SYMBOLS

SYMBOL	DESCRIPTION
	NEW PIPING, DUCTWORK OR EQUIPMENT
	EXISTING PIPING, DUCTWORK OR EQUIPMENT TO REMAIN
	NEW EQUIPMENT
RE	RELOCATED POSITION OF EXISTING EQUIPMENT
18X12	DUCT SIZE (FIRST FIGURE INDICATES HORIZONTAL SIZE)
18ø	ROUND DUCT DIAMETER
	ACOUSTIC LINING IN DUCT
	TRANSITION FROM RECTANGULAR TO ROUND OR OVAL DUCT
AD	ACCESS DOOR IN DUCT
	FLEXIBLE CONNECTION
V.D.	VOLUME DAMPER
F.D.	FIRE DAMPER W/ DUCT ACCESS DOOR
M	MOTORIZED DAMPER W/DUCT ACCESS DOOR
F.S.D.	COMBINATION FIRE/SMOKE DAMPER W/DUCT ACCESS DOOR
	SUPPLY REGISTER
	RETURN OR EXHAUST REGISTER OR GRILLE
	SUPPLY CEILING DIFFUSER (4-WAY BLOW)
	SUPPLY CEILING DIFFUSER (3-WAY BLOW)
	SUPPLY CEILING DIFFUSER (2-WAY BLOW)
	SUPPLY CEILING DIFFUSER (1-WAY BLOW)
B(500)	DIFFUSER TYPE AND CFM (CUBIC FEET PER MINUTE). REFER TO SCHEDULE.
	RETURN CEILING GRILLE OR REGISTER
	SUPPLY LINEAR DIFFUSER W/ PLENUM
	RETURN LINEAR DIFFUSER W/ PLENUM
	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	RETURN OR EXHAUST DUCT UP
	RETURN OR EXHAUST DUCT DOWN
	ELBOW WITH TURNING VANES
	RADIUS ELBOW
	DUCT SPLIT OR BRANCH TAKEOFF
VAV B(500)	TERMINAL BOX (CV, VAV). DESIGNATION INDICATES TYPE, BOX SIZE, AND CFM. QUANTITY (REFER TO SCHEDULES).
	SUPPORT BRACKETS FOR STAIR PRESSURIZATION DUCT WORK EXPOSED ON ROOF OR IN GARAGE; REFER TO PLANS FOR LOCATION AND DETAILS FOR BRACKET INFORMATION
T	THERMOSTAT OR TEMPERATURE SENSOR TO BE WALL OR DUCT MOUNTED. REFER TO PLANS FOR LOCATION.
LD	LEAK DETECTION SENSOR
T	THERMOSTAT / SENSOR WIRING FROM SENSING DEVICE TO CONTROLLED DEVICE
1	REVISION SYMBOL
D	DUCT SMOKE DETECTOR
CO	CARBON MONOXIDE DETECTOR FOR GARAGE EXHAUST SYSTEM
U	PROVIDE UNDERCUT AT DOOR WHERE THIS IS SHOWN

ABBREVIATION

AC	AIR CONDITIONING UNIT	HWR	HOT WATER RETURN
AD	ACCESS DOOR	HX	HEAT EXCHANGER
AH	AIR HANDLING UNIT	HZ	HERTZ
ATC	AUTOMATIC TEMPERATURE CONTROL	KW	KILOWATT
B(500)	DIFFUSER TYPE - REFER TO SCHEDULE	KX	KITCHEN EXHAUST
BMS	BUILDING MANAGEMENT SYSTEM	LAT	LEAVING AIR TEMPERATURE
BTU	BRITISH THERMAL UNIT	MBH	THOUSAND BTU PER HOUR
CC	COOLING COIL	MCA	MINIMUM CIRCUIT AMPS
CD	CONDENSATE DRAIN	MD	MOTORIZED DAMPER
CFM	CUBIC FEET PER MINUTE	NC	NORMALLY CLOSED
CG	CEILING GRILLE	NIC	NOT IN CONTRACT
CP	CONDENSATE PUMP	NK	NECK SIZE
CAR	CONSTANT AIRFLOW REGULATOR	NO	NORMALLY OPEN
CR	CEILING REGISTER	NTS	NOT TO SCALE
CUH	CABINET UNIT HEATER	OAI	OUTSIDE AIR INTAKE
CV	CONSTANT VOLUME	OED	OPEN END DUCT
CW	DOMESTIC COLD WATER PIPING	PC	PUMPED CONDENSATE
DC	DRY COOLER	PD	PUMP DISCHARGE
DHWS	DOMESTIC HOT WATER SUPPLY	PPH	POUNDS PER HOIUR
DHWR	DOMESTIC HOT WATER RETURN	PH	PHASE
DX	DIRECT EXPANSION	PSI	POUND PER SQUARE INCH
E	EXISTING	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
EAT	ENTERING AIR TEMPERATURE	PSIG	POUNDS PER SQUARE INCH GAUGE
EF	EXHAUST FAN	PTAC	PACKAGED TERMINAL AIR CONDITIONER
EG	EXHAUST GRILLE	RF	RETURN FAN
ERV	ENERGY RECOVERY VENTILATOR	SD	SMOKE DETECTOR
EWT	ENTER WATER TEMPERATURE	TD	TRANSFER DUCT
FXC	FLEXIBLE CONNECTION	TAO	TRANSFER AIR OPENING
FC	FAN COIL	TR	TOP REGISTER
FD/AD	FIRE DAMPER WITH ACCESS DOOR	TX	TOILET EXHAUST
FLA	FULL LOAD AMPS	TYP	TYPICAL
FPI	FIN PER INCH	VN	VENT
FTR	FIN TUBE RADIATION	V	VOLTS
G	GAS PIPING	VAV	VARIABLE AIR VOLUME
GPM	GALLONS PER MINUTE	VD	VOLUME DAMPER
GX	GENERAL EXHAUST	VFD	VARIABLE FREQUENCY DRIVE
HWP	HOT WATER PUMP	WMS	WIRE MESH SCREEN
HWS	HOT WATER SUPPLY		

BUILDING DEPARTMENT NOTES:

BUILDING DEPARTMENT NOTES:

1. UPON COMPLETION OF VENTILATION SYSTEM, A TEST SHALL BE CONDUCTED UNDER THE PRESENCE AND DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT QUALIFIED TO CONDUCT SUCH TESTS. THE TESTS SHALL SHOW COMPLIANCE WITH CODE REQUIREMENTS FOR VENTILATION AND PROPER FUNCTION OF ALL OPERATING DEVICES, BEFORE THE SYSTEM IS APPROVED.
2. THE LICENSED PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT WHO CONDUCTS THE TESTS SHALL FILE THE CERTIFICATE AS TO WHETHER THE SYSTEM COMPLIES WITH APPLICABLE LAWS. THE TEST AND REPORT SHALL BE MADE IN A MANNER SATISFACTORY TO THE SUPERINTENDENT.
3. A STATEMENT SHALL BE FILED BY THE OWNER THAT THE SYSTEM OF VENTILATION WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THIS BUILDING AS ORDERED IN THE APPLICABLE SECTION OF THE CODE.
4. NEW YORK STATE MECHANICAL CODE CHAPTER 4 SECTION 401 SHALL GOVERN THE VENTILATION OF SPACES WITHIN A BUILDING INTENDED TO BE OCCUPIED.
5. MECHANICAL VENTILATION BY A METHOD OF SUPPLY AIR AND RETURN OR EXHAUST AIR SHALL BE PROVIDED AS PER NEW YORK STATE MECHANICAL CODE CHAPTER 4, SECTION 403. THE AMOUNT OF SUPPLY AIR SHALL BE APPROXIMATELY EQUAL TO THE AMOUNT OF RETURN AND EXHAUST AIR. THE SYSTEM SHALL NOT BE PROHIBITED FROM PRODUCING NEGATIVE OR POSITIVE PRESSURE. THE SYSTEM TO CONVEY VENTILATION AIR SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NEW YORK STATE MECHANICAL CODE CHAPTER 6.
6. MECHANICAL VENTILATION SYSTEMS SHALL BE PROVIDED WITH MANUAL OR AUTOMATIC CONTROLS AS PER NEW YORK STATE MECHANICAL CODE CHAPTER 4 SECTION 405.
7. THE DESIGN, CONSTRUCTION AND INSTALLATION OF MECHANICAL EXHAUST SYSTEMS, INCLUDING DUST, STOCK AND REFUSE CONVEYOR SYSTEMS, EXHAUST SYSTEMS SERVING COMMERCIAL COOKING APPLIANCES AND ENERGY RECOVERY VENTILATIONSYSTEMS SHALL BE AS PER NEW YORK STATE MECHANICAL CODE CHAPTER 5 SECTION 501.
8. MECHANICAL AND PASSIVE SMOKE CONTROL SYSTEMS THAT ARE REQUIRED BY THE NEW YORK STATE MECHANICAL CODE SHALL BE AS PER NEW YORK STATE MECHANICAL CODE SECTION 513. GENERAL DESIGN REQUIREMENTS SHALL BE AS PER NEW YORK STATE MECHANICAL CODE SECTION 513.2. SPECIAL INSPECTION AND TEST REQUIREMENTS SHALL BE AS PER NEW YORK STATE MECHANICAL CODE SECTION 513.3.
9. DUCT SYSTEMS USED FOR THE MOVEMENT OF AIR IN AIR-CONDITIONING, HEATING, VENTILATING AND EXHAUST SYSTEMS SHALL CONFORM TO THE PROVISIONS OF NEW YORK STATE MECHANICAL CODE CHAPTER 6, SECTION 601.
10. THE INSTALLATION AND CONSTRUCTION OF DUCTWORK SHALL BE AS PER NEW YORK STATE MECHANICAL CODE CHAPTER 6, SECTION 603.
11. PROTECTION OF DUCT PENETRATIONS AND AIR TRANSFER OPENINGS IN ASSEMBLIES REQUIRED TO BE PROTECTED SHALL BE AS PER NEW YORK STATE MECHANICAL CODE CHAPTER 6, SECTION 607. FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS AND CEILING RADIATION DAMPERS SHALL BE PROVIDED AT THE LOCATIONS PRESCRIBED IN SECTIONS 607.5.1 THROUGH 607.5.5. WHERE AN ASSEMBLY IS REQUIRED TO HAVE BOTH FIRE DAMPERS AND SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS OR A FIRE DAMPER AND A SMOKE DAMPER SHALL BE REQUIRED.
12. DUCT AND AIR TRANSFER OPENINGS THAT PENETRATE FIRE RATED PARTITIONS SHALL COMPLY WITH ALL REQUIREMENTS LISTED UNDER THE BUILDING CODE SECTION 716 AS APPLICABLE TO SYSTEM DESIGN.
13. CONTRACTOR SHALL BE RESPONSIBLE TO RETAIN AND PAY FOR TESTING SERVICES AND SPECIAL INSPECTIONS AS PER CHAPTER 17 OF THE NYS BUILDING CODE.
13. CONTRACTOR SHALL BE RESPONSIBLE TO RETAIN AND PAY FOR TESTING SERVICES AND PROGESS INSPECTIONS AS PER NYS ENERGY CONSTRUCTION CODE..

NEW YORK STATE ENERGY CODE NOTES:

1. STAIR AND ELEVATOR SHAFT VENTS AND OTHER OUTDOOR AIR INTAKES AND EXHAUST OPENINGS INTEGRAL TO THE BUILDING ENVELOPE SHALL BE EQUIPPED WITH NOT LESS THAN A CLASS I MOTORIZED, LEAKAGE RATED DAMPER WITH A MAXIMUM LEAKAGE RATE OF 4 CFM PER SQUARE FOOT AT 1.0 INCH WATER GAUGE (W.G.) WHEN TESTED IN ACCORDANCE WITH AMCA 500D. GRAVITY (NON-MOTORIZED) DAMPERS ARE PERMITTED TO BE USED IN BUILDINGS LESS THAN THREE STORIES IN HEIGHT ABOVE GRADE.
2. BOTH OUTDOOR AIR SUPPLY AND EXHAUST DUCTS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEMS OR SPACES SERVED ARE NOT IN USE. GRAVITY DAMPERS SHALL BE PERMITTED IN BUILDINGS LESS THAN THREE STORIES IN HEIGHT. GRAVITY DAMPERS SHALL BE PERMITTED FOR OUTSIDE AIR INTAKE OR EXHAUST AIRFLOWS OF 300 CFM OR LESS.
3. HEAT TRACE SYSTEMS SHALL TURN OFF AUTOMATICALLY OR MANUALLY WHEN THE PIPING SYSTEM IS ABOVE FREEZING CONDITIONS.
4. HOT WATER SYSTEM PUMPS SHALL BE TURNED OFF AUTOMATICALLY OR MANUALLY WHEN THE HOT WATER SYSTEM IS NOT IN OPERATION.
5. ONE THERMOSTAT WITH SETBACK CONTROLS PER ZONE. EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM. EXCEPTIONS:
   A. ZONES THAT WILL BE OPERATED CONTINUOUSLY.
   B. ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A READILY ACCESSIBLE MANUAL SHUTOFF SWITCH.
6. THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F OR UP TO 85°F.
7. THERMOSTATIC CONTROLS PROVIDING BOTH HEATING AND COOLING SHALL HAVE A MINIMUM DEAD BAND OF AT LEAST 5°F, EXCEPT FOR UNITS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
8. HYDRONIC HEATING AND COOLING COILS MUST BE EQUIPPED WITH A WAY TO PRESSURE TEST CONNECTIONS AND MEASURE AND BALANCE WATER FLOW AND PRESSURE
9. AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR AT LEAST 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.
10. CONTRACTOR SHALL PROVIDE AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER. THE MANUAL SHALL INCLUDE, AT LEAST, THE FOLLOWING: EQUIPMENT CAPACITY (INPUT AND OUTPUT) AND REQUIRED MAINTENANCE ACTIONS, EQUIPMENT OPERATION AND MAINTENANCE MANUALS, HVAC SYSTEM CONTROL MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS, AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS AND A COMPLETE WRITTEN NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE.
11. THE MINIMUM FLOW RATE OF OUTDOOR AIR THAT THE VENTILATION SYSTEM MUST BE CAPABLE OF SUPPLYING DURING ITS OPERATION SHALL BE PERMITTED TO BE BASED ON THE RATE PER PERSON INDICATED IN THE NYC MECHANICAL CODE AND THE ACTUAL NUMBER OF OCCUPANTS PRESENT. INTERMITTENT EXHAUST SHALL BE PERMITTED WHERE AN INDIVIDUAL EXHAUST DUCT AND FAN ARE PROVIDED AND THE OPERATION OF THE FAN IS CONTROLLED BY OCCUPANTS OF THE SPACE BEING VENTED.
12. EACH AIR DISTRIBUTION SYSTEM SHALL BE PROVIDED WITH NOT LESS THAN ONE MANUAL CONTROL TO STOP THE OPERATION OF THE SUPPLY, RETURN, AND EXHAUST FANS(S) IN AN EMERGENCY. THE MANUAL CONTROL SUCH AS UNIT DISCONNECT SWITCH SHALL BE PROVIDED AT AN APPROVED LOCATION.
13. MECHANICAL VENTILATION SYSTEMS FOR ENCLOSED PARKING GARAGES ARE NOT REQUIRED TO OPERATE CONTINUOUSLY WHERE THE SYSTEM IS ARRANGED TO OPERATE AUTOMATICALLY UPON DETECTION OF A CONCENTRATION OF CARBON MONOXIDE OF 25 PARTS PER MILLION (PPM) BY APPROVED AUTOMATIC DETECTION DEVICES.
14. UNINHABITED SPACES, SUCH AS CRAWL SPACES AND ATTICS, SHALL BE PROVIDED WITH NATURAL VENTILATION OPENINGS OR SHALL BE PROVIDED WITH A MECHANICAL EXHAUST AND SUPPLY AIR SYSTEM AS REQUIRED BY THE NEW YORK STATE BUILDING CODE.
15. HEATING FOR VESTIBULES AND AIR CURTAINS SHALL INCLUDE CONTROLS THAT SHUT OFF THE HEATING SYSTEM WHEN OAT > 45F. VESTIBULE HEATING SYSTEMS SHALL HAVE A THERMOSTAT SET POINT <= 60F.

GENERAL HVAC NOTES:

1. NATURALLY VENTILATED SPACES SHALL BE PERMANENTLY OPEN TO AND WITHIN 25 FT OF OPERABLE WALL OR ROOF OPENINGS TO THE OUTDOORS. THE OPENABLE AREA OF WHICH IS A MINIMUM OF 4% OF THE NET OCCUPIABLE FLOOR AREA. WHERE OPENINGS ARE COVERED WITH LOUVERS OR OTHERWISE OBSTRUCTED, OPENABLE AREA SHALL BE BASED ON THE FREE UNOBSTRUCTED AREA THROUGH THE OPENING. WHERE INTERIOR SPACES WITHOUT DIRECT OPENINGS TO THE OUTDOORS ARE VENTILATED THROUGH ADJOINING ROOMS, THE OPENING BETWEEN ROOMS SHALL BE PERMANENTLY UNOBSTRUCTED AND HAVE A FREE AREA OF NOT LESS THAN 8% OF THE AREA OF THE INTERIOR ROOM NOR LESS THAN 25 SQ.FT.
2. REQUIRED OPERABLE OPENINGS SHALL BE READILY ACCESSIBLE TO BUILDING OCCUPANTS WHENEVER THE SPACE IS OCCUPIED.
3. EXHAUST DUCTS THAT ARE TO BE SEALED IN ACCORDANCE WITH SMACNA SEAL CLASS A.2.
4. MECHANICAL VENTILATION SYSTEMS SHALL INCLUDE CONTROLS, MANUAL OR AUTOMATIC, THAT ENABLES THE FAN SYSTEM TO OPERATE WHENEVER THE SPACES SERVED ARE OCCUPIED. THE SYSTEM SHALL BE DESIGNED TO MAINTAIN THE MINIMUM OUTDOOR AIRFLOW AS REQUIRED BY SYSTEM DESIGN.
5. ALL AIRSTREAM SURFACES IN EQUIPMENT AND DUCTS IN THE HEATING, VENTILATING, AND AIR-CONDITIONING SYSTEM SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS.
6. OUTDOOR AIR INTAKES, INCLUDING DOORS AND WINDOWS THAT ARE REQUIRED AS PART OF A NATURAL VENTILATION SYSTEM, SHALL BE LOCATED SUCH THAT THE SHORTEST DISTANCE FROM THE INTAKE TO ANY SPECIFIC POTENTIAL OUTDOOR CONTAMINANT SOURCE SHALL BE EQUAL TO OR GREATER THAN THE SEPARATION DISTANCE NOTED ON PLANS OR SPECIFICATIONS.
7. OUTDOOR AIR INTAKES THAT ARE PART OF THE MECHANICAL VENTILATION SYSTEM SHALL BE DESIGNED TO MANAGE RAIN ENTRAINMENT IN ACCORDANCE THE SPECIFICATIONS.
8. AIR HANDLING AND DISTRIBUTION EQUIPMENT MOUNTED OUTDOORS SHALL BE DESIGNED TO PREVENT RAIN INTRUSION INTO THE AIRSTREAM WHEN TESTED AT DESIGN AIRFLOW AND WITH NO AIRFLOW.
9. WHERE CLIMATE DICTATES, OUTDOOR AIR INTAKES THAT ARE PART OF THE MECHANICAL VENTILATION SYSTEM SHALL BE DESIGNED TO MANAGE MELTED SNOW BLOWN OR DRAWN INTO THE SYSTEM BY PROVIDING SUITABLE ACCESS DOORS TO PERMIT CLEANING SHALL BE PROVIDED OR OUTDOOR AIR DUCTWORK (OR PLENUMS) SHALL PITCH TO DRAINS DESIGNED IN ACCORDANCE WITH THE DRIP PAN REQUIREMENTS.
10. OUTDOOR AIR INTAKES SHALL INCLUDE A SCREENING DEVICE DESIGNED TO PREVENT PENETRATION BY A 1/2 IN. DIAMETER PROBE. THE SCREENING DEVICE MATERIAL SHALL BE CORROSION RESISTANT. THE SCREENING DEVICE SHALL BE LOCATED, OR OTHER MEASURES SHALL BE TAKEN, TO PREVENT BIRD NESTING WITHIN THE OUTDOOR AIR INTAKE.
11. THE DISCHARGE FROM NON-COMBUSTION EQUIPMENT THAT CAPTURES THE CONTAMINANTS GENERATED BY THE EQUIPMENT SHALL BE DUCTED DIRECTLY TO THE OUTDOORS.
12. FUEL-BURNING APPLIANCES, BOTH VENTED AND UN-VENTED, SHALL BE PROVIDED WITH SUFFICIENT AIR FOR COMBUSTION AND ADEQUATE REMOVAL OF COMBUSTION PRODUCTS, IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. PRODUCTS OF COMBUSTION FROM VENTED APPLIANCES SHALL BE VENTED DIRECTLY OUTDOORS.
13. DRAIN PANS, INCLUDING THEIR OUTLETS AND SEALS, SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS.
14. VENTILATION EQUIPMENT SHALL BE INSTALLED WITH SUFFICIENT WORKING SPACE FOR INSPECTION AND ROUTINE MAINTENANCE (E.G., FILTER REPLACEMENT AND FAN BELT ADJUSTMENT AND REPLACEMENT).
15. ACCESS DOORS, PANELS, OR OTHER MEANS SHALL BE PROVIDED AND SIZED TO ALLOW CONVENIENT AND UNOBSTRUCTED ACCESS SUFFICIENT TO INSPECT, MAINTAIN, AND CALIBRATE ALL VENTILATION SYSTEM COMPONENTS FOR WHICH ROUTINE INSPECTION, MAINTENANCE, OR CALIBRATION IS NECESSARY. VENTILATION SYSTEM COMPONENTS COMPRISE, FOR EXAMPLE, AIR-HANDLING UNITS, FAN-COIL UNITS, WATER-SOURCE HEAT PUMPS, OTHER TERMINAL UNITS, CONTROLLERS, AND SENSORS.
16. ACCESS DOORS, PANELS, OR OTHER MEANS SHALL BE PROVIDED IN VENTILATION EQUIPMENT, DUCTWORK, AND PLENUMS, LOCATED AND SIZED TO ALLOW CONVENIENT AND UNOBSTRUCTED ACCESS FOR INSPECTION, CLEANING, AND ROUTINE MAINTENANCE AS PER SPECIFICATIONS.
17. AIR SHALL BE CLASSIFIED, AND ITS RECIRCULATION SHALL BE LIMITED IN ACCORDANCE WITH THE SPECIFICATIONS.
18. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
19. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE TO UNDERSIDE OF PIPES DUCTS, SUSPENDED EQUIPMENT, ETC. THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
20. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY MECHANICAL CONTRACTOR. MINIMUM CONCRETE PAD SHALL BE 6 INCHES. PAD SHALL EXTEND BEYOND EQUIPMENT A MINIMUM OF 6 INCHES ON EACH SIDE.
21. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT.
22. ALL ROOF MOUNTED EQUIPMENT CURBS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
23. ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET WITH "P" TRAP, AND PIPES TO NEAREST DRAIN. SEE DETAIL DRAWINGS FOR CONDENSATE TRAP DETAILS.
24. PROVIDE HOSE END DRAIN VALVES AT THE BOTTOM OF ALL RISERS AND LOW POINTS.
25. ALL VALVES SHALL BE INSTALLED SO THAT VALVE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.
26. ALL BALANCING VALVES AND BUTTERFLY VALVES SHALL BE PROVIDED WITH POSITION INDICATION AND MAXIMUM ADJUSTABLE STOPS.
27. ALL FANS SHALL NOT BE ON TIMERS FOR KITCHEN TOILET EXHAUST SYSTEMS.
28. RESIDENTIAL APARTMENT EXHAUST. DUCTWORK SHALL BE RIGID SHEET METAL MINIMUM GAUGE NUMBER 26.
29. INTERNAL ACOUSTIC DUCT LINING WITH A THICKNESS OF 1 INCH SHALL BE PROVIDED FOR A MINIMUM DISTANCE OF 20 FT UPSTREAM OF ALL EXHAUST FANS SERVING APARTMENT AREAS AS WELL AS UP AND DOWNSTREAM OF CORRIDOR SUPPLY UNITS AND AC UNITS.
30. CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ENSURE APARTMENT AIR LEAKAGE SHALL BE NO MORE THAN 0.30 CFM PER SQUARE FOOT OF ENCLOSURE, AS TESTED BY OWNER'S REPRESENTATIVE.
31. DUCT LEAKAGE AS TESTED BY OWNERS REPRESENTATIVE, SHALL BE NO MORE THAN 5 CFM PER FLOOR PER SHAFT, INCLUSIVE OF DUCT FROM ROOF CURB TO GRILLE

DESIGNATION LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
GEF	GENERAL EXHAUST FAN	EUH	ELECTRIC UNIT HEATER

THE OWNERSHIP SHALL EMPLOY A QUALIFIED PARTY TO PERFORM AND FILE ALL REQUIRED ENERGY PROGRESS INSPECTIONS AND CONTROLLED INSPECTIONS REQUIRED FOR SIGN OFFS FOR ALL OF CONTR WORK. THE CONTRACTORS FILING AGENT SHALL SUPERCEDE ALL PREVIOUS PARTIES THAT FILED TO IDENTIFY THE REQUIRED INSPECTIONS.

CONTROL SYSTEM NARRATIVE:

1. ALL OCCUPIED AREAS DURING WINTER SHALL BE AT 70°F AND SERVICE AREA SHALL BE AT 65°F. ALL OCCUPIED AREAS DURING SUMMER SHALL BE AT 78°F. THE TEMPERATURE SET POINT WILL BE CONTROLLED BY THERMOSTAT AT EACH LOCATION.
2. ALARMS SHALL BE PROVIDED AT ELEVATOR MACHINE ROOM AND ELECTRICAL ROOM WHEN THE ROOM TEMPERATURE EXCEEDS 85°F.
3. ALL AUTOMATIC DAMPERS SHALL BE CONTROLLED BY THE AUTOMATIC TEMPERATURE CONTROL MANUFACTURER.
4. TOILET EXHAUST AND KITCHEN VENTILATION FANS SHALL RUN CONTINUOUSLY.
5. HEAT TRACING SHALL BE CONTROLLED VIA THERMOSTAT TO PREVENT PIPE FREEZING.
6. TEMPERATURE SET POINT SHALL BE AS FOLLOW: 110°F FOR DWELLINGS AND 90°F FOR ALL OTHER OCCUPANCIES.

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, ALL PROPOSED DESIGN AND DOCUMENTATION IN COMPLIANCE WITH THE 2016 NEW YORK CITY ENERGY CONSERVATION CONSTRUCTION CODE.

GENERAL EQUIPMENT NOTES:

GENERAL EQUIPMENT NOTES:
1. LOUVERS SHALL BE SIMILAR TO GREENHECK MODEL EDJ-401, 930 FPM FREE AREA VELOCITY, WATER PENETRATION STARTING POINT, ±50% FREE AREA. COORDINATE WITH GENERAL CONTRACTOR. LOUVERS SHALL RESTRICT WIND-DRIVEN RAIN PENETRATION TO LESS THAN 2.36 OZ/FT2 *H WHEN SUBJECTED TO A SIMULATED RAINFALL OF 3 IN. PER HOUR AND A 29 MPH WIND VELOCITY AT THE DESIGN OUTDOOR AIR INTAKE RATE WITH THE AIR VELOCITY CALCULATED BASED ON THE LOUVER FACE AREA. LOUVER PERFORMANCE CORRESPONDS TO CLASS A (99 EFFECTIVENESS) WHEN RATED ACCORDING TO AMCA 511-99 AND TESTED PER AMCA 500-L-99.
2. CONTRACTOR SHALL MANAGE THE WATER THAT PENETRATES OUTDOOR AIR INTAKE OPENING BY PROVIDING A DRAINAGE AREA AND/OR MOISTURE REMOVAL DEVICES.
3. ALL MOTORS 1HP AND LARGER SHALL BE NEMA PREMIUM EFFICIENCY.
4. ALL THERMOSTATS SHALL BE AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR AT LEAST 10 HOURS. CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

ALL HEATING AND COOLING LOAD CALCULATIONS ARE BASED ON EQUIPMENT SIZING PROCEDURES AS DESCRIBED IN THE ASHRAE/ACCA STANDARD 183.

MECHANICAL DRAWING LIST

Sheet Number	Sheet Name	ISSUED FOR
M-001.00	MECHANICAL LEAD & SCHEDULES SHEET	
M-100.00	MECHANICAL - LEVEL1 PLAN	
M-101.00	MECHANICAL - LEVEL 2-4 PLAN	
M-102.00	MECHANICAL - LEVEL 5 PLAN	
M-500.00	MECHANICAL - DETAILS	

EUH - ELECTRIC UNIT HEATER — BASE OF DESIGN: MARKEL

UNIT DESIG.	LOCATION	CAPACITY (KW)	MODEL	CATALOG NO.	FAN DATA				WIDTH (IN)	DEPTH (IN)	HEIGHT (IN)	WEIGHT (LBS)	MANUFACTURER	REMARKS
					CFM	AIR THROW (FT.)	MOTOR (KW)	VOLT/ PH						
EUH-A	MEP ROOM	3.3	F1FUH03003	06446002	400	26	3.3	208/1	20	11	13	36	MARKEL	

- ALL UNIT HEATERS TO BE PROVIDED WITH POWER DISCONNECT SWITCH,BUILT-IN THERMOSTAT 2 STAGE
- INSTALL PER MANUFACTURER REQUIREMENTS
- CONTRACTOR TO COORDINATE UNIT'S COLOR WITH ARCHITECT PRIOR INSTALLATION.
- COORDINATE POWER REQUIREMENT WITH ELECTRICIAN.

FAN SCHEDULE

EF-EXHAUST FAN
LEF- LAUNDRY EXHAUST FAN
SF-SUPPLY FAN
LSF- LAUNDRY SUPPLY FAN

KEF-KITCHEN EXHAUST FAN
TEF- TOILET EXHAUST FAN
REF-REFUSE EXHAUST FAN
GEF-GENERAL EXHAUST FAN

BASIC OF DESIGN:GREENHECK

FAN No.	LOCATION	AREA OR SYSTEM SERVED	CFM	TOTAL STATIC PRESSURE (IN. W.G.)	MODEL No.	FAN DATA						MOTOR DATA				EMERG. POWER (YES OR NO)	SONES	DIMENSIONS			WEIGHT (LBS)	REMARKS
						RPM	BHP	TYPE	DRIVE	CLASS	DISCHARGE POSITION	HP	VOLT/ CYCLE/PH	NEC FLA*	ENCLOSURE			L (IN.)	W (IN.)	H (IN.)		
GEF-1	LEVEL 1A	MEP ROOM	1000	0.5	AER-E20C-610-VG	1,206	0.18	SIDE WALL	DIRECT		HORIZONTAL	1/2	115/60/3	6.4	-	NO	12.2	32	26.25	26.25	136	

1. PROVIDE WITH DISCONNECT SWITCH, VIBRATION ISOLATORS, THERMAL OVERLOAD PROTECTION, AND SPARE DRY CONTACT FOR INTERLOCKING.
2. FANS SHALL NOT BE OPERATED VIA TIME CLOCKS.
3. ALL ROOF FANS ON THE MAIN ROOF SHALL BE HIGH WIND RATED.
   ALL SINGLE PHASE MOTORS TO INCLUDE THERMAL OVERLOAD.
4. PROVIDE DRIVE CONTROLLER, MEC 24 MODULATING FAN CONTROLLER, SENSORS AND PROBED FOR A COMPLETE INTEGRATED SYSTEM BY UNIT MANUFACTURER.
5. MOTOR VOLTAGE SHALL BE COORDINATED BY CONTRACTOR PRIOR TO RELEASE.
6. MOTORS SHALL BE PROVIDED WITH DISCONNECT SWITCHES AND APPROPRIATE ENCLOSURE BASED ON LOCATION AND APPLICATION.
7. ORIENTATION INCLUDING ARRANGEMENT, ROTATION AND/OR DISCHARGE SHALL BE COORDINATED BY CONTRACTOR PRIOR TO RELEASE.
8. ALL VARI-GREEN (VG) FANS SHALL INCLUDE AN 85% EFFICIENT (AT ALL SPEEDS) ELECTRONIC COMMUTATION (EC), BRUSHLESS DC TYPE, MOTOR SPECIFICALLY DESIGNED FOR FAN APPLICATIONS AND SPEED CONTROLLABLE DOWN TO 20% OF FULL SPEED.
9. PROVIDE MOTORIZED DAMPER FOR ALL EXHAUST FANS.

CONTRACT				
032	032E	032H	032P	N/TS
N	N	F	N	N

N = NOT IN CONTRACT, FOR REFERENCE ONLY

F = FULL SCOPE - ALL SCOPE ON DRAWINGS APPLES TO SINGLE CONTRACT ONLY.

S = SPLIT SCOPE. SEE SUMMARY OF WORK SPECIFICATIONS FOR CLARIFICATION.

FOR REFERENCE ONLY - NOT IN CONTRACT

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STATE OF NEW YORK · EDWARD C. ETTINGER · 095119 · LICENSED PROFESSIONAL ENGINEER

EXPIRATION DATE: 02/2021
DATE SEALED:11/12/2020
EDWARD C. ETTINGER: PROFESSIONAL ENGINEER
LICENSE NO. 095119

OWNER / CONSTRUCTION MANAGER

CITY OF NEW ROCHELLE
New Rochelle, NY 10801

the NRP group
THE NRP GROUP
1600 District Ave. Suite 315
Burlington, MA 01803

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VHB
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(914) 467 6629

Renaissance at Lincoln Park
116 Guion Place
Garage Precast
Contract 20-032

New Rochelle, NY

MARK	DATE	DESCRIPTION
8	01/22/2021	ISSUED FOR PLUMBING BIDDING
7	12/18/2020	ISSUED FOR CONSTRUCTION
6	12/16/2020	NRP/TS BULLETIN #1
5	11/12/2020	BUILDING PRECAST BIDDING
4	10/20/2020	BUILDING PERMIT RESUBMISSION 2
3	09/25/2020	BUILDING PERMIT RESUBMISSION
2	09/17/20	95%CD/BID SET
1	08/17/20	ISSUED FOR PERMIT

REVISIONS

ISSUE: CONSTRUCTION DOCUMENTS
ISSUE DATE: 11/23/2020
PROJECT NO: 2477
DRAWN BY: P.C.
CHECKED BY: E.E.

SHEET TITLE:
MECHANICAL LEAD & SCHEDULES SHEET

M-001.00