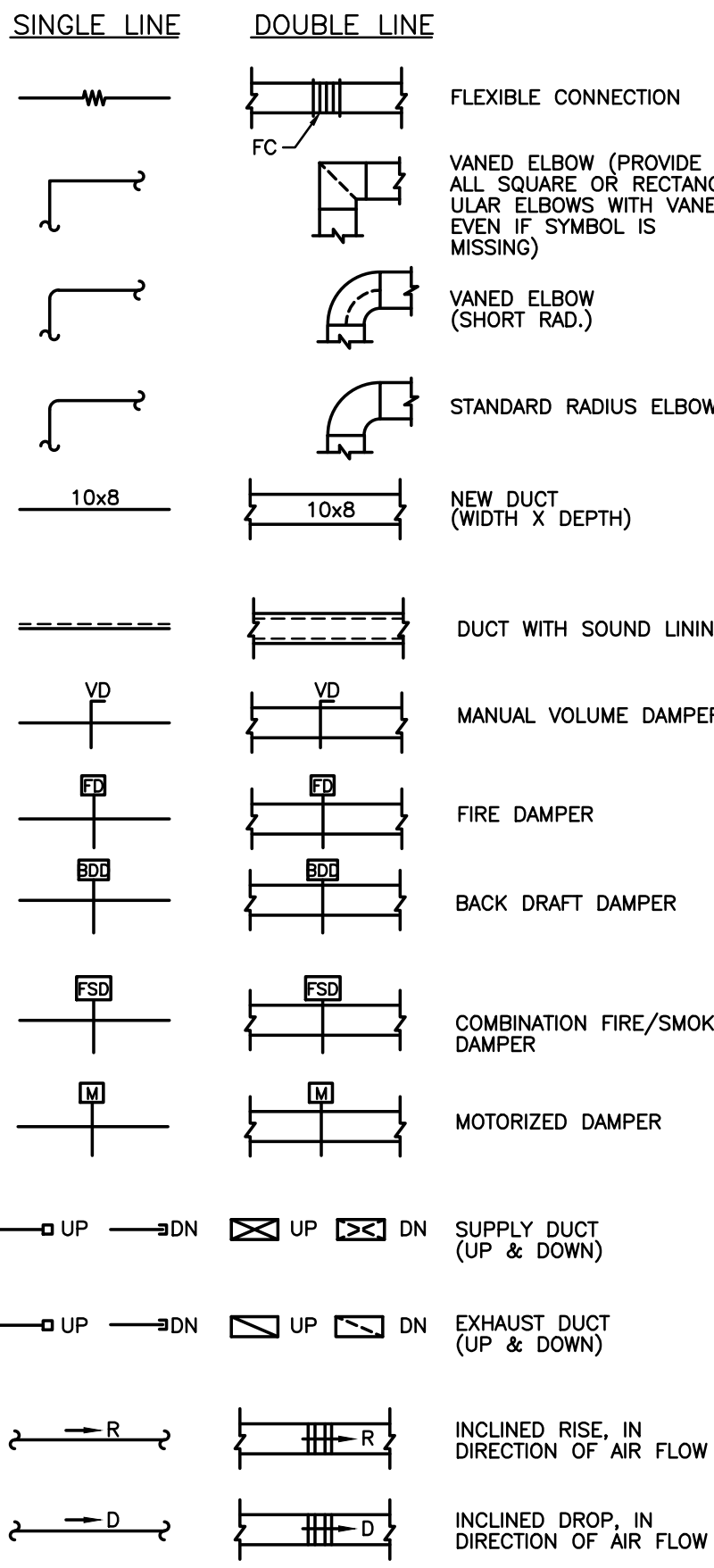


GENERAL NOTES:

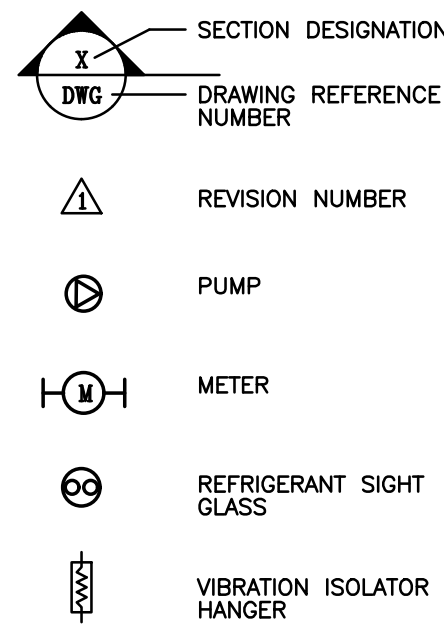
1. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR 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.
2. ALL DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICES FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS SUBJECT TO APPROVAL OF ENGINEER.
3. 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.
4. 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.
5. 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.
6. 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 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.
7. 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
8. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT, AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.
9. 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.
10. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL. SEE SPECIFICATIONS
11. 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.
12. 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.
13. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
14. 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.
15. 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.
16. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED.
17. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED 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 FAMILAR 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.
18. PROVIDE ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE AND SAFE INSTALLATION OF HVAC IN FULL CONFORMITY 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.
19. 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:

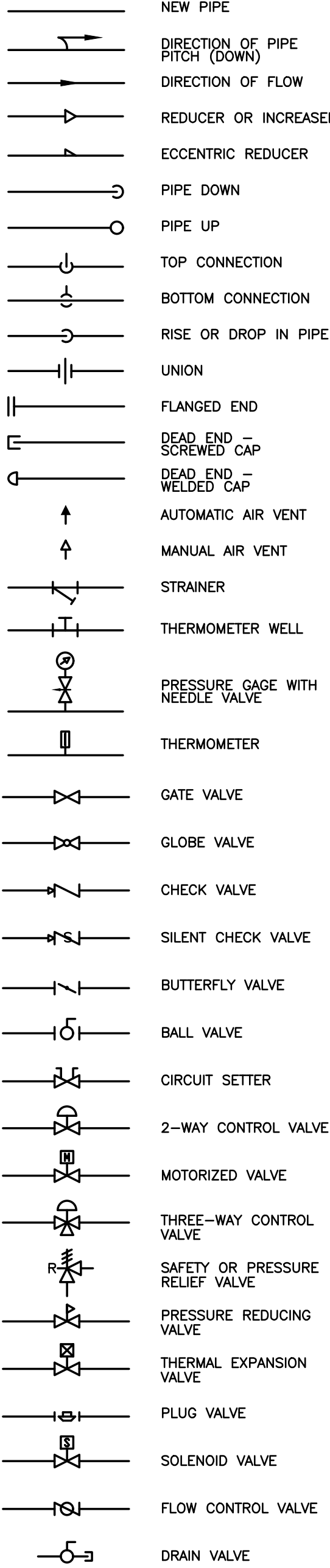
DUCTWORK SYMBOLS



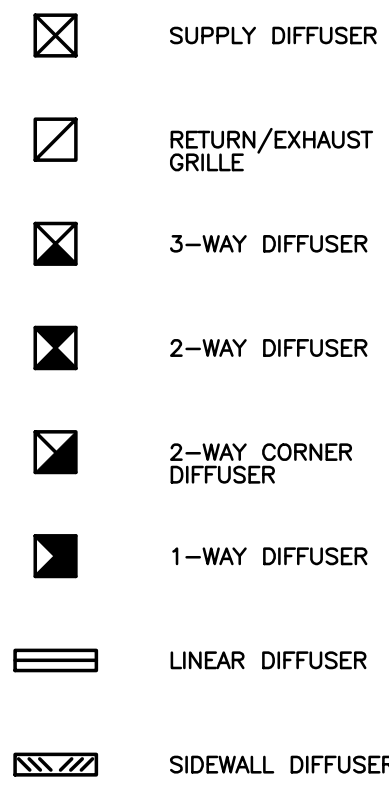
GENERAL SYMBOLS



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
BOP	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		
ELE	ELEVATION	OAI	OUTSIDE AIR INTAKE		
ELEC	ELECTRIC	ODB	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.	PD	PRESSURE DROP		
EXH	EXHAUST	PH	PHASE		
EXP	EXPANSION	PRV	PRESSURE REDUCING VALVE		
F	FILTER, FAN	PSI	POUNDS PER SQUARE INCH		
°F	DEGREES FAHRENHEIT	PSIA	POUNDS PER SQUARE INCH ABSOLUTE		
FA	FREE AREA	PSIG	POUNDS PER SQUARE INCH GAUGE		
FC	FLEXIBLE CONNECTION, FAN COIL	PVC	POLYVINYL CHLORIDE		
FD	FIRE DAMPER, FLOOR DRAIN	R	RISE		
FLA	FULL LOAD AMPS	RA	RETURN AIR		
FPM	FEET PER MINUTE	RE	RELOCATED POSITION OF EXISTING EQUIPMENT		
FPS	FEET PER SECOND	RF	RETURN FAN		
FSD	FIRE/SMOKE DAMPER	RH	RELATIVE HUMIDITY		
FT	FEET	RHC	REHEAT COIL		
FV	FACE VELOCITY	RM	ROOM		
		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:

1. INTERNATIONAL BUILDING CODE 2018, INCLUDING 2020 NYS SUPPLEMENTAL CODE.
2. INTERNATIONAL MECHANICAL CODE 2018, INCLUDING 2020 NYS SUPPLEMENTAL CODE.
3. NY STATE CODE CODE 2020, INCLUDING LATEST SUPPLEMENTS.
4. NY STATE ENERGY CONSERVATION CODE 2020, BASED ON 2018 IECC.
5. NEW YORK STATE FIRE CODES 2020 INCLUDING LATEST SUPPLEMENTS

SHOP DRAWINGS

1. 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

1. 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

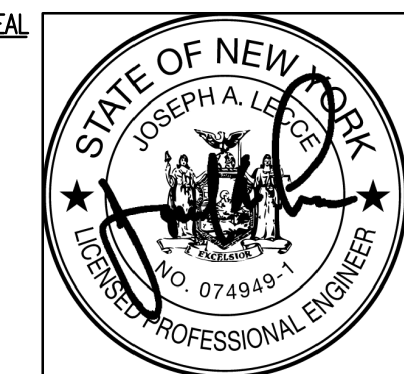
MEP ENGINEER
Lecce Engineering
Joseph A. Lecce P.E., P.C.
397 WALL STREET 21ST FLOOR
NEW YORK, NY 10037
(212) 419-4663

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

PROJECT:

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

SEAL



SCALE: NONE DATE: 08/21/20 PROJECT NO.: F2020-084
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 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 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.

NOTES:

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

NOTES

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

NOTE:

1. ALL UNITS TO BE EQUIPPED WITH LOW AMBIENT TEMP. PROTECTION CAPABILITY.	9. REFRIGERANT IS R410A
2. PROVIDE ACUSTICAL ROOF CURBS	10. PROVIDE HOT GAS BYPASS
3. AHU TO BE SUITED FOR OUTDOOR USE. COLOR BY ARCHITECT.	11. COMPRESSORS TO HAVE 5 YEAR WARRANTY
4. BASED ON 90°F AMBIENT TEMPERATURE	12. ADJUSTABLE V-BELT DRIVE
5. PROVIDE WITH BUILT IN FERV	13. PROVIDE WEATHERHOOD FOR OAI
6. PROVIDE VARIABLE POSITION RETURN, EXHAUST & OAI DAMPER	14. PROVIDE 2" PLEATED FILTERS FOR EACH AC UNIT, MERV-13, ALL FILTERS TO BE UL-900 LISTED.
7. PROVIDE REMOTE CONTROL SYSTEM BACK-NET CAPABLE TO EXISTING HONEYWELL DDC	15. PROVIDE AHU-R-1 WITH VARIABLE FREQUENCY DRIVE
8. NOT USED	

NOTE:

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

350 Seventh Ave. • SUITE 1501, NEW YORK NY 10001 • 212-643-7700, ECOCARENY@AOL.COM
605 East 132nd St. • 2nd FL., BRONX NY 10454 • 917-273-7657, IMPROVEYOURAIR@GMAIL.COM

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[illegible]

MEP ENGINEER
Lecce Engineering
Joseph A. Lecce P.E., P.C.

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

ED FOR REVIEW
ED FOR REVIEW
ED FOR BID AND PERMIT

Professional Engineer Seal for Joseph A. Leone, State of New York, License No. 074949-1.

DRAWING NO:

M-101

MECHANICAL SPECIFICATIONS:

GENERAL REQUIREMENTS:

- A. INSTALL ALL NEW WORK IN A NEAT WORKMANLIKE MANNER READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR.
- CODES, PERMITS AND INSPECTIONS:

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. CONTRACTOR IS TO INFORM ENGINEER OF ANY EXISTING WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS AND THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED AT CONTRACTOR'S EXPENSE BY THIS CONTRACTOR AND AT NO EXPENSE TO THE OWNER.
2. THIS CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IF REQUIRED AND OBTAIN ALL EQUIPMENT USE PERMITS AS REQUIRED BY STATE AND LOCAL AUTHORITIES. PERMITS SHALL BE TURNED OVER TO OWNER AT JOB COMPLETION.

- 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 SPRINKLER 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.
2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND APPROXIMATE LOCATION OF EQUIPMENT. REFERENCE TO ARCHITECT'S DRAWINGS FOR ALL DIMENSIONS AND COORDINATE FINAL LOCATIONS OF DIFFUSERS, GRILLES, REGISTERS, THERMOSTATS, SENSORS, SWITCHES AND ANY WALL MOUNTED DEVICES. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT. ANY CONFLICTS, THE MORE STRINGENT SITUATION SHALL APPLY.
3. IF A CONFLICT OCCURS IN THE SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.
4. ANY EQUIPMENT, PARTS, MATERIALS, ACCESSORIES, OR LABOR THAT IS NECESSARY FOR PROPER PERFORMANCE OF THE MECHANICAL WORK ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, SHALL BE FURNISHED AND INSTALLED WITHOUT ADDITIONAL COSTS.

- 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. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP AND OPERATION OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNER'S PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE SYSTEM.
2. THE 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.
5. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION" VIA DOCUMENT A201, LATEST EDITION, OR AS REQUIRED BY THE ARCHITECT DOCUMENTS, AND/OR OF THE STRUCTURAL ENGINEER'S DOCUMENTS, AS APPLICABLE, ARE PART OF THIS CONTRACT.

- 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 BY ALL OTHER EQUIPMENT AND OPERATIONS IN ANY WAY AFFECTED BY THE REMOVAL IS TO REMAIN IN PLACE. PROVIDE ALL NECESSARY COMPONENTS TO MAINTAIN SUCH OPERATION.

- SCOPE OF WORK:
- 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,UVGI LIGHTS, ETC.).

6. INSULATION OF PIPING, EQUIPMENT AND 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 SAVING BEFORE FILING.

COORDINATION WITH BUILDING MANAGEMENT

- 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 INTERUPTIONS 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.

SHOP DRAWINGS

- 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,UVGI LIGHTS, ETC.)
6. AIR OUTLETS (DIFFUSERS, REGISTERS, GRILLES, ETC.)
7. AUTOMATIC TEMPERATURE CONTROL DIAGRAMS, DEVICES AND SEQUENCE OF OPERATION.

- 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 SUBSTITUTE MATERIALS. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN EXPLANATION WHY A SUBSTITUTE 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 AT HIS OWN EXPENSE. ANY MODIFICATIONS 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 SUBSTITUTE.

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 COORDINATED 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 REQUIREMENTS 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.
- C. CONTRACTOR SHALL SUPPLY THE RECORD DRAWINGS IN THE LATEST AUTOCAD FORMAT.

- MAINTENANCE MANUALS:
- 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. MANUFACTURERS' 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 OF ALL CONCEALED EQUIPMENT, DEVICES, VALVES, DAMPERS AND CONTROLS. CONTRACTOR SHALL ARRANGE FOR THE INSTALLATION OF ALL ACCESS DOORS 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. 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 BY ALL OTHER EQUIPMENT AND OPERATIONS IN ANY WAY AFFECTED BY THE REMOVAL IS TO REMAIN IN PLACE. PROVIDE ALL NECESSARY COMPONENTS TO MAINTAIN SUCH OPERATION.

- 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, SUPPLEMENTAL STEEL AND ANCHORS AS REQUIRED TO INSTALL PIPING SYSTEM SIZED 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, BRANCH PIPING OVER 15 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 PARTS, RAILS, 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 DEFLECTION.
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 80% 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 SERVICING 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 SMACNA. 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 DUCT 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 FOIL-KRAFT FLAME RESISTANT VAPOR BARRIER.
- C. EXPOSED DUCTWORK:
1. INSULATE EXPOSED SUPPLY, RETURN, FRESH AIR DUCTS, AND EXPOSED PLENUM WITH 2" THICK, SEMI-RIGID FIBROUS GLASS BOARDS WITH FACTORY APPLIED FIRE RETARDANT F. REINFORCED 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 FOIL KRAFT FLAME RESISTANT VAPOR BARRIER. APPLY TWO (2) COATS OF WEATHERPROOF MASTIC AND EMBED INTO WEAT 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 EACH SIDE TO AVOID TRAPPING OF WATER IN THE CENTER.

EQUIPMENT INSULATION

- A. PROVIDE FIBROUS GLASS BOARD, 2 INCH THICK, 6 LB. DENSITY, FOIL-SCRM 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 REGULAR SHAPED EQUIPMENT: IMPILE 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-RESISTING ELASTIC, 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 90 DEGREE ANGLES.
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 R50EFT WITH A 1/8 CU. FT. DENSITY WITH A THERMAL CONDUCTIVITY OF NOT OVER 0.23 AT 75E° 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 AS/J52-H PIPE INSULATION.
- B. INSULATION FOR FITTINGS, FLANGES, AND VALVES: PROVIDE INSULATION FOR FITTINGS, FLANGES, AND VALVES PREMOULDED, PRECUT, OR FIBERGLASS OF THE SAME THICKNESS AND CONDUCTIVITY AS USED ON ADJACENT PIPING.
- C. INSULATE INSULATION FOR PIPING, FITTINGS, FLANGES AND VALVES OF THE THICKNESSES LISTED BELOW.

INSULATION THICKNESS FOR PIPE SIZES (INCHES)

SERVICE	MATERIAL	1" AND LESS	1 1/4" TO 1 1/2"	2"	2 1/2"	3"	4"	6"	8" OR LARGER
HOT WATER SUPPLY & RETURN UP TO 220 DEG. F.	FIBERGLASS	2"	2"	2"	2"	2"	2"	2"	2-1/2"
REFRIGERANT (BELOW 40 DEG. F.)	FIBERGLASS	1"	1"	1"	1"	1-1/2"	1-1/2"		
COLD WATER CONDENSATE DRAINS	FIBERGLASS	1"	1"	1"	1"	1"	1"		

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 BRONZE 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; VINYL-COVERED STEEL LEVER HANDLE WITH MEMORY STOP. STEM EXTENSION FOR VALVES INSTALLED IN INSULATED PIPING.
2. PLUG VALVES: MSS SP-78, 150-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 INCH 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. PROVIDE 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 PIPING SHALL BE PROPERLY MARKED AT THE MILL FOR PROPER IDENTIFICATION WITH NAME OR SYMBOL OF MANUFACTURER.
- C. PIPE APPLICATION SCHEDULE:

SERVICE	SIZE	MATERIAL	WEIGHT	STANDARD	JOINT TYPE
COLD CONDENSATE DRAINS, MISCELLANEOUS DRAINS AND OVERFLOWS	ALL	HARD COPPER	TYPE L	ASTM B8 OR A106 SEAMLESS GRADE B	BRAZE OR SILVER SOLDER
HOT WATER TO 220 DEG. F.	2" AND BELOW	BLACK STEEL	SCHEDULE 40	ASTM A53 OR A106 SEAMLESS GRADE B	SOCKET WELD

SERVICE	SIZE	MATERIAL	WEIGHT	STANDARD	JOINT TYPE
COLD WATER MAKEUP AND FILL	4" AND BELOW	HARD COPPER	TYPE L	ASTM B88	BRAZE OR SILVER SOLDER
	2-1/2" TO 10"	BLACK STEEL	SCHEDULE 40	ASTM A53 OR A106 SEAMLESS GRADE B	WELDED
	12" AND ABOVE UP TO 250 PSIG	BLACK STEEL	STANDARD	ASTM A53 OR A106 SEAMLESS GRADE B	WELDED
	12" AND ABOVE UP TO 250 PSIG	BLACK STEEL	XS EXTRA STRENGTH	ASTM A53 OR A106 SEAMLESS GRADE B	WELDED

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

PIPE MATERIAL	PIPE SIZE INCHES	JOINT TYPE	FITTING MATERIAL	FITTING CLASS
BLACK STEEL	2" AND SMALLER	THREADED, THREADED FLANGE	CAST IRON,	125,
BLACK STEEL	2-1/2" AND LARGER	THREADED SOCKET WELD ENDS	MALLEABLE IRON, FORGED STEEL	150 AND 300 2,000 LBS
		BUTT-WELDED	WROUGHT STEEL	SAME WEIGHT AS PIPING 150
		WELD NECK FLANGES AND FLANGED FITTINGS WROUGHT STEEL	WROUGHT STEEL	

BLACK STEEL	BRANCH CONNECTIONS	MAIN TO 2 PIPE SIZES SMALLER	USE WELD TEES
		3 OR MORE PIPE SIZES SMALLER THAN MAIN (UP TO BRANCH PIPE CONNECTION SIZE OF 2-1/2"	

GALV. STEEL	2" AND SMALLER	THREADED	AND GALVANIZED MALLEABLE IRON	150
	2-1/2" LARGER	FITTINGS SAME AS FOR BLACK STEEL PIPES EXCEPT ALL GALVANIZED FITTINGS		

COPPER TUBING HARD DRAIN TYPE K OR L	4" AND SMALLER	SOLDER 95-5 TIN ANTIMONY ASTM B32-OR-95TA OR SILVER SOLDER ASTM B226 OR 62-36-2 OR BRONZING <th>WROUGHT COPPER<th>300 PSIG AT 100 DEG F., 150 PSIG AT 250 DEG F.</th></th>	WROUGHT COPPER <th>300 PSIG AT 100 DEG F., 150 PSIG AT 250 DEG F.</th>	300 PSIG AT 100 DEG F., 150 PSIG AT 250 DEG F.
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		BRAZING		WROUGHT COPPER	450 PSI DEG F. DEG F. AT 250
COPPER TUBING HARD DRAWN REFRIGERANT SYSTEMS TYPE	4" AND SMALLER	SOLDER 15-5-80 SILVER PHOSPHOROUS COPPER AWS A5.8 OR BRAZING	WROUGHT COPPER	STANDARD	

E. PROVIDE ELECTRIC 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 MESS 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 PIPE 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 PIPE 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 (JUNK 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.

B. 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. 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

NOTES:

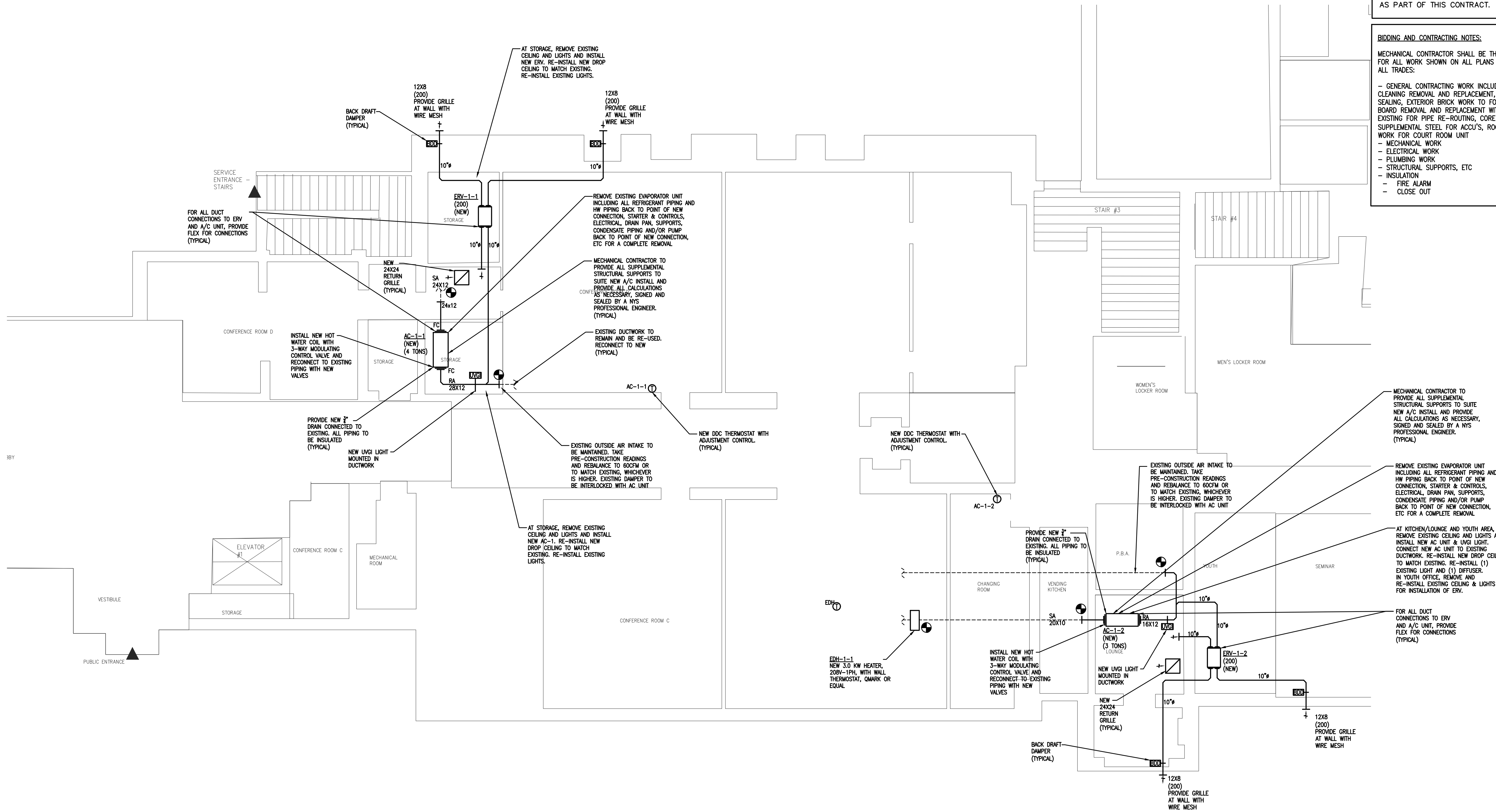
1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL BUILDING RULES AND REGULATIONS.
2. PROVIDE NEW DDC CONTROLLER AND DDC WALL THERMOSTAT FOR EACH NEW AC UNIT & TIE INTO BUILDING DIGITAL CONTROL SYSTEM(HONEYWELL BMS)
3. PROVIDE AND INSTALL CONDENSATE PUMP AND 3/4" INSULATED PIPING FOR A/C UNITS TO DISCHARGE 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 LOUVERS, COP 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



MECHANICAL CONTRACTOR TO PROVIDE ALL SUPPLEMENTAL 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 KITCHEN/LOUNGE AND YOUTH AREA, REMOVE EXISTING CEILING AND LIGHTS AND INSTALL NEW AC UNIT & DUCT. CONNECT NEW AC UNIT TO EXISTING DUCTWORK. RE-INSTALL NEW DROP CEILING TO MATCH EXISTING. RE-INSTALL (1) EXISTING LIGHT AND (1) DIFFUSER IN YOUTH OFFICE. REMOVE AND RE-INSTALL EXISTING CEILING & LIGHTS FOR INSTALLATION OF ERV.

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

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

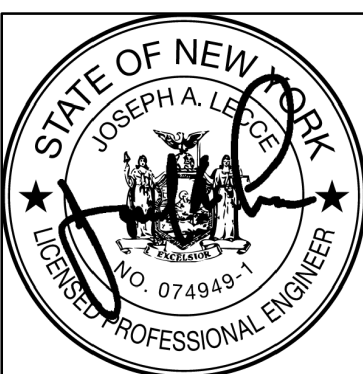
NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

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

PROJECT:

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

SEAL



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

DRAWING NO:

M-301

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

MECHANICAL CONTRACTOR TO PROVIDE ALL SUPPLEMENTAL 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 PANS, SUPPORTS, CONDENSATE PIPING AND/OR PUMP BACK TO POINT OF NEW CONNECTION, ETC FOR A COMPLETE REMOVAL

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

NEW 24X24 RETURN GRILLE (TYPICAL)

10X6 (50) PROVIDE GRILLE AT WALL WITH WIRE MESH

10X6 (50) PROVIDE GRILLE AT WALL WITH WIRE MESH

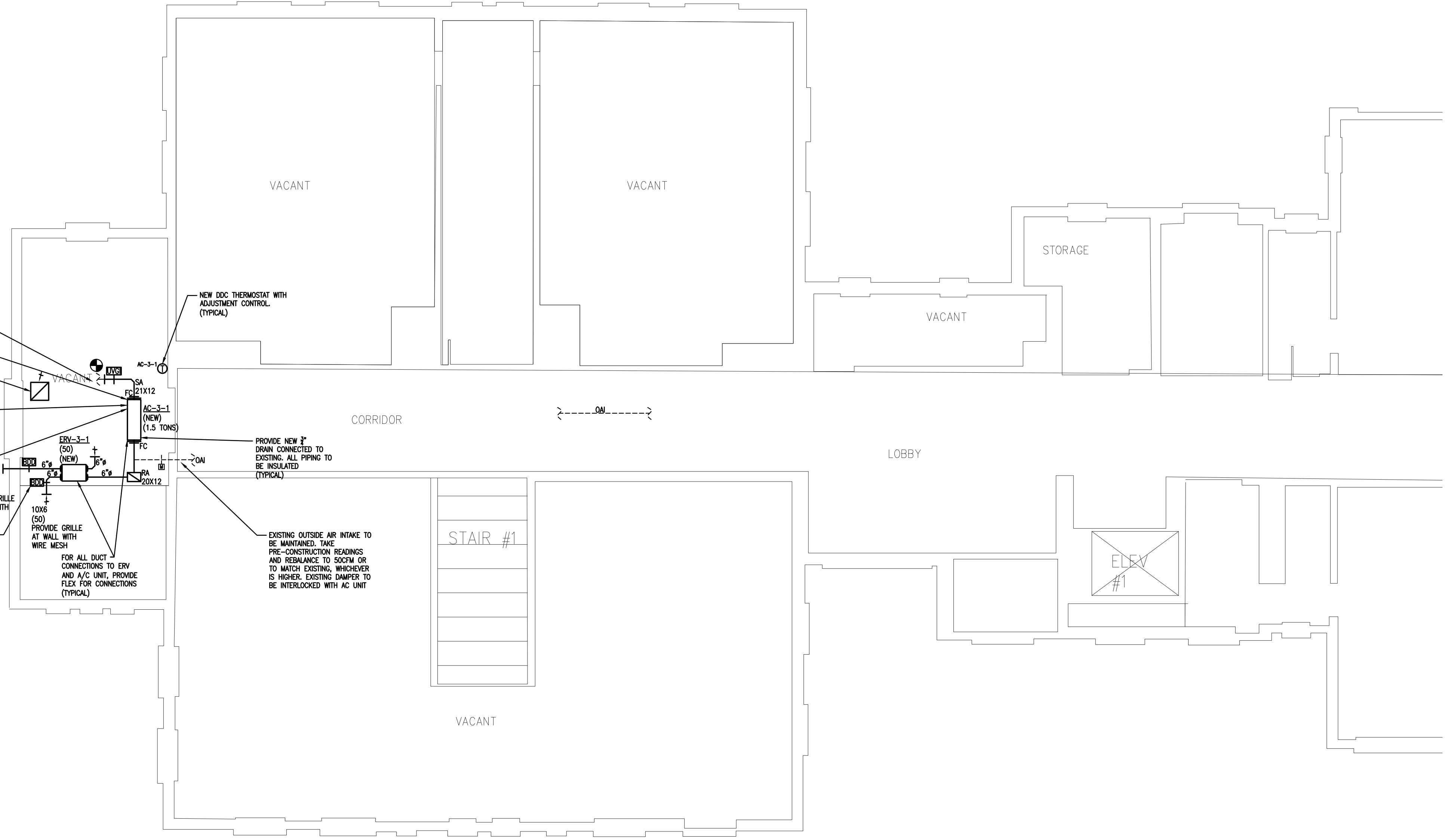
FOR ALL DUCT CONNECTIONS TO ERV AND A/C UNIT, PROVIDE FLEX FOR CONNECTIONS (TYPICAL)

NEW DDC THERMOSTAT WITH ADJUSTMENT CONTROL (TYPICAL)

AC-3-1 (NEW) (1.5 TONS)

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 REBALANCE TO SUCH OR TO MATCH EXISTING, WHICHEVER IS HIGHER, EXISTING DAMPER TO BE INTERLOCKED WITH AC UNIT



- 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 1/2" 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 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 LOUVERS, GYP BOARD REMOVAL AND REPLACEMENT WITH PAINTING TO MATCH EXISTING FOR PIPE RE-ROUTING, CORE DRILLS, SUPPLEMENTAL STEEL FOR ACCU'S, ROOF CURES & ROOF WORK FOR COURT ROOM UNIT
- MECHANICAL WORK
- ELECTRICAL WORK
- PLUMBING WORK
- STRUCTURAL SUPPORTS, ETC
- INSULATION
- FIRE ALARM
- CLOSE OUT

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

PROJECT:

**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	01/11/21
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.: #2020-084

DRAWN BY: EB

CHECKED BY: JL

APPROVED BY:

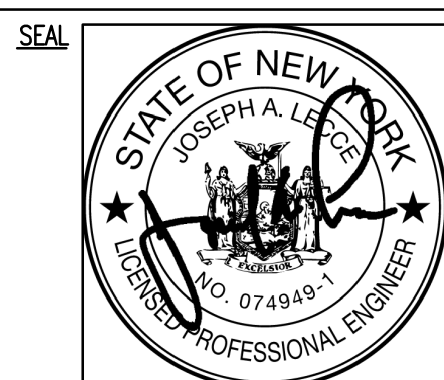
DRAWING TITLE:

**MECHANICAL PLAN
3RD LEVEL**

DRAWING NO:

M-303

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

[illegible]

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

DRAWING TITLE:

MECHANICAL PLAN
ROOF LEVEL

DRAWING NO:
M-304

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

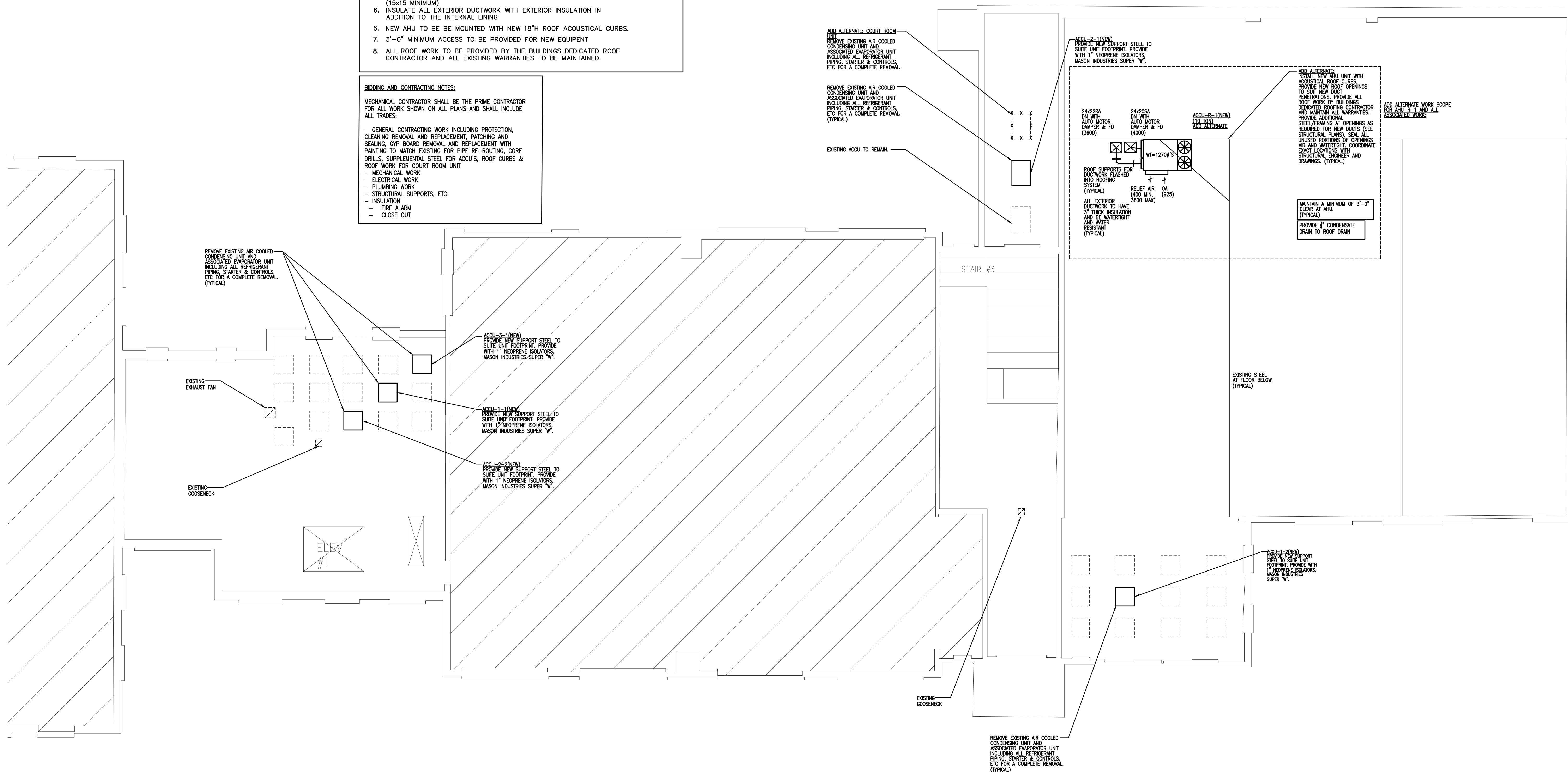
HVAC NOTES:

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 HALF DOWN STREAM OF AHU UNITS SUPPLY & RETURN DUCTWORK, PROVIDE 1" ACoustICALLY LINED DUCTWORK.
4. ALL DUCTWORK TO BE INSULATED PER SMAGNA AND LATEST NYS ENERGY CODES.
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 CURTAINS, 3"-0" MINIMUM ACCESS TO BE PROVIDED FOR NEW EQUIPMENT
8. 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:

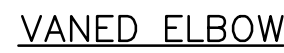
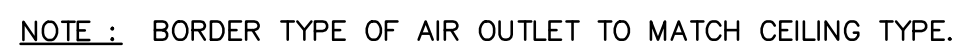
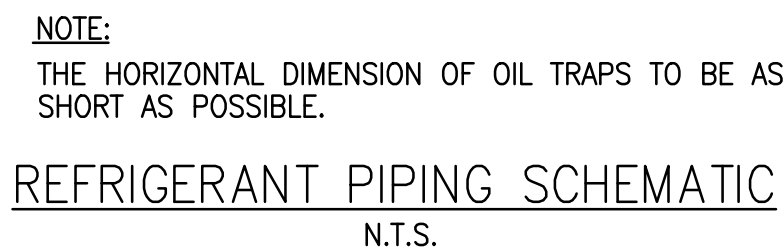
- GENERAL CONTRACTING WORK INCLUDING PROTECTION, CLEANING REMOVAL AND REPLACEMENT, PATCHING AND SEALING, GYP BOARD REMOVAL AND REPLACEMENT WITH PAINTING TO MATCH EXISTING FOR PIPE RE-ROUTING, CORE DRILLS, SUPPLEMENTAL STEEL FOR ACCU'S, ROOF CURBS & ROOF WORK FOR COURT ROOM UNIT
- MECHANICAL WORK
- ELECTRICAL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



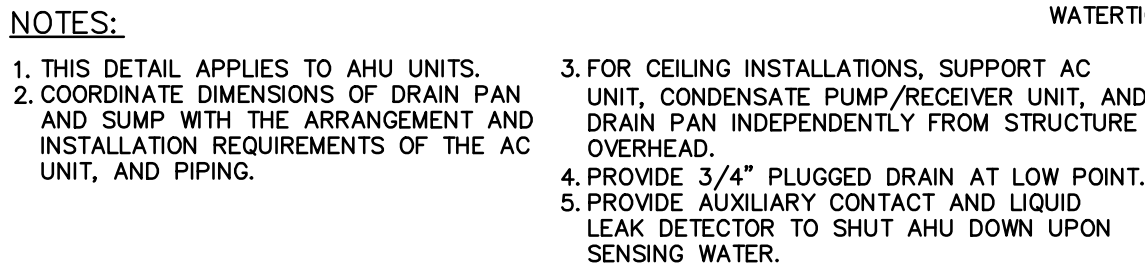
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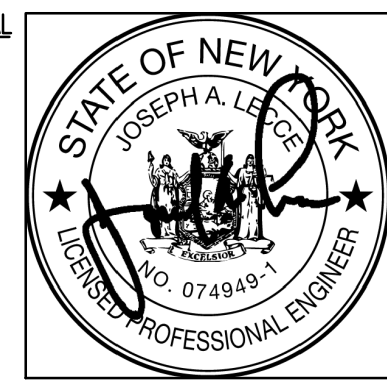
- NOTES:
1. LOCKING LUGS INTEGRAL WITH VANE.
 2. MAXIMUM UNSUPPORTED VANE LENGTH 36".
 3. FRAMES-BOLTED OR RIVETED TO ELBOW.
 4. VANES AND FRAMES-SAME GAUGE AS ELBOW



AHU UNIT DRAIN PAN DETAIL

MEP ENGINEER
Lecce Engineering
Joseph A. Lecce P.E., P.C.
297 KNOLLWOOD ROAD,
SUITE 211
WHITE PLAINS, NY 10607
(914) 419-4663

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

[illegible]

SCALE: NONE	DATE: 08/21/20	PROJECT NO.: #2020-084
DRAWN BY: DK	CHECKED BY: JL	APPROVED BY:
DRAWING TITLE:		

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 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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CONTROL SEQUENCE OF OPERATION:

AC UNIT AC-1-1,2, AC-2-1,2, AND AC-3-1

- AC UNIT TO BE CONTROLLED VIA NEW DDC CONTROLLER CONTROLLER TO MAINTAIN 75F/50RPH AVERAGE RETURN AIR TEMPERATURE (ADJ) IN THE COOLING SEASON, & 70F/25RPH IN THE HEATING SEASON. CONNECT ALL TO HEAD END SYSTEM.
- A/CU'S TO BE INTERLOCKED WITH AC UNIT.
- HOT WATER COIL AT UNIT, WITH 3-WAY MODULATING CONTROL VALVE, TO BE UTILIZED TO MAINTAIN THE WINTER TEMPERATURE SETPOINTS. COMPRESSORS SHALL BE LOCKED OUT WHEN HEATING IS UTILIZED.
- HEATER SHALL BE CONTROLLED VIA THE AC UNIT CONTROLLER
- PROVIDE FREEZE-STAT FOR AC TO SHUT AC DOWN UPON LOW COIL TEMPERATURES.
- PROVIDE DIRTY FILTER ALARM
- PROVIDE HIGH/LOW SUPPLY TEMPERATURE ALARM
- OUTSIDE AIR INTAKE DAMPER TO BE ELECTRICALLY INTERLOCKED WITH AC UNIT
- PROVIDE LEAK DETECTOR IN DRAIN PAN AND SHALL SHUT UNIT DOWN UPON SENSING WATER AND SEND AN ALARM TO THE WALL CONTROLLER AND BMS
- EXISTING HOT WATER PUMP SHALL FOLLOW EXISTING SEQUENCE OF OPERATION. AT MINIMUM, AT ALL TIMES AC-1-1,2, AC-2-1,2, AND AC-3-1 CALLS FOR HEAT TO MAINTAIN 70F/25RPH IN THE HEATING SEASON, HW PUMP SHALL OPERATE
- A UVGI LIGHT IS FIELD PROVIDED & SHALL BE ENERGIZED WHEN AC UNIT IS OPERATING & UNIT IS "OFF".
- EXISTING OUTSIDE AIR INTAKE DAMPER TO BE RE-USED AND INTERLOCKED WITH NEW AC UNIT SO IT IS OPEN WITH UNIT "ON" AND CLOSED WITH UNIT "OFF"
- FOR NON OCCUPIED PERIODS, UNITS TO RUN INCREMENTALLY TO VENTILATE SPACES BASE ON A TIME SCHEDULE. EVERY HOUR, UNITS TO BE SEQUENCED "ON" FOR 10 MINUTES (ADJUSTABLE), INCLUDING ERV & OAI.
MAINTAIN SETBACK TEMPERATURES BY RUNNING UNIT INCREMENTALLY TO MAINTAIN 66°F (ADJ)

AHU-R-1:(ADD ALTERNATE)

- AC UNIT TO BE CONTROLLED VIA DDC CONTROLLER CONTROLLER TO MAINTAIN 75F/50RPH AVERAGE RETURN AIR TEMPERATURE (ADJ) IN THE COOLING SEASON, & 70F/25RPH IN THE HEATING SEASON.
- HOT WATER COIL IN UNIT TO BE UTILIZED TO MAINTAIN THE WINTER TEMPERATURE SETPOINT. COMPRESSORS SHALL BE LOCKED OUT WHEN HEATER IS UTILIZED.
- HEATER SHALL BE CONTROLLED VIA THE AC UNIT CONTROLLER
- PROVIDE AC UNIT FAILURE ALARM AND SHALL SEND A VISUAL AND AUDIBLE ALARM AT REMOTE CONTROLLER.
- PROVIDE TIME SCHEDULING FOR UNIT, 7-DAYS PER WEEK, (4) SCHEDULES PER DAY
- DUCT SMOKE DETECTORS LOCATED IN THE SUPPLY & RETURN DUCTWORK SHALL UPON SENSING SMOKE, SHUT THE AC UNIT DOWN, AND SEND AN ALARM TO THE FACP.
- AHU-R-1 UNIT TO HAVE ECONOMIZERS THAT ARE CONTROLLED VIA AN ENTHALPY CONTROLLER.
- PROVIDE DEMAND CONTROL VENTILATION FOR AHU-R-1.
- FOR AHU-R-1, VFD TO BE PROVIDED WITH UNIT TO VARY FAN SPEED BASED ON SPACE SETPOINT TEMPERATURES. AS SPACE SETPOINTS ARE SATISFIED, THE FAN SHALL SLOW DOWN TO MINIMUM SPEED, AND AS SPACE TEMPERATURES ARE ARE NOT SATISFIED, VFD SHALL SPEED UP TO MAINTAIN SPACE SETPOINTS.
- A UVGI LIGHT IS FIELD PROVIDED & SHALL BE ENERGIZED WHEN AC UNIT IS OPERATING & UNIT IS "OFF".
- FOR NON OCCUPIED PERIODS, UNITS TO RUN INCREMENTALLY TO VENTILATE SPACES BASE ON A TIME SCHEDULE EVERY HOUR. UNITS TO BE SEQUENCED "ON" FOR 10 MINUTES (ADJUSTABLE), INCLUDING THE OAI.
MAINTAIN SETBACK TEMPERATURES BY RUNNING UNIT INCREMENTALLY TO MAINTAIN 66°F (ADJ)

ERV FOR AC-1-1,2, AC-2-1,2, AND AC-3-1

- ERV TO BE INTERLOCKED WITH ASSOCIATED A/C UNIT & SHALL BE "ON" WHEN AC UNIT IS "ON" & "OFF" WHEN A/C UNIT IS "OFF"

EDH-1-1

- DUCT HEATER TO BE AVAILABLE WHEN AIR-FLOW IS BEING SUPPLIED FROM ASSOCIATED FAN. PROVIDE WALL MOUNTED THERMOSTAT TO MAINTAIN SET-POINTS.

BASE BUILDING EQUIPMENT BMS INPUT/OUTPUT, SUMMARY

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS							OUTPUTS				SYSTEM FEATURES					GENERAL	REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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	MEASURED		CALC	STATUS				SMOKE	WATER	OFF-AUTO-ON	OPEN-CLOSE	EMER. POS	SET POINT ADJ	BYPASS	IN ALARM	LOW ANALOG			HIGH ANALOG	LOW BINARY	HIGH BINARY	PROOF	GENERAL	TIME SCHEDULING	DEMAND LIMITING	DUTY CYCLE OPT	ENTHALPY OPT	SMOKE ONT.	ALARM INSTRUCT	MAINT. WK. ORD.	COLOR GRAPHIC PROGRAMMING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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NOTES:

- ALL CONTROLS TO BE BY HONEYWELL AND COMPATIBLE WITH THE EXITING HONEYWELL BMS SYSTEM AT BUILDING.
- PROVIDE ALL REQUIRED PROGRAMING OF DDC STAND ALONE SYSTEMS AT THE HEAD END BMS SYSTEM AND WORKSTATION
- PROVIDE NEW DDC STAND ALONE CONTROLLER FOR EACH AC UNIT INCLUDING AHU-R-1 AND CONNECT TO EXISTING HEAD END DDC SYSTEM.

DIRECT DIGITAL CONTROL SYSTEM

A. GENERAL

- UTILIZE THE EXISTING HEAD END HONEYWELL BUILDING BMS SYSTEM AND PROVIDE NEW STAND ALONE CONTROLLERS CONNECTED TO THE EXISTING HEAD END BMS, FOR EACH NEW UNIT.
- AS BASE BID WORK SCOPE, CONTROL OF THE AC-1-1, AC-1-2, AC-2-1, AC-2-2, AND AC-3-1 SYSTEMS WILL BE ACCOMPLISHED BY NEW DIRECT DIGITAL CONTROLLERS AND THE EXISTING HEAD END BMS SYSTEM BY HONEYWELL. PROVIDE FOR ADD ALTERNATE #1, INCLUDE AHU-R-1.
- ALL CONTROL ALGORITHMS, COMPUTATION FUNCTIONS AND ENERGY MANAGEMENT FUNCTIONS SHALL BE SOFTWARE-BASED AND RESIDENT IN THE DDC SYSTEM. THE OPERATOR SHALL HAVE THE CAPABILITY, THROUGH ANY OF THE COMPUTER WORKSTATIONS AND/OR PORTABLE OPERATOR'S TERMINALS TO ACCESS ALL PROGRAMS, DISPLAY ALL DATA RESIDENT IN THE DDC SYSTEM MEMORY AND PERFORM ANALOG AND DIGITAL FUNCTIONS AT EACH LOCAL DIRECT DIGITAL CONTROL UNIT OR AT A COMPUTER WORKSTATION.
- PROVIDE ALARM REPORTING FOR ALL FAILURE AND OUT-OF-RANGE CONDITIONS. COORDINATE ALARM REPORTING PROCEDURES WITH OWNER.
- PROVIDE ALL REQUIRED PROGRAMMING, GRAPHIC, CONTROL TRANSFORMERS, SOFTWARE, COMPONENTS, HARDWARE FOR A COMPLETE SYSTEM. UPDATE ALL CAD AND GRAPHICS AT THE HEAD END BMS SYSTEM TO SUIT NEW WORK.

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:

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

SEAL



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

DRAWING TITLE:

MECHANICAL PLAN
CONTROLS

DRAWING NO:

M-501

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 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.

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE 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.
2. 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.O.N.
3. FILE PLANS WITH THE BUILDING DEPARTMENT AND OBTAIN ALL PERMITS AND SIGNOFFS.
4. ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AND CONFER WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION.
5. 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.
6. 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. LAMPHOLDERS SHALL HAVE LEFT HANDED SCREW SHELL LAMP HOLDERS AND NON-METALLIC LAMP GUARDS. CONNECTIONS TO EXISTING STAIRWELL AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED.
7. 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 IN THE PLANS AND DETAILS.
8. UPON COMPLETION OF THE WORK, A SET OF "AS-BUILT" DRAWINGS SHALL BE SUBMITTED. PROVIDE "AS-BUILT" DRAWINGS ON DISK, AUTOCAD 2010 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. CADD BACKGROUNDS TO BE SUPPLIED BY ARCHITECT.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE AN ELECTRICAL INSPECTION APPROVAL CERTIFICATE TO ARCHITECT/ENGINEER UPON COMPLETION OF WORK.

ELECTRICAL ABBREVIATIONS

A	AMPERE
AC	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
ASYM	ASYMMETRICAL
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
C	CONDUIT
CAT	CATALOG
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
CLS	CLOSET
CO	CONDUIT ONLY
CONT	CONTINUATION
CT	CURRENT TRANSFORMER
CU	COPPER
CUH	CABINET UNIT HEATER
DISC	DISCONNECT
DN	DOWN
DP	DISTRIBUTION PANEL BOARD
DWG	DRAWING
EA	EACH
EC	ELECTRIC CLOSET
ELEC	ELECTRICAL
EMER, EM	EMERGENCY
EQUIP	EQUIPMENT
EXT	EXTERIOR
F	FUSE
FA	FIRE ALARM
FBD	FURNISHED BY OTHER
FCU	FAN COIL UNIT
FDR	FEEDER
FDS	FUSED DISCONNECT SWITCH
FIXT	FIXTURE
FL	FLOOR
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
FT	FEET OR FOOT
G,GRD	GROUND
GFI	GROUND FAULT INTERRUPTER
HP	HORSE POWER
HZ	HERTZ
IC	INTERRUPTING CAPACITY
INC	INCANDESCENT
JB	JUNCTION BOX
kcmil	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
LTG	LIGHTING
MER	MECHANICAL EQUIPMENT ROOM
MIN	MINIMUM
MTD	MOUNTED
MTG	MOUNTING
N	NEUTRAL
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
P	POLE
PB	PULL BOX
PH or Ø	PHASE
PHT	PIPE HEAT TRACING SYSTEM
PNL	PANEL
PWR	POWER
RECEPT	RECEPTACLE
REF	REFRIGERATOR
REQ	REQUIRED
RM	ROOM
SECT	SECTION
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SW	SWITCH
SYM	SYMMETRICAL
TBD	TO BE DETERMINED
TEL	TELEPHONE
TS	TAMPER SWITCH
TV	TELEVISION
TYP	TYPICAL
UC	UNDER COUNTER
UH	UNIT HEATER
UNF	UNFUSED
UNO	UNLESS OTHERWISE NOTED
V	VOLT OR VOLTAGE
VA	VOLT AMPERE
W	WATT
WF	WATER FLOW SWITCH
WP	WEATHERPROOF

ELECTRICAL SYMBOLS

	NEW LIGHT SWITCH - DIMMER
	NEW LIGHT SWITCH - 2 WAY W/ZONE DESIGNATION
	NEW LIGHT SWITCH - 3 WAY W/ZONE DESIGNATION
	NEW LIGHT SWITCH - 4 WAY W/ZONE DESIGNATION
	RECESSED MOUNTED FLUORESCENT 2X2 FIXTURE, 120V.
	NEW LIGHT EXIT LIGHT WITH EMERGENCY BATTERY BACK-UP ARROW INDICATES ILLUMINATED FACE AND DIRECTION. 120V.
	NEW DOWNLIGHT, 120V.
	NEW WALL MOUNTED FLUORESCENT FIXTURE, 120V.
	NEW 120V- 20 AMP RECEPTACLE WITH BACKBOX AND 3/4" CONDUIT UP TO CEILING
	NEW DEDICATED 120V- 20 AMP RECEPTACLE WITH BACKBOX AND 3/4" CONDUIT UP TO CELING
	NEW 120V- 20 AMP QUAD RECEPTACLE WITH BACKBOX AND 3/4" CONDUIT UP TO CEILING
	LOCAL MECHANICAL SWITCH WITH THERMAL OVERLOAD PROTECTION
	NEW MOTOR (MECHANICAL EQUIPMENT) WITH LOCAL DISCONNECT
	UNFUSED DISCONNECT FOR EQUIPMENT, 3-POLE, 30 AMP UNLESS OTHERWISE NOTED
	FUSED DISCONNECT FOR EQUIPMENT, 3-POLE, 30 AMP UNLESS OTHERWISE NOTED
	NEW 120V- 20 AMP FLUSH FLOOR MOUNTED PDK-THROUGH DEVICE WITH DUPLEX RECEPTACLE
	NEW CIRCUIT HOMERUN. NUMBER OF ARROWS DESIGNATES # CIRCUITS NUMERALS INDICATES CIRCUIT NUMBERS
	SPECIALTY FIBER OUTLETS Ø 1/8" A.F.F. (UNLESS OTHERWISE NOTED ON PLAN). PROVIDE (1) J GANG BOX WITH MUD RING & 3/4" CONDUIT FROM BOX TO 6" ABOVE FINISH CEILING. TYPICAL AT ALL DATA OUTLETS. ALL FIBER INSTALLATION BY TENANT.
	INDICATES CABLE LOCATION. SYSTEM WILL BE PROVIDED & INSTALLED BY TENANT VENDOR. INSTALL 3/4" DIA. CONDUIT UP TO 6" ABOVE FINISHED CEILING & J-BOX IN PARTITION. COORDINATE WITH SYSTEM VENDOR FOR J-BOX REQUIREMENTS.
	INDICATES CARD KEY DEVICES TO ACTIVATE ELECTRIC STRIKES. SYSTEM WILL BE PROVIDED & INSTALLED BY TENANT VENDOR. INSTALL 3/4" DIA. CONDUIT UP TO 6" ABOVE FINISHED CEILING & J-BOX IN PARTITION. COORDINATE WITH SYSTEM VENDOR FOR J-BOX REQUIREMENTS. CARD KEY SYSTEM SHALL BE CONNECTED TO BUILDING FIRE SYSTEM TO ALLOW FOR "FAIL SAFE" OPERATION.
	DATA WALL OUTLETS Ø 1/8" A.F.F. (UNLESS OTHERWISE NOTED ON PLAN). PROVIDE (1) SINGLE GANG BOX WITH MUD RING & 3/4" CONDUIT FROM BOX TO 6" ABOVE FINISH CEILING. TYPICAL AT ALL DATA OUTLETS. ALL DATA WIRING BY TENANT.
	ELECTRIC STRIKE
	JUNCTION BOX - CEILING / WALL MOUNTED
	TIMECLOCK
	NEW SURFACE OR RECESSED MOUNTED ELECTRICAL PANEL
	MOMENTARY OVERRIDE SWITCH FOR LIGHT CONTROLS
	WALL MOUNTED OCCUPANCY SENSOR FOR LIGHTS
	CEILING MOUNTED PHOTOCELL SENSOR FOR LIGHTS

ELECTRICAL DRAWING LIST	
DRAWING NUMBER	DRAWING TITLE
E-001	ELECTRICAL - SYMBOLS, NOTES AND DRAWING LIST
E-201	ELECTRICAL - SPECIFICATIONS
E-301	ELECTRICAL - 1ST FLOOR PLAN
E-302	ELECTRICAL - 2ND FLOOR PLAN
E-303	ELECTRICAL - 3RD FLOOR PLAN
E-304	ELECTRICAL - ROOF PLAN

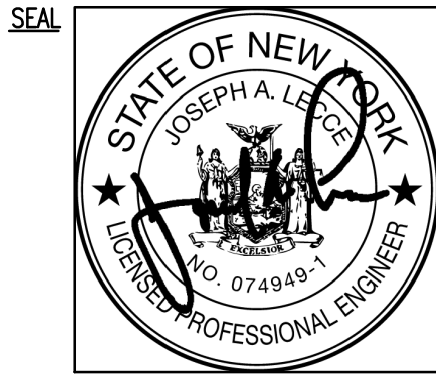
SHOP DRAWINGS

1. PROVIDE SHOP DRAWINGS FOR ALL EQUIPMENT, LAYOUTS, & CONDUIT 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 (5) BUSINESS DAY TURN-AROUND FOR ALL SUBMITTALS. SUBMIT (3) HARD COPIES FOR REVIEW.

MEP ENGINEER
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PROJECT:
**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.: #2020-084
DRAWN BY: DK	CHECKED BY: JL	APPROVED BY:

DRAWING TITLE:

ELECTRICAL
SYMBOLS & NOTES

DRAWING NO:

E-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 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 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 ALL DIMENSIONS 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 AFOREMENTIONED 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 (ON 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 ACAD 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 SHALL 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 SHAWMUTT
- 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 OR OZ./ GEDNEY CO.
- FIRE STOP MATERIAL: HILTI, 3M (NOTE: MATERIAL MUST BE ACCEPTABLE TO LOCAL AHD)
- FITTINGS, COUPLINGS, BUSHINGS, CONNECTORS: OZ GEDNEY, BURNDY, NEPCO, THOMAS AND BETTS
- FIRE RATED POKE-THROUGH: HUBBELL, WIRENOLD, STEEL CITY.
- ABBREVIATIONS
- | | | | |
|-------|---------------------------|-------|-------------------------|
| A | AMP/AMPERE | KV | KILOVOLT |
| AFT | ABOVE FINISH FLOOR | LTG | LIGHTING |
| ATS | AUTOMATIC TRANSFER SWITCH | MTB | MAIN CIRCUIT BREAKER |
| AVG | AMERICAN WIRE GAUGE | KCMIL | THOUSAND CIRCULAR MILLS |
| CB | CIRCUIT BREAKER | MLO | MAIN LUGS ONLY |
| CKT | CIRCUIT | MTD | MOUNTED |
| CO | CONDUIT ONLY | N | NEUTRAL |
| CU | COPPER | NTS | NOT TO SCALE |
| DISC | DISCONNECT | PB | PULL BOX |
| E | EXISTING | PBL | PANELBOARD |
| ELEC | ELECTRICAL | PWR | POWER |
| EM | EMERGENCY | SD | SMOKE DETECTOR |
| FA | FIRE ALARM | SVBD | SWITCHBOARD |
| FBD | FURNISHED BY OTHERS | TYP | TYPICAL |
| GF/GF | GROUND FAULT INTERRUPTER | UF | UNFUSED |
| GRD | GROUND | UDN | UNLESS OTHERWISE NOTED |
| HZ | HERTZ | W | WIRE |
| I | ISOLATED GROUND | WP | WEATHERPROOF |
| JB | JUNCTION BOX | | |
| KVA | KILOVOLT-AMPERE | | |
- 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 KNEEDOUTS.
- 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-ON 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-PIN CYLINDER LOCKS WITH MILLED KEYS. ALL PANELS TO BE KEYED 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 120/280V 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. MAXIMUM 6 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 AND 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. COLOR 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
- (SUBMIT SAMPLES TO ARCHITECT FOR APPROVAL PRIOR TO DEVICES PURCHASE)
- 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 DEVIS CAT NO. 562.
- 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.O.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.
- B. 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.
- E. 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.
- F. 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.

MEP ENGINEER
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PROJECT:

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	01/14/21	02/11/21	05/19/21						
1.	ISSUED FOR REVIEW										
2.	ISSUED FOR REVIEW										
3.	ISSUED FOR BID AND PERMIT										

SCALE:



SCALE: NONE DATE: 08/21/20 PROJECT NO.: #2020-084
DRAWN BY: DK CHECKED BY: JL APPROVED BY:

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 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 INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF THE ENGINEER. INFREQUENT 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.

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1. 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.
2. ALL WORK IS NEW UNLESS OTHERWISE NOTED.
THE DRAWINGS INDICATE SIZE AND GENERAL LOCATION OF WORK. SCALE DIMENSIONS SHALL NOT BE USED FOR DIMENSIONING. LOCATION OF PANELS, PANELS, TELEPHONE/DATA OUTLETS, ETC., SHALL BE DETERMINED FROM THE ARCHITECT'S DRAWINGS, U.O.N.
3. FILE PLANS WITH THE BUILDING DEPARTMENT AND OBTAIN ALL PERMITS AND SIGNOFFS.
4. ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AND CONFLICT WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION.
5. 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.
6. TEMPORARY LIGHTING, THE CONTRACTOR SHALL PROVIDE CLEARS, LABEL PANELS AND PANEL 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 TO ALL WORK AREAS. TEMPORARY LIGHTING AND POWER SHALL BE INSTALLED TO ALL UTILITIES, C-TAP TERMINATIONS, LAMP HOLDERS SHALL HAVE LEFT HANDWOUND SCREW SHIELD LAMP HOLDERS AND ALL METALLIC LAMP GUARDS. CONNECTIONS TO EXISTING STAINLESS AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED.
7. THIS CONTRACTOR, BEFORE INSTALLING ANY OF THE WORK, SHALL SEE THAT IT DOES NOT INTERFERE WITH CLEARANCES REQUIRED FOR FINISHED COLUMNS, HUNG CEILING PLASTER, EXISTING WALLS, ETC. IF ANY INTERFERENCE IS NOTED, THE CONTRACTOR SHALL STOP WORK IMMEDIATELY. IF ANY WORK IS SO INSTALLED AND IT LATER DEVELOPS THAT SUCH DETAILS OR DESIGN CANNOT BE MAINTAINED, THIS CONTRACTOR AT HIS OWN RISK SHALL BE RESPONSIBLE FOR 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.
8. THE ELECTRICAL CONTRACTOR, 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 BREAKER, AND ELECTRICAL WORK AS INSTALLED.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE AN ELECTRICAL INSPECTION APPROVAL CERTIFICATE TO ARCHITECT/ENGINEER UPON COMPLETION OF WORK.
10. 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 FOR EQUIPMENT REMOVAL.

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NEC ELECTRICAL AND LOCAL BUILDING CODE, NFPA, UI, BUILDING MANAGEMENT RULES AND REGULATIONS AND NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE, AND ALL OTHER GOVERNING AGENCIES HAVING JURISDICTION.
2. ALL WORK IS NEW UNLESS OTHERWISE NOTED.
THE DRAWINGS INDICATE SIZE AND GENERAL LOCATION OF WORK. SCALE DIMENSIONS SHALL NOT BE USED. EXACT LOCATION OF CONDUIT, PIPING, AND ALL OTHER COVERINGS AREAVING JURISDICTION SHALL BE DETERMINED FROM THE ARCHITECT'S DRAWINGS, U.O.N.
3. FILE PLANS WITH THE BUILDING DEPARTMENT AND OBTAIN ALL PERMITS AND SIGNOFFS.
4. ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AND CONFER WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION.
5. ELECTRICAL PANEL COVERS ARE NOT TO BE LEFT OFF AT ANY TIME UNLESS MEN ARE WORKING IN THE PANEL. 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 IN THE AREA TO BE LIGHTED. PROPER TEMPORARY LIGHTING AND POWER MUST BE INSTALLED AND MAINTAINED IN ALL WORK AREAS. TEMPORARY LIGHT AND POWER STRINGERS SHALL UTILIZE NON-FRAGILE, NON-FLAMMABLE, NON-TOXIC, NON-CORROSIVE, NON-CONDUCTIVE, NON-SPARKING AND NON-METALLIC CLAMP DROPS. CONNECTIONS TO EXISTING STAIRWELL AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED.
7. THIS CONTRACTOR, BEFORE INSTALLING ANY OF THE WORK, SHALL SEE THAT IT DOES NOT INTERFERE WITH REQUIREMENTS FOR FINISHED COLUMNS, HUNG CEILINGS, PLASTER, PARTITIONS, WALLS, ETC., AS SHOWN IN THE ARCHITECTURAL DRAWINGS AND DETAILS. IF ANY WORK IS INSTALLED BEFORE THE ARCHITECT HAS DEVELOPED THE LATER DETAILS OR DESIGN CADT 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.
8. UPON COMPLETION OF THE WORK, A SET OF "AS-BUILT" DRAWINGS SHALL BE SUBMITTED.
THESE DRAWINGS SHALL INCLUDE: 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.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE AN ELECTRICAL INSPECTION APPROVAL CERTIFICATE TO ARCHITECT/ENGINEER UPON COMPLETION OF WORK.
10. THE ELECTRICAL CONTRACTOR SHALL DEMOLISH ALL WRING, CONDUIT, STRAPS, BACK-BOXES AND ASSOCIATED WIRING OR EQUIPMENT THAT IS TO BE REMOVED & ASSOCIATED WITH EXISTING EQUIPMENT REMOVAL. COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR AND ENGINEER PRIOR TO REMOVAL.

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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 RECEPTABLES AND TELEPHONE/DATA OUTLETS, ETC., SHALL BE DETERMINED FROM THE ARCHITECT'S DRAWINGS, U.O.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 PLASTER 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.
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- 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.

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	01/11/21
2.	ISSUED FOR REVIEW	02/11/21
3.	ISSUED FOR BID AND PERMIT	05/19/21

SEAL

SCALE: 1/8"=1'-0" DATE: 05/21/20 PROJECT NO.: #2020-084
DRAWN BY: EB CHECKED BY: JL APPROVED BY:
DRAWING TITLE: ELECTRICAL PLAN 3RD LEVEL

DRAWING NO: E-303

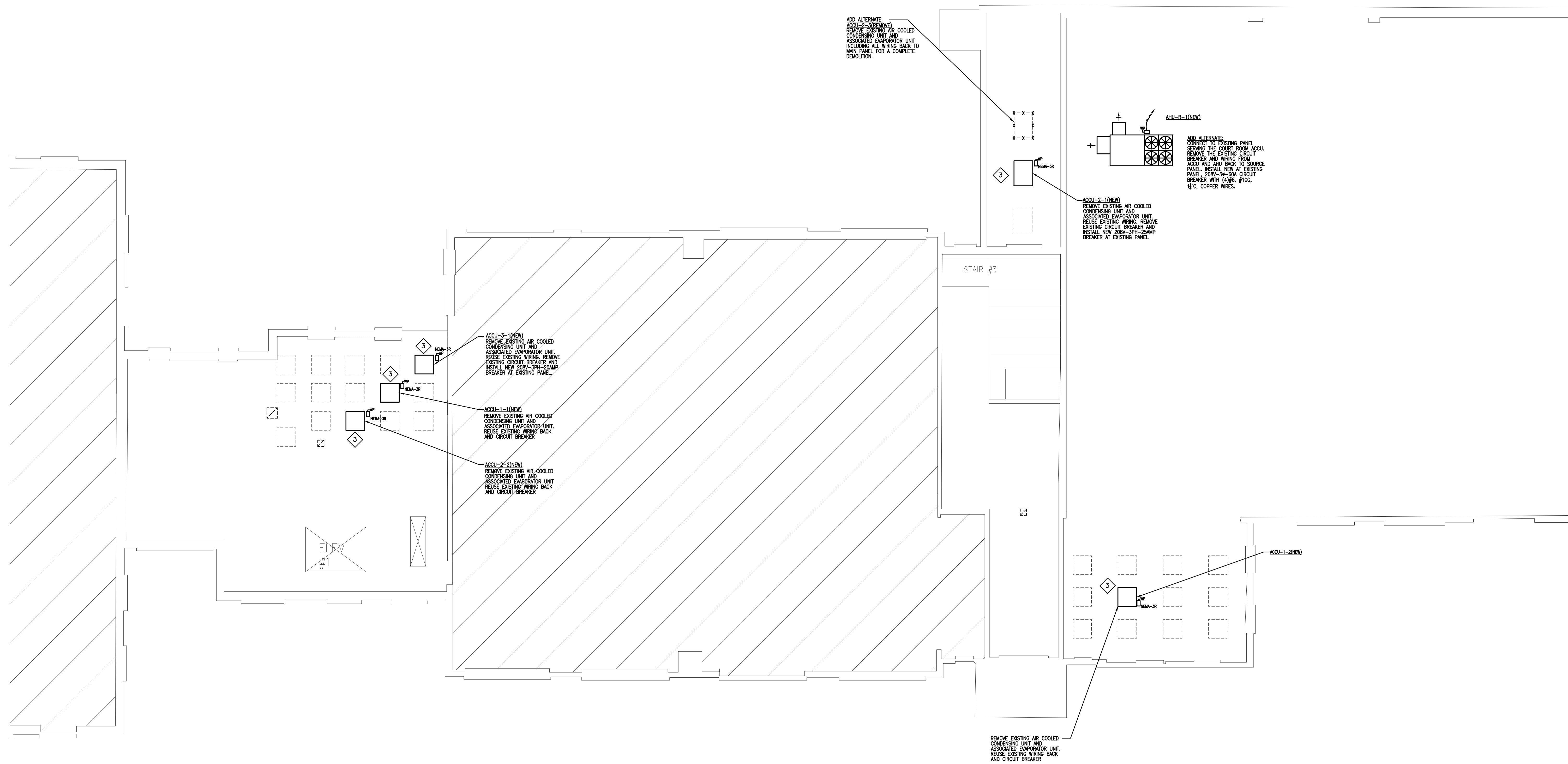
IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A REGISTERED ARCHITECT OR A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THIS PLAN IN ANY WAY. IF ALTERATION TO THIS PLAN IS MADE, THE ALTERATIONS SHALL BE MADE IN ACCORDANCE WITH ARTICLE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

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

NOTES:

1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH ALL BUILDING RULES AND REGULATIONS.
2. CONTRACTOR SHALL COORDINATE FINAL EQUIPMENT POWER REQUIREMENTS AND LOCATIONS IN FIELD WITH MECHANICAL CONTRACTOR.

3. FOR EACH EXISTING CONDENSER TO BE REMOVED, EXISTING WRIRING TO BE RE-USED, REMOVE EXISTING DISCONNECT & INSTALL NEW NEMA-3R DISCONNECT. PROVIDE NEW SEAL-TIGHT, WATERPROOF FLEXIBLE CONDUIT & WRIRING FROM NEW DISCONNECT TO NEW ACCU. FOR ACCU-2-3 & ACCU-2-3. REMOVE ALL WRIRING & CONDUIT BACK TO SOURCE PANEL. DISCONNECT EXISTING CONDENSER & REMOVE. FOR ACCU-2-1, REMOVE EXISTING CIRCUIT BREAKER AND INSTALL NEW 208V-3PH-25A CIRCUIT BREAKER. FOR ACCU-3-1, REMOVE EXISTING CIRCUIT BREAKER AND INSTALL NEW 208V-3PH-20A CIRCUIT BREAKER.

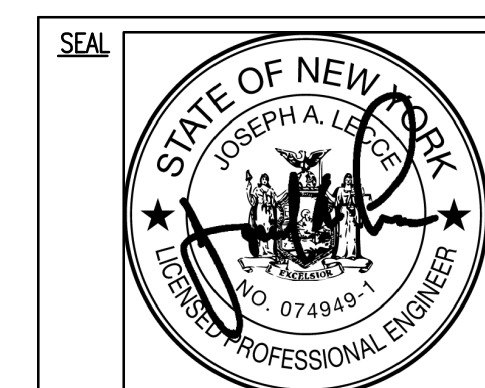


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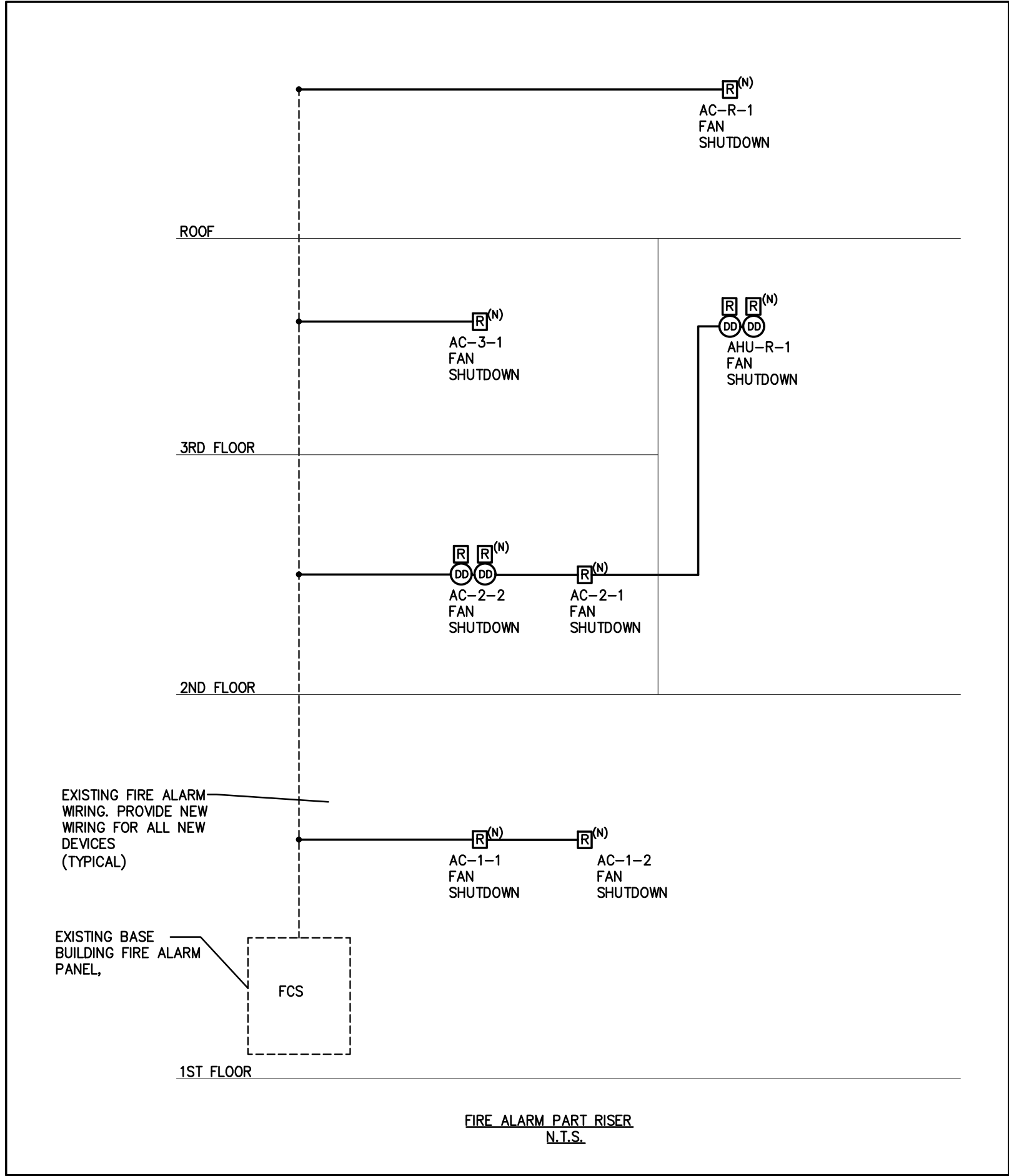
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740 WEST BOSTON POST ROAD
MAMARONECK, NY

[illegible]

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

ED	SE	
DRAWING TITLE:		
MECHANICAL PLAN		
ROOF LEVEL		

DRAWING NO:
M-304






























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
	NEW ADDRESSABLE SMOKE DETECTOR
	NEW ADDRESSABLE SMOKE DETECTOR ABOVE CEILING
	RELOCATED SMOKE DETECTOR
	NEW ADDRESSABLE HEAT DETECTOR
	NEW ADDRESSABLE CARBON MONOXIDE DETECTOR W/SOUNDING BASE
	NEW ADDRESSABLE COMBINATION SMOKE/CARBON MONOXIDE DETECTOR W/SOUNDING BASE
	EXISTING BELL TO BE REMOVED
	NEW ADDRESSABLE RELAY
	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
(N)	NEW
(R)	REMOVE
(RE)	RELOCATED
(E)	EXISTING
(AC)	NEW, ABOVE CEILING

GENERAL FIRE ALARM NOTES

1. 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.
2. 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.
3. WALL MOUNTED HORNS BELLS UNITS SHALL BE LOCATED AT A MAXIMUM OF 80 INCHES ABOVE FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER.
4. ALL FIRE ALARM CABLE SHALL BE RUN IN CONDUIT BELOW 8'-0" OR WHERE EXPOSED.
5. PROVIDE DOUBLE DEEP DEVICE BOXES FOR ALL WALL MOUNTED COMBINATION SPEAKER/STROBE DEVICES.
6. ALL FIRE ALARM DEVICES SHALL BE FLUSHED MOUNTED, UNLESS OTHERWISE NOTED.
7. UNLESS OTHERWISE DIRECTED AND PRIOR TO THE COMMENCEMENT OF WORK, ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE 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.
8. 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.
9. 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.
10. ALL FIRE ALARM CABLES SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:
 - a. A MINIMUM TEMPERATURE RATING OF 150°C
 - b. A MINIMUM AVERAGE INSULATION THICKNESS OF 15 MILS.
 - c. A MINIMUM AVERAGE JACKET THICKNESS OF 25 MILS.
 - d. THE COLOR OF THE CABLE SHALL BE RED.
 - e. THE CABLE SHALL BE TYPED FPLP (PLENUM TYPE)
 - f. 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.
11. 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.
12. ALL EXISTING FIRE ALARM WIRING TO BE REMOVED AND NEW, PLENUM RATED WIRING TO BE INSTALLED

FIRE ALARM NOTES:

1. 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.
2. ALL BOXES FOR FIRE ALARM AND SMOKE DETECTION SYSTEM SHALL BE PAINTED WITH RED ENAMEL PAINT.
3. REFER TO FLOOR PLAN DRAWINGS FOR EXACT QUANTITIES, TYPES AND LOCATION OF ALL DEVICES
4. COORDINATE EXACT LOCATION & ROUTING OF ALL CONDUITS WITH OTHER TRADES.
5. ALL FIRE ALARM SYSTEMS ARE ADDRESSABLE.
6. PROVIDE ALL PROGRAMMING OF NEW AT HEAD END FACP. UN-PROGRAM ALL DEVICES BEING REMOVED
7. CONNECT ALL NEW SECURITY DEVICES TO FIRE ALARM SYSTEM TO FAIL SAFE IN EVENT OF AN ALARM
8. REMOVE ALL EXISTING FIRE ALARM DEVICES (UNLESS SHOWN TO REMAIN) AND DE-PROGRAM FROM SYSTEM FOR ALL DAMPERS THAT ARE TO BE REMOVED.
9. REMOVE ALL FIRE ALARM WIRING AT AREA OF WORK AND INSTALL NEW

FIRE ALARM SEQUENCE OF OPERATION:

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

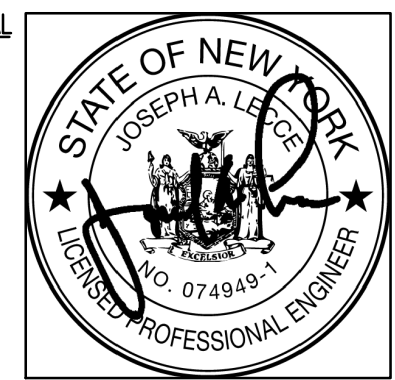
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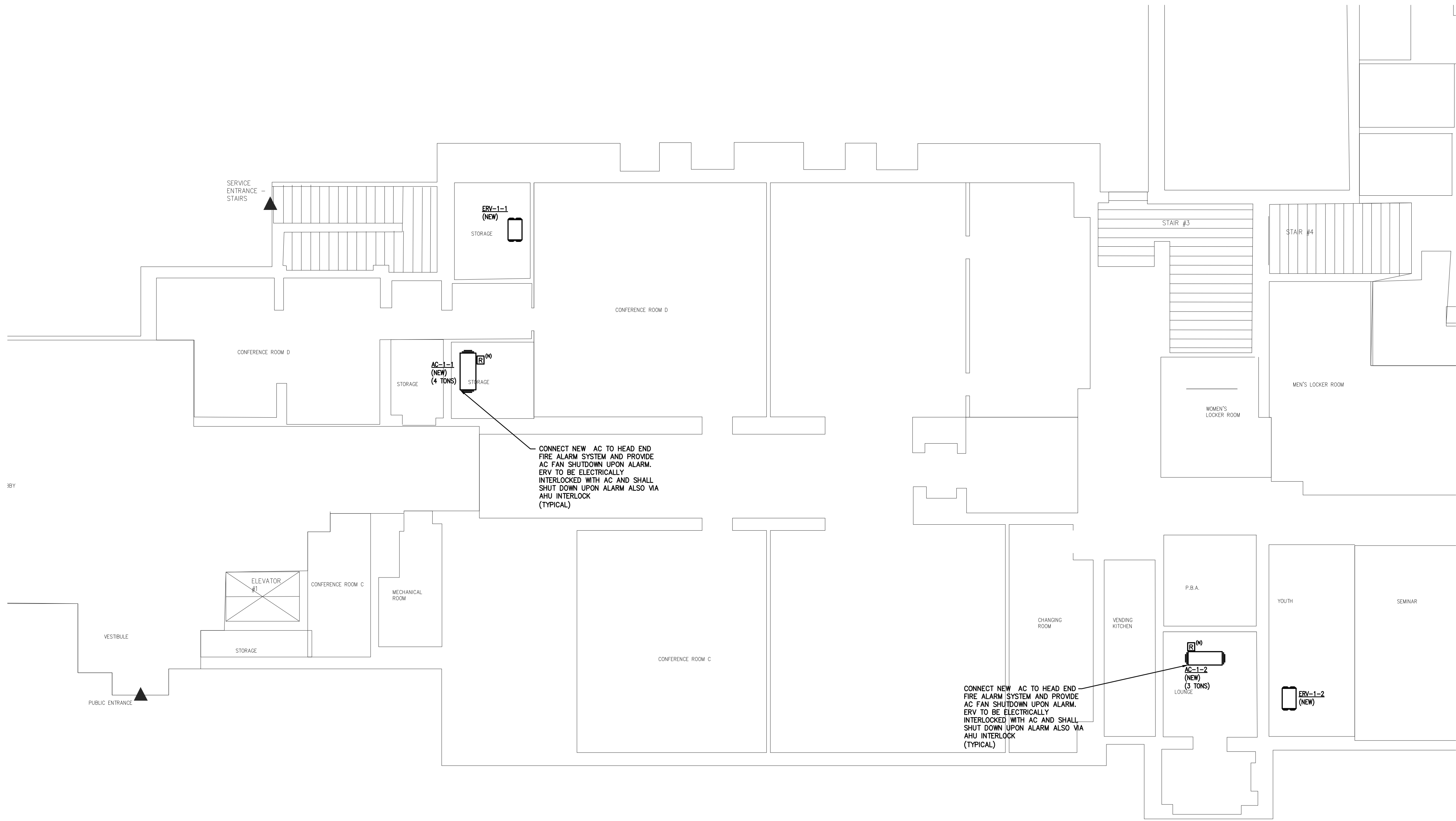
PROJECT:
**PROPOSED A/C UNIT REPLACEMENT FOR
MAMARONECK COURT CLERK
TOWN OF MAMARONECK
1ST, 2ND, AND 3RD LEVEL
740 WEST BOSTON POST ROAD
MAMARONECK, NY**

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



SCALE: NONE	DATE: 08/21/20	PROJECT NO.: #2020-084
DRAWN BY: DK	CHECKED BY: JL	APPROVED BY:
DRAWING TITLE: FIRE ALARM SYMBOLS & NOTES		

DRAWING NO:
FA-001



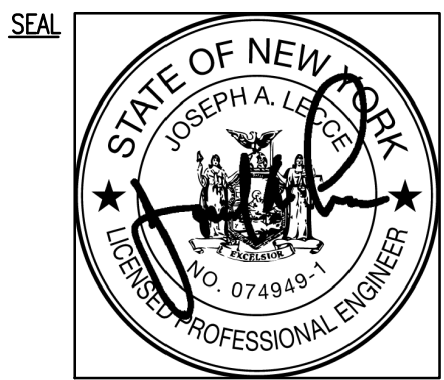
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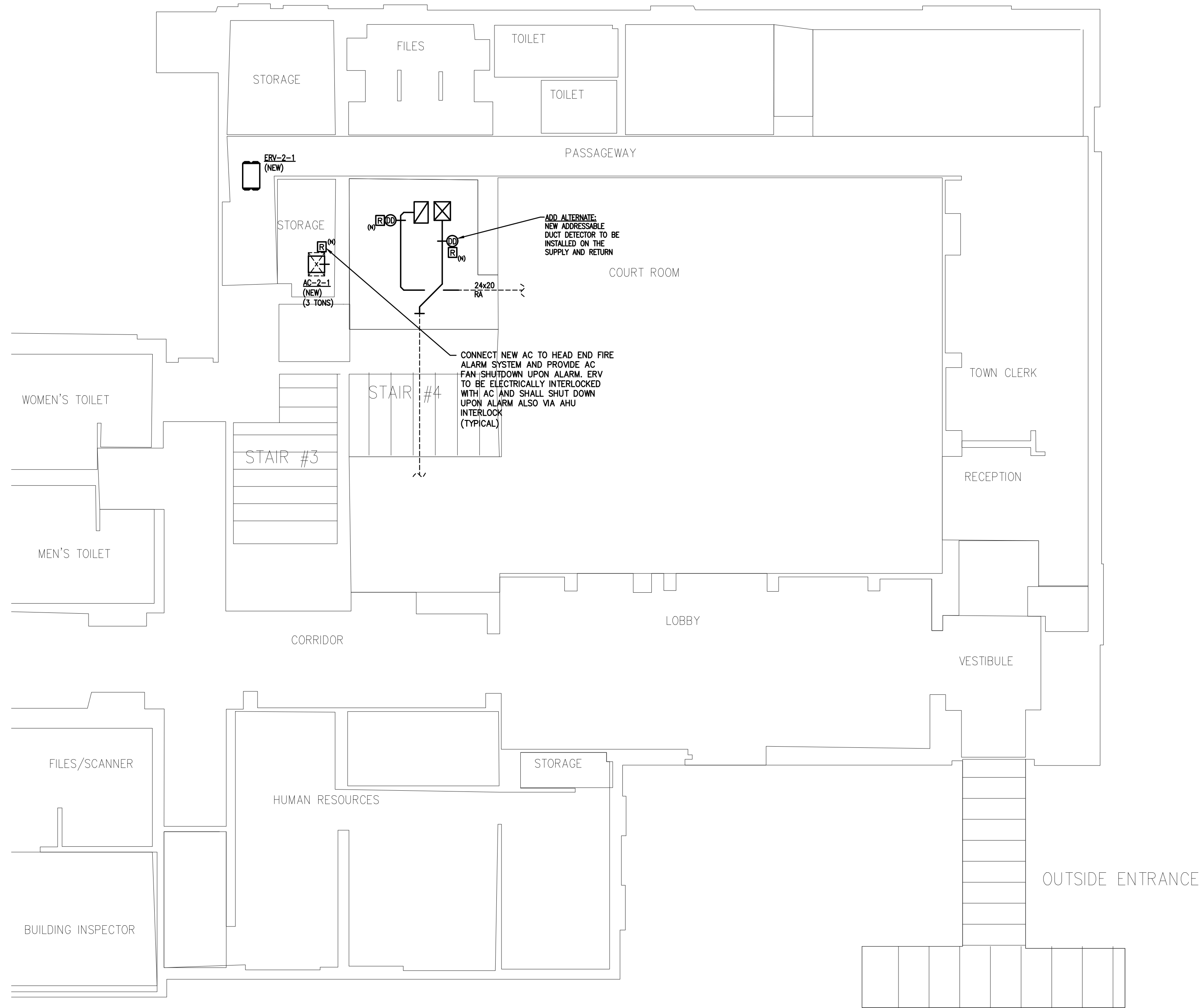
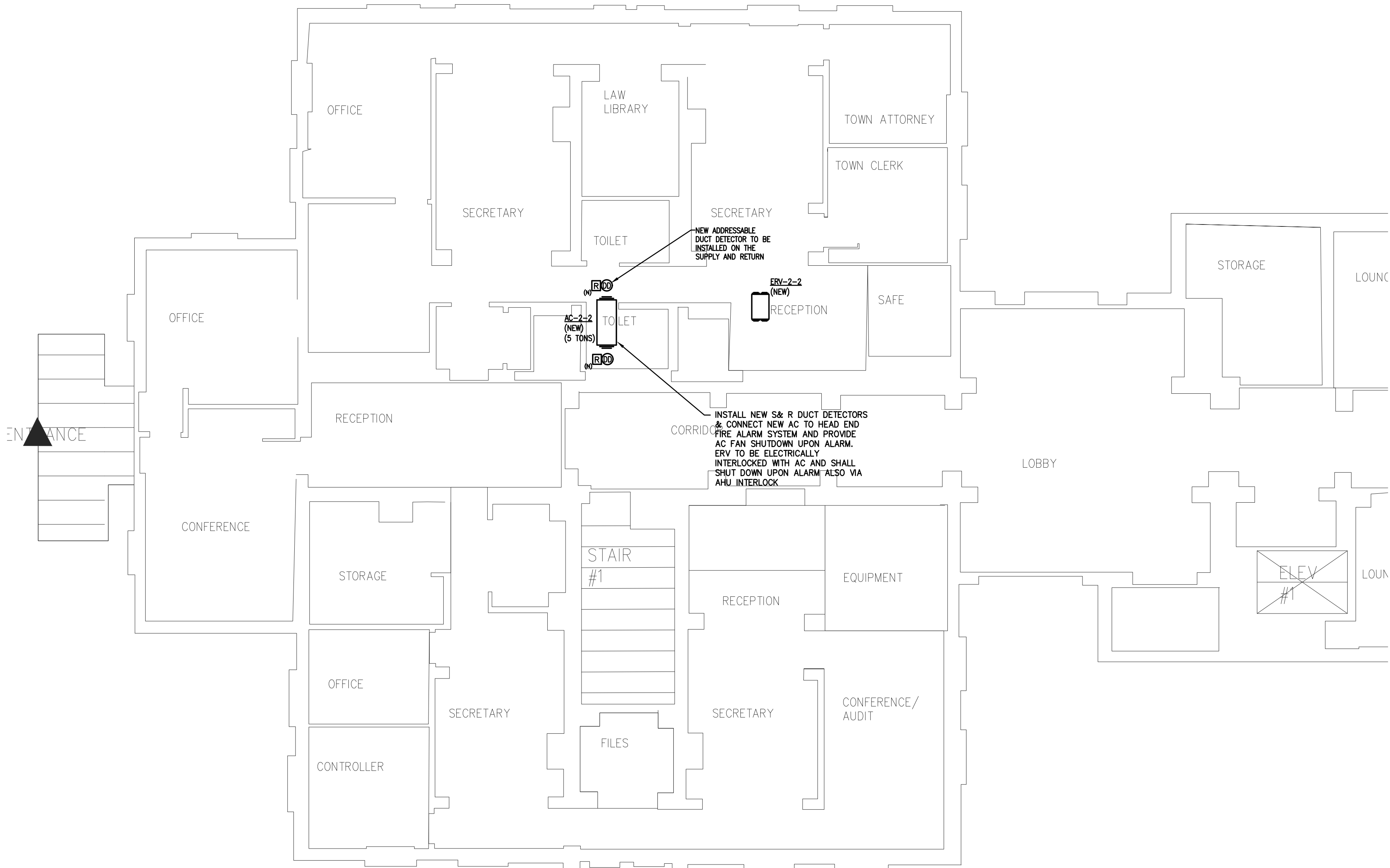
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3.	ISSUED FOR BID AND PERMIT	05/19/21



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
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 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.

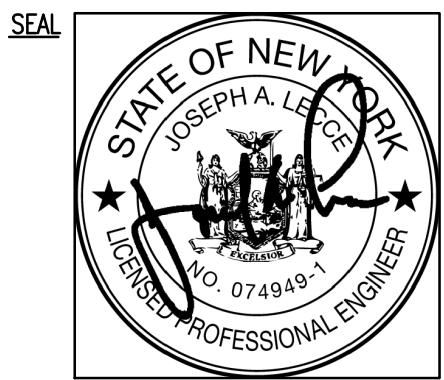
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NO ALLOWANCES SHALL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

MEP ENGINEER
Lecce Engineering
Joseph A. Lecce P.E., P.C.
397 HAVELWOOD ROAD
Suite 211
WHITE PLAINS, NY 10627
(914) 419-4663

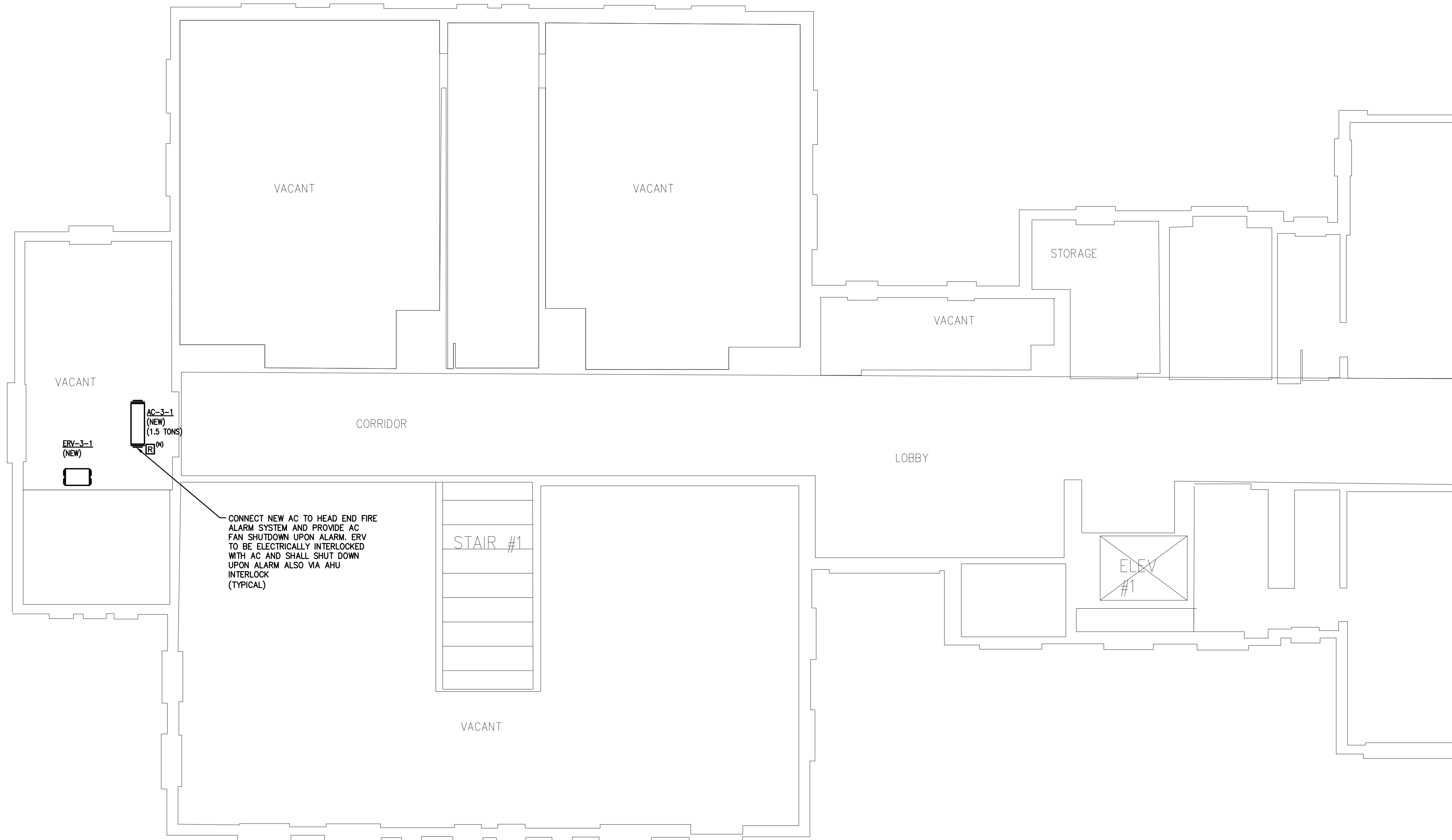
PROJECT:
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MAMARONECK, NY**

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



CONNECT NEW AC TO HEAD END FIRE ALARM SYSTEM AND PROVIDE AC FAN SHUTDOWN UPON ALARM. EXV TO BE ELECTRICALLY INTERLOCKED WITH AC AND SHALL SHUT DOWN UPON ALARM ALSO VIA AHJ INTERLOCK (TYPICAL)

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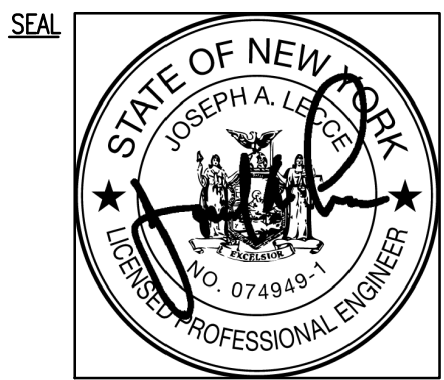
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MEP ENGINEER
Lecce Engineering
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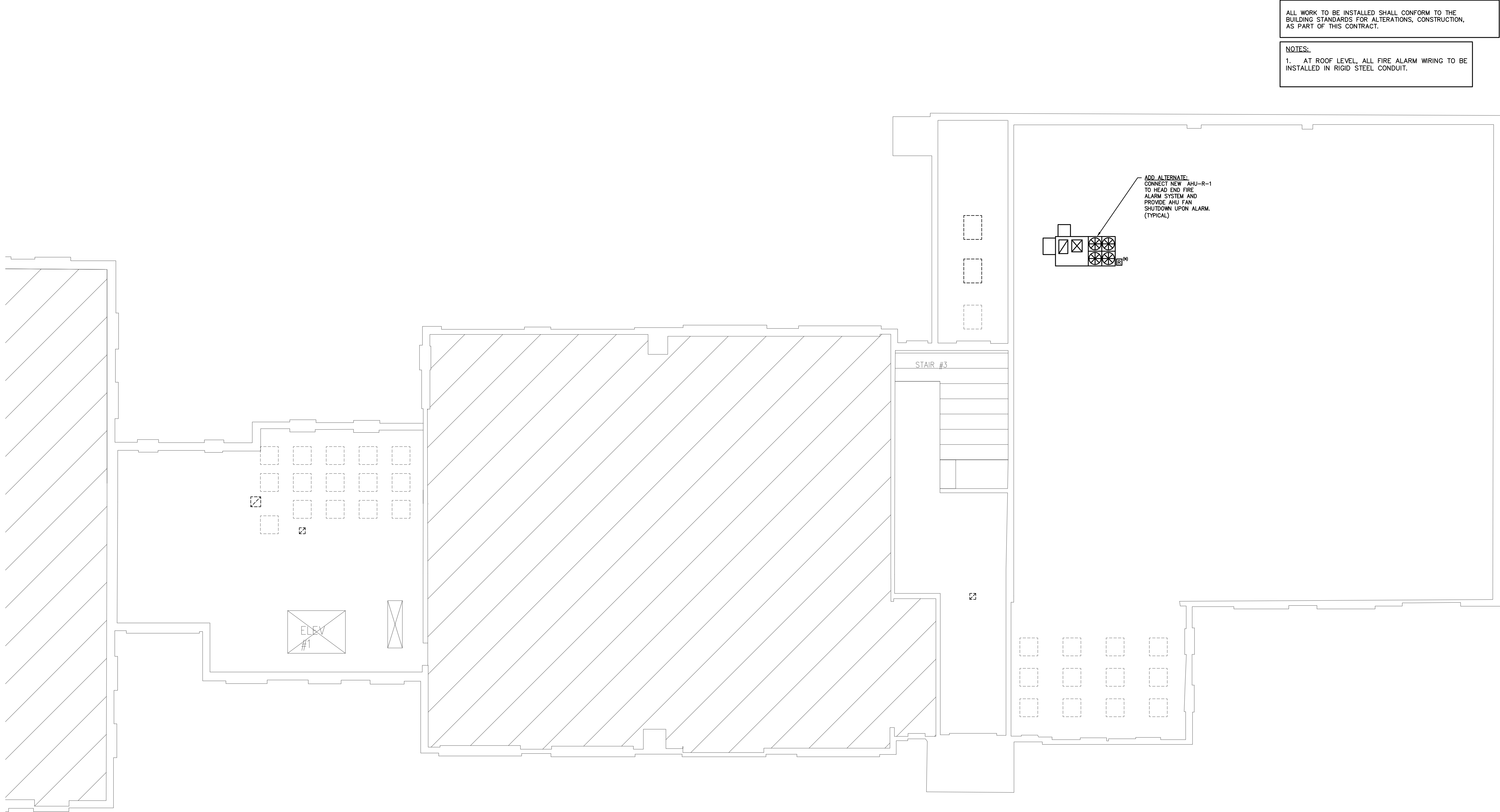
PROJECT:
**PROPOSED A/C UNIT REPLACEMENT FOR
MAMARONECK COURT CLERK
TOWN OF MAMARONECK
1ST, 2ND, AND 3RD LEVEL
740 WEST BOSTON POST ROAD
MAMARONECK, NY**

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
3RD LEVEL**

DRAWING NO:
FA-303

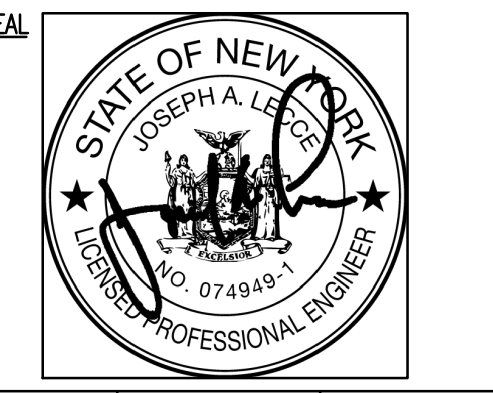


ALL WORK TO BE INSTALLED SHALL CONFORM TO THE BUILDING STANDARDS FOR ALTERATIONS, CONSTRUCTION, AS PART OF THIS CONTRACT.

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

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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 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 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 NEGLECT ON HIS PART.