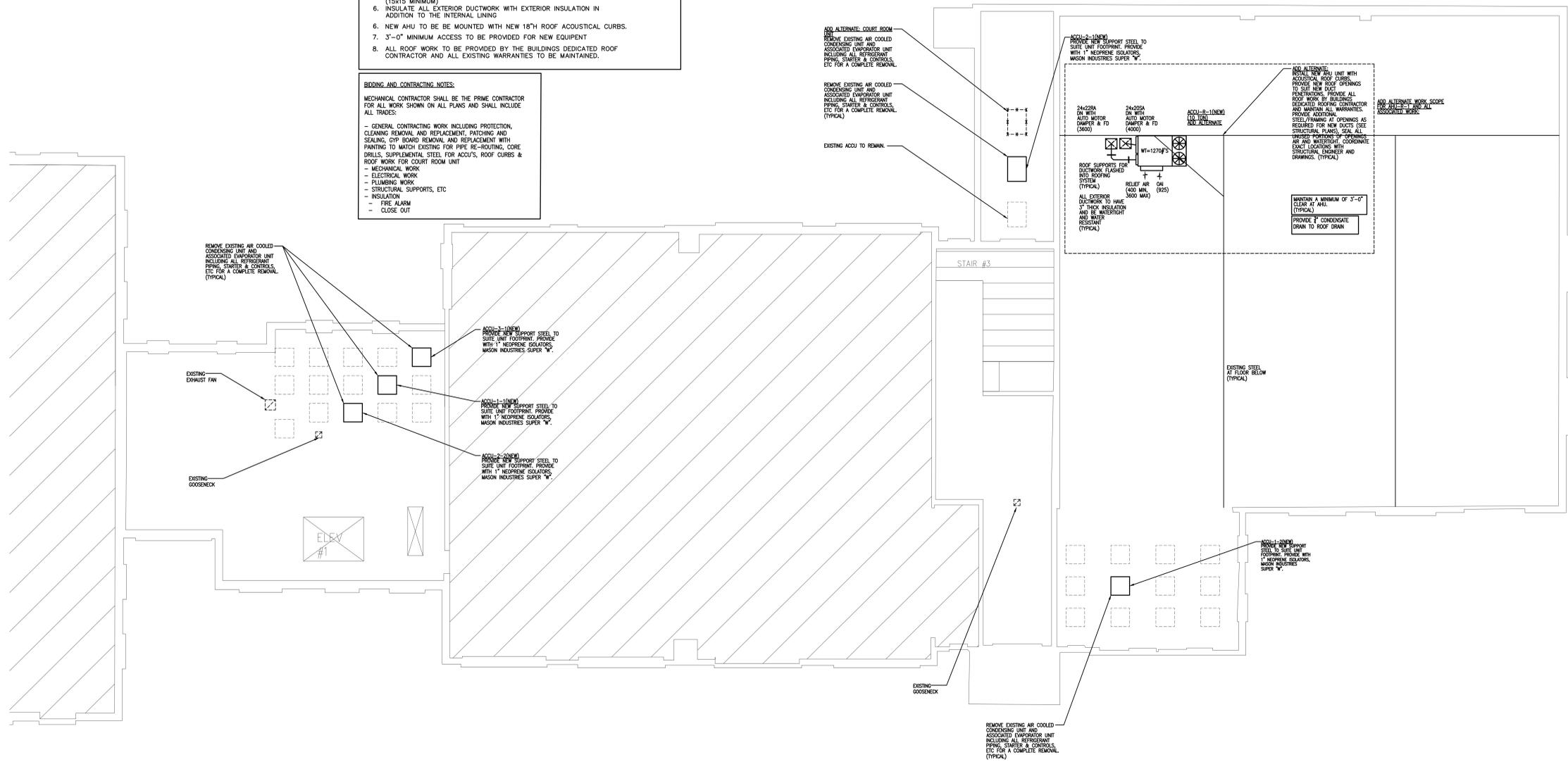
THESE PLANS ARE INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFRINGEMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK.

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- HVAC NOTES:**
1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL BUILDING RULES AND REGULATIONS.
 2. ALL DUCTWORK SIZES SHOWN ARE INTERNAL CLEAR DIMENSIONS.
 3. ALL DUCTWORK FOR 15LF DOWN STREAM OF AHU UNITS SUPPLY & RETURN DUCTWORK, PROVIDE 1" ACOUSTICALLY LINED DUCTWORK.
 4. ALL DUCTWORK TO BE INSULATED PER SMACNA AND LATEST NYS ENERGY CODE.
 5. ALL FIRE DAMPERS & FSD'S TO HAVE ACCESS DOORS INSTALLED (15x15 MINIMUM).
 6. INSULATE ALL EXTERIOR DUCTWORK WITH EXTERIOR INSULATION IN ADDITION TO THE INTERNAL LINING.
 7. NEW AHU TO BE MOUNTED WITH NEW 18" ROOF ACOUSTICAL CURBS.
 8. 3'-0" MINIMUM ACCESS TO BE PROVIDED FOR NEW EQUIPMENT.
 9. ALL ROOF WORK TO BE PROVIDED BY THE BUILDINGS DEDICATED ROOF CONTRACTOR AND ALL EXISTING WARRANTIES TO BE MAINTAINED.

- BIDDING AND CONTRACTING NOTES:**
- MECHANICAL CONTRACTOR SHALL BE THE PRIME CONTRACTOR FOR ALL WORK SHOWN ON ALL PLANS AND SHALL INCLUDE ALL TRADES:
- GENERAL CONTRACTING WORK INCLUDING PROTECTION, CLEANING REMOVAL AND REPLACEMENT, PATCHING AND SEALING, TOP DOWN REMOVAL AND REPLACEMENT WITH PAINTING TO MATCH EXISTING FOR PIPE RE-ROUTING, CORE DRILLS, SUPPLEMENTAL STEEL FOR ACCUS, ROOF CURBS & ROOF WORK FOR COURT ROOM UNIT
 - MECHANICAL WORK
 - ELECTRICAL WORK
 - PLUMBING WORK
 - STRUCTURAL SUPPORTS, ETC
 - INSULATION
 - FIRE ALARM
 - CLOSE OUT



PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
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 MAMARONECK, NY

NO.	ISSUE	DATE
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2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: 1/8"=1'-0"
 DRAWN BY: EB
 DATE: 08/21/20
 CHECKED BY: JL
 PROJECT NO.: #2020-084
 APPROVED BY:

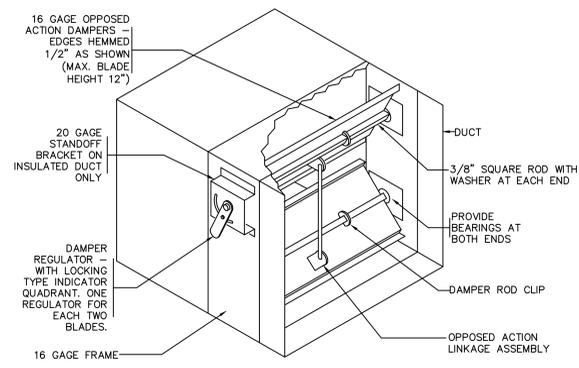
DRAWING TITLE:
**MECHANICAL PLAN
 ROOF LEVEL**

DRAWING NO.:
M-304

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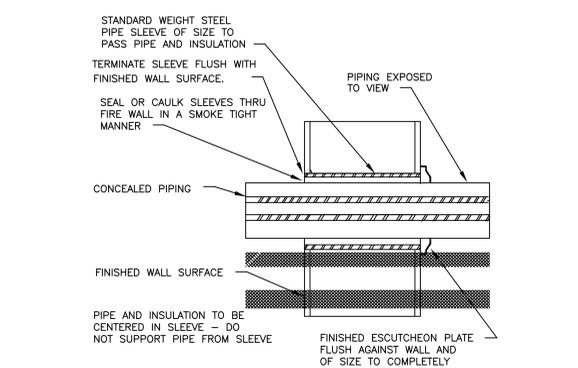
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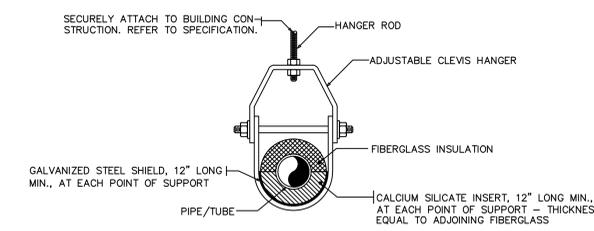


NOTE :
 1. FOR DUCTS LESS THAN 12" HIGH USE SINGLE BLADE DAMPER.
 2. BALANCING DAMPERS W/O FRAMES WILL NOT BE ACCEPTABLE.
 3. PROVIDE CABLE-OPERATOR WHERE DAMPER IS INACCESSIBLE.

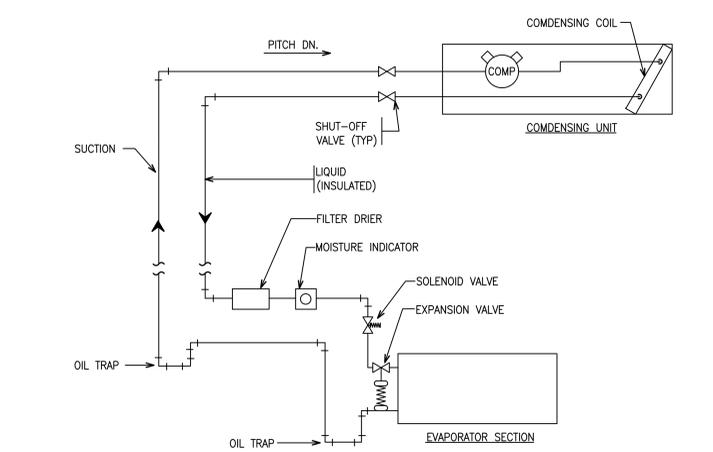
VOLUME DAMPER DETAIL



PIPE THRU INTERIOR WALL
 NOT TO SCALE

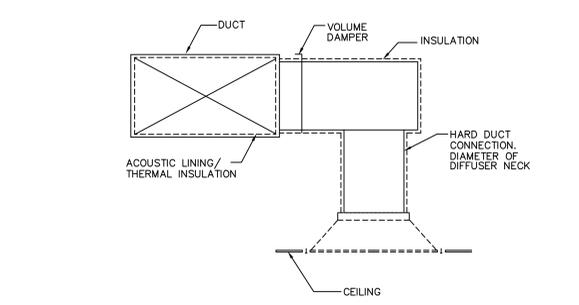


PIPE HANGER DETAIL



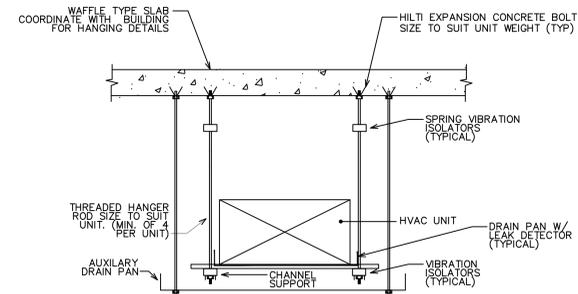
REFRIGERANT PIPING SCHEMATIC
 N.T.S.

NOTE:
 THE HORIZONTAL DIMENSION OF OIL TRAPS TO BE AS SHORT AS POSSIBLE.



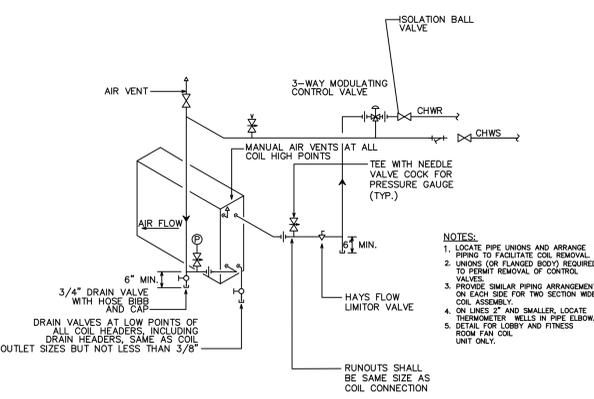
NOTE 1: BORDER TYPE OF AIR OUTLET TO MATCH CEILING TYPE.

DIFFUSER CONNECTION DETAIL



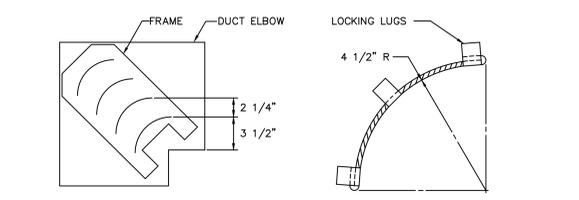
NOTES:
 1. EACH UNIT SHALL BE SUPPORTED BY A MINIMUM OF FOUR (4) EQUALLY LOADED SUPPORTS.

EQUIPMENT HANGING DETAIL



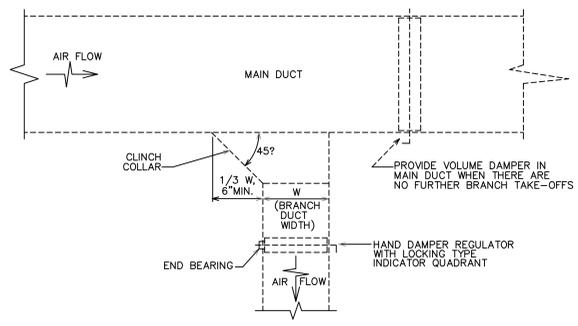
HOT WATER COIL DETAIL

NOTES:
 1. LOCATE PIPE UNIONS AND ARRANGE PIPING TO FACILITATE COIL REMOVAL.
 2. UNIONS (OR FLANGED BODY) REQUIRED TO PERMIT REMOVAL OF CONTROL VALVES.
 3. PROVIDE SIMILAR PIPING ARRANGEMENTS ON EACH SIDE FOR TWO SECTION WIDE COIL ASSEMBLY.
 4. ON LINES 2" AND SMALLER LOCATE THERMOMETER WELLS IN PIPE ELBOW.
 5. DETAIL FOR LOBBY AND FITNESS ROOM FAN COIL UNIT ONLY.



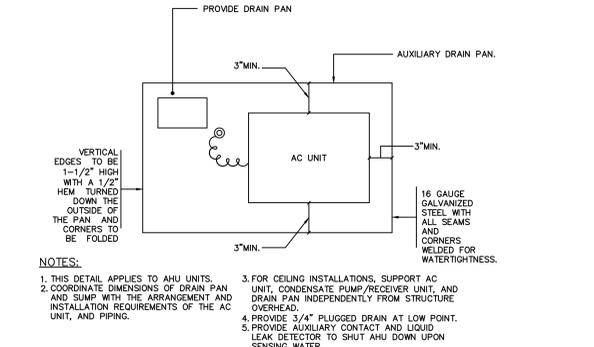
NOTES:
 1. LOCKING LUGS INTEGRAL WITH VANE.
 2. MAXIMUM UNSUPPORTED VANE LENGTH 36".
 3. FRAMES-BOLTED OR RIVETED TO ELBOW.
 4. VANES AND FRAMES-SAME GAUGE AS ELBOW.

DUCT VANE DETAIL



NOTES:
 1. SEE PLANS FOR DUCT SIZES.
 2. SEE BALANCING DAMPER CONSTRUCTION DETAIL.

DUCT TAP DETAIL

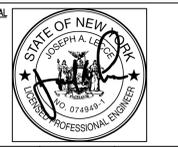


NOTES:
 1. THIS DETAIL APPLIES TO AHU UNITS.
 2. COORDINATE DIMENSIONS OF DRAIN PAN AND SUMP WITH THE ARRANGEMENT AND INSTALLATION REQUIREMENTS OF THE AC UNIT AND PIPING.
 3. FOR CEILING INSTALLATIONS, SUPPORT AC UNIT, CONDENSATE PUMP/RECEIVER UNIT, AND DRAIN PAN INDEPENDENTLY FROM STRUCTURE OVERHEAD.
 4. PROVIDE 3/4" PLUGGED DRAIN AT LOW POINT.
 5. PROVIDE AUXILIARY CONTACT AND LIQUID LEAK DETECTOR TO SHUT AHU DOWN UPON SENSING WATER.

AHU UNIT DRAIN PAN DETAIL

PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: NONE DATE: 05/21/20 PROJECT NO.: #2020-054
 DRAWN BY: DK CHECKED BY: JL APPROVED BY:
 DRAWING TITLE: MECHANICAL DETAILS SHEET #1

DRAWING NO: M-401

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THE PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
 THESE PLANS ARE INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFRINGEMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK.
 NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

ELECTRICAL SPECIFICATION

GENERAL REQUIREMENTS

- A. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE NEC, NEW YORK STATE CODE, BUILDING MANAGEMENT RULES AND REGULATIONS. CONTRACTOR IS TO INFORM ENGINEER OF ANY EXISTING WORK OR MATERIALS THAT VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED AT CONTRACTOR'S EXPENSE BY THIS CONTRACTOR AND AT NO EXPENSE TO THE OWNER.
B. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE EXISTING BUILDING CONSTRUCTION STANDARDS.
C. PRIOR TO SUBMISSION OF BID, THIS CONTRACTOR SHALL VISIT THE JOB SITE TO ASCERTAIN THE ACTUAL FIELD CONDITIONS AS THEY RELATE TO THE WORK AS INDICATED ON THE DRAWINGS AND DESCRIBED HEREIN. DISCREPANCIES IF ANY, SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO SUBMISSION OF HIS BID, AND IF NOT RESOLVED TO SATISFACTION SHALL BE SUBMITTED AS WRITTEN QUALIFICATION OF THE BID. SUBMISSION OF A BID SHALL BE EVIDENCE THAT SITE VERIFICATION HAS BEEN PERFORMED AS DESCRIBED ABOVE. REQUEST FOR ADDITIONAL COMPENSATION DUE TO CONTRACTOR'S FAILURE TO EXAMINE THE SITE PRIOR TO SUBMISSION OF BID SHALL NOT BE CONSIDERED.
D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND APPROXIMATE LOCATION OF EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR FINAL LOCATIONS OF EQUIPMENT AND DEVICES, ETC. WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS. IF A CONFLICT OCCURS IN THE SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.
E. PRIOR TO SUBMISSION OF BID, THIS CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THE ENTIRE PROJECT INCLUDING GENERAL CONSTRUCTION, DEMOLITION, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING, AND SHALL INCLUDE ANY WORK REQUIRED IN THE BID THAT IS INDICATED OR IMPLIED TO BE PERFORMED BY THIS TRADE IN OTHER SECTIONS OF THE WORK.
F. ANY EQUIPMENT, PARTS, MATERIALS, ACCESSORIES, OR LABOR THAT IS NECESSARY FOR PROPER PERFORMANCE OF THE ELECTRICAL WORK, ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN, OR SHOWN ON THE DRAWINGS, SHALL BE FURNISHED AND INSTALLED AS IF CALLED FOR IN DETAIL WITHOUT ADDITIONAL COST.
G. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME THAT THE ELECTRICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER, AND IS UNDER CARE, CUSTODY, AND CONTROL OF THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP AND OPERATION AND SERVICING OF THE EQUIPMENT.
H. ALL MATERIALS SHALL BE NEW AND SHALL CONFORM TO THE STANDARDS OF THE UNDERWRITERS' LABORATORIES INC. MATERIALS SHALL BE FABRICATED IN ACCORDANCE WITH THE SPECIFICATIONS AND APPROVED RULES AND REGULATIONS OF NEMA AND SHALL BEAR THE UL INSPECTION LABEL. MATERIALS AND APPARATUS FOR LIKE SHALL BE BY THE SAME MANUFACTURER.
I. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND CONTRACTOR'S SERVICES NECESSARY FOR COMPLETE, SAFE INSTALLATION OF ALL ELECTRICAL WORK. THE SCOPE OF WORK SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
1. DISCONNECTION AND REMOVAL OF ELECTRICAL EQUIPMENT AS REQUIRED FOR NEW INSTALLATION, INCLUDING ALL CONDUCTORS AND CONDUIT BACK TO THEIR SOURCE. (SEE DEMOLITION NOTES)
2. PROVIDING OF LIGHT FIXTURES AND LAMPS INCLUDING EXIT AND EMERGENCY LIGHTING AND ALL ASSOCIATED COMPONENTS AND BRANCH CIRCUITING. PROVIDE FLUORESCENT LIGHT FIXTURES WITH ELECTRONIC BALLASTS CLASS P, HIGH POWER FACTOR ETL AND CBM APPROVED.
3. PROVIDING OF NEW RACEWAY AND CONDUCTORS FOR LIGHTING AND POWER.
4. CUTTING, CHANNELING AND CHASING REQUIRED TO ACCOMMODATE THE ELECTRICAL INSTALLATION AND ROUGH PATCHING.
5. ADDITIONS AND MODIFICATIONS TO EXISTING ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND RELATED FEEDERS.
6. PROVIDING OF HVAC POWER WIRING AND FINAL CONNECTIONS TO HVAC EQUIPMENT.
7. PROVIDING OF CONDUIT, JUNCTION BOXES, PULL BOXES, ETC., REQUIRED FOR THE AFORESAIDED EQUIPMENT.
8. MAINTENANCE AND PROPER OPERATION OF EXISTING BASE BUILDING SYSTEMS WITHIN THE CONTRACT AREA DURING CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF BUILDING MANAGEMENT.
9. GROUNDING OF ALL EQUIPMENT AS REQUIRED BY NATIONAL ELECTRICAL CODE AND AS SHOWN ON THE DRAWINGS.
10. MAINTAIN CONTINUITY OF EXISTING CIRCUITING TO ADJACENT AREAS NOT AFFECTED BY THE NEW WORK.
11. PROVIDING TELEPHONE/DATA AND SIGNAL EMPTY CONDUIT, PULLBOXES, OUTLETS, SLEEVES AND FISHWIRES.
12. COORDINATE WITH BUILDING FIRE ALARM MAINTENANCE CONTRACTOR AND PROVIDE ALL REQUIRED ADDITIONS AND MODIFICATIONS TO THE EXISTING BUILDING FIRE ALARM SYSTEM.
13. PROVIDING RECEPTACLES, LIGHT SWITCHES, DISCONNECT SWITCHES, FUSES, DIMMERS, OUTLET BOXES, CONTRACTORS AND OTHER WIRING DEVICES INCLUDING RELATED BRANCH CIRCUIT WIRING.
14. PROVIDING ENGRAVED LAMICOID NAMEPLATES FOR NEW PANELBOARDS, SWITCHES, CABINETS, MOTOR STARTERS, ETC.
15. PROVIDING TEMPORARY LIGHT AND POWER DURING CONSTRUCTION.
J. PERFORM ANY NOISY WORK (E.G., CHOPPING, CORE DRILLING, DEMOLITION, ETC.) AND BASE BUILDING SYSTEM TEMPORARY SHUTDOWNS OUTSIDE OF NORMAL BUSINESS HOURS (IN SAFE TIME PREMIUM TIME). SAFE TIME WORK SHALL BE PERFORMED WHEN AND AS DIRECTED BY THE BUILDING MANAGEMENT.
K. FOLLOW THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION AIA DOCUMENT A201 LATEST EDITION, OR AS REQUIRED BY THE ARCHITECTS DOCUMENTS AND/OR ENGINEERS DOCUMENTS.
L. SUBMIT SHOP DRAWINGS CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT ALL CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS. PROVIDE A MINIMUM OF SIX (6) COPIES OF 8-1/2"x11" SUBMISSIONS AND ONE (1) REPRODUCIBLE AND ONE (1) PRINT OF ALL DRAWINGS.
SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
1. SERVICE AND METERING EQUIPMENT, INCLUDING LAYOUT.
2. FIRE ALARM DEVICES.
3. LIGHTING FIXTURES AND LAMPS.
4. SWITCHES AND FUSES.
5. PANELBOARDS AND CIRCUIT BREAKERS.
6. WIRING DEVICES.
7. ANY OTHER ITEM THAT MAY BE REQUIRED BY ARCHITECT.
M. SUBMIT FOUR (4) LOOSE-LEAF BOUND OPERATING AND MAINTENANCE MANUALS WITH INDEX AND INDEX TABS TO INCLUDE ALL SHOP DRAWINGS AND OPERATING AND MAINTENANCE INSTRUCTIONS ON ALL SYSTEMS.
N. CONTRACTOR SHALL REVISE DRAWINGS TO CONFORM TO RECORD DRAWINGS AND SUBMIT AS-BUILT CONDITION DEVICES, EQUIPMENT, CIRCUITRY, ETC.) DRAWINGS UPON COMPLETION OF THE PROJECT. FINAL SUBMISSION OF REPRODUCIBLE AND CAD DISKETTE OF AS-BUILT DRAWINGS ARE TO BE SUBMITTED TO THE OWNER AND WB ENGINEERING REVIEW AND RECORDS.
O. SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL NOT BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER THAT INCLUDES ALL DIMENSIONAL, PERFORMANCE AND MATERIAL SPECIFICATIONS. ANY CHANGES IN LAYOUT, ELECTRICAL CHARACTERISTICS, STRUCTURAL REQUIREMENTS, OR DESIGN DUE TO THE USE OF A SUBSTITUTION SHALL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM SUBSTITUTION.
P. REMOVAL, TEMPORARY CONNECTIONS AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK.
Q. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHAL BE COORDINATED WITH BUILDING MANAGEMENT. PROVIDE TEMPORARY FEEDERS, CIRCUITRY, ETC., AS REQUIRED TO MINIMIZE DOWNTIME.
R. OBTAIN ALL PERMITS AND SIGN-OFFS AND PAY ALL ASSOCIATED FEES

- R. DEFINITIONS:
1. "ELECTRICAL CONTRACTOR", "THIS CONTRACTOR" - THE PARTY OR PARTIES HAVE BEEN DULY AWARDED THE CONTRACT FOR AND ARE THEREBY MADE RESPONSIBLE FOR THE ELECTRICAL WORK AS DESCRIBED HEREIN.
2. "ARCHITECT", "ENGINEER", "OWNER'S REPRESENTATIVE" - THE PARTY OR PARTIES RESPONSIBLE FOR INTERPRETING, ACCEPTING AND OTHERWISE RULING ON THE PERFORMANCE UNDER THIS CONTRACT.
3. "FURNISH" - PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT, ALL AS PART OF THE ELECTRICAL WORK.
4. "INSTALL" - UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING INSTALLATION AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT, ALL AS PART OF THE ELECTRICAL WORK.

- 5. "PROVIDE" - "FURNISH" AND "INSTALL"
6. "RELOCATE" - MOVE EXISTING EQUIPMENT/DEVICES/FIXTURE AND ALL ACCESSORIES AS REQUIRED, INCLUDING THE EXTENSION OF EXISTING OR PROVIDING NEW CIRCUIT/CONDUCTORS/WIRING AS REQUIRED.
7. "REMOVE" - DISMANTLE AND CART AWAY FROM SITE INCLUDING ALL RELATED ACCESSORIES, ALL OTHER EQUIPMENT AND OPERATIONS IN ANY WAY AFFECTED BY THE REMOVAL IS TO REMAIN IN FULL OPERATION. PROVIDE ALL NECESSARY COMPONENTS TO MAINTAIN SUCH OPERATION.
S. ACCEPTABLE MANUFACTURERS:
DISCONNECT SWITCHES: ITE, CUTLER HAMMER, GE OR SQUARE 'D'
FUSES: BUSSMAN, GOULD SHAWMUT
DRY TYPE TRANSFORMERS: ACME ELECTRIC CORP., CUTLER-HAMMER, GE, SQUARE D.
RACEWAY: NATIONAL WIRE PRODUCTS, TRIANGLE OR REPUBLIC
WIRE/CABLE: ROME PHELPS DODGE, GENERAL CABLE, SIMPLEX
PANELBOARDS: ITE, SQUARE 'D', GE, DELTA METAL PRODUCTS, ELECTRIC SWITCHBOARD, METROPOLITAN SWITCHBOARD, ALL-CITY SWITCHBOARD
JUNCTION/PULL BOXES: APPLETON ELECTRIC, GROUSE HANDS DR OZ./ GEDNEY CO.
FIRE STOP MATERIAL: HILTI, 3M (NOTE: MATERIAL MUST BE ACCEPTABLE TO LOCAL AHD)
FITTINGS, COUPLINGS, BUSHINGS, CONNECTORS: OZ GEDNEY, BURNBY, NEPCO, THOMAS AND BETTS
FIRE RATED POKE-THROUGH: HUBBELL, WIREMOLD, STEEL CITY.

ABBREVIATIONS table with columns for symbol, description, and unit. Includes entries for AMP/AMPERE, ABOVE FINISH FLOOR, AUTOMATIC TRANSFER SWITCH, AMERICAN WIRE GAUGE, CIRCUIT BREAKER, CIRCUIT, CONDUIT ONLY, COPPER, DISCONNECT, EXISTING, ELECTRICAL, EMERGENCY, FIRE ALARM, FINISHED BY OTHERS, GROUND FAULT INTERRUPTER, GROUND, HERTZ, ISOLATED GROUND, JUNCTION BOX, KILOVOLT/AMPERE, KWH, LIGHTING, MAIN CIRCUIT BREAKER, THOUSAND CIRCULAR MILLS, MAIN LUGS ONLY, MOUNTED, NEUTRAL, NOT TO SCALE, PULL BOX, PANELBOARD, POWER, SMOKE DETECTOR, SWITCHBOARD, TYPICAL, UNFUSED, UNLESS OTHERWISE NOTED, WIRE, WEATHERPROOF.

- PANELBOARDS
A. FURNISH AND INSTALL THREE-PHASE, 4 WIRE COPPER BUS PANELBOARDS AS INDICATED ON PANEL SCHEDULES.
B. PANELBOARDS SHALL BE IN INSTALLED IN ENCLOSURES FABRICATED OF CODE GAUGE GALVANIZED SHEET STEEL WITHOUT KNOCKOUTS.
C. ALL MAIN AND BRANCH BUS BARS, NEUTRAL AND GROUND BUS BARS, CABLE LUGS AND ALL CONNECTORS TO BE MADE OF COPPER. PANELBOARD BUS BARS SHALL BE COPPER AND PROPORTIONED FOR A CURRENT DENSITY OF 1000 AMPERES PER SQUARE INCH OF CROSS SECTIONAL AREA.
D. THE MAIN AND BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE SHALL BE MOLDED CASE CIRCUIT BREAKERS, LISTED IN ACCORDANCE WITH UL 489 AND WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS. THE CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC WITH INVERSE TIME-CURRENT ELEMENT FOR LOW LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP FOR SHORT CIRCUITS. FOR BRANCH CIRCUITS PROVIDE BOLT-IN TYPE BREAKERS FOR FRAMES 125 A OR SMALLER.
E. CIRCUIT WIRING IN PANELBOARDS SHALL BE TRIMMED AND DRESSED IN A NEAT AND WORKMANLIKE MANNER. ALL WIRING SHALL BE TAGGED. PANELBOARDS SHALL BE PROVIDED WITH A DETAILED TYPE WRITTEN DIRECTORY.
F. CABINETS: CODE GAUGE GALVANIZED STEEL WITH DOOR IN DOOR LOCKABLE TRIM. LAP AND RIVET CORNERS OR FORM AS APPROVED. BACKBOX AND TRIM TO BE PRIMED AND PAINTED WITH GREY ENAMEL. PANEL TRIM (OUTER DOOR) SHALL BE MOUNTED VIA TRIM CLAMPS OR SHALL BE SCREW MOUNTED. DOOR SHALL BE MOUNTED WITH FULL LENGTH PIANO HINGES AND SHALL BE PROVIDED WITH MULTI-POINT CYLINDER LOCKS WITH MILLED KEYS. ALL PANELS TO BE KEVED ALIKE, AND KEYS TO BE CUT AS DIRECTED.
G. DIRECTORY HOLDER: METAL FRAME WITH NONBREAKABLE TRANSPARENT COVER AND DIRECTORY CARD. PROVIDE TYPEWRITTEN PANELBOARD CIRCUIT DIRECTORY ON THE INSIDE OF THE DOOR AND UPDATE EXISTING PANELBOARD DIRECTORIES AS REQUIRED BY NEW WORK.
H. 120/208 VOLT PANELS: MINIMUM SHORT CIRCUIT RATING 10,000 AMPERES, RMS SYMMETRICAL, 277/480 VOLT PANELS: MINIMUM SHORT CIRCUIT RATING 14,000 AMPERES, RMS SYMMETRICAL.
I. MINIMUM GUTTER SPACE: BOX SHALL BE OF SUFFICIENT SIZE TO ALLOW A GUTTER AT LEAST 5-3/4" IN WIDTH ENTIRELY SURROUNDING EACH SECTION OF BOARD. INCREASE GUTTER SIZE TO ACCOMMODATE FEEDER AND FEEDER TAPS.
J. PANELS SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMICOID NAMEPLATE AFFIXED WITH EPOXY CEMENT. RATINGS OF BRANCH CIRCUIT BREAKERS AS SCHEDULED ON PANEL SCHEDULES.

- SWITCHES, FUSES AND CIRCUIT BREAKERS
A. SWITCHES SHALL BE QUICK-BREAK HEAVY DUTY IN NEMA 1 ENCLOSURE FUSED OR UNFUSE, AS INDICATED ON THE DRAWINGS. FUSES FOR SWITCHES SHALL BE CURRENT LIMITING TYPE WITH AN INTERRUPTING CAPACITY OF 200,000 RMS AMPERES AND OF THE CONTINUOUS CURRENT RATING AS SHOWN ON THE DRAWINGS.
B. CIRCUIT BREAKERS SHALL BE THERMAL MAGNETIC TYPE, QUICK-MAKE, QUICK-BREAK WITH NON-WELDING CONTACTS COMPENSATED FOR AMBIENT TEMPERATURES AND SHALL HAVE A MINIMUM SHORT CIRCUIT RATING OF 10,000 AMPERES SYMMETRICAL FOR 120/208V PANELS AND 14,000 AMPERES FOR 277/480V.

- RACEWAY
A. CONDUIT FOR BRANCH CIRCUIT SHALL BE THIN WALL TUBING (EMT), WITH COMPRESSION FITTINGS SIZED PER DRAWING, 3/4" MINIMUM (MAXIMUM 3 CIRCUITS PER HOMERUN EXCEPT AS NOTED). USE RIGID GALVANIZED STEEL CONDUIT FOR FIRE ALARM POWER RISER.
B. FLEXIBLE STEEL CONDUIT MAY BE USED ONLY FOR:
1. SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICABLE.
2. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE; MINIMUM 4 FT. LENGTHS.
3. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMERS AND OTHER VIBRATING EQUIPMENT, WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR, MINIMUM LENGTH 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END.
4. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.
5. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END.
C. EXPANSION FITTINGS: INSTALL AT RIGHT ANGLES WITH CLIP CENTERED IN EXPANSION JOINT. PROVIDE LENGTH OF RUNS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
D. RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT AS REQUIRED TO MAINTAIN THE EXISTING FIRE RATING.
E. PROVIDE FISH OR PULL WIRE IN ALL EMPTY CONDUITS OVER 10 FEET LONG.
F. MAINTAIN GROUND CONTINUITY OF ALL INTERRUPTED RACEWAYS WITH GROUND CONDUCTOR.
G. ALL WIRING WITHIN ELECTRICAL CLOSET AND IN BUILDINGS CORE CEILINGS SHALL BE INSTALLED IN CONDUIT.
H. INSTALL ACCESSIBLE JUNCTION AND PULLBOXES CLEAR OF OTHER TRADES AND SUPPORTED FROM BUILDING STRUCTURE INDEPENDENT OF CONDUIT.

- WIRE AND CABLE
A. ALL CONDUCTORS SHALL BE COPPER, TYPE THHN/THWN INSULATED. ALL CONDUCTORS SHALL HAVE 600 VOLT RATED INSULATION. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID WIRE. CONDUCTORS AND 8 AWG AND LARGER SHALL BE STRANDED WIRE.
B. EC SHALL USE HOSPITAL GRADE MC CABLE WHERE APPLICABLE, BY CODE AND BUILDING MANAGEMENT.
C. BRANCH CIRCUIT WIRE SIZE: THE MINIMUM WIRE SIZE FOR BRANCH CIRCUIT SHALL BE No. 12 AWG EXCEPT 120 VOLT CIRCUITS OVER 80 FEET IN LENGTH SHALL BE 10# AWG. REFER TO DRAWINGS FOR FURTHER WIRE SIZING INFORMATION.
D. PROVIDE ALL BRANCH CIRCUITS WITH DEDICATED GROUND WIRES.

- E. COLDER CODING OF 120/208 VOLT WIRING SYSTEM
1. BLACK FOR A PHASE
2. RED FOR B PHASE
3. BLUE FOR C PHASE
4. WHITE FOR NEUTRAL
5. GREEN FOR EQUIPMENT GROUND
F. PROVIDE FLAMEPROOF IDENTIFICATION TAGS IN ALL JUNCTION BOXES, PULL BOXES AND PANELBOARDS FOR ALL FEEDERS, BRANCH CIRCUIT AND CONTROL WIRING. TAGS SHALL IDENTIFY CONDUCTOR SIZES, SOURCE AND TERMINATION POINTS.
G. INSTALL NO MORE THAN 3 LIGHTING OR CONVENIENCE BRANCH CIRCUITS IN ONE CONDUIT OR HOMERUN UNLESS OTHERWISE NOTED.
WIRING DEVICES
(CS/MBIT SAMPLES TO ARCHITECT FOR APPROVAL PRIOR TO DEVICES GRADE)
A. WIRING DEVICES SHALL BE OF THE COMMERCIAL SPECIFICATION GRADE. ALL DEVICES AND PLATES SHALL BE PLUMB AND FLUSH MOUNTED, UNLESS OTHERWISE NOTED.
B. SWITCHES SHALL BE 120/277 VOLTS, RATED AT 20 AMPERES, QUITE OPERATION DECORA TYPE, SIMILAR TO SPECIFICATION, RATED 500.
C. 20 AMP RECEPTACLES SHALL BE 125 VOLT DECORA NEMA 5-20R.
D. ALL RECEPTACLES AND COVERPLATES COLOR SHALL BE AS SELECTED BY ARCHITECT, U.D.N.

- PULL BOXES, JUNCTION BOXES AND OUTLET BOXES.
A. PULLBOXES, JUNCTION BOXES AND OUTLET BOXES SHALL BE MANUFACTURED FROM GALVANIZED INDUSTRY STANDARD GAUGE SHEET STEEL.
B. PROVIDE PULL BOXES AND JUNCTION BOXES IN LONG STRAIGHT RUNS OF RACEWAY TO ASSURE THAT CABLES ARE NOT DAMAGED WHEN THEY ARE PULLED, TO FULFILL REQUIREMENTS AS TO THE NUMBER OF BENDS PERMITTED IN RACEWAY BETWEEN CABLE ACCESS POINTS, THE ACCESSIBILITY OF CABLE JOINTS AND SPLICES, AND THE APPLICATION OF CABLE SUPPORTS.
C. PULLBOXES AND JUNCTION BOXES SHALL BE SIZED SO THAT THE MINIMUM BENDING RADIUS CRITERIA SPECIFIED FOR THE WIRES AND CABLE ARE MAINTAINED.
D. ALL EQUIPMENT, DEVICE BOXES, JUNCTION BOXES, PULLBOXES AND OUTLET BOXES SHALL BE INSTALLED SO AS TO ALLOW ACCESS TO THE BOX. IF NECESSARY AND APPROVED BY ARCHITECT, PROVIDE ACCESS DOOR OR COVERPLATES IN AREAS WHERE UNOBSTRUCTED ACCESS IS NOT POSSIBLE.
E. USE WEATHERPROOF BOXES, JUNCTION BOXES AND DEVICES FOR ALL REQUIRED WEATHERPROOF INSTALLATION.

- TELEPHONE AND DATA EMPTY CONDUIT SYSTEM
A. PROVIDE LABOR, MATERIALS AND SERVICES FOR A COMPLETE AND SAFE INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION FOR THE SYSTEM INCLUDING THE FOLLOWING: COORDINATE ALL LOCATIONS & QUANTITIES WITH ARCHITECT'S PLANS.
1. CONDUIT AND DRAG WIRE UP TO CEILING PLENUM
2. PULL BOXES
3. OUTLET BOXES
4. SLEEVES
B. PROVIDE MINIMUM 2" DEEP 2 GANG OUTLET BOXES. DEVICES BY OTHERS.
C. ALL RACEWAY SHALL BE EMT WITH BUSHED TERMINATIONS AT HUNG CEILING WITH FISH WIRE (NYLON CORD).

- FIRE ALARM SYSTEM
A. THIS SECTION INCLUDES ADDITIONS AND MODIFICATIONS TO THE EXISTING BUILDING FIRE ALARM SYSTEM.
B. SHOP DRAWINGS:
1. WIRING DIAGRAMS: PROVIDE DETAILED WIRING DIAGRAMS THAT DIFFERENTIATE BETWEEN MANUFACTURER INSTALLED AND FIELD-INSTALLED WIRING. INCLUDE DIAGRAMS FOR EQUIPMENT AND FOR SYSTEM WITH ALL TERMINALS AND INTERCONNECTIONS IDENTIFIED
2. DEVICE ADDRESS LIST, COORDINATE SEQUENCE OF OPERATIONS, FINAL CONNECTIONS AND SYSTEM PROGRAMMING WITH THE BUILDING FIRE ALARM VENDOR. THEIR WORK SHALL BE INCLUDED AS PART OF THIS CONTRACT.
C. MANUFACTURER QUALIFICATIONS: MANUFACTURER SHALL BE THE SAME AS THE BASE BUILDING
D. SOURCE LIMITATIONS: OBTAIN FIRE ALARM SYSTEM COMPONENTS THROUGH THE BUILDING FIRE ALARM MAINTENANCE CONTRACTOR.
E. COMPLIANCE WITH LOCAL REQUIREMENTS: COMPLY WITH NATIONAL CODE, LOCAL ORDINANCES AND REGULATIONS, REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION AND BUILDING
F. REFER TO FIRE ALARM DRAWINGS FOR FURTHER REQUIREMENTS.

- LIGHTING FIXTURES AND LAMPS
(SEE ARCHITECTURAL DRAWINGS FOR LIGHTING FIXTURES SPECIFICATIONS.)
A. BALLASTS AND LAMPS SHALL ENERGY EFFICIENT COMPLYING WITH THE NEW YORK STATE ENERGY CODE.
1. PROVIDE COMPLETE LIGHT FIXTURES WITH ASSOCIATED LAMPS, MOUNTING ACCESSORIES ETC. AS PER ARCHITECTS SPECIFICATIONS. ALL EMERGENCY LIGHT FIXTURES SHALL MEET INTERNATIONAL BUILDING CODE REQUIREMENTS.

- WIRING
1. LUMINAIRE WIRING: 600 VOLT, 302 DEG F, TYPE SFF-2, BEGINING AT SEPARATELY MOUNTED OUTLET BOX.
2. SPLICES: MECHANICAL BORING PRESSURE CONNECTOR OR CRIMP CONNECTOR, WIRE NUTS NOT PERMITTED.
3. FIXTURES FED FROM MORE THAN ONE PANEL: SEPARATE NEUTRAL TO EACH PANEL.
4. FLEXIBLE CONDUIT CONNECTIONS FOR RECESSED FIXTURES, MAXIMUM LENGTH: 6 FT. 0 IN.
C. SUPPORTS:
1. INDIVIDUAL FIXTURES: CARRY WEIGHT OF FIXTURE TO BUILDING CONSTRUCTION, CLEAR OF DUCTS OR PIPES.
2. PENDANT-MOUNTED FIXTURES: WITH CONDUIT STEMS SUPPORTED TO CEILING FRAMEWORK SELF-LEVELING FITTINGS.
D. BASE BID MANUFACTURES
1. BASE BID FOR LIGHTING FIXTURES SHALL BE BASED ON MANUFACTURERS LISTED IN LIGHTING FIXTURES SCHEDULE.

- ELECTRONIC BALLASTS
1. PROVIDE UL LISTED CLASS P, "A" SOUND RATED BALLASTS WITH HIGH POWER FACTOR WITH REQUIRED VOLTAGE AND FREQUENCY, AND HIGH EFFICIENCY.
2. BALLAST TO HAVE A FIVE (5) YEAR WARRANTY INCLUDING REASONABLE REPLACEMENT LABOR COSTS.
3. THIRD HARMONICS DISTORTION SHALL BE LESS THAN 10%.
4. BALLAST TO CONTAIN REQUIRED FILTERING SO AS NOT TO INTERFERE WITH POWER LINE CARRIER SYSTEM.
5. BALLAST SHALL BE RAPID START, FULL LIGHT OUTPUT.

- LOCATIONS:
1. LOCATIONS ON THE DRAWINGS ARE DIAGRAMMATIC.
2. VERIFY WITH ARCHITECTURAL REFLECTED CEILING DRAWINGS & COORDINATE SPACE CONDITIONS WITH OTHER TRADES.
3. FIXTURE ROWS SHALL BE IN STRAIGHT LINES EXCEPT AS NOTED. FIXTURE DOORS SHALL OPEN FROM SAME SIDE.
G. MOUNTING
1. FOR CEILING CONSTRUCTION, REFER TO ARCHITECTURAL DRAWINGS FOR FINISH SCHEDULES AND REFER TO MANUFACTURER'S INSTALLATION DETAILS AND APPLICABLE CODES FOR REQUIRED FIXTURE MOUNTING ACCESSORIES.
2. VERIFY ALL CEILING TRIMS WITH ARCHITECTURAL DRAWINGS.
H. REPLACE BLEMISHED, DAMAGED OR UNSATISFACTORY FIXTURES AS DIRECTED.
I. REPLACE LAMPS THAT FAIL DURING CONSTRUCTION PRIOR TO OWNER'S ACCEPTANCE OF SPACE.
MISCELLANEOUS LIGHTING CONTROL INSTALLATION COMPONENTS
A. REMOTE CONTROL SWITCHES: SHALL BE ELECTRICALLY OPERATED, MECHANICALLY HELD, SINGLE COIL, RUGGEDLY CONSTRUCTED, CAPABLE OF ON-OFF SWITCHING WITH FULL CAPACITY LIGHTING LOADS. NUMBER OF POLES AND RATED CAPACITY AS REQUIRED BY EQUIPMENT CONTROL, MINIMUM 20A.

PROPOSED A/C UNIT REPLACEMENT FOR
MAMARONECK COURT CLERK
TOWN OF MAMARONECK
1ST, 2ND, AND 3RD LEVEL
740 WEST BOSTON POST ROAD
MAMARONECK, NY

Table with columns for DATE, ISSUE, and NO. Includes rows for 01/14/21, 02/11/21, 05/19/21 and issue descriptions: 1. ISSUED FOR REVIEW, 2. ISSUED FOR REVIEW, 3. ISSUED FOR BID AND PERMIT.

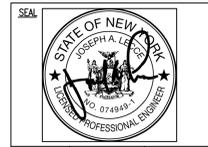


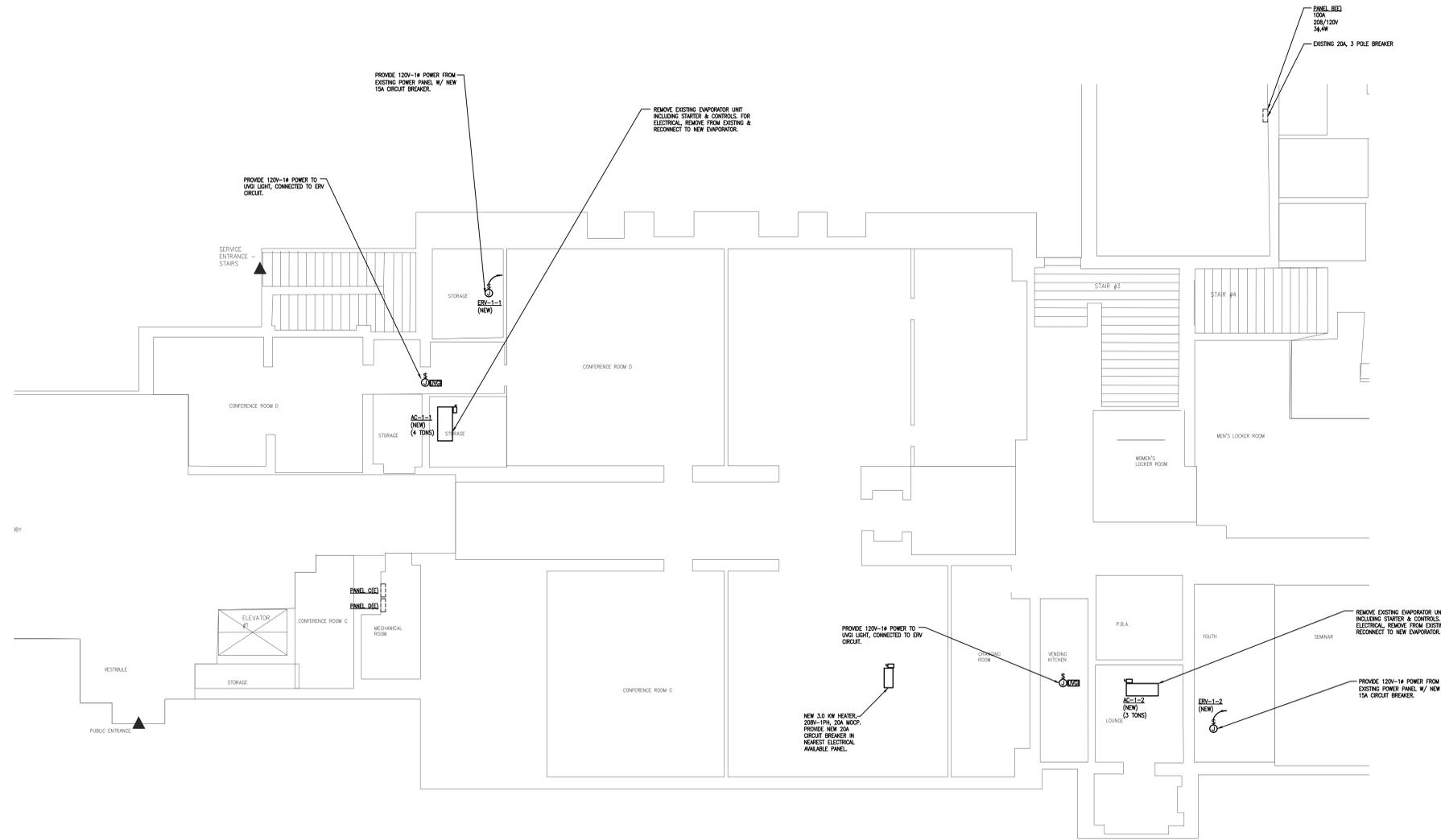
Table with columns for SCALE, DATE, PROJECT NO., DRAWN BY, CHECKED BY, APPROVED BY. Values include NONE, 08/21/20, #2020-084, DK, JL.

DRAWING TITLE: ELECTRICAL SPECIFICATIONS #1

DRAWING NO: E-201

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM OF THE PLAN IN ANY WAY, IF ALTERATION TO THE PLAN IS MADE. ANY ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
THESE PLANS ARE INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFREMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK. NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY**



ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

- GENERAL NOTES:**
- ALL WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NEC ELECTRICAL AND LOCAL BUILDING CODE, NFPA, UL, BUILDING MANAGEMENT RULES AND REGULATIONS AND NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE, AND ALL OTHER GOVERNING AGENCIES HAVING JURISDICTION.
 - ALL WORK IS NEW UNLESS OTHERWISE NOTED. THE DRAWINGS INDICATE SIZE AND GENERAL LOCATION OF WORK. SCALE DIMENSIONS SHALL NOT BE USED. THE EXACT LOCATION AND ELEVATION OF ALL RECEPTACLES AND TELEPHONE/DATA OUTLETS, ETC., SHALL BE DETERMINED FROM THE ARCHITECT'S DRAWINGS, U.G.N.
 - FILE PLANS WITH THE BUILDING DEPARTMENT AND OBTAIN ALL PERMITS AND SIGNOFFS.
 - ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AND CONFER WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION.
 - ELECTRIC PANEL COVERS ARE NOT TO BE LEFT OFF AT ANY TIME UNLESS MEN ARE WORKING ON SAME. COVERS SHALL BE REPLACED EACH NIGHT BEFORE LEAVING JOB SITE.
 - FOR TEMPORARY LIGHTING, THE CONTRACTOR SHALL CLEARLY LABEL PANELS AND BREAKERS USED FOR LIGHTING. LOCATION OF PANELS TO BE SHOWN ON FLOOR PLAN POSTED AT ENTRANCE TO WORK AREA. PROPER TEMPORARY LIGHTING AND POWER MUST BE INSTALLED AND MAINTAINED IN ALL WORK AREAS. TEMPORARY LIGHT AND POWER STRINGERS SHALL UTILIZE C-TAP TERMINATIONS. LAMP HOLDERS SHALL HAVE LEFT HANDED SCREW SHELL LAMP HOLDERS AND NON-METALLIC LAMP GUARDS. CONNECTIONS TO EXISTING STAIRWELL AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED.
 - THIS CONTRACTOR, BEFORE INSTALLING ANY OF THE WORK, SHALL SEE THAT IT DOES NOT INTERFERE WITH CLEARANCES REQUIRED FOR FINISHED COLUMNS, HUNG CEILINGS PILASTER, PARTITIONS, WALLS, ETC., AS SHOWN IN THE ARCHITECTURAL DRAWINGS AND DETAILS. IF ANY WORK IS SO INSTALLED AND IT LATER DEVELOPS THAT SUCH DETAILS OR DESIGN CANNOT BE FOLLOWED, THIS CONTRACTOR AT HIS OWN EXPENSE SHALL MAKE SUCH CHANGES IN THE WORK AS DIRECTED BY THE ARCHITECT, AS WELL AS TO PERMIT THE INSTALLATION OF THE ARCHITECTURAL WORK AS SHOWN ON THE PLANS AND DETAILS.
 - UPON COMPLETION OF THE WORK, A SET OF "AS-BUILT" DRAWINGS SHALL BE SUBMITTED. PROVIDE "AS-BUILT" DRAWINGS ON DISK, AUTOCAD 2007 AND FULL SIZE PRINT DRAWINGS SHOWING ALL FEEDERS AND BRANCH CIRCUITS WIRE SIZE, CONDUIT, ACTUAL EQUIPMENT/DEVICES CIRCUIT NUMBERING OF ALL ELECTRICAL WORK AS ACTUALLY INSTALLED.
 - ELECTRICAL CONTRACTOR SHALL PROVIDE AN ELECTRICAL INSPECTION APPROVAL CERTIFICATE TO ARCHITECT/ENGINEER UPON COMPLETION OF WORK.
 - THE ELECTRICAL CONTRACTOR SHALL DEMOLISH ALL WIRING, CONDUIT, STRAPS, BACK-BOXES AND ASSOCIATED CIRCUIT BREAKERS FOR EQUIPMENT SHOWN TO BE REMOVED & ASSOCIATED WITH EXISTING EQUIPMENT REMOVAL. COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR AND ENGINEER PRIOR TO REMOVAL.

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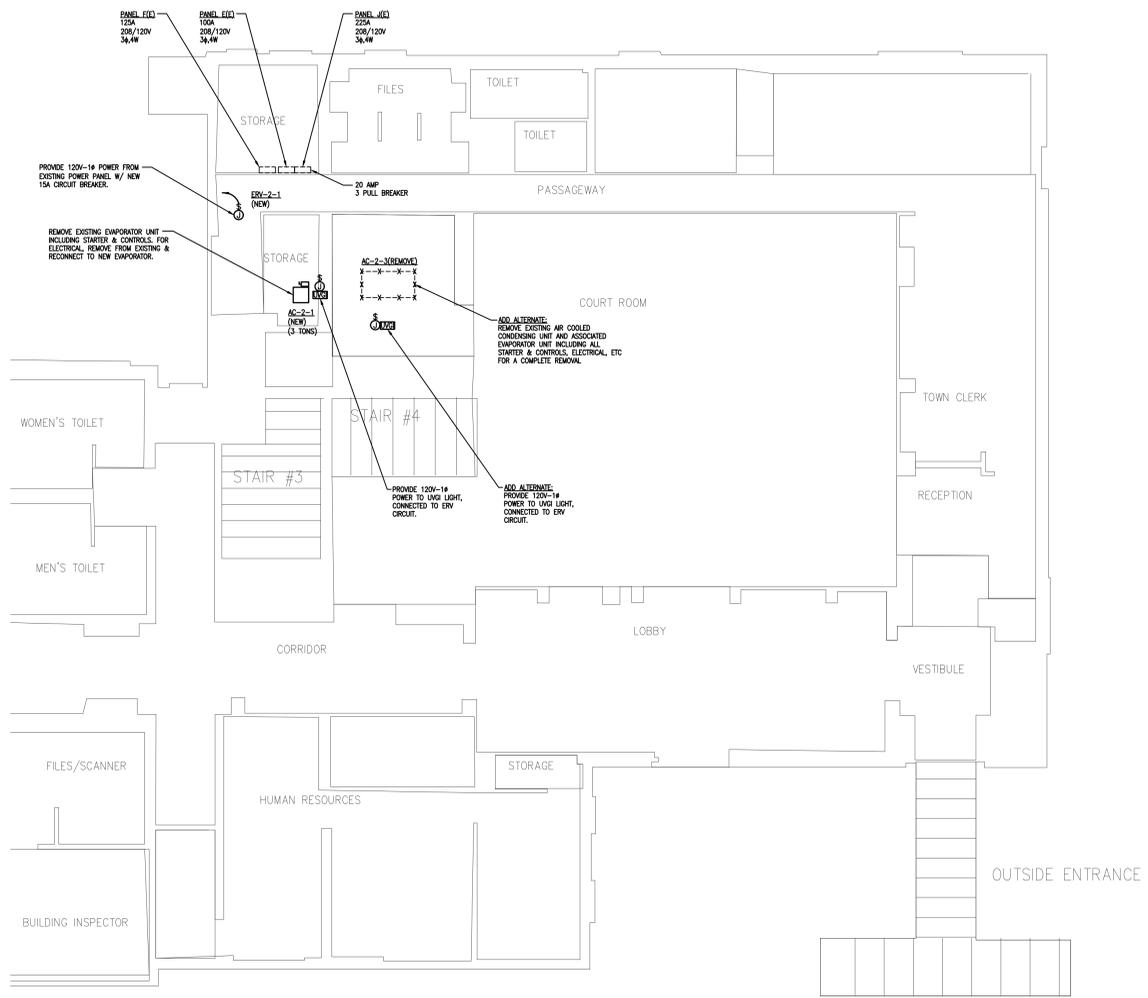
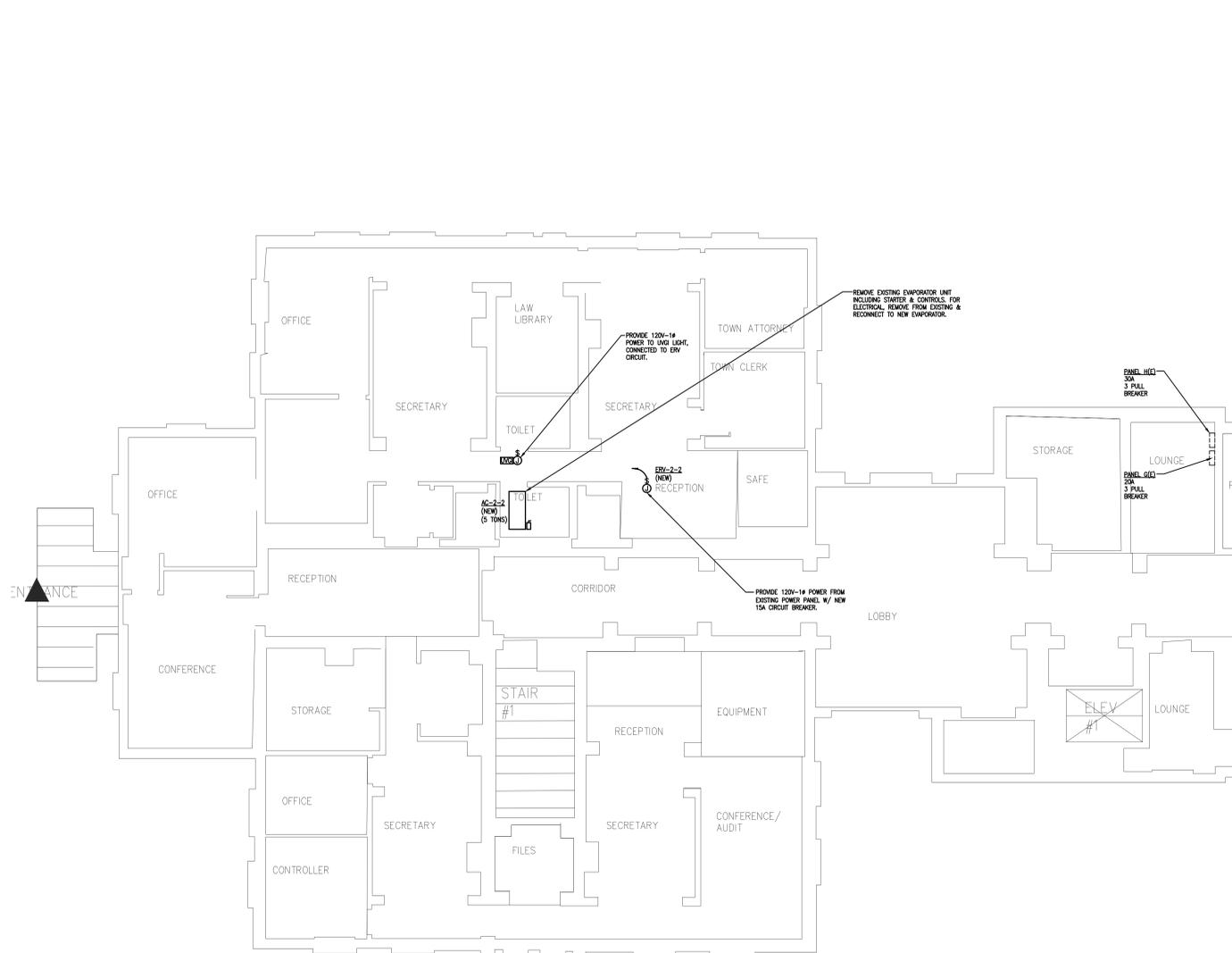
NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/11/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BIDD AND PERMIT	05/19/21



SCALE: 1/8"=1'-0"
 DRAWN BY: EB
 CHECKED BY: JL
 DATE: 08/21/20
 PROJECT NO.: E2020-084

DRAWING TITLE:
**ELECTRICAL PLAN
 1ST LEVEL**

DRAWING NO.:
E-301



ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

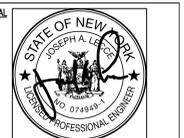
GENERAL NOTES:

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- FOR TEMPORARY LIGHTING, THE CONTRACTOR SHALL CLEARLY LABEL PANELS AND BREAKERS USED FOR LIGHTING. LOCATION OF PANELS TO BE SHOWN ON FLOOR PLAN POSTED AT ENTRANCE TO WORK AREA. PROPER TEMPORARY LIGHTING AND POWER MUST BE INSTALLED AND MAINTAINED IN ALL WORK AREAS. TEMPORARY LIGHT AND POWER STRINGERS SHALL UTILIZE C-TAP TERMINATIONS. LAMP HOLDERS SHALL HAVE LEFT HANDED SCREW SHELL LAMP HOLDERS AND NON-METALLIC LAMP GUARDS. CONNECTIONS TO EXISTING STAIRWELL AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED.
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PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



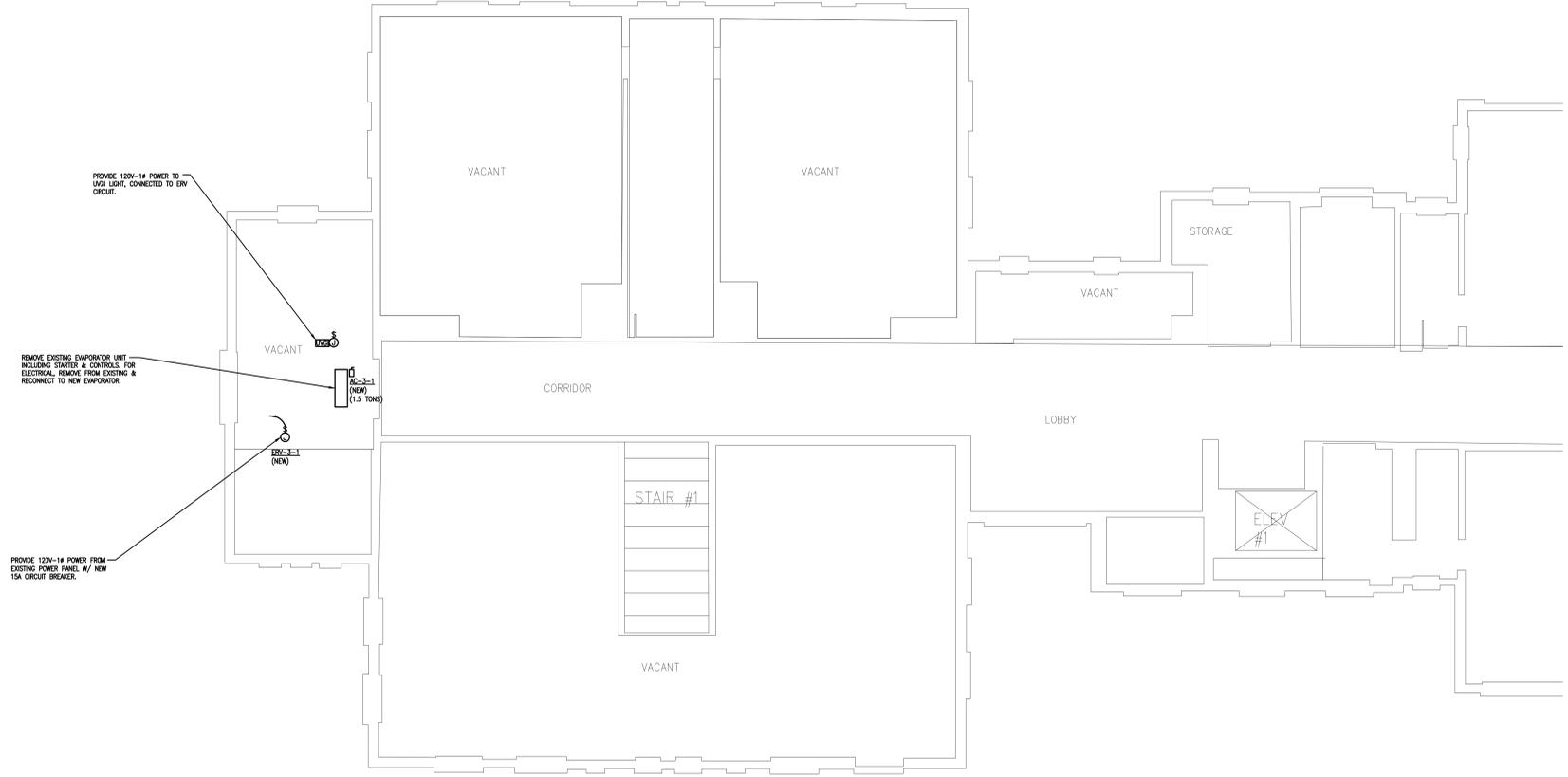
SCALE: 1/8"=1'-0"
 DRAWN BY: EB
 DATE: 05/21/20
 CHECKED BY: JL
 PROJECT NO.: #2020-054
 APPROVED BY:

DRAWING TITLE:
 ELECTRICAL PLAN
 2ND LEVEL

DRAWING NO.:
E-302

ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

- GENERAL NOTES:**
- ALL WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NEC ELECTRICAL AND LOCAL BUILDING CODE, NFPA, U.L. BUILDING MANAGEMENT RULES AND REGULATIONS AND NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE, AND ALL OTHER GOVERNING AGENCIES HAVING JURISDICTION.
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**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY**

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
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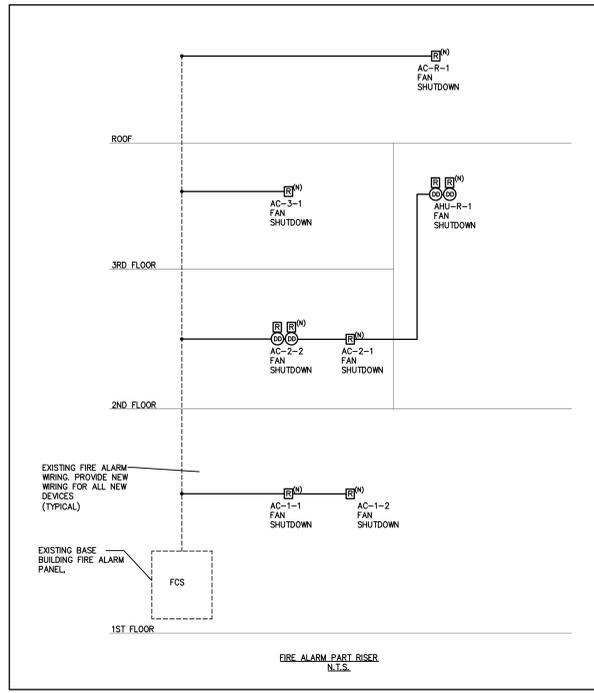


SCALE: 1/8"=1'-0"
 DATE: 05/21/20
 PROJECT NO.: F2020-084
 DRAWN BY: EB
 CHECKED BY: JL
 APPROVED BY:

DRAWING TITLE:
**ELECTRICAL PLAN
 3RD LEVEL**

DRAWING NO.:
E-303

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THE PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 2(b) OF THE NEW YORK STATE EDUCATION LAW.
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DRAWING #	TITLE
FA-001	FIRE ALARM - RISER, SYMBOLS AND NOTES
FA-301	FIRE ALARM - 1ST FLOOR NEW WORK PART PLAN
FA-302	FIRE ALARM - 2ND FLOOR NEW WORK PART PLAN
FA-303	FIRE ALARM - 3RD FLOOR NEW WORK PART PLAN
FA-304	FIRE ALARM - 4TH FLOOR NEW WORK PART PLAN

ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

ALL WORK IS IN COMPLIANCE WITH ALL NYS FIRE CODES 2020 (INTERNATIONAL FIRE CODE-2018), NYS BUILDING CODE 2020 (INTERNATIONAL BUILDING CODE-2018), AND, NYS MECHANICAL CODE 2020 (INTERNATIONAL MECHANICAL CODE-2018), NFPA REQUIREMENTS 72, AND ALL MANUFACTURES REQUIREMENTS. ALL DEVICES FOR THE FIRE ALARM SYSTEM TO BE UL268 LISTED, 7TH EDITION STANDARDS

CONTRACTOR TO FILE ALL PERMIT DRAWINGS WITH LOCAL AUTHORITIES AND FIRE DEPARTMENT. PROVIDE ALL FINAL AS-BUILT DRAWINGS AND DOCUMENTS INCLUDING ALL FLOOR PLANS, RISERS, SEQUENCE OF OPERATIONS, ALARM MATRIX'S, BATTERY CALCULATIONS, VOLTAGE DROP CALCULATIONS, EQUIPMENT TECHNICAL DATA SHEETS FOR DEVICES AND WIRING. CONTRACTOR TO SIGN AND SEAL ALL DOCUMENTS FROM THEIR RETAINED NEW YORK STATE PROFESSIONAL ENGINEER AS PART OF THIS BID PRICING. PERFORM ALL NFPA-72 FINAL INSPECTIONS INCLUDING THE LOCAL JURISDICTION INSPECTIONS. OBTAIN ALL APPROVALS..

CONTRACTOR TO SUBMIT ALL SHOP DRAWINGS INCLUDING DETAILED DEVICE LAYOUTS, RISER DIAGRAMS, SUPPORT DETAILS, EQUIPMENT SUBMITTALS, BATTERY CALCULATIONS, ETC. PROVIDE WITHIN THE FIRST (3) WEEKS OF PROJECT CONSTRUCTION KICK-OFF. ALLOW FOR A MINIMUM OF FIVE (5) BUSINESS DAYS FOR ENGINEER REVIEW AND COMMENTS. PROVIDE (3) HARD COPIES OF ALL SHOP DRAWINGS TO ENGINEER FOR THEIR USE IN REVIEW AND APPROVAL.

SYMBOL LIST	
	NEW ADDRESSABLE PULL STATION
	EXISTING PULL STATION TO REMAIN
	NEW ADDRESSABLE FIRE ALARM HORN/STROBE
	EXISTING FIRE ALARM HORN/STROBE TO REMAIN
	EXISTING FIRE ALARM HORN/STROBE TO BE REMOVED
	NEW ADDRESSABLE FIRE ALARM STROBE
	EXISTING SMOKE DETECTOR TO REMAIN
	EXISTING SMOKE DETECTOR TO BE REMOVED
	RELOCATED SMOKE DETECTOR
	NEW ADDRESSABLE SMOKE DETECTOR
	NEW ADDRESSABLE SMOKE DETECTOR ABOVE CEILING
	RELOCATED SMOKE DETECTOR
	REMOVED SMOKE DETECTOR
	NEW ADDRESSABLE HEAT DETECTOR
	NEW ADDRESSABLE CARBON MONOXIDE DETECTOR W/SOUNDING BASE
	EXISTING CARBON MONOXIDE DETECTOR W/SOUNDING BASE TO BE REMOVED
	NEW ADDRESSABLE COMBINATION SMOKE/CARBON MONOXIDE DETECTOR W/SOUNDING BASE
	EXISTING BELL TO BE REMOVE
	RELOCATED BELL
	NEW ADDRESSABLE RELAY
	EXISTING RELAY TO BE REMOVED
	NEW ADDRESSABLE FIRE ALARM CONTROL PANEL CENTRAL STATION CONNECTION
	NEW ADDRESSABLE FIRE ALARM REMOTE ANNUNCIATOR PANEL
	NEW ADDRESSABLE TAMPER SWITCH
	NEW ADDRESSABLE FLOW SWITCH
	NEW ADDRESSABLE DUCT SMOKE DETECTOR
	NEW ADDRESSABLE DOOR RELEASE
	NEW ADDRESSABLE RELAY
	EXISTING ABOVE CEILING SMOKE DETECTOR
	EXISTING OR RELOCATED REMOTE INDICATING LIGHT
	RELOCATED FIRE BELL
	REMOVE FIRE BELL
	NEW
	REMOVE
	RELOCATED
	EXISTING
	NEW, ABOVE CEILING

GENERAL FIRE ALARM NOTES

- FIRE ALARM WIRING DIAGRAMS SHOWN ARE FOR GENERAL ARRANGEMENT ONLY. ELECTRICAL CONTRACTOR SHALL VERIFY EXISTING FIELD CONDITIONS AND OBTAIN POINT TO POINT WIRING DIAGRAM FROM FIRE ALARM VENDOR PRIOR TO INSTALLATION.
- HORNS SHALL BE COMPATIBLE WITH EXISTING SYSTEM AND TAPPED TO PROVIDE 15 db ABOVE THE AMBIENT NOISE LEVEL. UNLESS OTHERWISE NOTED, SPEAKERS SHALL BE TAPPED AT 1 WATT MINIMUM IN OFFICE AREAS. CONTRACTOR SHALL PERFORM SOUND POWER TESTING BEFORE AND AFTER THE INSTALLATION IS COMPLETE AND SHALL ADJUST TAP SETTING AS REQUIRED TO OBTAIN THE REQUIRED SOUND LEVEL.
- WALL MOUNTED HORNS BELLS UNITS SHALL BE LOCATED AT A MAXIMUM OF 80 INCHES ABOVE FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
- ALL FIRE ALARM CABLE SHALL BE RUN IN CONDUIT BELOW 8'-0" OR WHERE EXPOSED.
- PROVIDE DOUBLE DEEP DEVICE BOXES FOR ALL WALL MOUNTED COMBINATION SPEAKER/STROBE DEVICES.
- ALL FIRE ALARM DEVICES SHALL BE FLUSH MOUNTED, UNLESS OTHERWISE NOTED.
- UNLESS OTHERWISE DIRECTED AND PRIOR TO THE COMMENCEMENT OF WORK, ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FILING PLANS AND NECESSARY DOCUMENTS WITH NYC BUILDING DEPARTMENT. WHEN REQUIRED, THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER TO SIGN AND SEAL THE DOCUMENTS. ENGINEER'S NAME SHALL BE SUBMITTED TO THE DESIGN ARCHITECT AND ENGINEER FOR APPROVAL.
- ELECTRICAL CONTRACTOR SHALL FILE SIGNED AND SEALED PLANS TO THE LOCAL BUILDING DEPARTMENT. ELECTRICAL CONTRACTOR SHALL THEN ACCOMPANY THE FIRE DEPARTMENT INSPECTOR DURING HIS INSPECTION OF THE SYSTEM. MAKE ALL ADJUSTMENTS REQUIRED BY THE INSPECTOR RESULTING FROM ISSUANCE OF "NOTICE OF DEFECTS" AND REQUEST FOR ADDITIONAL APPROVAL IS RECEIVED FROM THE FIRE DEPARTMENT.
- PERMITS AND APPROVALS NECESSARY FOR INSTALLATION OF THE WORK SHALL BE OBTAINED PRIOR TO THE COMMENCEMENT OF THE WORK. ALL PERMIT COSTS AND INSPECTION FEES SHALL BE INCLUDED AS PART OF THIS CONTRACTOR.
- ALL FIRE ALARM CABLES SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:
 - A MINIMUM TEMPERATURE RATING OF 150°C
 - A MINIMUM AVERAGE INSULATION THICKNESS OF 15 MILS.
 - A MINIMUM AVERAGE JACKET THICKNESS OF 25 MILS.
 - THE COLOR OF THE CABLE SHALL BE RED.
 - THE CABLE SHALL BE TYPED FPLP (PLENUM TYPE)
 - THE CABLE SHALL BE VISIBLY MARKED EXTERNALLY "CLASS "E" FIRE ALARM". THE CABLE SHALL MEET THE ABOVE REQUIREMENTS AND HAS UL 1424 AND UL 910 LISTING.
- ALL FINAL CONNECTIONS SHALL BE BY BUILDING FIRE ALARM SYSTEM VENDOR. THIS ELECTRICAL CONTRACTOR SHALL INCLUDE ALL FIRE ALARM VENDOR FEES FOR RE-PROGRAMMING AND TIE-INS IN HIS BID.
- ALL EXISTING FIRE ALARM WIRING TO BE REMOVED AND NEW, PLENUM RATED WIRING TO BE INSTALLED

FIRE ALARM NOTES:

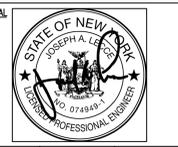
- ALL DEVICES ARE NEW UNLESS OTHERWISE NOTED. PROVIDE ALL NECESSARY WIRING AS REQUIRED BY MANUFACTURER FOR COMPLETE OPERABLE SYSTEM. ALARM INSTALLATION AND COMPONENTS SHALL COMPLY WITH LOCAL & NYS AND ICC BUILDING CODES AND ALL NFPA REQUIREMENTS. PROVIDE NEW WIRING FOR ALL NEW FIRE ALARM DEVICES. ALL WIRING TO BE PLENUM RATED AND PER NEC LATEST EDITION FOR FIRE ALARM WIRE.
- ALL BOXES FOR FIRE ALARM AND SMOKE DETECTION SYSTEM SHALL BE PAINTED WITH RED ENEMAL PAINT.
- REFER TO FLOOR PLAN DRAWINGS FOR EXACT QUANTITIES, TYPES AND LOCATION OF ALL DEVICES
- COORDINATE EXACT LOCATION & ROUTING OF ALL CONDUITS WITH OTHER TRADES.
- ALL FIRE ALARM SYSTEMS ARE ADDRESSABLE.
- PROVIDE ALL PROGRAMMING OF NEW AT HEAD END FACP. UN-PROGRAM ALL DEVICES BEING REMOVED
- CONNECT ALL NEW SECURITY DEVICES TO FIRE ALARM SYSTEM TO FAIL SAFE IN EVENT OF AN ALARM
- REMOVE ALL EXISTING FIRE ALARM DEVICES (UNLESS SHOWN TO REMAIN) AND DE-PROGRAM FROM SYSTEM FOR ALL DAMPERS THAT ARE TO BE REMOVED.
- REMOVE ALL FIRE ALARM WIRING AT AREA OF WORK AND INSTALL NEW

FIRE ALARM SEQUENCE OF OPERATION:

- ACTIVATION OF EXISTING OR NEW SMOKE, DUCT, HEAT, FLOW SWITCH DETECTOR, PULL STATION, SHALL AUTOMATICALLY:
 - SOUND HORNS & INITIATE STROBES.
 - AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FACP.
 - EACH AUTOMATIC ALARM INITIATING DEVICE SHALL BE ANNUNCIATED IN TEXT AT THE FACP.
 - INITIATE SECURITY SYSTEM TO FAIL SAFE POSITION.
 - SHUT DOWN EXISTING AND ALL NEW AC UNITS.
 - SEND SIGNAL TO CENTRAL STATION.
 - RECALL ELEVATORS.

**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY**

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: NONE	DATE: 05/21/20	PROJECT NO.: #2020-084
DRAWN BY: DK	CHECKED BY: JL	APPROVED BY:
DRAWING TITLE: FIRE ALARM SYMBOLS & NOTES		

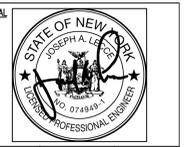
DRAWING NO: **FA-001**

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM OF THE PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
 THESE PLANS ARE INSTRUMENTS OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFRINGEMENT WILL BE PROSECUTED. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND BE RESPONSIBLE FOR FIELD FIT AND QUANTITY OF WORK.
 NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.



**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
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 MAMARONECK, NY**

NO.	ISSUE	DATE
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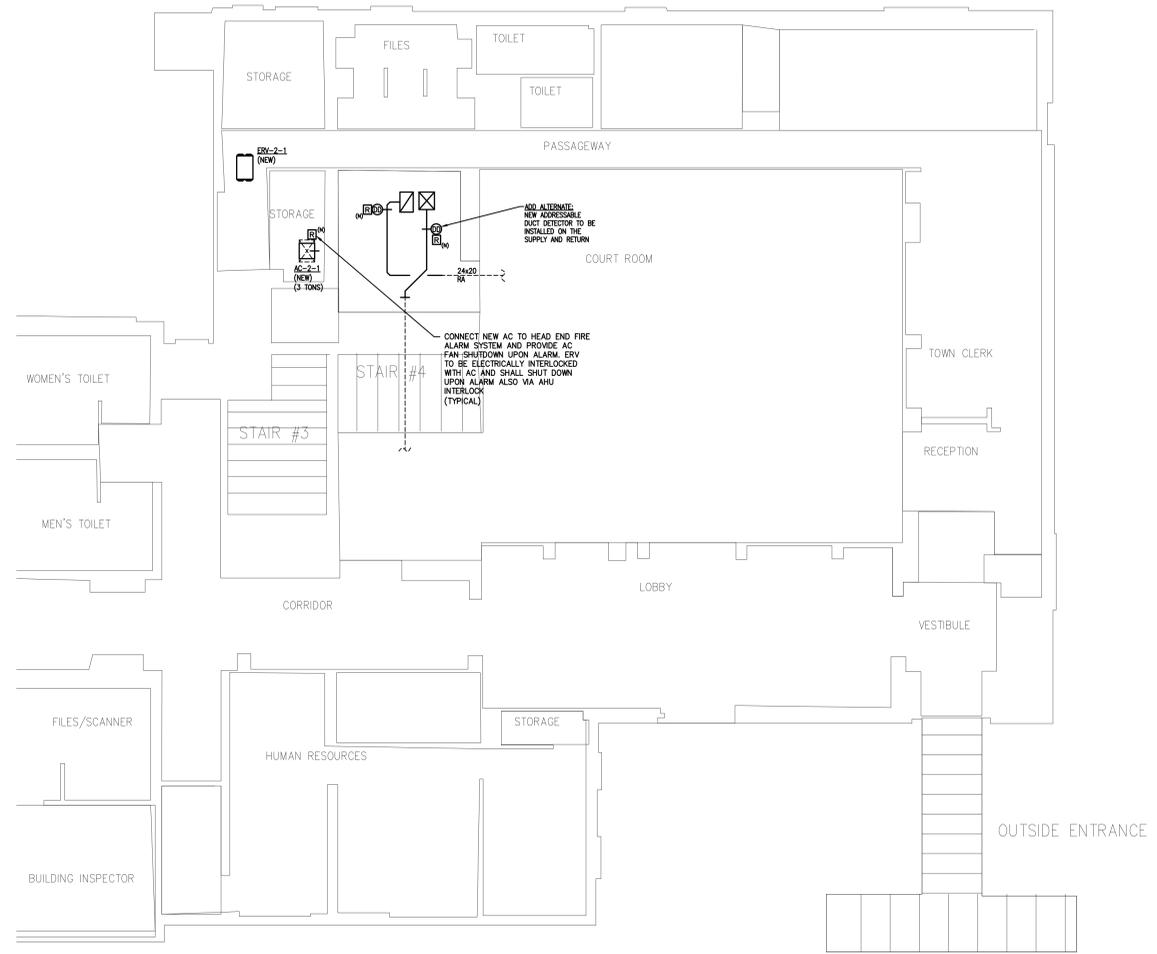
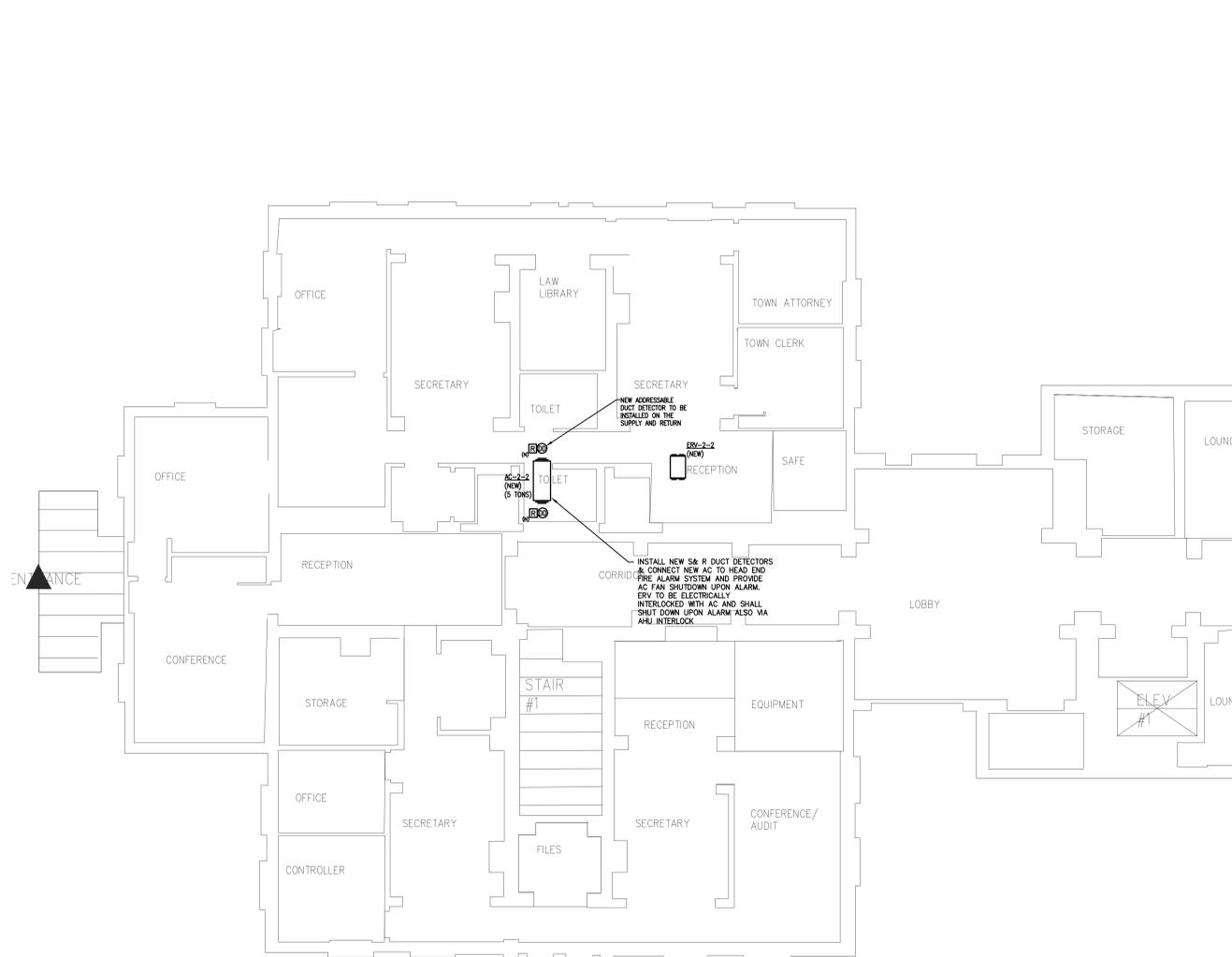


SCALE: 1/8"=1'-0" DATE: 05/21/20 PROJECT NO.: #2020-054
 DRAWN BY: EB CHECKED BY: JL APPROVED BY:

DRAWING TITLE:
**FIRE ALARM PLAN
 1ST LEVEL**

DRAWING NO.:
FA-301

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THE PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 2209 OF THE NEW YORK STATE EDUCATION LAW.
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**PROPOSED A/C UNIT REPLACEMENT FOR
 MAMARONECK COURT CLERK
 TOWN OF MAMARONECK
 1ST, 2ND, AND 3RD LEVEL
 740 WEST BOSTON POST ROAD
 MAMARONECK, NY**

NO.	ISSUE	DATE
1.	ISSUED FOR REVIEW	01/14/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21



SCALE: 1/8"=1'-0" DATE: 05/21/20 PROJECT NO.: #2020-084
 DRAWN BY: EB CHECKED BY: JL APPROVED BY:
 DRAWING TITLE:
**FIRE ALARM PLAN
 2ND LEVEL**

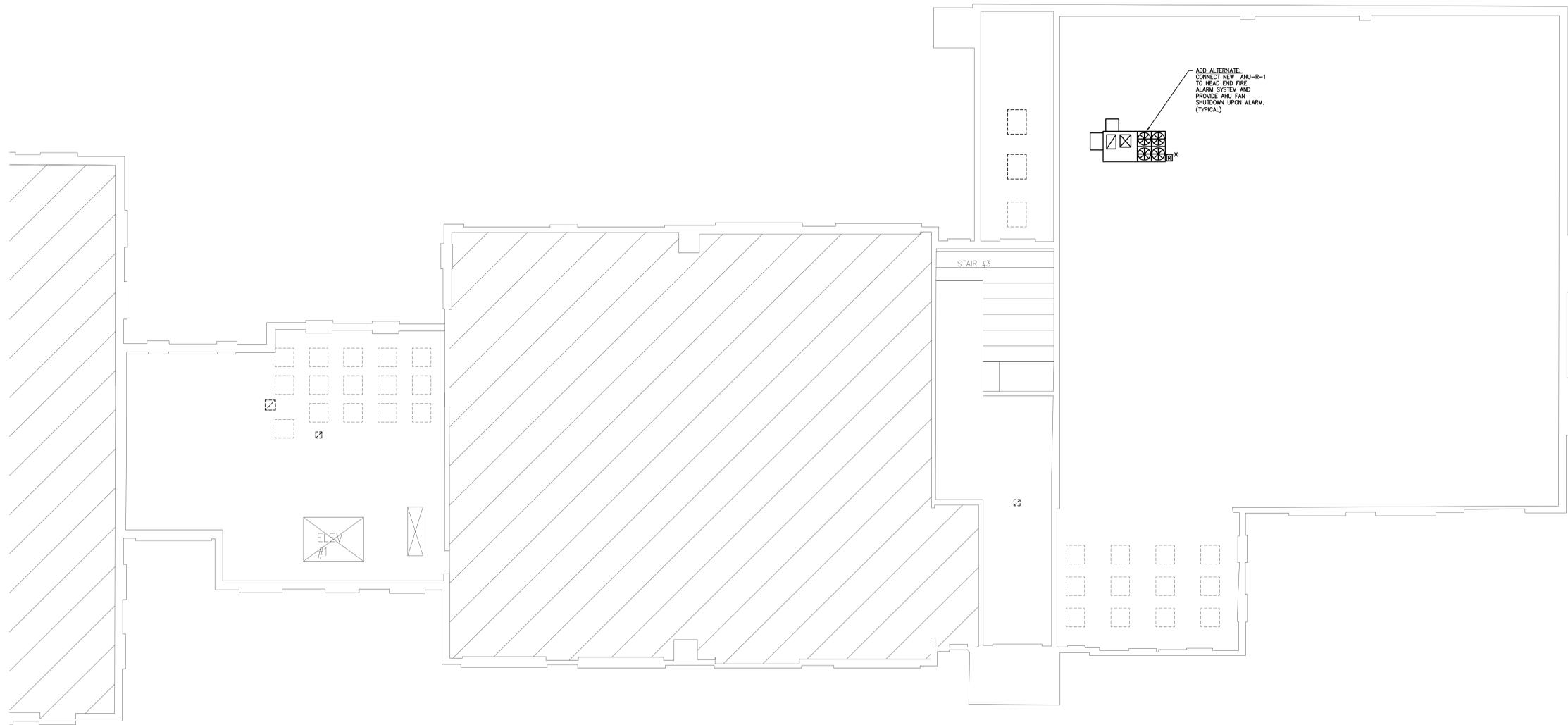
DRAWING NO:
FA-302

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM OF THE PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
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ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

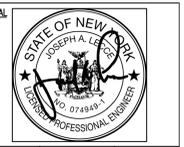
NOTES:
 1. AT ROOF LEVEL, ALL FIRE ALARM WIRING TO BE INSTALLED IN RIGID STEEL CONDUIT.

ADD ALTERNATE:
 CONNECT NEW AHU-R-1 TO HEAD END FIRE ALARM SYSTEM AND PROVIDE AHU FAN SHUTDOWN UPON ALARM. (TYPICAL)



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3.	ISSUED FOR BIDDING AND PERMIT	05/19/21



SCALE: 1/8"=1'-0" DATE: 05/21/20 PROJECT NO.: #2020-054
 DRAWN BY: EB CHECKED BY: JL APPROVED BY:

DRAWING TITLE:
**FIRE ALARM PLAN
 ROOF LEVEL**

DRAWING NO.:
FA-304

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THE PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE 145-SUBSECTION 2209 OF THE NEW YORK STATE EDUCATION LAW.
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