MECHANICAL SYMBOLS LIST

AC-1 / TXF-1	EQUIPMENT SYMBOL
XX / X	RISER SYMBOL
AIR DEVICES	
	CEILING DIFFUSER SUPPLY
	CEILING DIFFUSER RETURN
	SUPPLY GRILLE – SIDEWALL
	RETURN GRILLE – SIDEWALL
DUCT ACCESSORIES	
	FIRE DAMPER W/ ACCESS DOOR
M	MOTORIZED DAMPER W/ ACCESS DOOR
	FIRE SMOKE DAMPER W/ ACCESS DOOR
VD / VD	VOLUME DAMPER W/ ACCESS DOOR
HVAC PIPING	
CP	NEW CONDENSATE PIPING
REF	NEW REFRIGERANT PIPING
	PIPE TURNING DOWN
	PIPE GOING UP
CONTROLS AND SENSORS	
T	THERMOSTAT
S	DUCT SMOKE DETECTOR
DUCTWORK	
	AIR DUCT W/ 1.5" ACOUSTICAL LINING
ø12	ROUND DUCT (DIAMETER)
	ROUND DUCT CROSS SECTION
	SUPPLY AIR RECTANGULAR DUCT CROSS SECTION
	RETURN AIR RECTANGULAR DUCT CROSS SECTION

SEQUENCE OF OPERATION:

1. ERV:
   ERV-1,2,3 WILL BE IN CONTINUOUS OPERATION AND ERV-4 WILL BE SCHEDULED FOR OPERATION AS PER CELLAR OFFICE WORK TIME. THE SBC-100 CONTROLLER WILL BE USE FOR THE ACCESS, MONITORING AND EQUIPMENT SCHEDULING OF ALL ERVS.

2. DRYER EXHAUST SEQUENCE OF OPERATION
   MAF AND DXF CONTROLLERS WILL MONITOR STATUS OF DRYERS. UPON SENSING ANY DRYER ON VIA STATIC PRESSURE SENSOR IN DUCT-WORK, CONTROL SEQUENCE WILL INITIATE. EXHAUST FAN WILL MODULATE TO MAINTAIN PRESSURE SET POINT AT THE PRESSURE SENSOR LOCATED IN THE EXHAUST DUCTWORK. UPON SENSING OFF FOR ALL DRYERS, THE EXHAUST FAN WILL RAMP DOWN. THE MAKEUP AIR FAN WILL BE INTERLOCKED WITH THE DRYER EXHAUST FAN AND RAMP UP AND DOWN ACCORDINGLY.

3. ENERGY MANAGEMENT PANEL:
   IT WILL DISPLAY THE ENERGY USAGE OF THE UNIT CONNECTED TO IT. IT HAS ONE AE-200 CENTRAL CONTROLLER WHICH IS CONNECTED TO THREE EW-500 CONTROLLER. FOR MORE DETAIL REFER ENERGY ALLOCATION CONTROL DIAGRAM ON SHEET M-202.00.

MECHANICAL ABBREVIATIONS

AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSER
CDS	CEILING DIFFUSER SUPPLY
CDR	CEILING DIFFUSER RETURN
CFM	CUBIC FEET OF AIR PER MINUTE
CP	CONDENSATE PUMP
CD	CONDENSATE DRAIN PIPE
DN	DOWN
DXF	DRYER EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
EG	EXHAUST GRILLE
FD	FIRE DAMPER W/FUSIBLE LINK
FSD	FIRE SMOKE DAMPER
HWHT	HOT WATER HEATER
KX	KITCHEN EXHAUST RISER
MD	MOTORIZED DAMPER
OAI	OUTSIDE AIR INTAKE RISER
REF	REFRIGERANT PIPING
RG	RETURN GRILLE
SG	SUPPLY GRILLE
TR	TRANSFER DUCT
TX	TOILET EXHAUST RISER
VD	VOLUME DAMPER
W.M.S.	WIRE MESH SCREEN

MECHANICAL DRAWING LIST

M-001.00	MECHANICAL SYMBOLS LIST, ABBREVIATIONS, DRAWING LIST & NOTES
M-002.00	GENERAL HVAC NOTES & MECHANICAL SPECIFICATIONS (1 OF 4)
M-003.00	MECHANICAL SPECIFICATIONS (2 OF 4)
M-004.00	MECHANICAL SPECIFICATIONS (3 OF 4)
M-005.00	MECHANICAL SPECIFICATIONS (4 OF 4)
M-006.00	COMMISSIONING TABLE AND NOTES
M-100.00	CELLAR MECHANICAL PLAN
M-101.00	GROUND FLOOR MECHANICAL PLAN
M-102.00	2ND FLOOR MECHANICAL PLAN
M-103.00	3RD FLOOR MECHANICAL PLAN
M-104.00	4TH FLOOR MECHANICAL PLAN
M-105.00	ROOF FLOOR MECHANICAL PLAN
M-106.00	BULKHEAD MECHANICAL PLAN
M-107.00	TYPICAL FLOOR SHAFT COORDINATION
M-201.00	DRYER EXHAUST & MAKEUP AIR FROM CONTROL DIAGRAM
M-202.00	ENERGY ALLOCATION CONTROL DIAGRAM
M-301.00	ERV-1 SUPPLY AIR RISER DIAGRAM (1 OF 8)
M-302.00	ERV-1 TOILET AIR RISER DIAGRAM (2 OF 8)
M-303.00	ERV-1 KITCHEN AIR RISER DIAGRAM (3 OF 8)
M-304.00	ERV-2 SUPPLY AIR RISER DIAGRAM (4 OF 8)
M-305.00	ERV-2 TOILET AIR RISER DIAGRAM (5 OF 8)
M-306.00	ERV-2 KITCHEN AIR RISER DIAGRAM (6 OF 8)
M-307.00	ERV-3 AIR RISER DIAGRAM (7 OF 8)
M-308.00	ERV-4 AIR RISER DIAGRAM (8 OF 8)
M-309.00	REFRIGERANT PIPING RISER DIAGRAM (1 OF 15)
M-310.00	REFRIGERANT PIPING RISER DIAGRAM (2 OF 15)
M-311.00	REFRIGERANT PIPING RISER DIAGRAM (3 OF 15)
M-312.00	REFRIGERANT PIPING RISER DIAGRAM (4 OF 15)
M-313.00	REFRIGERANT PIPING RISER DIAGRAM (5 OF 15)
M-314.00	REFRIGERANT PIPING RISER DIAGRAM (6 OF 15)
M-315.00	REFRIGERANT PIPING RISER DIAGRAM (7 OF 15)
M-316.00	REFRIGERANT PIPING RISER DIAGRAM (8 OF 15)
M-317.00	REFRIGERANT PIPING RISER DIAGRAM (9 OF 15)
M-318.00	REFRIGERANT PIPING RISER DIAGRAM (10 OF 15)
M-319.00	REFRIGERANT PIPING RISER DIAGRAM (11 OF 15)
M-320.00	REFRIGERANT PIPING RISER DIAGRAM (12 OF 15)
M-321.00	REFRIGERANT PIPING RISER DIAGRAM (13 OF 15)
M-322.00	REFRIGERANT PIPING RISER DIAGRAM (14 OF 15)
M-323.00	REFRIGERANT PIPING RISER DIAGRAM (15 OF 15)
M-501.00	MECHANICAL DETAILS (1 OF 4)
M-502.00	MECHANICAL DETAILS (2 OF 4)
M-503.00	MECHANICAL DETAILS (3 OF 4)
M-504.00	MECHANICAL DETAILS (4 OF 4)
M-601.00	MECHANICAL SCHEDULES (1 OF 2)
M-602.00	MECHANICAL SCHEDULES (2 OF 2)

NYC BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE CITY OF NEW YORK BUILDING CODE, EFFECTIVE JULY 1, 2014 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. THE CONTRACTOR SHALL ENGAGE THE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.

2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2014 BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704].

3. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.

4. SPECIAL INSPECTIONS: (TR-1)
   THE FOLLOWING SYSTEMS SHALL BE INSPECTED IN ACCORDANCE WITH THE SECTION CITED FROM THE 2014 NYC BUILDING CODE.
   A. MECHANICAL SYSTEMS – BC 1704.16
   B. FIRESTOP, DRAFTSTOP, AND FIREBLOCK SYSTEMS – BC 1704.27

5. ENERGY CODE PROGRESS INSPECTIONS: (TR-8)
   THE FOLLOWING PROGRESS INSPECTIONS FOR HVAC SYSTEMS SHALL BE PERFORMED AS REQUIRED BY THE SECTIONS CITED FROM THE 2014 NYC BUILDING CODE.
   A. AIR SEALING AND INSULATION –VISUAL
   B. AIR SEALING AND INSULATION –TESTING
   C. DAMPER INTEGRAL TO BUILDING ENVELOPE
   D. DUCT PLENUM AND PIPING INSULATION AND SEALING
   E. MAINTENANCE INFORMATION
   F. PERMANENT CERTIFICATE

6. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION MC 107 AND THE FOLLOWING SECTIONS OF THE 2014 NEW YORK CITY MECHANICAL CODE:
   A. VENTILATION SYSTEM BALANCING MC 403.6
   B. NYC NOISE CONTROL CODE: 24-227

7. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. STANDARDS OF HEATING – MC 309.1
   B. DUCT CONSTRUCTION AND INSTALLATION– MC 603
   C. AIR INTAKES, EXHAUSTS AND RELIEFS – MC 401.5
   D. AIR FILTERS – MC 605
   E. SMOKE DETECTORS AND FIRE AND SMOKE DAMPERS – MC 606 & 607 RESPECTIVELY
   F. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS – MC 513
   G. PIPING AND INSULATION – MC 1201-1203 & 1204

8. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.

9. VENTILATION FOR ALL AREA SHALL COMPLY WITH MC 401.

10. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY MC 403.3

11. ALL FIRE DAMPERS SHALL BE ACCEPTED FOR USE BY THE NEW YORK CITY DEPARTMENT OF BUILDINGS. FIRE DAMPERS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555, STANDARDS FOR FIRE DAMPERS AND CEILING DAMPERS.

12. COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY NEW YORK CITY DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH UL 555S.

13. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION MC 606 TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.

14. FIRE DAMPERS, SMOKE DAMPERS, AND COMBINATION FIRE/SMOKE DAMPERS LOCATED WITHIN THE AIR DISTRIBUTION AND SMOKE CONTROL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION MC 607.

15. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.

16. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

17. MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER 2016 NYCECC C403.2.2, C408.2.1, C408.2.5.4. FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.

18. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.

19. SMOKE DETECTOR SHALL MEET UL268A

GENERAL NOTES

1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.

2. 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.

3. BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.

4. 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.

5. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

6. CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

7. DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED.

8. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.

9. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.

10. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).

11. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.

12. 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.

13. ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.

14. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.

15. 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.

16. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, 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.

17. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

18. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE.

19. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.

22. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.

23. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

24. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

25. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

26. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.

DEFINITIONS:

1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

SCOPE OF WORK

SCOPE OF WORK

1. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFI'S, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.

2. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

3. 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 FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. 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.

GENERAL HVAC NOTES

GENERAL:

1. PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.

2. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.

3. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.

4. WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.

5. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.

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6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.

7. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.

8. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.

9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.

10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.

11. PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO, AND WITHIN 50 FT. OF, ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW SUPPORTS AND ANCHOR POINTS) THROUGHOUT MECHANICAL EQUIPMENT ROOMS. DO THE SAME FOR SUPPORTS OF STEAM MAINS WITHIN 50 FT. OF BOILER OR PRESSURE-REDUCING VALVES.

12. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.

13. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.

14. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

15. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.

16. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.

17. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.

18. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.

19. 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.

20. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.

21. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.

22. 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 PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.

23. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.

24. REINFORCEMENT, DETAILING, AND PLACEMENT OF CONCRETE SHALL CONFORM TO ASTM 315 AND ACI 318. CONCRETE SHALL CONFORM TO ASTM C94. CONCRETE WORK SHALL CONFORM TO ACI 318 PART ENTITLED "CONSTRUCTION REQUIREMENTS".COMPRESSIVE STRENGTH IN 28 DAYS SHALL BE 3,000 PSI. TOTAL AIR CONTENT OR EXTERIOR CONCRETE SHALL BE BETWEEN 5 AND 7 PERCENT BY VOLUME. SLUMP SHALL BE BETWEEN 3 AND 4 IN. CONCRETE SHALL BE CURED FOR 7 DAY AFTER PLACEMENT.

25. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE MECHANICAL CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 6 IN. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 6 IN. ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.

26. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.

27. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.

HVAC DUCTWORK – SHEET METAL

1. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC., ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS.

2. ALL NEW DUCTWORK WILL COMPLY WITH THE LATEST SMACNA GUIDELINES AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.

3. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.

4. SUPPLY AND RETURN DUCTWORK 20' FROM ALL AC UNITS SHALL BE LINED WITH 1.5" ACOUSTICAL LINING.

5. CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS/GRILLES AND RETURN AIR DIFFUSERS/GRILLES WHERE INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND GRILLES WITH REFLECTED CEILING PLAN.

6. IN CORRIDORS WHERE CEILING SPEAKERS AND AIR DIFFUSERS ARE INDICATED BETWEEN THE SAME LIGHT FIXTURES, INSTALL BOTH DEVICES AT THE QUARTER POINTS BETWEEN THE FIXTURES.

7. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS 4'-0" (CENTER LINE) ABOVE THE FINISHED FLOOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE PRECEDING LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.

8. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.

9. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.

10. PROVIDE ALL 90-DEGREE SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED. ELBOWS IN LAUNDRY EXHAUSTS SHALL BE OF UN-VANED SMOOTH RADIUS CONSTRUCTION WITH A RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE DUCT. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.

11. COORDINATE DIFFUSERS AND GRILLES LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.

12. ALL AIR HANDLING UNITS SHALL OPERATE WITHOUT MOISTURE CARRYOVER.

13. LOCATE ALL MECHANICAL EQUIPMENT (SINGLE DUCT, CONSTANT VOLUME, CABINET HEATERS, UNIT HEATERS, UNIT VENTILATORS, ETC.) FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.

14. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.

15. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.

16. RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FT.

17. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

18. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, VOLUME DAMPERS, AND OTHER ITEMS LOCATED IN THE DUCTWORK THAT REQUIRE SERVICE AND/OR INSPECTION.

19. PROVIDE ACCESS DOORS IN DUCTWORK FOR THE OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.

20. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS. GROUNDING STRAPS SHALL BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE DUCT.

21. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MOUNTING THE SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.

22. TERMINATE GAS VENTS FOR WATER HEATERS, AND OTHER GAS APPLIANCES A MINIMUM OF 30 IN. ABOVE THE ROOF WITH RAIN CAP.

23. EXTERIOR LOUVERS ARE INDICATED FOR SIZE, GENERAL LOCATION AND PERFORMANCE ONLY. DETAILED LOUVER DESCRIPTIONS ARE PROVIDED IN THE ARCHITECTURAL SPECIFICATIONS.

PIPING

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PIPING SYSTEMS AS INDICATED ON THE DRAWINGS AND AS SPECIFIED AND REQUIRED BY CODE.

2. UNLESS OTHERWISE NOTED, ALL PIPING IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE OR SLAB, WITH SPACE FOR INSULATION IF REQUIRED.

3. INSTALL PIPING SO ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.

4. UNIONS AND/OR FLANGES SHALL BE INSTALLED AT EACH PIECE OF EQUIPMENT, IN BYPASSES, AND IN LONG PIPING RUNS (100 FT. OR MORE) TO PERMIT DISASSEMBLY FOR ALTERATION AND REPAIRS.

5. INSTALL ALL PIPING WITHOUT FORCING OR SPRINGING.

6. ALL PIPING SHALL CLEAR DOORS AND WINDOWS.

7. ALL VALVES SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION.

8. ALL PIPING SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

9. PROVIDE FLEXIBLE CONNECTIONS IN ALL PIPING SYSTEMS CONNECTED TO EQUIPMENT WHICH REQUIRE VIBRATION, ISOLATION, EXCEPT WATER COILS. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE OR AS INDICATED ON THE DRAWINGS.

10. SLOPED REFRIGERANT PIPING 1% IN THE DIRECTION OF OIL RETURN. LIQUID LINES MAY BE INSTALLED LEVEL.

11. INSTALL HORIZONTAL REFRIGERANT HOT GAS DISCHARGE PIPING WITH 1/2" PER 10 FT. DOWNWARD SLOPE AWAY FROM THE COMPRESSOR.

12. INSTALL HORIZONTAL REFRIGERANT SUCTION LINES WITH 1/2" PER 10 FT. DOWNWARD SLOPE TO THE COMPRESSOR, WITH NO LONG TRAPS OR DEAD ENDS THAT MAY CAUSE OIL TO SEPARATE FROM THE SUCTION GAS AND RETURN TO THE COMPRESSOR IN DAMAGING SLUGS.

13. PROVIDE LINE SIZE LIQUID INDICATORS IN THE MAIN LIQUID LINE LEAVING THE CONDENSER OR RECEIVER. INSTALL MOISTURE-LIQUID INDICATORS IN LIQUID LINES BETWEEN FILTER DRYERS AND THERMOSTATIC EXPANSION VALVES, AND IN LIQUID LINE TO RECEIVER.

14. PROVIDE A LINE SIZE STRAINER UPSTREAM OF EACH AUTOMATIC VALVE. PROVIDE A SHUT-OFF VALVE ON EACH SIDE OF A STRAINER.

15. PROVIDE PERMANENT FILTER DRYERS IN LOW-TEMPERATURE SYSTEMS AND SYSTEMS USING HERMETIC COMPRESSORS.

16. PROVIDE REFRIGERANT CHARGING VALVE CONNECTIONS IN THE LIQUID LINE BETWEEN THE RECEIVER SHUTOFF VALVE AND THE EXPANSION VALVE.

SPECIFICATIONS

SECTION 0001 – NOTICE TO BIDDERS

1.1 BIDDERS REPRESENTATIONS

A. THE BIDDER BY MAKING A BID REPRESENTS THAT:

THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.

B. THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.

C. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.

D. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.

E. THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.

1.2 EXISTING CONDITIONS AND COORDINATION

A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND HAS CORRELATED THE BIDDER'S PERSONAL OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.

B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.

1.3 RESPONSIBILITIES

A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.

B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.

C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUT-DOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 – QUALITY OF WORK

1.1 WORKMANSHIP

A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.

B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.

C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.

1.2 CODE COMPLIANCE

A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.

END OF SECTION 0101

SECTION 0102 –REQUIRED DOCUMENTS

1.1 SHOP DRAWINGS

A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.

1.2 SUBMITTALS

A. WITHIN 90 DAYS, EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED OR OTHERWISE INDICATED ON THE SUBMITTALS.

1.3 RECORD DRAWINGS

A. WITHIN 90 DAYS, UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.

1.4 EQUIPMENT OPERATING INSTRUCTIONS

WITHIN 90 DAYS, ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS,EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

END OF SECTION 0102

SECTION 078413–PENETRATION FIRE-STOPPING

1.1 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.

B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL SEMKO OR FM GLOBAL

1.2 PENETRATION FIRESTOPPING

A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479.

B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E 814 OR UL 1479:

C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.

D. W-RATINGS: PER UL 1479.

1.3 INSTALLATION

A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.

1.4 FIELD QUALITY CONTROL

A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.

1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.

FOR THE FOLLOWING SYSTEMS:

METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ON OR MORE THE FOLLOWING MATERIALS:

a. LATEX SEALANT
b. SILICONE SEALANT
c. INTUMESCENT PUTTY
d. MORTAR
h. SILICONE FOAM
i. PILLOWS/BAGS
j. INTUMESCENT WRAP STRIPS
k. INTUMESCENT COMPOSITE SHEET

1.6 MANUFACTURERS

1. HILTI CONSTRUCTION CHEMICAL, INC
2. TREMCO INC.
3. 3M FIRE PROTECTION PRODUCTS

END OF SECTION 078413

SECTION 230517 – SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

1.1 SLEEVE-SEAL SYSTEMS

A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNULAR SPACE BETWEEN PIPING AND SLEEVE.

1. SEALING ELEMENTS: EPDM RUBBER OR NBR.
2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.
3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.

B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

1. ADVANCE PRODUCTS & SYSTEMS, INC.
2. CALPICO, INC.
3. METRAFLEX COMPANY (THE).
4. PIPELINE SEAL AND INSULATOR, INC.
5. PROCO PRODUCTS, INC.

1.2 SLEEVE-SEAL FITTINGS

A. MANUFACTURED PLASTIC, SLEEVE-TYPE, PLASTIC OR RUBBER WATER-STOP ASSEMBLY MADE FOR IMBEDDING IN CONCRETE SLAB OR WALL.

1.3 GROUT

A. NON-SHRINK, FACTORY PACKAGED.

1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. USE SLEEVES AND SLEEVE SEALS FOR THE FOLLOWING PIPING-PENETRATION APPLICATIONS:

1. INTERIOR PARTITIONS:
   a. PIPING SMALLER THAN NPS 6 (DN 150): GALVANIZED-STEEL-PIPE SLEEVES, PVC-PIPE SLEEVES.
   b. PIPING NPS 6 (DN 150) AND LARGER: GALVANIZED-STEEL-SHEET SLEEVES.

END OF SECTION 230517

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SECTION 230529 – HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

1.1 PERFORMANCE REQUIREMENTS

A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.

B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.

1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.
2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND COMPONENTS.
3. DESIGN SEISMIC–RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.

1.2 SUBMITTALS

A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

1.3 QUALITY ASSURANCE

A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE – STEEL."

1.4 COMPONENTS

A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL

B. TRAPEZE PIPE HANGERS: CARBON OR STAINLESS STEEL

C. FIBERGLASS PIPE HANGERS: –CLEVIS, CENTURY COMPOSITES, COOPER B–LINE

D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER

E. FIBERGLASS STRUT SYSTEMS: COOPER B–LINE

F. THERMAL–HANGER SHIELD INSERTS:

G. FASTENER SYSTEMS: POWDER–ACTUATED FASTENERS OR MECHANICAL–EXPANSION ANCHORS

H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB–MOUNTED TYPE

I. EQUIPMENT SUPPORTS.

END OF SECTION 230529

SECTION 230548 – VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT

PART 1 – GENERAL

1.2 COMPONENTS

A. VIBRATION ISOLATORS:

1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
2. MOUNTS: DOUBLE–DEFLECTION TYPE.
3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS; CAST–DUCTILE–IRON HOUSING.
4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN–SPRING TYPE.
5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL.
6. HOUSED SPRING MOUNTS: DUCTILE–IRON OR STEEL HOUSING, WITH INTEGRAL.
7. ELASTOMERIC HANGERS: DOUBLE–DEFLECTION TYPE.
8. SPRING HANGERS: COMBINATION COIL–SPRING AND ELASTOMERIC–INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
9. SPRING HANGERS WITH VERTICAL–LIMIT STOP: COMBINATION COIL–SPRING AND ELASTOMERIC–INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL–LIMIT STOP.
10. PIPE RISER RESILIENT SUPPORT: ALL–DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.
11. RESILIENT PIPE GUIDES.

B. AIR–MOUNTING SYSTEMS:

1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED–AIR BELLOWS.
2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED–AIR BELLOWS.

C. RESTRAINED VIBRATION ISOLATION ROOF–CURB RAILS: FACTORY–ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR– AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.

D. VIBRATION ISOLATION EQUIPMENT BASES:

1. STEEL BASE: FACTORY–FABRICATED, WELDED, STRUCTURAL–STEEL BASES AND RAILS.
2. INERTIA BASE: FACTORY–FABRICATED, WELDED, STRUCTURAL–STEEL BASES AND RAILS READY FOR FIELD–APPLIED, CAST–IN–PLACE CONCRETE.

1.3 FIELD QUALITY CONTROL

A. TESTING: BY EITHER: OWNER–ENGAGED AGENCY, CONTRACTOR–ENGAGED AGENCY, OR CONTRACTOR.

PART–2 PRODUCTS

2.1 VIBRATION ISOLATORS DEVICES

A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. COOPER B–LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
5. HILTI, INC.
6. ISOLATION TECHNOLOGY, INC.
7. KINETICS NOISE CONTROL.
8. LOOS & CO.; CABLEWARE DIVISION.
9. MASON INDUSTRIES.
10. TOLCO INCORPORATED; A BRAND OF NIBCO INC.
11. UNISTRUT; TYCO INTERNATIONAL, LTD.
12. VIBRATION ELIMINATOR CO., INC.
13. VIBRATION ISOLATION.
14. VIBRATION MOUNTINGS & CONTROLS, INC.

END OF SECTION 230548

SECTION 230593 – TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:

1. AIR SYSTEMS: CONSTANT–VOLUME.
2. CONDENSING UNITS.

1.2 QUALITY ASSURANCE

A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

1.3 EXECUTION

A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

B. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

C. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.

D. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

E. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

F. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.

G. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

H. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

I. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

END OF SECTION 230593

SECTION 230713 – DUCT INSULATION

1.1 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: BY OWNER–ENGAGED AGENCY.

1.2 INDOOR DUCT AND PLENUM INSULATION SCHEDULE FOR INDOOR DUCTED AC UNITS;

A. CONCEALED, RECTANGULAR, ROUND AND SUPPLY–RETURN AND AIR PLENUM INSULATION:

B. FLEXIBLE ELASTOMERIC, MINERAL–FIBER BLANKET,

MINERAL–FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:

UNCONDITIONED SPACES WITHIN BUILDING:	R–6
WITHIN BUILDING ENVELOPE ASSEMBLY:	R–8
OUTSIDE OF BUILDING:	R–8

1.4 ITEMS NOT INSULATED:

1. FIBROUS–GLASS DUCTS.
2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE ANDASHRAE/IESNA 90.1.
3. FACTORY–INSULATED FLEXIBLE DUCTS.
4. FACTORY–INSULATED PLENUMS AND CASINGS.
5. FLEXIBLE CONNECTORS.
6. VIBRATION–CONTROL DEVICES.
7. FACTORY–INSULATED ACCESS PANELS AND DOORS.
8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.

1.5 PRODUCTS

A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:

1. JOHNS–MANVILLE
2. OWENS–CORNING

1.6 ACOUSTICAL TREATMENT

1. WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R–6 AS MANUFACTURED BY DUCTMATE, 1–1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER. LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED,

END OF SECTION 230713

SECTION 233113 – METAL DUCTS

1.1 CONSTRUCTION

A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 2–1/2 INCH WG PRESSURE CLASS IS THE BASIS OF COMPLIANCE WITH THESE STANDARDS, REGARDLESS OF THE VELOCITY IN THE DUCT.

B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 2" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:

1. DUCTWORK SHALL BE TRANSVERSELY JOINTED BY CONNECTING SEAMS OF COMPANION ANGLES, FORMED FROM 1–1/2"X1–1/2"X1/8" GALVANIZED ANGLES, TACK–WELDED OR RIVETED TO THE DUCT. THE ANGLE FRAME SHALL BE CONTINUOUSLY FLANGED UP INTO UPRIGHT OF ANGLE AND EACH CORNER SHALL BE FILLED IN AND GROUND SMOOTH. JOINTS SHALL BE GASKETED WITH 1/8" THICK REINFORCED GASKET, OVERLAPPED AT CORNERS, GASKET SIMILAR TO 3M–1202 OR APPROVED EQUAL.
2. RECTANGULAR FITTINGS AND ALL TRANSITION PIECES FROM RECTANGULAR TO ROUND SHALL BE NO. 16 GAUGE ALL WELDED CONSTRUCTION.
3. HORIZONTAL DUCTS SHALL BE SUPPORTED ON NOT MORE THAN 6' CENTERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR.
4. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK SHALL BE PITTSBURGH LOCK SEAMS WITH SEALING COMPOUND, EQUAL TO BENJAMIN FOSTER NO. 30–03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30–02 AND COVERED WITH APPROVED SEALING TAPE.
5. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; AWG A5.2.
6. ALL FITTINGS SUCH AS ELBOWS, TEES, ETC., SHALL BE NO. 20 GAUGE ZINC COATED STEEL. ELBOWS SHALL BE OF FIVE (5) PIECE WELDED AIRTIGHT CONSTRUCTION.

C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

USG	MAX. SIDE INCHES	TRANSVERSE JOINTS & BRACING
22	UP TO 12	S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FT.CENTERS
22	13 TO 24	1"X1"X1/8" ANGLES ON 4 FT. CENTERS
20	25 TO 35	1"X1"X1/8" ANGLES ON 2 FT. CENTERS

D. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3–6 AND AS SHOWN IN FIG. 3–1 AND 3–2 FOR ROUND DUCTWORK.

ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEAT SMACNA CLASS 6 FOR RECTANGULAR AND CLASS 3 FOR ROUND DUCTS.

1.2 MATERIALS

A. SINGLE–WALL RECTANGULAR DUCTS AND FITTINGS.

B. DOUBLE–WALL RECTANGULAR DUCTS AND FITTINGS.

1. FIBROUS–GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION FOR DUCTED AC UNITS ONLY.
2. PERFORATED INNER DUCT.

C. SINGLE–WALL ROUND AND FLAT–OVAL DUCTS AND FITTINGS.

D. DOUBLE–WALL ROUND AND FLAT–OVAL DUCTS AND FITTINGS.

1. FIBROUS–GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION.
2. PERFORATED INNER DUCT.

E. SHEET METAL MATERIALS:

1. GALVANIZED SHEET STEEL.
2. PVC–COATED, GALVANIZED SHEET STEEL.
3. CARBON–STEEL SHEETS.
4. STAINLESS–STEEL SHEETS.
5. ALUMINUM SHEETS.
6. FACTORY–APPLIED ANTI–MICROBIAL COATING.

F. DUCT LINER:

1. FIBROUS GLASS, TYPE I, FLEXIBLE.
   a. WITH ANTI–MICROBIAL EROSION–RESISTANT COATING.
2. FLEXIBLE ELASTOMERIC.
3. NATURAL FIBER.

G. SEALANT MATERIALS:

1. TWO–PART TAPE SEALING SYSTEM.
2. WATER–BASED JOINT AND SEAM SEALANT.
3. SOLVENT–BASED JOINT AND SEAM SEALANT.
4. FLANGED JOINT SEALANT.
5. FLANGE GASKETS.
6. ROUND DUCT JOINT O–RING SEALS.

1.3 DUCT CLEANING

A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.

B. CLEAN THE FOLLOWING ITEMS:

1. AIR OUTLETS AND INLETS.
2. SUPPLY, RETURN, AND EXHAUST FANS.
3. AIR–HANDLING UNITS.
4. RETURN–AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
5. SUPPLY–AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
6. DEDICATED EXHAUST AND VENTILATION COMPONENTS AND MAKEUP AIR SYSTEMS.

1.4 DUCT SCHEDULE

A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:

1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM..

END OF SECTION 233113

SECTION 233713 – DIFFUSERS AND GRILLES

1.1 PRODUCTS

A. DIFFUSERS AND GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.

B. MANUFACTURERS: TITUS

1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:

a. CARNES.
b. HART & COOLEY INC.
c. KRUEGER.
d. METALAIRE, INC.
e. NAILOR INDUSTRIES INC.

C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

D. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

END OF SECTION 233713

INSULATION – GENERAL REQUIREMENTS

A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEINER TUNNEL TEST METHOD FOR FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E–84), (ASA A2.5–1963). FLAMESPREAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETERIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.

B. DEFINITIONS:

1) EXPOSED: INDOOR DUCTS, PIPING OR EQUIPMENT LOCATED IN MECHANICAL EQUIPMENT ROOMS AND IN AREAS WHICH WILL BE VISIBLE WITHOUT REMOVING CEILINGS OR OPENING ACCESS PANELS.
2) CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.
3) OUTDOOR: DUCTS, PIPING OR EQUIPMENT WHICH IS EXPOSED TO THE WEATHER.

A) DUCTWORK INSULATION

A. INSULATE ALL DUCTWORK FOR DUCTED AC UNITS ONLY IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

INSULATION SCHEDULE – DUCTWORK

SERVICE	LOCATION	THICKNESS	TYPE	FINISH
SUPP/RET	CONCEALED	1.5"	D–1	VAPORSEAL

FOR SUPPLY AND RETURN DUCTS PROVIDE MINIMUM INSULATION AS PER FOLLOWING:

UNCONDITIONED SPACES WITHIN BUILDING:	R–6
WITHIN BUILDING ENVELOPE ASSEMBLY:	R–8
OUTSIDE OF BUILDING:	R–8

B. NON–INSULATED DUCTWORK (FOR ALL ERV UNITS):

1) WHERE SOUND LINING IS OF MINIMUM THICKNESS SPECIFIED FOR INSULATION.

C. MATERIAL:

1) TYPE D–1: MINIMUM 1–LB DENSITY FIBERGLASS BLANKET, MAXIMUM 0.28 K–FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY–APPLIED FOIL–SKRIM–KRAFT FACING SIMILAR TO MANVILLE MICROLITE.

B) PIPING INSULATION

A. INSULATE ALL PIPING IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED:

INSULATION SCHEDULE – PIPING

SERVICE	OPERATING TEMPERATURE RANGE (°F)	THICKNESS	MATERIAL	FINISH
REFRIGERANT PIPING	40–60 & <40	1.5"		P–6

B. MATERIAL:

1) TYPE P–6: MINIMUM 6 LB MOLDED FOAMED PLASTIC. MAXIMUM 0.27 K–FACTOR AT 75 DEG F MEAN TEMPERATURE. MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

C. INSTALLATION:

3) BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.
4) ALL INSULATION SHALL BE BUTTED FIRMLY TOGETHER. PROVIDE 2 IN. LAMP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. USE VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE WHERE REQUIRED. STAPLES NOT PERMITTED. REFRIGERANT PIPING INSULATION SHALL HAVE MITERED FITTINGS.
5) ALL INSULATION AND VAPOR BARRIERS SHALL BE CONTINUOUS PASSING THROUGH SLEEVES, HANGERS, ETC., OR OTHER OPENINGS. PROVIDE SADDLES OR SHIELDS FOR PROTECTION AT ALL HANGINGS.
6) INSULATION FOR STRAINERS OR OTHER FITTINGS OR ACCESSORIES REQUIRING SERVICING OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

NOISE CONTROL

A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.

B. PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK:

1) ALL DUCTWORK WITHIN MECHANICAL ROOMS AND NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS.
2) AIR TRANSFER DUCTS.
3) DOWNSTREAM OF ALL CONSTANT VOLUME BOXES FOR A MINIMUM OF 15 FT.
4) ALL MIXED AIR PLENUMS, EXCEPT WHERE MOISTURE CARRYOVER FROM OUTDOOR AIR LOUVER WILL OCCUR.
5) ALL EXPOSED INTERIOR SUPPLY DUCTWORK.
6) ALSO WHERE NOTED ON A DRAWING.

C. SOUND LINING IN DUCTWORK: FIBROUS GLASS, MINIMUM 3 LB DENSITY, 1 IN. THICKNESS, MAXIMUM 0.25 K FACTOR AT 75 DEG F MEAN TEMPERATURE WITH ACRYLIC COATED FINISH FACTORY APPLIED EDGE COATING AND STENCILED IN ACCORDANCE WITH NFPA 90. FLAMESPREAD SHALL BE A MAXIMUM OF 25. LINING SHALL NOT SUPPORT MICROBIAL GROWTH AND SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1071 AND ASTM G21/G22. SIMILAR TO MANVILLE PERMACOTE LINA COUSTIC.

D. ALL SOUND LINING, ADHESIVES, FACES AND ACCESSORIES TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, EXCEPT AS OTHERWISE NOTED.

SEQUENCE OF OPERATIONS

FAN

MODEL BEF 300
MAKE – ENERVEX

USE

THE MDVS MODULATING DRYER EXHAUST SYSTEM IS A MECHANICAL EXHAUST SYSTEM USED TO MAINTAIN A CONSTANT PRESSURE IN THE EXHAUST SYSTEM FOR MULTIPLE TYPE I AND TYPE II RESIDENTIAL AND COMMERCIAL CLOTHES DRYERS WHETHER ELECTRIC OR GAS–FIRED.

THE MCAS MODULATING COMBUSTION AIR SYSTEM IS A MECHANICAL AIR SUPPLY SYSTEM THAT PROVIDES A CONSTANT ROOM PRES–SURE BY SUPPLYING MAKE–UP AIR AS IT IS REQUIRED BY THE EQUIPMENT BEING SERVED.

DESCRIPTION

THE MDVS AND MCAS CONSIST OF TWO BEF BOX VENTILATORS, AN EBC31 PRESSURE CONTROL WITH PRESSURE TRANSDUCER, AND AN EDRIVE MOTOR CONTROLLER. THE EBC31 MAINTAINS A CONSTANT PRESSURE FOR THE CLOTHES DRYERS BY MODULATING THE SPEED OF THE EXHAUST BOX VENTILATOR AND MAINTAINS A CONSTANT ROOM PRESSURE BY MODULATING THE SPEED OF THE MAKE–UP AIR BOX VENTILATOR. THE MDVS AND MCAS ARE SUPPLIED AS A COMPLETE PACKAGE WITH BOX VENTILATORS, DISCONNECTS, PRESSURE CON–TROL, DIFFERENTIAL PRESSURE TRANSDUCERS, MOTOR CONTROLLERS, OUTDOOR STATIC PRESSURE PICKUP PORT, AND DUCT PROBE.

OPERATION

DURING INSTALLATION THE EBC31 AUTOMATICALLY DETECTS CONNECTIONS, SETTING REQUIREMENTS AND ANY ADD–ON DEVICES. FOR THE MDVS, THE PLANNED PRESSURE SETTINGS MUST BE ENTERED MANUALLY VIA THE PRESSURE CONTROL'S INTERFACE. FOR THE MCAS, THE ROOM PRESSURE SETTING (USUALLY 0.00"W.C.) MUST BE ENTERED MANUALLY VIA THE PRESSURE CONTROL'S INTERFACE. AFTER THESE STEPS HAVE BEEN TAKEN, THE PRESSURE CONTROL WILL KEEP THE SETTINGS IN MEMORY. MANY OTHER FUNCTIONS CAN BE PROGRAMMED IN THE FIELD.

UNLESS INTERLOCKED WITH EACH CLOTHES DRYER, THE MDVS AND MCAS ARE "ACTIVE" AT ALL TIMES. AS A TUMBLER ACTIVATES, THE EBC31'S PRESSURE TRANSDUCERS SENSE THE PRESSURE CHANGE IN THE EXHAUST DUCT AND LAUNDRY ROOM AND, IN TURN, THE EBC31 ADJUSTS THE BOX VENTILATOR'S AND BOX VENTILATOR'S SPEED ACCORDINGLY. AS MORE TUMBLERS ACTIVATE, THE EXHAUST BOX VENTILATOR'S SPEED IS INCREASED TO MAINTAIN A CONSTANT PRESSURE; SIMULTANEOUSLY, THE MAKE–UP AIR BOX VENTILATOR'S SPEED IN INCREASED TO MAINTAIN THE PROPER ROOM PRESSURE. WHEN A TUMBLER SHUTS DOWN, THE BOX VENTILATOR WILL SLOW DOWN WHILE STILL MAINTAINING THE PRESSURE SETTING. WHEN THE LAST TUMBLER SHUTS DOWN, BOTH BOX VENTILATORS SLOW TO A MINIMUM SPEED.

ANY ERRORS DETECTED DURING OPERATION ARE ACCESSIBLE VIA THE EBC31'S INTERFACE.

LISTINGS

THE BEF BOX VENTILATOR IS ETL LISTED TO UL705, STANDARD FOR POWER VENTILATORS, WITH SPECIAL CONSIDERATION FOR EXHAUST–ING LINT–LADEN AIR FROM SINGLE OR MULTIPLE DRYERS.

THE EBC31 MODULATING PRESSURE CONTROL IS ETL LISTED TO UL60947, STANDARD FOR INDUSTRIAL CONTROL EQUIPMENT.

THE MSC EDRIVE MOTOR CONTROLLER IS ETL LISTED TO UL508C, STANDARD FOR POWER CONVERSION.

Property of CNT Engineers

THERMOSTATIC CONTROLS:

A. GENERAL:

THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE WITHIN THE ZONE. FOR THE PURPOSES OF SECTION 6.4.3.1, A DWELLING UNIT SHALL BE PERMITTED TO BE CONSIDERED A SINGLE ZONE.

B. DEAD BAND:

WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

EXCEPTIONS:

THERMOSTATS THAT REQUIRE MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.

C. SETBACK CONTROLS:

HEATING SYSTEMS LOCATED IN CLIMATE ZONES 2–8 SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES ABOVE A HEATING SETPOINT ADJUSTABLE DOWN TO 55°F OR LOWER. COOLING SYSTEMS LOCATED IN CLIMATE ZONES 1B, 2B, AND 3B SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES BELOW A COOLING SETPOINT ADJUSTABLE UP TO 90°F OR HIGHER OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

D. AUTOMATIC SHUTDOWN:

HVAC SYSTEMS SHALL BE EQUIPPED WITH AT LEAST ONE OF THE FOLLOWING: CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT DAY–TYPES PER WEEK, ARE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF AT LEAST TEN HOURS, AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE, OR EQUIVALENT FUNCTION, THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO TWO HOURS.

EXCEPTION:

RESIDENTIAL OCCUPANCIES MAY USE CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER TWO DIFFERENT TIME SCHEDULES PER WEEK.

E. SETPOINT OVERLAP RESTRICTION:

WHERE HEATING AND COOLING TO A ZONE ARE CONTROLLED BY SEPARATE ZONE THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONE, MEANS (SUCH AS LIMIT SWITCHES, MECHANICAL STOPS, OR, FOR DDC SYSTEMS, SOFTWARE PROGRAMMING) SHALL BE PROVIDED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT MINUS ANY APPLICABLE PROPORTIONAL BAND.

F. HEAT PUMP SUPPLEMENTARY HEAT :

HEAT PUMPS HAVING SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL HAVE CONTROLS THAT, EXCEPT DURING DEFROST, PREVENT SUPPLEMENTARY HEAT OPERATION WHERE THE HEAT PUMP CAN PROVIDE THE HEATING LOAD.

SEQUENCE OF OPERATIONS

1) FIRE AND SMOKE DAMPER

a) SMOKE DETECTION/TEST/POWER FAILURE OPERATION

WHEN SMOKE IS DETECTED (VIA A SMOKE DETECTOR), DURING TESTING OR IF POWER FAILURE OCCURS, THE DAMPER WILL CLOSE AND REMAIN CLOSED. WHEN THE SMOKE SIGNAL CEASES (SMOKE DETECTOR RESET),THE TEST IS COMPLETED OR POWER IS RESTORED THE DAMPER WILL AUTOMATICALLY RESET TO THE OPEN POSITION. THE DAMPER AUTOMATICALLY RESETS IF NUISANCE ALARMS OCCUR AND THE SYSTEM IS RESET.

b) FIRE OPERATION

WHEN TEMPERATURES IN EXCESS OF 165°F (212°F, 250°F OR 350°F OPTIONAL) ARE DETECTED, THE DAMPER WILL CLOSE AND LOCK. AT NO TIME SHALL THE DAMPER BE DISENGAGED FROM THE ACTUATOR. UPON CESSATION OF THE FIRE CONDITIONS, THE DAMPER CAN BE REOPENED BY PRESSING THE RESET BUTTON LOCATED ON THE DAMPER ASSEMBLY.

2) FANS: TURNED ON OR OFF THROUGH ON–OFF SWITCH AND SHALL OPERATE CONTINUOUSLY. WHERE THERE ARE DAMPERS (MOTORIZED OR FSD) IN THE DUCTWORK SYSTEM SERVED BY THE FAN, THEY SHALL BE INTERLOCKED WITH THE FAN TO OPEN WHEN THE FAN IS OPERATING ONLY. IF FSD IS INSTALLED IN THE SYSTEM, THE FAN SHALL SHUT DOWN WHENEVER THE FSD CLOSES ON AN ALARM CONDITION.

a. TRANSFER FANS: FANS SHALL BE CONTROLLED BY A LOCAL WALL MOUNTED SWITCH.

b. OUTSIDE AIR FANS: FANS SHALL BE INTERCONNECTED WITH AC UNITS SERVED. FANS SHALL RUN WHENEVER EITHER BUILDING AIR HANDLER IS OPERATIONAL.

c. OUTSIDE AIR FANS SHALL BE INTERCONNECTED TO THEIR RESPECTIVE OUTSIDE AIR MOTORIZED DAMPER SO THAT THE DAMPER OPENS WHENEVER THE OA FAN IS OPERATING. OA FAN SHALL START RUNNING AFTER DAMPER IS PROOFED OPEN.

3) AC UNITS: UNIT SHALL BE STARTED AND STOPPED BY WALL MOUNTED PROGRAMMABLE THERMOSTAT. DURING "ON" MODE UNIT THERMOSTAT SHALL ENERGIZE COMPRESSOR(S) AND SUPPLY FAN TO MAINTAIN ROOM SET POINT OF 75°F ADJUSTABLE; WHEN ROOM TEMPERATURE DROPS BELOW SET POINT COMPRESSOR(S) SHALL DE–ENERGIZE AND FAN SHALL REMAIN ON.

HVAC GUIDE SPECIFICATIONS

MULTI INDOOR UNIT, VARIABLE REFRIGERANT FLOW; Y–SERIES; SIZE RANGE:

MITSUBISHI ELECTRIC MODEL NUMBER:

PUHY–P72T(Y)KMU–U (–BS) Y–SERIES (COOL/HEAT MODEL)

PUHY–P96T(Y)KMU–U (–BS) Y–SERIES (COOL/HEAT MODEL)

Y–SERIES OUTDOOR UNIT

A.GENERAL:

THE Y–SERIES PUHY OUTDOOR UNIT SHALL BE SPECIFICALLY USED WITH CITY MULTI VRF COMPONENTS. THE PUHY OUTDOOR UNITS SHALL BE EQUIPPED WITH MULTIPLE CIRCUIT BOARDS THAT INTERFACE TO THE M–NET CONTROLS SYSTEM AND SHALL PERFORM ALL FUNCTIONS NECESSARY FOR OPERATION. EACH OUTDOOR UNIT MODULE SHALL BE COMPLETELY FACTORY ASSEMBLED, PIPED, WIRED AND RUN TESTED AT THE FACTORY.

1. THE MODEL NOMENCLATURE AND UNIT REQUIREMENTS ARE SHOWN BELOW. ALL UNITS REQUIRING A FACTORY SUPPLIED TWINNING KIT SHALL BE PIPED TOGETHER IN THE FIELD, WITHOUT THE NEED FOR EQUALIZING LINE(S). IF AN ALTERNATE MANUFACTURER IS SELECTED, ANY ADDITIONAL MATERIAL, COST, AND LABOR TO INSTALL ADDITIONAL LINES SHALL BE INCURRED BY THE CONTRACTOR.
2. OUTDOOR UNIT SHALL HAVE A SOUND RATING NO HIGHER THAN 60 DB(A) INDIVIDUALLY OR 65 DB(A) TWINNED. UNITS SHALL HAVE A SOUND RATING NO HIGHER THAN 50 DB(A) INDIVIDUALLY OR 55 DB(A) TWINNED WHILE IN NIGHT MODE OPERATION. IF AN ALTERNATE MANUFACTURER IS SELECTED, ANY ADDITIONAL MATERIAL, COST, AND LABOR TO MEET PUBLISHED SOUND LEVELS SHALL BE INCURRED BY THE CONTRACTOR.
3. OUTDOOR UNIT SHALL BE ABLE TO CONNECT TO UP TO 50 INDOOR UNITS DEPENDING UPON MODEL.
4. BOTH REFRIGERANT LINES FROM THE OUTDOOR UNIT TO INDOOR UNITS SHALL BE INSULATED.
5. THE OUTDOOR UNIT SHALL HAVE AN ACCUMULATOR WITH REFRIGERANT LEVEL SENSORS AND CONTROLS.
6. THE OUTDOOR UNIT SHALL HAVE A HIGH PRESSURE SAFETY SWITCH, OVER–CURRENT PROTECTION AND DC BUS PROTECTION.
7. THE OUTDOOR UNIT SHALL HAVE THE ABILITY TO OPERATE WITH A MAXIMUM HEIGHT DIFFERENCE OF 164 FEET (294 FEET OPTIONAL) AND HAVE A TOTAL REFRIGERANT TUBING LENGTH OF 3280 FEET. THE GREATEST LENGTH IS NOT TO EXCEED 541 FEET BETWEEN THE OUTDOOR UNIT AND THE INDOOR UNITS WITHOUT THE NEED FOR LINE SIZE CHANGES OR TRAPS.
8. THE OUTDOOR UNIT SHALL BE CAPABLE OF OPERATING IN HEATING MODE DOWN TO –4F AMBIENT TEMPERATURE OR COOLING MODE DOWN TO 23F AMBIENT TEMPERATURE, WITHOUT ADDITIONAL LOW AMBIENT CONTROLS. IF AN ALTERNATE MANUFACTURER IS SELECTED, ANY ADDITIONAL MATERIAL, COST, AND LABOR TO MEET LOW AMBIENT OPERATING CONDITION AND PERFORMANCE SHALL BE INCURRED BY THE CONTRACTOR.
9. THE OUTDOOR UNIT SHALL BE CAPABLE OF OPERATING IN COOLING MODE DOWN TO –10F WITH OPTIONAL MANUFACTURER SUPPLIED LOW AMBIENT KIT.
10. MANUFACTURER SUPPLIED LOW AMBIENT KIT SHALL BE PROVIDED WITH PREDESIGNED CONTROL BOX RATED FOR OUTDOOR INSTALLATION AND CAPABLE OF CONTROLLING KIT OPERATION AUTOMATICALLY IN ALL OUTDOOR UNIT OPERATION MODES.
11. MANUFACTURER SUPPLIED LOW AMBIENT KIT SHALL BE LISTED BY ELECTRICAL LABORATORIES (ETL) AND BEAR THE ETL LABEL.
12. MANUFACTURER SUPPLIED LOW AMBIENT KIT SHALL BE FACTORY TESTED IN LOW AMBIENT TEMPERATURE CHAMBER TO ENSURE OPERATION. FACTORY PERFORMANCE TESTING DATA SHALL BE AVAILABLE WHEN REQUESTED.
13. THE OUTDOOR UNIT SHALL BE PROVIDED WITH A MANUFACTURER SUPPLIED 20 GAUGE HOT DIPPED GALVANIZED SNOW /HAIL GUARD. THE SNOW/HAIL GUARD PROTECTS THE OUTDOOR COIL SURFACES FROM HAIL DAMAGE AND SNOW BUILD–UP IN SEVERE CLIMATES.
14. THE OUTDOOR UNIT SHALL HAVE A HIGH EFFICIENCY OIL SEPARATOR PLUS ADDITIONAL LOGIC CONTROLS TO ENSURE ADEQUATE OIL VOLUME IN THE COMPRESSOR IS MAINTAINED.
15. EQUIPMENT MUST BE LABELED "ASSEMBLED IN USA" ON EQUIPMENT NAMEPLATE. MANUFACTURER MUST PROVIDE DOCUMENTATION FROM U.S. CUSTOMS AND BORDER PROTECTION INDICATING THE EQUIPMENT IS A PRODUCT OF THE U.S.

B.UNIT CABINET:

1. THE CASING(S) SHALL BE FABRICATED OF GALVANIZED STEEL, BONDERIZED AND FINISHED. UNITS CABINETS SHALL BE ABLE TO WITHSTAND 960 HOURS PER ASTM B117 CRITERIA FOR SEACOAST PROTECTED MODELS (–BS MODELS).

C.FAN:

1. EACH OUTDOOR UNIT MODULE SHALL BE FURNISHED WITH ONE DIRECT DRIVE, VARIABLE SPEED PROPELLER TYPE FAN.
2. THE FAN MOTOR SHALL HAVE INHERENT PROTECTION, HAVE PERMANENTLY LUBRICATED BEARINGS, AND BE COMPLETELY VARIABLE SPEED. THE FAN SHALL BE FACTORY SET FOR OPERATION UNDER 0 IN. WG EXTERNAL STATIC PRESSURE, BUT CAPABLE OF NORMAL OPERATION UNDER A MAXIMUM OF 0.24 IN. WG EXTERNAL STATIC PRESSURE VIA DIPSWITCH.
3. THE FAN MOTOR SHALL BE MOUNTED FOR QUIET OPERATION.
4. THE FAN SHALL BE PROVIDED WITH A RAISED GUARD TO PREVENT CONTACT WITH MOVING PARTS.
5. THE OUTDOOR UNIT SHALL HAVE VERTICAL DISCHARGE AIRFLOW.

D.REFRIGERANT

1. R410A REFRIGERANT SHALL BE REQUIRED FOR PUHY–T/Y(S)KMU–A OUTDOOR UNIT SYSTEMS.
2. POLYOLESTER (POE) OIL SHALL BE REQUIRED. PRIOR TO BIDDING, MANUFACTURERS USING ALTERNATE OIL TYPES SHALL SUBMIT MATERIAL SAFETY DATA SHEETS (MSDS) AND COMPARISON OF HYGROSCOPIC PROPERTIES FOR ALTERNATE OIL WITH LIST OF LOCAL SUPPLIERS STOCKING ALTERNATE OIL FOR APPROVAL AT LEAST TWO WEEKS PRIOR TO BIDDING.

E.COIL:

1. THE OUTDOOR COIL SHALL BE OF NONFERROUS CONSTRUCTION WITH LANCED OR CORRUGATED PLATE FINS ON COPPER TUBING.
2. THE COIL FINS SHALL HAVE A FACTORY APPLIED CORROSION RESISTANT BLUE–FIN FINISH.
3. THE COIL SHALL BE PROTECTED WITH AN INTEGRAL METAL GUARD.
4. REFRIGERANT FLOW FROM THE OUTDOOR UNIT SHALL BE CONTROLLED BY MEANS OF AN INVERTER DRIVEN COMPRESSOR.
5. THE OUTDOOR COIL SHALL INCLUDE 4 CIRCUITS WITH TWO POSITION VALVES FOR EACH CIRCUIT, EXCEPT FOR THE LAST STAGE.

F.COMPRESSOR:

1. EACH OUTDOOR UNIT MODULE SHALL BE EQUIPPED WITH ONE INVERTER DRIVEN SCROLL HERMETIC COMPRESSOR. NON INVERTER–DRIVEN COMPRESSORS, WHICH CAUSE INRUSH CURRENT (DEMAND CHARGES) AND REQUIRE LARGER WIRE SIZING, SHALL NOT BE ALLOWED.
2. A CRANKCASE HEATER(S) SHALL BE FACTORY MOUNTED ON THE COMPRESSOR(S).
3. THE OUTDOOR UNIT COMPRESSOR SHALL HAVE AN INVERTER TO MODULATE CAPACITY. THE CAPACITY SHALL BE COMPLETELY VARIABLE WITH A TURNDOWN OF 18%–4% OF RATED CAPACITY, DEPENDING UPON UNIT SIZE
4. THE COMPRESSOR SHALL BE EQUIPPED WITH AN INTERNAL THERMAL OVERLOAD.
5. THE COMPRESSOR SHALL BE MOUNTED TO AVOID THE TRANSMISSION OF VIBRATION.

G. ELECTRICAL:

1. THE OUTDOOR UNIT ELECTRICAL POWER SHALL BE 208/230 VOLTS, 3–PHASE, 60 HERTZ.
2. THE OUTDOOR UNIT SHALL BE CAPABLE OF SATISFACTORY OPERATION WITHIN VOLTAGE LIMITS OF 187–228 VOLTS (208V/60HZ), 207–253V (230V/60HZ).
3. THE OUTDOOR UNIT SHALL BE CONTROLLED BY INTEGRAL MICROPROCESSORS.
4. THE CONTROL CIRCUIT BETWEEN THE INDOOR UNITS, BC CONTROLLER AND THE OUTDOOR UNIT SHALL BE 24VDC COMPLETED USING A 2–CONDUCTOR, TWISTED PAIR SHIELDED CABLE TO PROVIDE TOTAL INTEGRATION OF THE SYSTEM.

H.ELECTRICAL:

1. THE OUTDOOR UNIT ELECTRICAL POWER SHALL BE 208–230 VOLTS, 3–PHASE, 60 HERTZ.
2. THE OUTDOOR UNIT SHALL BE CAPABLE OF SATISFACTORY OPERATION WITHIN VOLTAGE LIMITS OF 208–230 VOLTS.
3. THE OUTDOOR UNIT SHALL BE CONTROLLED BY INTEGRAL MICROPROCESSORS.
4. THE CONTROL CIRCUIT BETWEEN THE INDOOR UNITS, BC CONTROLLER AND THE OUTDOOR UNIT SHALL BE 24VDC COMPLETED USING A 2–CONDUCTOR, TWISTED PAIR SHIELDED CABLE TO PROVIDE TOTAL INTEGRATION OF THE SYSTEM.

PKFY (WALL MOUNTED) INDOOR UNIT

A.GENERAL:

THE PKFY SHALL BE A WALL–MOUNTED INDOOR UNIT SECTION AND SHALL HAVE A MODULATING LINEAR EXPANSION DEVICE AND A FLAT FRONT. THE PKFY SHALL BE USED WITH THE R2–SERIES OUTDOOR UNIT AND BC CONTROLLER, Y–SERIES OUTDOOR UNIT, OR S–SERIES OUTDOOR UNIT. THE PKFY SHALL SUPPORT INDIVIDUAL CONTROL USING M–NET DDC CONTROLLERS.

B.INDOOR UNIT

THE INDOOR UNIT SHALL BE FACTORY ASSEMBLED, WIRED AND RUN TESTED. CONTAINED WITHIN THE UNIT SHALL BE ALL FACTORY WIRING, PIPING, ELECTRONIC MODULATING LINEAR EXPANSION DEVICE, CONTROL CIRCUIT BOARD AND FAN MOTOR. THE UNIT SHALL HAVE A SELF–DIAGNOSTIC FUNCTION, 3–MINUTE TIME DELAY MECHANISM, AN AUTO RESTART FUNCTION, AND A TEST RUN SWITCH. INDOOR UNIT AND REFRIGERANT PIPES SHALL BE CHARGED WITH DEHYDRATED AIR BEFORE SHIPMENT FROM THE FACTORY.

C.UNIT CABINET:

1. ALL CASINGS, REGARDLESS OF MODEL SIZE, SHALL HAVE THE SAME WHITE FINISH
2. MULTI DIRECTIONAL DRAIN AND REFRIGERANT PIPING OFFERING FOUR (4) DIRECTIONS FOR REFRIGERANT PIPING AND TWO (2) DIRECTIONS FOR DRAINING SHALL BE STANDARD.
3. THERE SHALL BE A SEPARATE BACK PLATE WHICH SECURES THE UNIT FIRMLY TO THE WALL.

D.FAN:

1. THE INDOOR FAN SHALL BE AN ASSEMBLY WITH ONE OR TWO LINE–FLOW FAN(S) DIRECT DRIVEN BY A SINGLE MOTOR.
2. THE INDOOR FAN SHALL BE STATICALLY AND DYNAMICALLY BALANCED TO RUN ON A MOTOR WITH PERMANENTLY LUBRICATED BEARINGS.
3. A MANUAL ADJUSTABLE GUIDE VANE SHALL BE PROVIDED WITH THE ABILITY TO CHANGE THE AIRFLOW FROM SIDE TO SIDE (LEFT TO RIGHT).
4. A MOTORIZED AIR SWEEP LOUVER SHALL PROVIDE AN AUTOMATIC CHANGE IN AIRFLOW BY DIRECTING THE AIR UP AND DOWN TO PROVIDE UNIFORM AIR DISTRIBUTION.

E.FILTER:

1. RETURN AIR SHALL BE FILTERED BY MEANS OF AN EASILY REMOVABLE, WASHABLE FILTER.

F.COIL:

1. THE INDOOR COIL SHALL BE OF NONFERROUS CONSTRUCTION WITH SMOOTH PLATE FINS ON COPPER TUBING.
2. THE TUBING SHALL HAVE INNER GROOVES FOR HIGH EFFICIENCY HEAT EXCHANGE.
3. ALL TUBE JOINTS SHALL BE BRAZED WITH PHOS–COPPER OR SILVER ALLOY.
4. THE COILS SHALL BE PRESSURE TESTED AT THE FACTORY.
5. A CONDENSATE PAN AND DRAIN SHALL BE PROVIDED UNDER THE COIL.
6. BOTH REFRIGERANT LINES TO THE PKFY INDOOR UNITS SHALL BE INSULATED IN ACCORDANCE WITH THE INSTALLATION MANUAL.

A.ELECTRICAL:

1. THE UNIT ELECTRICAL POWER SHALL BE 208/230 VOLTS, 1–PHASE, 60 HERTZ.
2. THE SYSTEM SHALL BE CAPABLE OF SATISFACTORY OPERATION WITHIN VOLTAGE LIMITS OF 208–230 VOLTS (208V/60HZ) OR 207–253 VOLTS (230V/60HZ)

H.CONTROLS:

1. THIS UNIT SHALL USE CONTROLS PROVIDED BY MITSUBISHI ELECTRIC COOLING & HEATING TO PERFORM FUNCTIONS NECESSARY TO OPERATE THE SYSTEM. PLEASE REFER TO PART 4 OF THIS GUIDE SPECIFICATION FOR DETAILS ON CONTROLLERS AND OTHER CONTROL OPTIONS.
2. THE UNIT SHALL BE ABLE TO CONTROL EXTERNAL BACKUP HEAT.
3. THE UNIT SHALL HAVE A FACTORY BUILT IN RECEIVER FOR WIRELESS REMOTE CONTROL
4. INDOOR UNIT SHALL COMPENSATE FOR THE HIGHER TEMPERATURE SENSED BY THE RETURN AIR SENSOR COMPARED TO THE TEMPERATURE AT LEVEL OF THE OCCUPANT WHEN IN HEAT MODE. DISABLING OF COMPENSATION SHALL BE POSSIBLE FOR INDIVIDUAL UNITS TO ACCOMMODATE INSTANCES WHEN COMPENSATION IS NOT REQUIRED.
5. CONTROL BOARD SHALL INCLUDE CONTACTS FOR CONTROL OF EXTERNAL HEAT SOURCE. EXTERNAL HEAT MAY BE ENERGIZED AS SECOND STAGE WITH 1.8°F – 9.0°F ADJUSTABLE DEADBAND FROM SET POINT.
6. INDOOR UNIT SHALL INCLUDE NO LESS THAN FOUR (4) DIGITAL INPUTS CAPABLE OF BEING USED FOR CUSTOMIZABLE CONTROL STRATEGIES.
7. INDOOR UNIT SHALL INCLUDE NO LESS THAN THREE (3) DIGITAL OUTPUTS CAPABLE OF BEING USED FOR CUSTOMIZABLE CONTROL STRATEGIES.

PRODUCT SPECIFICATIONS FOR VENTACITY SYSTEMS MODEL VS3000 RTE PACKAGED ROOFTOP HEAT RECOVERY VENTILATOR FOR INDOOR OR OUTDOOR INSTALLATION

CSI MASTERFORMAT CATEGORY 23–72–00

PART 1 – GENERAL

1.01 SUMMARY

A. PACKAGED AIR–TO–AIR ENTHALPY RECOVERY VENTILATIONS UNITS (ERV) INCLUDING

1. FRAME
2. CASE
3. FANS
4. COUNTER FLOW FIXED PLATE EXCHANGER
5. FILTERS
6. DAMPERS
7. ELECTRICAL WIRING AND CONTROLS
8. SERVICE ACCESSORIES

1.02 RELATED SECTIONS

A. RELATED CSI MASTERFORMAT SECTIONS INCLUDE:
1. DIVISION 1 PLUMBING
2. DIVISION 27 ELECTRICAL
3. SECTION 23 01 00 OPERATION AND MAINTENANCE OF HVAC SYSTEMS
3. SECTION 23 05 00 COMMON WORK RESULTS FOR HVAC
4. SECTION 23 07 00 HVAC INSULATION
5. SECTION 23 08 00 COMMISSIONING OF HVAC
6. SECTION 23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC
7. SECTION 23 31 00 HVAC DUCTWORK AND CASINGS
8. SECTION 23 33 00 AIR DUCT ACCESSORIES

1.03 SUBMITTALS

A. FOR EACH MODEL, SUBMIT UNDER THE PROVISIONS OF DIVISION 01 – GENERAL REQUIREMENTS.
B. PRODUCT DATA, SUBMITTAL SHALL INCLUDE THE FOLLOWING:
1. SUPPLY AND EXHAUST FAN PERFORMANCE CURVES
2. HEAT RECOVERY EXCHANGER PERFORMANCE CURVES FOR SUMMER AND WINTER CONDITIONS
3. MOTOR AND FAN TYPES
4. ELECTRICAL CHARACTERISTICS
5. GROSS WEIGHT OF COMPLETE UNIT
6. DIMENSIONAL DRAWINGS OF EACH UNIT INCLUDING DUCTWORK CONNECTIONS
7. CASEWORK TYPE, METAL THICKNESS, AND INSULATION TYPE AND THICKNESS
8. QUALITY ASSURANCE COMPLIANCE DOCUMENTATION
9. INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

1.04 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS:

1.MANUFACTURER SHALL REGULARLY ENGAGE IN THE PRODUCTION OF ENTHALPY RECOVERY VENTILATION EQUIPMENT.

B. PRODUCT CERTIFICATIONS:
1.WHOLE UNIT SHALL BE THIRD–PARTY TESTED AND CERTIFIED TO COMPLY WITH UL 1812 AND CSA C22.2 NO. 113.

2.UNIT SHALL BE CERTIFIED BY THE PASSIVE HOUSE INSTITUTE WITH A MINIMUM HEAT RECOVERY EFFICIENCY OF 85% AND A MINIMUM MOISTURE RECOVERY OF 65%.

C. WARRANTY:
1.THE ENTHALPY RECOVERY CORE SHALL BE WARRANTED AGAINST ANY MANUFACTURING DEFECTS OR IMPROPER WORKMANSHIP UNDER NORMAL USAGE FOR A PERIOD OF TEN YEARS FROM THE UNIT'S DATE CODE.
2.THE COMPLETE ENTHALPY RECOVERY VENTILATOR SHALL BE WARRANTED AGAINST ANY MANUFACTURING DEFECTS OR IMPROPER WORKMANSHIP FOR A PERIOD OF TWO YEARS FROM THE DATE OF INSTALLATION.

1.05 DELIVERY, STORAGE, AND HANDLING

A. STORE IN MANUFACTURER'S PACKAGING. UPON DELIVERY CONFIRM ALL COMPONENTS ARE PRESENT AND UNDAMAGED BY SHIPPING. PRODUCTS TO BE INSTALLED INDOORS SHALL BE STORED IN A DRY HEATED LOCATION.

1.06 COORDINATION

A. COORDINATE ANY REQUIRED BUILDING PENETRATIONS FOR PROPER SIZE AND LOCATION WITH APPROPRIATE TRADES.

B. COORDINATE ASSOCIATED PLUMBING, ELECTRICAL AND ROOFING SYSTEMS FOR INSTALLATION.

C. COORDINATE PROPER SEQUENCING OF CONSTRUCTION WITH ALL ASSOCIATED TRADES.

1.07 EXTRA MATERIALS

A. PROVIDE ONE SET OF REPLACEMENT FILTERS, MERV 13 ON INTAKE AIR STREAM, MERV 8 ON RETURN AIR STREAM

PART 2 – PRODUCTS

2.01 MANUFACTURERES

A. ACCEPTABLE MANUFACTURER: VENTACITY SYSTEMS INC, PORTLAND OR WWW.VENTACITY.COM 503–208–7331

B. SUBSTITUTIONS: EQUIPMENT WITH EQUIVALENT PERFORMANCE, CONSTRUCTION, AND CERTIFICATIONS TO THE SPECIFIED PRODUCTS ARE ACCEPTABLE SUBJECT TO APPROVAL BY THE ENGINEERS.

2.02 GENERAL

A. CONSTRUCTION: ERV SHALL BE A PREPACKAGED UNIT THAT IS FULLY ASSEMBLED AT THE FACTORY AND SHALL INCLUDE: INSULATED DOUBLE WALL METAL CABINET, RAIN LOUVERS, MOTORIZED INTAKE AND EXHAUST DAMPERS, COUNTER FLOW FIXED PLATE HEAT RECOVERY CORE, ECM MOTORS, DIRECT DRIVE FAN ASSEMBLIES, FROST CONTROL PRE–HEATER ASSEMBLY, MODULATING BYPASS DAMPER ASSEMBLY, INTAKE AIR AND RETURN AIR FILTER ASSEMBLIES, TEMPERATURE AND PRESSURE SENSORS, AN CONTROL PANEL ASSEMBLY. ALL COMPONENTS TO BE FACTORY TESTED AND POWERED BY A SINGLE ELECTRICAL CONNECTION.

B. NAME PLATES: PROVIDE PERMANENT NAME PLATE CONTAINING MANUFACTURER NAME, MODEL NUMBER, SERIAL NUMBER, VOLTAGE, FCA, MCA, AND MOP INFORMATION.

C. WEIGHT: UNIT WEIGHT SHALL NOT EXCEED 1720 LBS.

2.03 CABINET

A. CABINET SHALL BE CONSTRUCTED OF DOUBLE–WALL INSULATED PANELS WITH THERMAL BREAKS TO MINIMIZE THERMAL BRIDGING.
1. PANELS SHALL BE CONSTRUCTED OF 0.031" THICK GALVANIZED STEEL. EXTERIOR WALL SHALL BE POWDER COATED WITH MINIMUM THICKNESS OF 60 UM.
2. INSULATION SHOULD BE 2–INCH THICK OF RIGID THERMOSET WITH 0.013 BTU/(HR–FT–°F) THERMAL CONDUCTIVITY. SIDE PANELS SHALL ALSO HAVE 0.5" THICK K–FLEX ECO INSULATION.
3. PANELS SHALL BE ATTACHED WITH M8 SHCS FASTENERS.
4. PANELS SHALL BE SEALED AND THERMALLY BROKEN WITH SOFT POLYETHYLENE SEALS, K–FLEX ECO, AND PORON UL50E PERIODIC RECOMPRESSION RATED GASKET MATERIAL.
5. AIR INTAKE AND EXHAUST LOCATIONS SHALL BE PROTECTED FROM WATER INFILTRATION BY INTEGRATED LOUVERS CONSTRUCTED OF 0.031" THICK POWDER COATED GALVANIZED STEEL WITH A BLADE ANGLE OF 35 DEGREES WITH A SECONDARY 1" 60 DEGREE TURN–DOWN LIP.
6. SUPPLY AIR AND RETURN AIR SHALL BE CONFIGURABLE FOR DOWN OR END DUCTING CONNECTIONS.
7. BOTTOM OF CABINET SHALL HAVE DRIP EDGE TO DIRECT WATER AWAY FROM ROOF CURB.

B. DOORS AND ACCESS PANELS SHALL BE CONSTRUCTED OF THE SAME MATERIALS AS THE PANELS
1. DOORS AND ACCESS PANELS SHALL ALLOW FOR ALL ROUTINE MAINTENANCE AND REPAIRS.
2. FILTERS SHALL BE ACCESSIBLE FOR FILTER CHANGES THROUGH A LATCHED AND HINGED DOOR.
3. DOORS AND ACCESS PANELS SHALL BE SEALED FOR AIR TIGHTNESS WITH K–FLEX ECO, AND PORON UL50E PERIODIC RECOMPRESSION RATED GASKET MATERIAL.

C. FOR OUTDOOR INSTALLATIONS, CABINET SHALL INCLUDE A DOMED ROOF EXTERNALLY APPLIED TO THE TOP OF THE CABINET TO SHED WATER.
1. ROOF SHALL BE CONSTRUCTED OF 0.031" GALVANIZED STEEL POWDER COATED TO MATCH CABINET COLOR.
2. ROOF SHALL INCLUDE DRIP EDGES TO DIRECT WATER AWAY FROM REMOVABLE ACCESS PANELS.

2.04 FANS

A. FANS SHALL BE ELECTRONICALLY COMMUTATED MOTOR (ECM) INTEGRATED DIRECT–DRIVE FAN & MOTOR ASSEMBLIES BY EBM PABST.
1. FAN ASSEMBLIES SHALL BE APPROVED BY UL 1004–7 AND CSA C22.2 NO. 77–14
2. MOTORS SHALL BE PROTECTION CLASS 1 WITH INTERNALLY WIRED THERMAL OVERLOAD PROTECTOR.
3. MOTORS SHALL BE VARIABLE SPEED.
4. MOTORS SHALL HAVE SEALED BALL BEARINGS FOR MAINTENANCE FREE OPERATION.
5. IMPELLERS SHALL BE BACKWARDLY CURVED CENTRIFUGAL ASSEMBLIES WITH FACTORY BALANCING.
6. IMPELLERS SHALL BE CONSTRUCTED OF ALUMINUM.
7. EACH AIRSTREAM SHALL HAVE AN INDEPENDENTLY CONTROLLED FAN/MOTOR ASSEMBLY.
8. FANS SHALL BE MOUNTED DOWNSTREAM OF THE HEAT RECOVERY CORE.

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KY ENGINEERS

2.05 ENTHALPY RECOVERY CORE

A. ENTHALPY EXCHANGE CORE SHALL BE OF FIXED PLATE PARALLEL COUNTER FLOW DESIGN.
1. CORE CONSTRUCTION SHALL BE OF PERMEABLE MEMBRANE PLATES WITH A MINIMUM OF 3114 SQUARE FEET OF SURFACE AREA.
2. CORE SHALL BE REMOVABLE FOR CLEANING AND MAINTENANCE.
3. CORE SHALL BE GASKETED FOR AIR SEALING TO PREVENT CROSS–FLOW CONTAMINATION WITH SOFT POLYETHYLENE SEAL MATERIAL.
4. CORE SHALL BE PROTECTED FROM FREEZING AND FROST BUILD–UP WITH A FACTORY INSTALLED 17 KW MODULATING ELECTRIC RESISTANCE PREHEATER LOCATED IN THE INTAKE AIR STREAM AND CONTROLLED BY THE EXHAUST AIR TEMPERATURE. RETURN AIR BYPASS THROUGH THE CORE AND INTO THE SUPPLY AIR STREAM FOR FROST PROTECTION IS NOT ALLOWED.

2.06 POWER AND CONTROLS

A. POWER:
1. UNIT SHALL BE POWERED BY CHOSE ONE (208/240 VAC, THREE PHASE, 60 HZ POWER) OR (480 & 208 VAC, THREE PHASE, 60 HZ POWER)
2. PROVIDE A NEMA 3R RAINPROOF FUSED INTERRUPT BOX TYPE OF DISCONNECT SWITCH RATED FOR CHOOSE ONE (208/240 VAC, THREE PHASE, 60 HZ POWER) OR (480 VAC, THREE PHASE, 60 HZ POWER)
3. UNIT SHALL BE POWERED WITH A SINGLE POINT FIELD CONNECTION TO POWER SUPPLY.
4. IF 480 VAC POWER INCLUDE CONTRACTOR SHALL SUPPLY A 480–208 VAC STEP–DOWN TRANSFORMER FOR POWERING FANS AND CONTROLS AT 208 VAC (FROST PROTECTION PRE–HEATER POWERED AT 480 VAC).

B. CONTROLS:
1. THE ERV SHALL HAVE THE ABILITY TO BE CONTROLLED BY A FACTORY PROVIDED CONTROL SYSTEM OR BE ABLE TO BE MONITORED AND CONTROLLED BY A BUILDING MANAGEMENT SYSTEM (BMS).
2. THE ERV SHALL BE PROVIDED WITH A FACTORY CONTROLS INTERFACE PANEL FOR REMOTE CONTROL AND OPERATION OF THE UNIT.
3. THE CONTROL SYSTEM SHALL BE ABLE TO CONNECT TO A BMS THROUGH MODBUS RTU CONNECTION PROTOCOLS.
4. OPTIONAL CONTROL SYSTEM ERV SHALL INCLUDE SMART BUILDING GATEWAY CONTROL SYSTEM, HARDWARE, AND ANTENNAS FOR CLOUD–BASED CONTROL, MONITORING, AND DATA–LOGGING OF ERV.

C. SENSORS: THE FOLLOWING SENSORS SHALL BE INCLUDED IN THE ERV:
1. TEMPERATURE SENSORS LOCATED IN EACH AIRSTREAM
2. PRESSURE SENSORS LOCATED ON BOTH SIDES OF EACH FILTER, ON THE INLET AND OUTLET OF EACH FAN, IN THE SUPPLY AIRSTREAM, AND OUTSIDE OF THE ERV CASING.
3. SAFETY DISCONNECT SENSOR IN THE OUTSIDE AIR PRE–HEATER
4. OPTIONAL SENSORS, CHOOSE (ROOM CO2) (DUCT CO2)

2.07 DAMPERS

A. BYPASS DAMPER: THE ERV SHALL HAVE A FULLY MODULATING BYPASS DAMPER ASSEMBLY TO CLOSE OFF INTAKE AIR THROUGH THE CORE AND DIRECT IT AROUND THE CORE TO THE SUPPLY AIR SIDE.
1. THE DAMPER OPENING BYPASS CHAMBER SHALL BE INTERLINKED TO THE DAMPER CLOSING AIRFLOW THROUGH THE CORE.
2. THE DAMPERS SHALL BE CONSTRUCTED OF DOUBLE–WALL 14 GAGE GALVANIZED SHEET METAL.
3. THE BYPASS DAMPER BLADE SHALL BE AIR SEALED UPON CLOSING WITH POLYMER EXTRUSION BLADE SEAL.
4. THE DAMPER ACTUATOR SHALL BE FULLY MODULATING WITH A CLOSING TORQUE OF 44 IN–LB (5 N–M).

B. INTAKE AND EXHAUST DAMPERS: THE ERV SHALL INCLUDE INTEGRATED DAMPERS ON THE INTAKE AND EXHAUST TO CLOSE THESE OPENINGS FOR STAND–BY MODE OPERATION OR WHEN THE UNIT IS POWERED OFF.
1. THE DAMPERS SHALL BE MOTORIZED TWO–POSITION PARALLEL BLADE DAMPERS.
2. UPON START–UP, THE DAMPERS SHALL OPEN BEFORE THE FANS OPERATE.
3. THE DAMPERS SHALL BE CONSTRUCTED OF DOUBLE WALL EXTRUDED ALUMINUM.
4. THE DAMPER BLADES SHALL BE AIR SEALED UPON CLOSING WITH POLYMER EXTRUSION BLADE SEALS
5. THE DAMPER ACTUATOR SHALL HAVE A CLOSING TORQUE OF 44 IN–LB (5 N–M).

2.08 FILTERS

A. FILTER RACKS:
1. FILTER RACKS SHALL BE CONSTRUCTED OF 0.031" THICK GALVANIZED STEEL DESIGNED TO HOLD A 2" THICK RETURN FILTER, 4" THICK SUPPLY FILTER AND 2" THICK SUPPLY PRE–FILTER.
2. FILTER RACKS SHALL BE ACCESSIBLE FOR CHANGING FILTERS THROUGH A LATCHED ACCESS DOOR.

B. FILTERS:
1. THE OUTDOOR AIR SHALL BE FILTERED WITH A 4" THICK MINI–PLEAT MERV 13 FILTER.
2. THE OUTDOOR AIR SHALL BE PRE–FILTERED WITH A 2" THICK PLEATED MERV 6 FILTER.
3. THE RETURN AIR SHALL BE FILTERED WITH A 2" THICK PLEATED MERV 8 FILTER.
4. THE ERV SHALL HAVE ONE SET OF FILTERS PRE–INSTALLED IN THE FACTORY.
5. CONTRACTOR SHALL PROVIDE ONE SET OF REPLACEMENT FILTERS.

2.09 CONDENSATE DRAIN

A. THE ERV SHALL INCLUDE STAINLESS STEEL CONDENSATE COLLECTION TRAY SLOPED TO CENTER DRAIN TO CAPTURE CONDENSATE FROM EXHAUST AIR STREAM.

B. CONDENSATE SHALL BE DRAINED FROM ERV THROUGH A CLEANABLE FLOAT–BALL P–TRAP PROVIDED WITH THE ERV.

C. IN OUTDOOR INSTALLATIONS WHERE FREEZING OF CONDENSATE MAY OCCUR, PROVIDE FREEZE PROTECTION HEAT TAPE TO PROTECT CONDENSATE DRAIN.

2.10 VIBRATION ISOLATION

A. MOUNT THE ERV ONTO CURB OR STAND USING A GASKET OF NEOPRENE MATERIAL 0.5" THICKNESS AND 1.25" WIDTH FOR WHOLE UNIT VIBRATION PROTECTION.

B. CONNECT SUPPLY AND RETURN DUCTWORK TO THE ERV USING FLEXIBLE CONNECTIONS FOR VIBRATION ISOLATION.

PART 3 – EXECUTION

3.01 EXAMINATION

A. VERIFICATION OF CONDITIONS:
1. PRIOR TO INSTALLATION, EXAMINE INSTALLATION SITE TO VERIFY THAT LOCATION IS ACCURATE, DUCTWORK PENETRATIONS (IF REQUIRED) ARE CORRECTLY SIZED AND LOCATED AND THE ROOF CURB OR STAND IS CORRECT. CONSULT UNITS IOM TO VERIFY CORRECT CONDITIONS FOR INSTALLATION.
2. VERIFY THAT ELECTRICAL ROUGH–IN IS OF THE PROPER SIZE AND LOCATION FOR THE UNIT. CONSULT UNIT IOM FOR REQUIREMENTS.
3. VERIFY THAT ANY PLUMBING ROUGH–IN REQUIRED FOR CONDENSATE ROUTING IS OF THE PROPER SIZE AND LOCATION. CONSULT UNIT IOM FOR REQUIREMENTS.
4. PROCEED WITH INSTALLATION ONLY ONCE ANY DEFICIENCIES IN CONDITIONS HAVE BEEN RECTIFIED.

3.02 INSTALLATION

A. INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS, ENGINEERED MECHANICAL DRAWINGS, MANUFACTURER'S INSTRUCTIONS IN THE UNIT IOM, LOCAL BUILDING CODE AND TRADE BEST PRACTICES.

3.03 CLEANING

A. CLEAN ALL FILTERS, AIR CHAMBERS, INTERIOR EXPOSED SURFACES AND EXTERIOR FACES. ENSURE THAT ANY LOOSE MATERIALS SHIPPED WITH UNIT HAVE BEEN REMOVED FROM THE INSIDE. ALL CLEANING MUST TAKE PLACE PRIOR TO COMMISSIONING OF THE UNIT.

3.04 SYSTEM START–UP

A. RETAIN A MANUFACTURER'S AUTHORIZED REPRESENTATIVE TO PROVIDE START–UP SERVICE AND COMMISSIONING OF THE ERV. COORDINATE WITH CONTROLS COMMISSIONING AND AIR FLOW TESTING AND BALANCING AS NECESSARY.

<u>PRODUCT SPECIFICATIONS FOR VENTACITY SYSTEMS MODEL VS1000 RTE PACKAGED ROOFTOP ENTHALPY RECOVERY VENTILATOR FOR INDOOR OR OUTDOOR INSTALLATION</u>

CSI MASTERFORMAT CATEGORY 23–72–00

PART 1 – GENERAL

1.01 SUMMARY

A. PACKAGED AIR–TO–AIR ENTHALPY RECOVERY VENTILATIONS UNITS (ERV) INCLUDING

1. FRAME
2. CASE
3. FANS
4. COUNTER FLOW FIXED PLATE EXCHANGER
5. FILTERS
6. DAMPERS
7. ELECTRICAL WIRING AND CONTROLS
8. SERVICE ACCESSORIES

1.02 RELATED SECTIONS

A. RELATED CSI MASTERFORMAT SECTIONS INCLUDE:
1. DIVISION 1 PLUMBING
2. DIVISION 27 ELECTRICAL
3. SECTION 23 01 00 OPERATION AND MAINTENANCE OF HVAC SYSTEMS
3. SECTION 23 05 00 COMMON WORK RESULTS FOR HVAC
4. SECTION 23 07 00 HVAC INSULATION
5. SECTION 23 08 00 COMMISSIONING OF HVAC
6. SECTION 23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC
7. SECTION 23 31 00 HVAC DUCTWORK AND CASINGS
8. SECTION 23 33 00 AIR DUCT ACCESSORIES

1.03 SUBMITTALS

A. FOR EACH MODEL, SUBMIT UNDER THE PROVISIONS OF DIVISION 01 – GENERAL REQUIREMENTS.
B. PRODUCT DATA, SUBMITTAL SHALL INCLUDE THE FOLLOWING:
1. SUPPLY AND EXHAUST FAN PERFORMANCE CURVES
2. ENTHALPY RECOVERY EXCHANGER PERFORMANCE CURVES FOR SUMMER AND WINTER CONDITIONS
3. MOTOR AND FAN TYPES
4. ELECTRICAL CHARACTERISTICS
5. GROSS WEIGHT OF COMPLETE UNIT
6. DIMENSIONAL DRAWINGS OF EACH UNIT INCLUDING DUCTWORK CONNECTIONS
7. CASEWORK TYPE, METAL THICKNESS, AND INSULATION TYPE AND THICKNESS
8. QUALITY ASSURANCE COMPLIANCE DOCUMENTATION
9. INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

1.04 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS:

1. MANUFACTURER SHALL REGULARLY ENGAGE IN THE PRODUCTION OF ENTHALPY RECOVERY VENTILATION EQUIPMENT.

B. PRODUCT CERTIFICATIONS:
1. WHOLE UNIT SHALL BE THIRD–PARTY TESTED AND CERTIFIED TO COMPLY WITH UL 1812 AND CSA C22.2 NO. 113.
2. UNIT SHALL BE CERTIFIED BY THE PASSIVE HOUSE INSTITUTE WITH A MINIMUM HEAT RECOVERY EFFICIENCY OF 82% AND A MINIMUM MOISTURE RECOVERY OF 70%.

C. WARRANTY:
1. THE ENTHALPY RECOVERY CORE SHALL BE WARRANTED AGAINST ANY MANUFACTURING DEFECTS OR IMPROPER WORKMANSHIP UNDER NORMAL USAGE FOR A PERIOD OF TEN YEARS FROM THE UNIT'S DATE CODE.
2. THE COMPLETE ENTHALPY RECOVERY VENTILATOR SHALL BE WARRANTED AGAINST ANY MANUFACTURING DEFECTS OR IMPROPER WORKMANSHIP FOR A PERIOD OF TWO YEARS FROM THE DATE OF INSTALLATION.

1.05 DELIVERY, STORAGE, AND HANDLING

A. STORE IN MANUFACTURER'S PACKAGING. UPON DELIVERY CONFIRM ALL COMPONENTS ARE PRESENT AND UNDAMAGED BY SHIPPING. PRODUCTS TO BE INSTALLED INDOORS SHALL BE STORED IN A DRY HEATED LOCATION.

1.06 COORDINATION

A. COORDINATE ANY REQUIRED BUILDING PENETRATIONS FOR PROPER SIZE AND LOCATION WITH APPROPRIATE TRADES.

B. COORDINATE ASSOCIATED PLUMBING, ELECTRICAL AND ROOFING SYSTEMS FOR INSTALLATION.

C. COORDINATE PROPER SEQUENCING OF CONSTRUCTION WITH ALL ASSOCIATED TRADES.

1.07 EXTRA MATERIALS

A. PROVIDE ONE SET OF REPLACEMENT FILTERS, MERV 13 ON INTAKE AIR STREAM, MERV 8 ON RETURN AIR STREAM.

PART 2 – PRODUCTS

2.01 MANUFACTURERES

A. ACCEPTABLE MANUFACTURER: VENTACITY SYSTEMS INC, PORTLAND OR WWW.VENTACITY.COM 503–208–7331

B. SUBSTITUTIONS: EQUIPMENT WITH EQUIVALENT PERFORMANCE, CONSTRUCTION, AND CERTIFICATIONS TO THE SPECIFIED PRODUCTS ARE ACCEPTABLE SUBJECT TO APPROVAL BY THE ENGINEERS.

2.02 GENERAL

A. CONSTRUCTION: ERV SHALL BE A PREPACKAGED UNIT THAT IS FULLY ASSEMBLED AT THE FACTORY AND SHALL INCLUDE: INSULATED DOUBLE WALL METAL CABINET, RAIN LOUVERS, MOTORIZED INTAKE AND EXHAUST DAMPERS, COUNTER FLOW FIXED PLATE ENTHALPY RECOVERY CORE, ECM MOTORS, DIRECT DRIVE FAN ASSEMBLIES, FROST CONTROL PRE–HEATER ASSEMBLY, MODULATING BYPASS DAMPER ASSEMBLY, INTAKE AIR AND RETURN AIR FILTER ASSEMBLIES, TEMPERATURE AND PRESSURE SENSORS, AND CONTROL PANEL ASSEMBLY. ALL COMPONENTS TO BE FACTORY TESTED AND POWERED BY A SINGLE ELECTRICAL CONNECTION.

B. NAME PLATES: PROVIDE PERMANENT NAME PLATE CONTAINING MANUFACTURER NAME, MODEL NUMBER, SERIAL NUMBER, VOLTAGE, FCA, MCA, AND MOP INFORMATION.

C. WEIGHT: UNIT WEIGHT SHALL NOT EXCEED 662 LBS.

2.03 CABINET

A. CABINET SHALL BE CONSTRUCTED OF DOUBLE–WALL INSULATED PANELS WITH THERMAL BREAKS TO MINIMIZE THERMAL BRIDGING.
1. PANELS SHALL BE CONSTRUCTED OF 0.031" THICK GALVANIZED STEEL. EXTERIOR WALL SHALL BE POWDER COATED WITH MINIMUM THICKNESS OF 60 UM.
2. INSULATION SHOULD BE 2–INCH THICK OF RIGID THERMOSET WITH 0.013 BTU/(HR–FT–°F) THERMAL CONDUCTIVITY. SIDE PANELS SHALL ALSO HAVE 0.5" THICK K–FLEX ECO INSULATION.
3. PANELS SHALL BE ATTACHED WITH M8 SHCS FASTENERS.
4. PANELS SHALL BE SEALED AND THERMALLY BROKEN WITH SOFT POLYETHYLENE SEALS, K–FLEX ECO, AND PORON UL50E PERIODIC RECOMPRESSION RATED GASKET MATERIAL.
5. AIR INTAKE AND EXHAUST LOCATIONS SHALL BE PROTECTED FROM WATER INFILTRATION BY INTEGRATED LOUVERS CONSTRUCTED OF 0.031" THICK POWDER COATED GALVANIZED STEEL WITH A BLADE ANGLE OF 35 DEGREES WITH A SECONDARY 1" 60 DEGREE TURN–DOWN LIP.
6. SUPPLY AIR AND RETURN AIR SHALL BE CONFIGURABLE FOR DOWN OR END DUCTING CONNECTIONS.
7. BOTTOM OF CABINET SHALL HAVE DRIP EDGE TO DIRECT WATER AWAY FROM ROOF CURB.

B. DOORS AND ACCESS PANELS SHALL BE CONSTRUCTED OF THE SAME MATERIALS AS THE PANELS
1. DOORS AND ACCESS PANELS SHALL ALLOW FOR ALL ROUTINE MAINTENANCE AND REPAIRS.
2. FILTERS SHALL BE ACCESSIBLE FOR FILTER CHANGES THROUGH A LATCHED AND HINGED DOOR.
3. DOORS AND ACCESS PANELS SHALL BE SEALED FOR AIRTIGHTNESS WITH K–FLEX ECO, AND PORON UL50E PERIODIC RECOMPRESSION RATED GASKET MATERIAL.

C. FOR OUTDOOR INSTALLATIONS, CABINET SHALL INCLUDE A DOMED ROOF EXTERNALLY APPLIED TO THE TOP OF THE CABINET TO SHED WATER.
1. ROOF SHALL BE CONSTRUCTED OF 0.031" GALVANIZED STEEL POWDER COATED TO MATCH CABINET COLOR.
2. ROOF SHALL INCLUDE DRIP EDGES TO DIRECT WATER AWAY FROM REMOVABLE ACCESS PANELS.

2.04 FANS

A. FANS SHALL BE ELECTRONICALLY COMMUTATED MOTOR (ECM) INTEGRATED DIRECT–DRIVE FAN & MOTOR ASSEMBLIES BY EBM PABST.
1. FAN ASSEMBLIES SHALL BE APPROVED BY UL 1004–3 AND CSA C22.2 NO. 77
2. MOTORS SHALL BE PROTECTION CLASS 1 WITH INTERNALLY WIRED THERMAL OVERLOAD PROTECTOR.
3. MOTORS SHALL BE VARIABLE SPEED.
4. MOTORS SHALL HAVE SEALED BALL BEARINGS FOR MAINTENANCE FREE OPERATION.
5. IMPELLERS SHALL BE BACKWARDLY CURVED CENTRIFUGAL ASSEMBLIES WITH FACTORY BALANCING.
6. IMPELLERS SHALL BE CONSTRUCTED OF POLYPROPYLENE PLASTIC.
7. EACH AIRSTREAM SHALL HAVE AN INDEPENDENTLY CONTROLLED FAN/MOTOR ASSEMBLY.
8. FANS SHALL BE MOUNTED DOWNSTREAM OF THE HEAT RECOVERY CORE.

2.05 ENTHALPY RECOVERY CORE

A. ENTHALPY EXCHANGE CORE SHALL BE OF FIXED PLATE PARALLEL COUNTER FLOW DESIGN.
1. CORE CONSTRUCTION SHALL BE OF PERMEABLE MEMBRANE PLATES WITH A MINIMUM OF 957 SQUARE FEET OF SURFACE AREA.
2. CORE SHALL BE REMOVABLE FOR CLEANING AND MAINTENANCE.
3. CORE SHALL BE GASKETED FOR AIR SEALING TO PREVENT CROSS–FLOW CONTAMINATION WITH SOFT POLYETHYLENE SEAL MATERIAL.
4. CORE SHALL BE PROTECTED FROM FREEZING AND FROST BUILD–UP WITH A FACTORY INSTALLED 6KW MODULATING ELECTRIC RESISTANCE PREHEATER LOCATED IN THE INTAKE AIR STREAM AND CONTROLLED BY THE EXHAUST AIR TEMPERATURE. RETURN AIR BYPASS THROUGH THE CORE AND INTO THE SUPPLY AIR STREAM FOR FROST PROTECTION IS NOT ALLOWED.

2.06 POWER AND CONTROLS

A. POWER:
1. UNIT SHALL BE POWERED BY CHOSE ONE (240 VAC, SINGLE PHASE, 60 HZ POWER) OR (208/240 VAC, THREE PHASE, 60 HZ POWER)
2. PROVIDE A NEMA 3R RAINPROOF FUSED INTERRUPT BOX TYPE OF DISCONNECT SWITCH RATED FOR CHOOSE ONE (240 VAC, SINGLE PHASE, 60 HZ POWER) OR (208/240 VAC, THREE PHASE, 60 HZ POWER)
3. UNIT SHALL BE POWERED WITH A SINGLE POINT FIELD CONNECTION TO POWER SUPPLY.

B. CONTROLS:
1. THE ERV SHALL HAVE THE ABILITY TO BE CONTROLLED BY A FACTORY PROVIDED CONTROL SYSTEM OR BE ABLE TO BE MONITORED AND CONTROLLED BY A BUILDING MANAGEMENT SYSTEM (BMS).
2. THE ERV SHALL BE PROVIDED WITH A FACTORY CONTROLS INTERFACE PANEL FOR REMOTE CONTROL AND OPERATION OF THE UNIT.
3. THE CONTROL SYSTEM SHALL BE ABLE TO CONNECT TO A BMS THROUGH MODBUS RTU CONNECTION PROTOCOLS.
4. OPTIONAL CONTROL SYSTEM ERV SHALL INCLUDE SMART BUILDING GATEWAY CONTROL SYSTEM, HARDWARE, AND ANTENNAS FOR CLOUD–BASED CONTROL, MONITORING, AND DATA–LOGGING OF ERV.

C. SENSORS: THE FOLLOWING SENSORS SHALL BE INCLUDED IN THE ERV:
1. TEMPERATURE SENSORS LOCATED IN EACH AIRSTREAM
2. PRESSURE SENSORS LOCATED ON BOTH SIDES OF EACH FILTER, ON THE INLET AND OUTLET OF EACH FAN, IN THE SUPPLY AIRSTREAM, AND OUTSIDE OF THE ERV CASING.
3. SAFETY DISCONNECT SENSOR IN THE OUTSIDE AIR PRE–HEATER
4. OPTIONAL SENSORS, CHOOSE (ROOM CO2) (DUCT CO2)

2.07 DAMPERS

A. BYPASS DAMPER: THE ERV SHALL HAVE A FULLY MODULATING BYPASS DAMPER ASSEMBLY TO CLOSE OFF INTAKE AIR THROUGH THE CORE AND DIRECT IT AROUND THE CORE TO THE SUPPLY AIR SIDE.
1. THE DAMPER OPENING BYPASS CHAMBER SHALL BE INTERLINKED TO THE DAMPER CLOSING AIRFLOW THROUGH THE CORE.
2. THE DAMPERS SHALL BE CONSTRUCTED OF DOUBLE–WALL 14 GAGE GALVANIZED SHEET METAL.
3. THE BYPASS DAMPER BLADE SHALL BE AIR SEALED UPON CLOSING WITH POLYMER EXTRUSION BLADE SEAL.
4. THE DAMPER ACTUATOR SHALL BE FULLY MODULATING WITH A CLOSING TORQUE OF 17.5 IN–LB (2 N–M).

B. INTAKE AND EXHAUST DAMPERS: THE ERV SHALL INCLUDE INTEGRATED DAMPERS ON THE INTAKE AND EXHAUST TO CLOSE THESE OPENINGS FOR STAND–BY MODE OPERATION OR WHEN THE UNIT IS POWERED OFF.
1. THE DAMPERS SHALL BE MOTORIZED TWO–POSITION PARALLEL BLADE DAMPERS.
2. UPON START–UP, THE DAMPERS SHALL OPEN BEFORE THE FANS OPERATE.
3. THE DAMPERS SHALL BE CONSTRUCTED OF DOUBLE WALL EXTRUDED ALUMINUM.
4. THE DAMPER BLADES SHALL BE AIR SEALED UPON CLOSING WITH POLYMER EXTRUSION BLADE SEALS
5. THE DAMPER ACTUATOR SHALL HAVE A CLOSING TORQUE OF 17.5 IN–LB (2 N–M).

2.08 FILTERS

A. FILTER RACKS:
1. FILTER RACKS SHALL BE CONSTRUCTED OF 0.031" THICK GALVANIZED STEEL DESIGNED TO HOLD A 2" THICK RETURN FILTER AND 4" THICK SUPPLY FILTER.
2. FILTER RACKS SHALL BE ACCESSIBLE FOR CHANGING FILTERS THROUGH A LATCHED ACCESS DOOR.

B. FILTERS:
1. THE OUTDOOR AIR SHALL BE FILTERED WITH A 4" THICK MINI–PLEAT MERV 13 FILTER.
2. THE RETURN AIR SHALL BE FILTERED WITH A 2" THICK PLEATED MERV 8 FILTER.
3. THE HRV SHALL HAVE ONE SET OF FILTERS PRE–INSTALLED IN THE FACTORY.
4. CONTRACTOR SHALL PROVIDE ONE SET OF REPLACEMENT FILTERS.

2.09 CONDENSATE DRAIN

A. THE ERV SHALL INCLUDE STAINLESS STEEL CONDENSATE COLLECTION TRAY SLOPED TO CENTER DRAIN TO CAPTURE CONDENSATE FROM EXHAUST AIR STREAM.

B. CONDENSATE SHALL BE DRAINED FROM ERV THROUGH A CLEANABLE FLOAT–BALL P–TRAP PROVIDED WITH THE ERV.

C. IN OUTDOOR INSTALLATIONS WHERE FREEZING OF CONDENSATE MAY OCCUR, PROVIDE FREEZE PROTECTION HEAT TAPE TO PROTECT CONDENSATE DRAIN.

2.10 VIBRATION ISOLATION

A. MOUNT THE ERV ONTO CURB OR STAND USING A GASKET OF NEOPRENE MATERIAL 0.5" THICKNESS AND 1.25" WIDTH FOR WHOLE UNIT VIBRATION PROTECTION.

B. CONNECT SUPPLY AND RETURN DUCTWORK TO THE ERV USING FLEXIBLE CONNECTIONS FOR VIBRATION ISOLATION.

PART 3 – EXECUTION

3.01 EXAMINATION

A. VERIFICATION OF CONDITIONS:
1. PRIOR TO INSTALLATION, EXAMINE INSTALLATION SITE TO VERIFY THAT LOCATION IS ACCURATE, DUCTWORK PENETRATIONS (IF REQUIRED) ARE CORRECTLY SIZED AND LOCATED AND THE ROOF CURB OR STAND IS CORRECT. CONSULT UNITS IOM TO VERIFY CORRECT CONDITIONS FOR INSTALLATION.
2. VERIFY THAT ELECTRICAL ROUGH–IN IS OF THE PROPER SIZE AND LOCATION FOR THE UNIT. CONSULT UNIT IOM FOR REQUIREMENTS.
3. VERIFY THAT ANY PLUMBING ROUGH–IN REQUIRED FOR CONDENSATE ROUTING IS OF THE PROPER SIZE AND LOCATION. CONSULT UNIT IOM FOR REQUIREMENTS.
4. PROCEED WITH INSTALLATION ONLY ONCE ANY DEFICIENCIES IN CONDITIONS HAVE BEEN RECTIFIED.

3.02 INSTALLATION

A. INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS, ENGINEERED MECHANICAL DRAWINGS, MANUFACTURER'S INSTRUCTIONS IN THE UNIT IOM, LOCAL BUILDING CODE AND TRADE BEST PRACTICES.

3.03 CLEANING

A. CLEAN ALL FILTERS, AIR CHAMBERS, INTERIOR EXPOSED SURFACES AND EXTERIOR FACES. ENSURE THAT ANY LOOSE MATERIALS SHIPPED WITH UNIT HAVE BEEN REMOVED FROM THE INSIDE. ALL CLEANING MUST TAKE PLACE PRIOR TO COMMISSIONING OF THE UNIT.

3.04 SYSTEM START–UP

A. RETAIN A MANUFACTURER'S AUTHORIZED REPRESENTATIVE TO PROVIDE START–UP SERVICE AND COMMISSIONING OF THE ERV. COORDINATE WITH CONTROLS COMMISSIONING AND AIR FLOW TESTING AND BALANCING AS NECESSARY.

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SYSTEMS REQUIRING COMMISSIONING

SYSTEM	SUB–SYSTEM	QTY	CAPACITY (MBH) COOLING	CAPACITY (MBH) HEATING	TOTAL CAPACITY (MBH) COOLING	TOTAL CAPACITY (MBH) HEATING	REQUIRED COMMISSIONING
COOLING AND HEATING	OUTDOOR (COOLING) UNITS (1 TON)	1	12	–	12	–	HEATING (>600 MBH) YES COOLING (>480 MBH) YES
	HEAT PUMP UNITS (6 TON)	2	72	80	144	160	
	HEAT PUMP UNITS (8 TON)	6	96	108	576	648	
	HEAT PUMP UNITS (14 TON)	1	168	188	168	188	
	ELECTRIC UNIT HEATER (0.5 KW)	2	–	1.7	–	3.4	
	ELECTRIC UNIT HEATER (1 KW)	3	–	3.412	–	10.236	
	ELECTRIC UNIT HEATER (3 KW)	2	–	10.236	–	20.47	
	ELECTRIC DUCT HEATER (12 KW)	1	–	40.94	–	40.94	
	HOT WATER HEATER (600 MBH)	2	–	600	–	1200	
				TOTAL	900	2275	

SYSTEMS COMMISSIONING PURSUANT TO SECTION ECC408

SYSTEMS REQUIRING COMMISSIONING

1– HEATING, COOLING, AIR HANDLING AND DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS, AND THEIR RELATED AIR QUALITY MONITORING SYSTEMS.

2– AIR, WATER, AND OTHER ENERGY RECOVERY SYSTEMS.

3– MANUAL OR AUTOMATIC CONTROLS, WHETHER LOCAL OR REMOTE, ON ENERGY USING SYSTEMS INCLUDING BUT NOT LIMITED TO TEMPERATURE CONTROLS, SETBACK SEQUENCES, AND OCCUPANCY BASED CONTROL, INCLUDING ENERGY MANAGEMENT FUNCTIONS OF THE BUILDING MANAGEMENT SYSTEM.

4– PLUMBING, INCLUDING INSULATION OF PIPING AND ASSOCIATED VALVES, DOMESTIC AND PROCESS WATER PUMPING, AND MIXING SYSTEMS.

5– REFRIGERATION SYSTEM.

6– MECHANICAL HEATING SYSTEMS AND SERVICE WATER HEATING SYSTEMS.

7– OTHER SYSTEMS, EQUIPMENT AND COMPONENTS THAT ARE USED FOR HEATING, COOLING OR VENTILATION AND THAT AFFECT ENERGY USE.

C408.2.1 – COMMISSIONING PLAN BY A REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY.

C408.2.2 – SYSTEMS ADJUSTING AND BALANCING
- C408.2.2.1 – AIR SYSTEM BALANCING (EXCEPTION: FANS WITH FAN MOTORS OF 1 HP OR LESS.)
- C408.2.2.2 – HYDRONIC SYSTEMS BALANCING (EXCEPTION: PUMPS WITH PUMP MOTORS OF 5 HP OR LESS)

C408.2.3 – FUNCTIONAL PERFORMANCE TESTING
- C408.2.3.1 – EQUIPMENT
- C408.2.3.2 – EQUIPMENT FUNCTIONAL PERFORMANCE TESTING SHALL DEMONSTRATE THE INSTALLATION AND OPERATION OF COMPONENTS, SYSTEMS AND SUB–SYSTMES IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND MANUFACTURER REQUIREMENTS.
- C408.2.3.3 – ECONOMIZER

C408.2.4 – PRELIMINARY COMMISSIONING REPORT
- C408.2.4.1 – ACCEPTANCE OF REPORT
- C408.2.4.2 – COPY OF PRELIMINARY COMMISSIONING REPORT BE MADE AVAILABLE FOR REVIEW BY CODE OFFICIAL.

C408.2.5 – DOCUMENTATION REQUIREMENTS
- C408.2.5.1 – DRAWINGS TO SHOW THE LOCATION AND PERFORMANCE DATE ON EACH PIECE OF EQIUPMENT.
- C408.2.5.2 – COPY OF REPORT
- C408.2.5.3 – SYSTEM BALANCING REPORT
- C408.2.5.4 – FINAL COMMISSIONING REPORT

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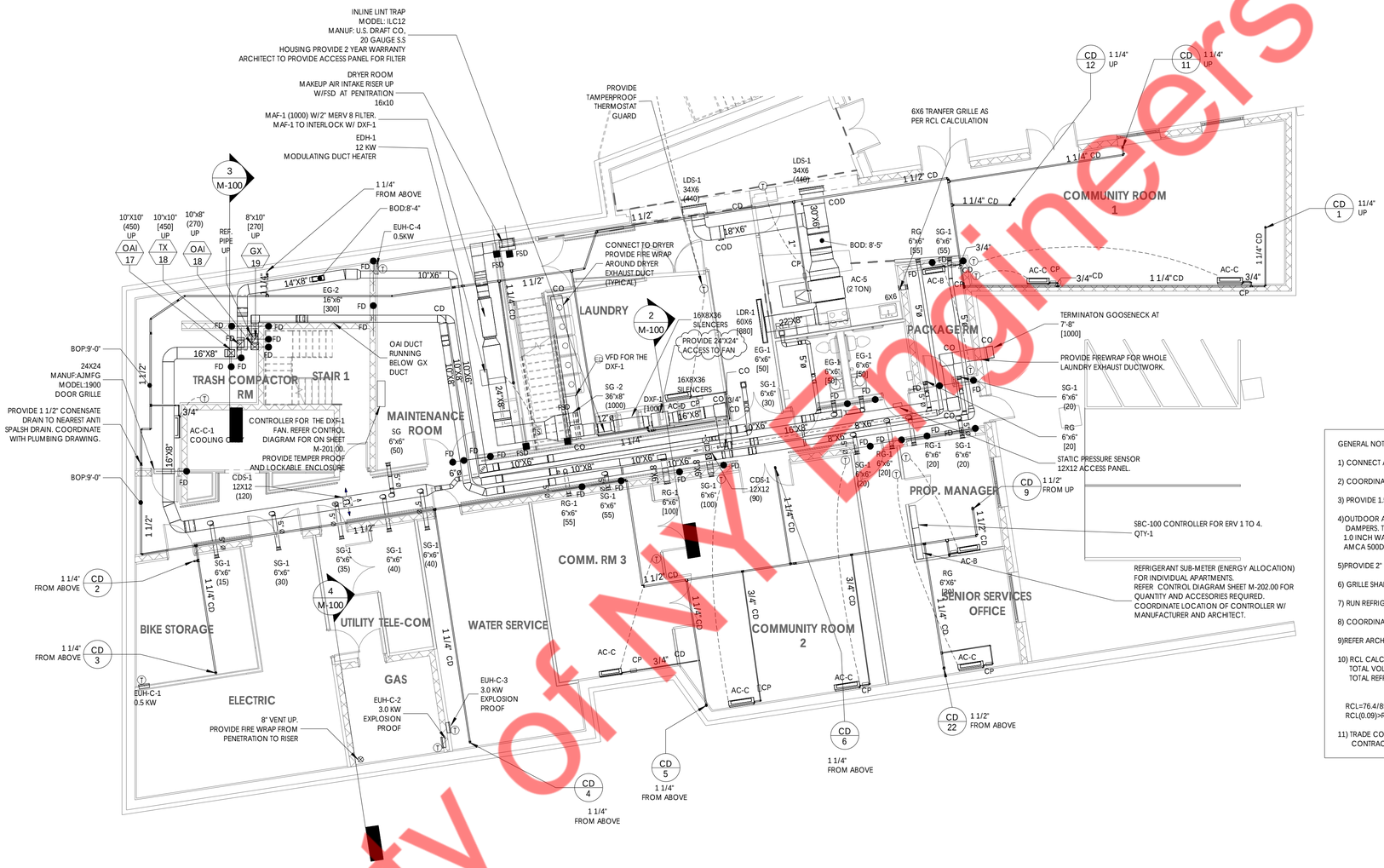


GENERAL NOTES:

1) CONNECT AC UNITS DRAIN PIPE TO THE NEAREST DRAIN RISER.

2) COORDINATE ACCESS PANEL COLOR/FINISH WITH ARCHITECT.

3) PROVIDE 1.5" INSULATION FOR SUPPLY & RETURN DUCTWORK FROM AC UNITS.

4)OUTDOOR AIR INTAKE, EXHAUST OPENINGS, STAIRWAY AND SHAFT VENTS SHALL BE PROVIDED WITH CLASS I MOTORIZED DAMPERS. THE DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 4 CFM/FT2 OF DAMPER SURFACE AREA AT 1.0 INCH WATER GAUGE AND SHALL BE LABELED BY AN APPROVED AGENCY WHEN TESTED IN ACCORDANCE WITH AMCA 500D".

5)PROVIDE 2" INSULATION FOR OUTDOOR AIR INTAKE DUCT.

6) GRILLE SHALL INCLUDE INBUILD VOLUME DAMPER.

7) RUN REFRIGERENT AND CONDENSING PIPE TIGHT TO CEILING.

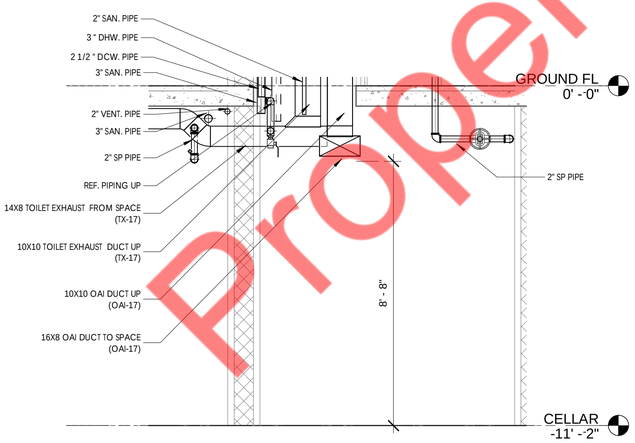
8) COORDINATE ALL GRILLE AND ACCESS DOOR LOCATION WITH ARCHITECT.

9)REFER ARCHITECTURAL DRAWINGS (A120, A121, A122, A123,A124) FOR LOCATION OF SHAFT RISERS.

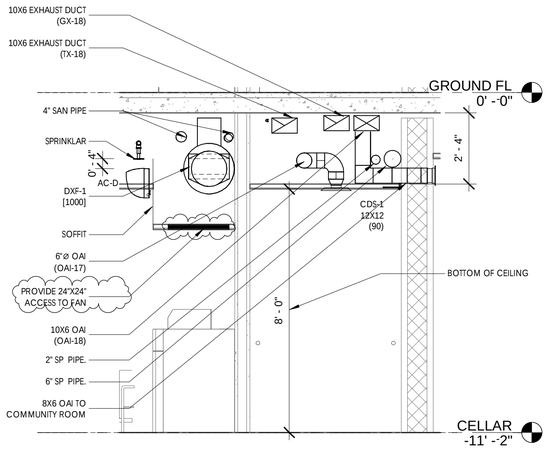
10) RCL CALCULATION FOR PACKAGE RM:
TOTAL VOLUME OF THE SMALLEST ROOM =850 CUBIC FEET.
TOTAL REFRIGERANT= REFRIGERANT IN CONDENSOR + REFRIGERANT IN PIPING.
= 26+50.4
=76.4 LBS.
RCL=76.4/850=0.08 LBS PER CUBIC FEET.
RCL(0.09)>RCL(AS PER CODE,0.025)

11) TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

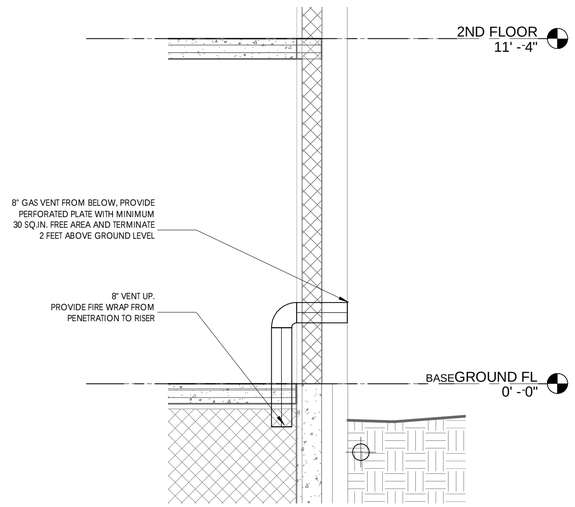
1 CELLAR MECHANICAL PLAN
1/8" = 1'-0"



3 CELLAR FLOOR TRASH ROOM
3/8" = 1'-0"



2 CELLAR FLOOR CORRIDOR
3/8" = 1'-0"



4 CELLAR FLOOR GAS VENT SECTION
3/8" = 1'-0"

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UNIT 120
505 SF
1 BDRM
UNIT 121
504 SF
1 BDRM
UNIT 119
354 SF
STUDIO
UNIT 118
356 SF
STUDIO
UNIT 117
357 SF
STUDIO
UFAS
UNIT 116
372 SF
STUDIO
UNIT 115
352 SF
STUDIO
UNIT 114
352 SF
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355 SF
STUDIO
UNIT 102
354 SF
STUDIO
UNIT 103
353 SF
STUDIO
UNIT 104
502 SF
1BDRM
UFAS
UNIT 105
501 SF
1BDRM
LOBBY
681 SF
STAIR 1
STAIR 2
J.C.
REFUSE
RM
E.C.
ELEV 1
(3500)
ELEV 2
(2100)
PROVIDE 36"X36" RATED ACCESS DOOR TO SHAFT MAKE: BEST ACCESS DOOR MODEL:BA-PFI-36-36
LAUNDRY MAKEUP AIR LOUVER 22"X20" (1000) LOCATE MINIMUM 10 FEET AWAY FROM EXHAUST.
BOTTOM OF LOUVER:8'-4"
10X16 CONNECTION FROM BELOW TO PLENUM
MD TO INTERLOCK W/MAF-1
PROVIDE WMS W/FILTER FOR AC UNIT RETURN
FIRE RATED ENCLOSURE
MAILBOXES
8" GAS VENT FROM BELOW, PROVIDE PERFORATED PLATE WITH MINIMUM 30 SQ.IN. FREE AREA AND TERMINATE 2 FEET ABOVE GROUND LEVEL
CDR 12"x12" [300]
CDS 12"x12" (40) W/COD
COD
BOE:9'-8"
18'X6'
10'X6'
8'X6'
2'X6'
AC UNIT
AC-1 1 TON
LDS-2 40X1.5 (145)
FSD M MD
M-101
M-102
1 1/2"
1 1/4"
3/4" CD
1" UP & DN
3/4" FROM UP
1 1/2" DN
1 1/4" UP & DN
1 1/4" FROM UP
8"x6" (90) UP
6"x6" [40] UP
6"x6" [50] UP
10"x10" (525) UP & DN
5" [20] UP
5" [25] UP
5" (45) UP
8"x10" [270] UP & DN
10"x8" (270) UP & DN
5" [50] UP
6"x6" (45) UP
10"x10" [525] UP & DN
6"x6" (75)
6"x6" (40) UP
6"x6" (50) UP
6"x6" (90) UP
6"x8" (90) UP
5" (25) UP
5" (45) UP
5" [20] UP
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5" [25] UP
8"x10" [270] UP & DN
10"x8" (270) UP & DN
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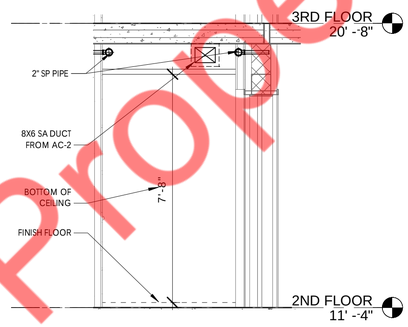
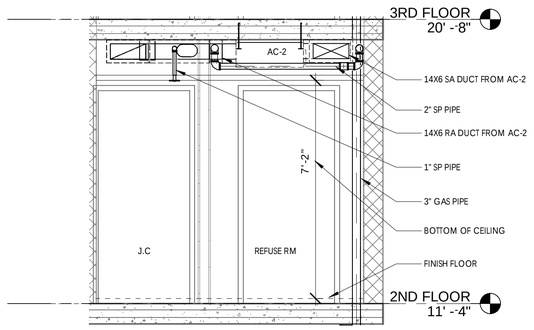
10"x10" [525] UP & DN
6"x8" (90) UP
5" [20] UP
5" [50] UP
5" [20] UP
5" [20] UP
6"x6" (40) UP
5" (25) UP
5" (45

1 2ND FLOOR MECHANICAL PLAN
1/8" = 1'-0"



2 2ND FLOOR CORRIDOR
3/8" = 1'-0"



3 2ND FLOOR REFUSE RM AC UNIT
3/8" = 1'-0"

GENERAL NOTES

1) PROVIDE 1.5" INSULATION FOR SUPPLY & RETURN DUCTWORK FROM AC UNITS.

2)ALL APARTMEN KITCHEN EXHAUST GRILLES MUST BE EQUIPPED WITH A MERV 3 OR WASHABLE CARBON FILTER FOR TRAPPING GREASE.

3) GRILLE SHALL INCLUDE INBUILD VOLUME DAMPER.

4) RUN REFRIGERENT AND CONDENSING PIPE TIGHT TO CEILING.

5) COORDINATE ALL GRILLE AND ACCESS DOOR LOCATION WITH ARCHITECT.

6) COORDINATE ACCESS PANEL COLOR/FINISH WITH ARCHITECT.

7) REFER RISER DIAGRAM FOR KITCHEN, TOILET AND OUTDOOR AIR BRANCH DUCT SIZES.

8)REFER ARCHITECTURAL DRAWINGS (A120, A121, A122, A123,A124) FOR LOCATION OF SHAFT RISERS.

10) CONDENSATE PUMP FOR ALL WALL MOUNTED AC UNIT SHALL BE MOUNTED INSIDE THE CASING BEHIND AC UNIT. REFER DETAIL 8 ON SHEET M-504.00

11) TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

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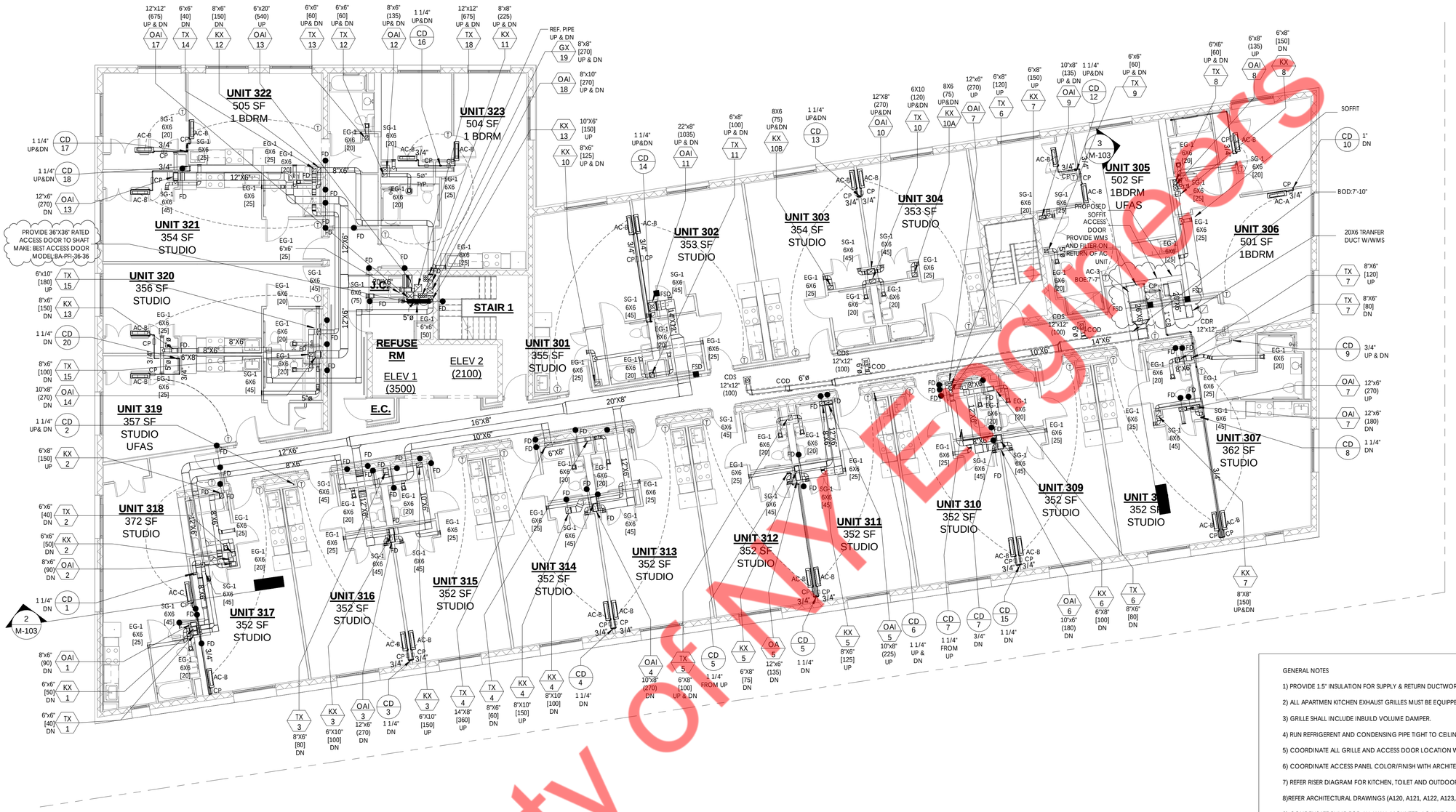

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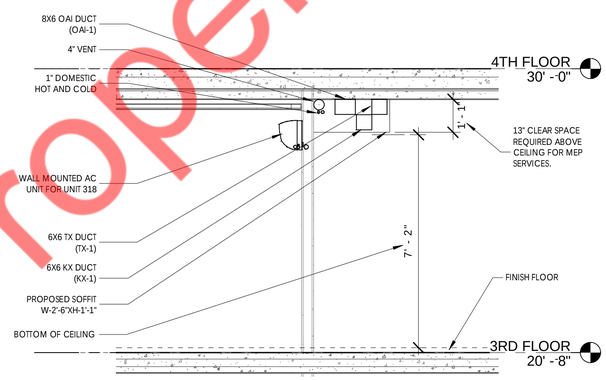
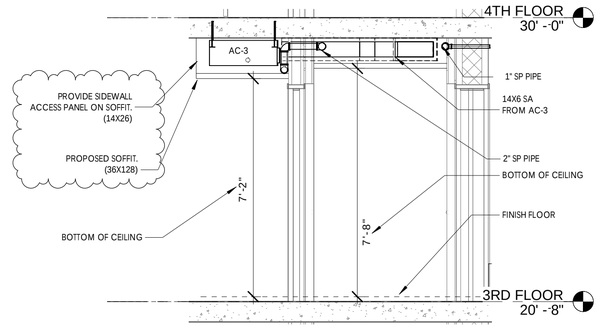
1 3RD FLOOR MECHANICAL PLAN
1/8" = 1'-0"

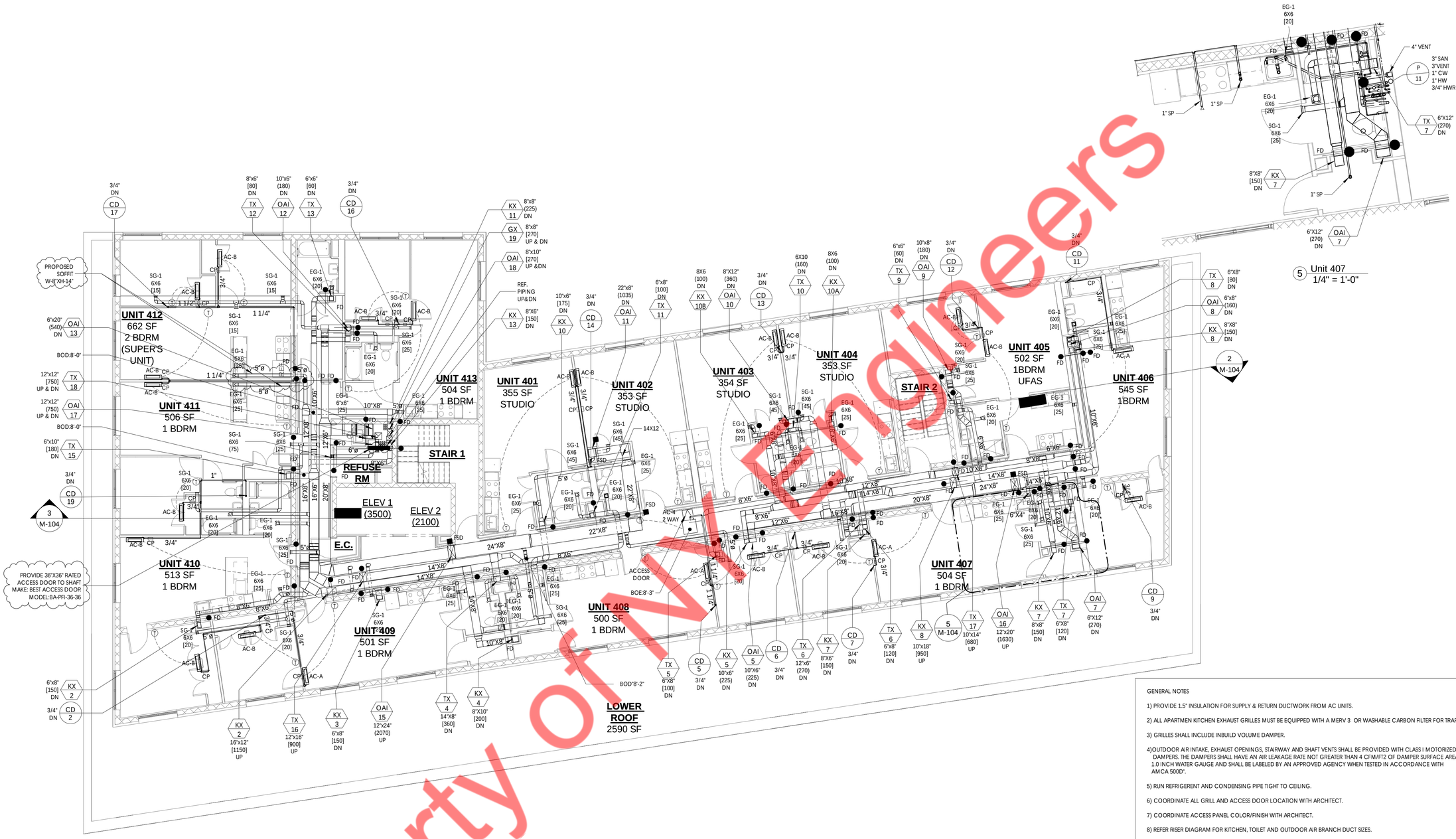


2 3RD FLOOR UNIT 318 & 317
3/8" = 1'-0"



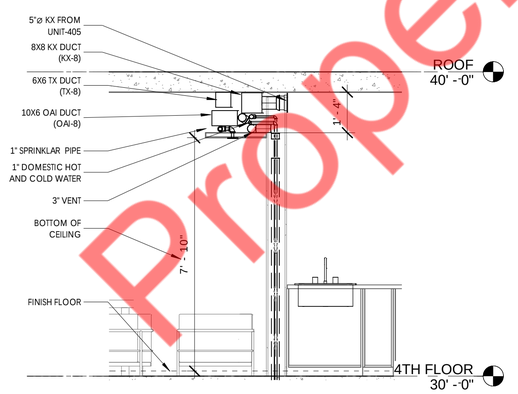
3 3RD FLOOR CORRIDOR
3/8" = 1'-0"

Property of NYE Brokers

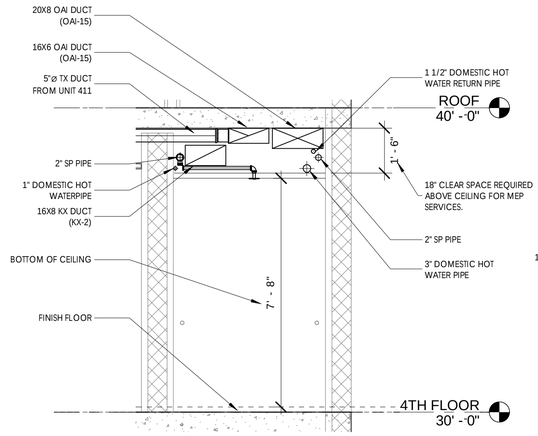


1 4TH FLOOR MECHANICAL PLAN
1/8" = 1'-0"

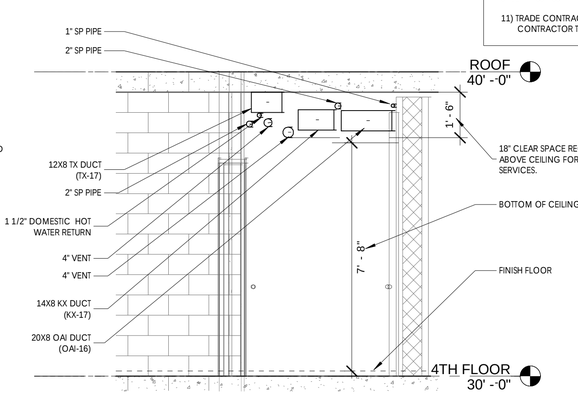
5 Unit 407
1/4" = 1'-0"



2 4TH FLOOR UNIT-406
3/8" = 1'-0"



3 4TH FLOOR CORRIDOR-1
3/8" = 1'-0"



4 4TH FLOOR CORRIDOR-2
3/8" = 1'-0"

GENERAL NOTES

1) PROVIDE 1.5" INSULATION FOR SUPPLY & RETURN DUCTWORK FROM AC UNITS.

2) ALL APARTMEN KITCHEN EXHAUST GRILLES MUST BE EQUIPPED WITH A MERV 3 OR WASHABLE CARBON FILTER FOR TRAPPING GREASE.

3) GRILLES SHALL INCLUDE INBUILD VOLUME DAMPER.

4)OUTDOOR AIR INTAKE, EXHAUST OPENINGS, STAIRWAY AND SHAFT VENTS SHALL BE PROVIDED WITH CLASS I MOTORIZED DAMPERS. THE DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 4 CFM/FT2 OF DAMPER SURFACE AREA AT 1.0 INCH WATER GAUGE AND SHALL BE LABELED BY AN APPROVED AGENCY WHEN TESTED IN ACCORDANCE WITH AMCA 500D".

5) RUN REFRIGERENT AND CONDENSING PIPE TIGHT TO CEILING.

6) COORDINATE ALL GRILL AND ACCESS DOOR LOCATION WITH ARCHITECT.

7) COORDINATE ACCESS PANEL COLOR/FINISH WITH ARCHITECT.

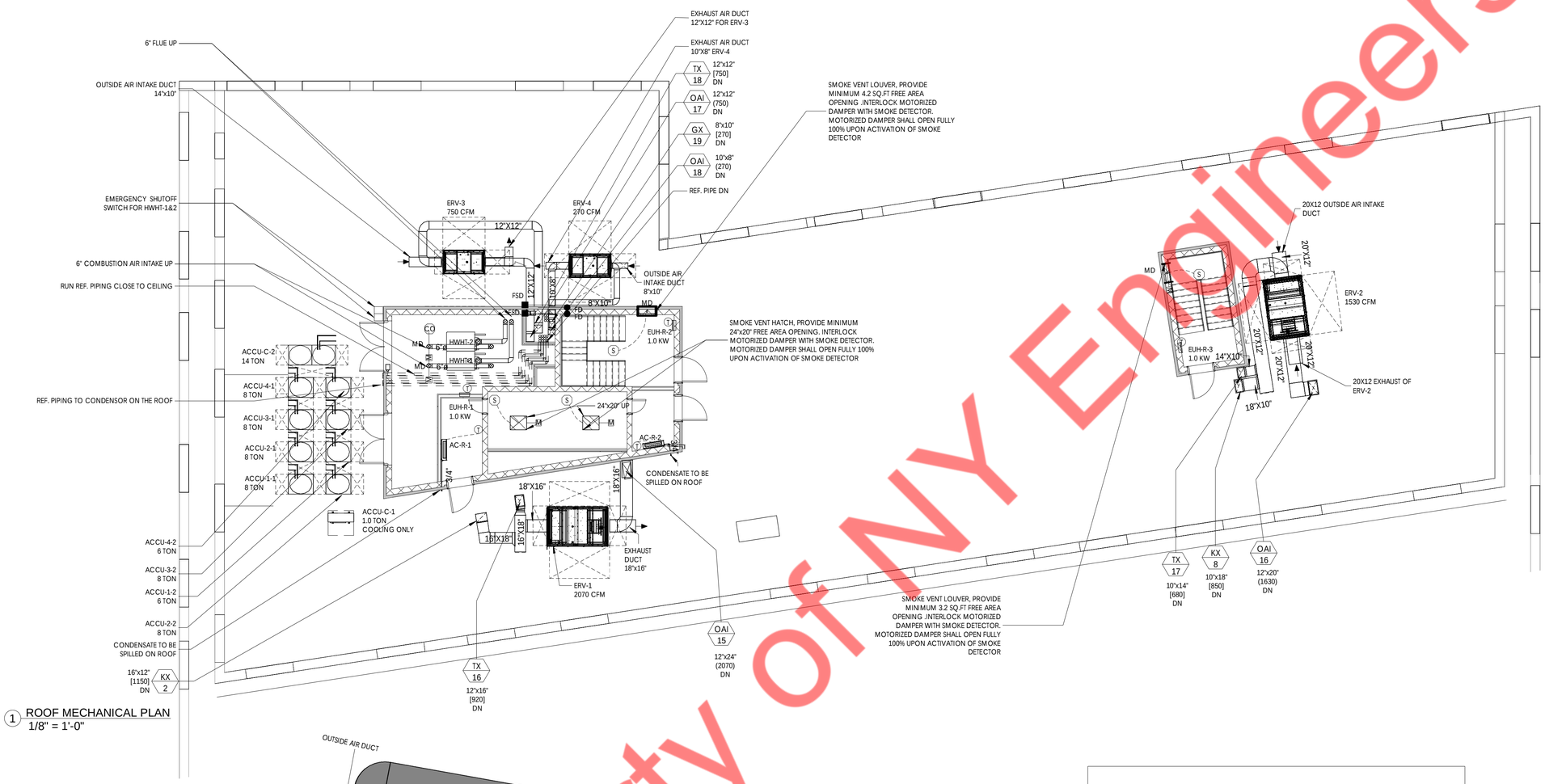
8) REFER RISER DIAGRAM FOR KITCHEN, TOILET AND OUTDOOR AIR BRANCH DUCT SIZES.

9)REFER ARCHITECTURAL DRAWINGS (A120, A121, A122, A123,A124) FOR LOCATION OF SHAFT RISERS.

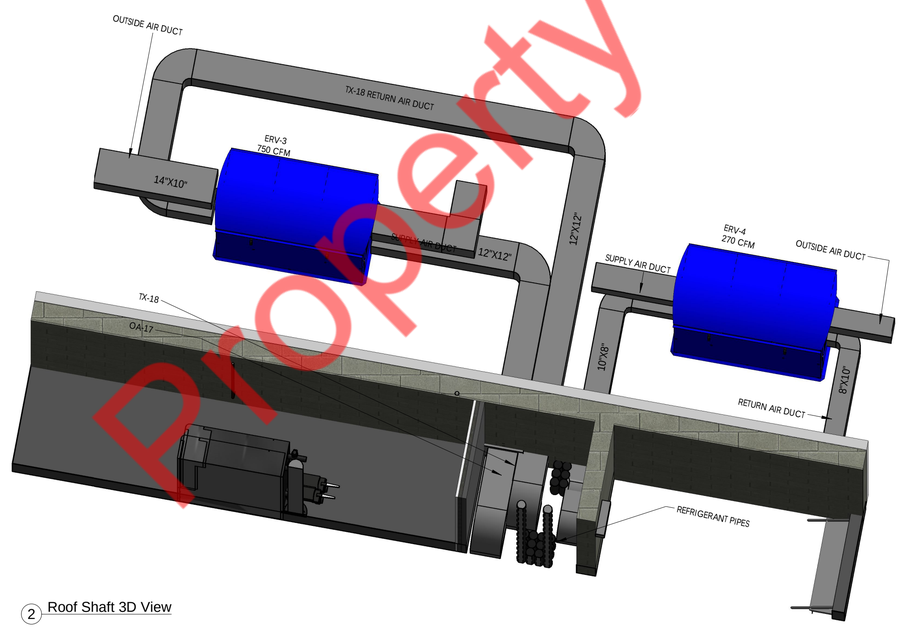
10) CONDENSATE PUMP FOR ALL WALL MOUNTED AC UNIT SHALL BE MOUNTED INSIDE THE CASING BEHIND AC UNIT. REFER DETAIL 8 ON SHEET M-504.00

11) TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

Property of NV Engineers



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



2 Roof Shaft 3D View

GENERAL NOTES:

1) ALL EXHAUST SHALL BE LOCATED MINIMUM 3 FEET FROM LOT LINE.

2) AIR CONDITIONER UNIT AND ERV SHALL NOT PRODUCE NOISE LEVELS IN EXCESS OF 42 DECIBLES FOR A SINGLE AIR CIRCULATING DEVICE AND 45 DECIBLES FOR THE CUMULATIVE NOISE LEVEL OF MULTIPLE AIR CURCULATING DEVICES AS MEASURED 3 FEET FROM THE NOISE SOURCE AT AN OPEN DOOR OR WINDOW OF A NEARBY RESIDENCE.

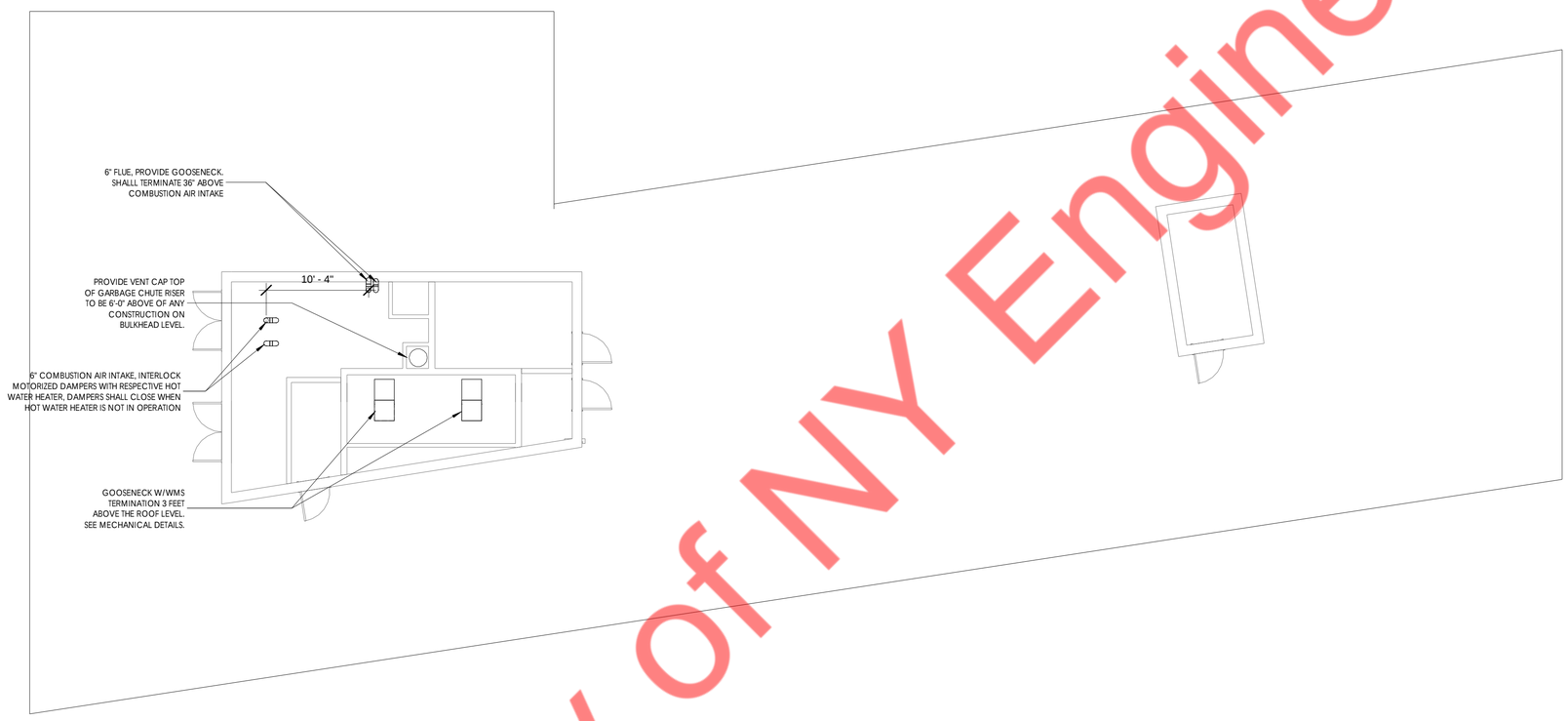
3) PROVIDE UV PROTECTED & WEATHER PROOF COATING FOR ALL EXTERIOR DUCTWORK AND PIPING INSULATION AND DUCT CONNECTORS

4) AIR INTAKE SHALL BE LOCATED 10 FEET AWAY FROM LOTLINE AND ANY EXHAUST.

5) COORDINATE HEAT LOAD REJECTION WITH ELEVATOR CONSULTANT. NYE DESIGNED BASED ON 12,000 BTUS/HR.

6) PROVIDE 2" INSULATION FOR FOR ALL OUTSIDE AIR DUCTS.

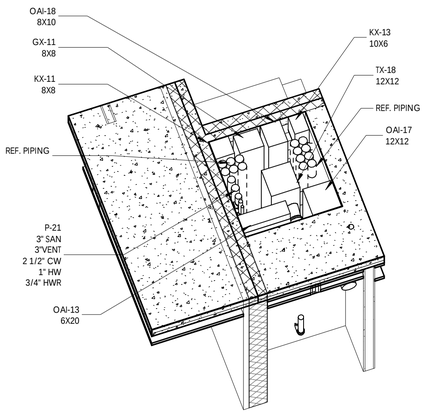
Property of NY Engineers



1 BULKHEAD MECHANICAL PLAN
1/8" = 1'-0"

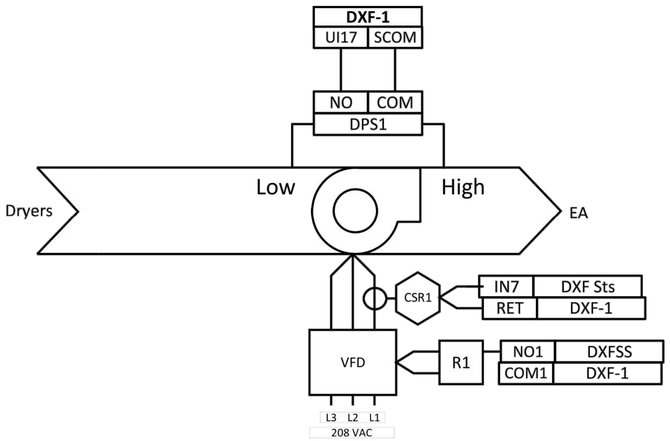
Property of NY Engineers

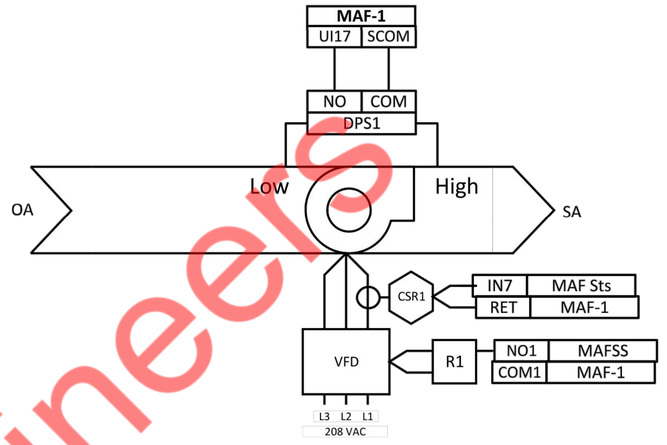
1 TYPICAL FLOOR SHAFT COORDINATION
1/8" = 1'-0"

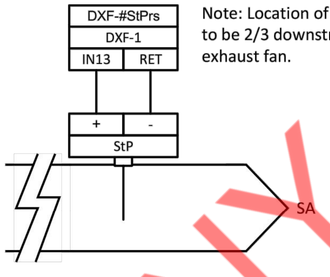


2 SHAFT-1

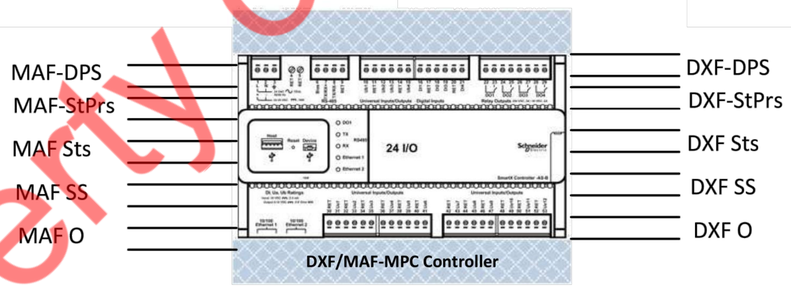
Property of NY Engineers







Note: Location of static pressure to be 2/3 downstream of the exhaust fan.



DESIGN BASIS: (ECS GLOBAL SOLUTIONS)

Sequence of Operation

Dryer Exhaust Sequence of Operation

- MAF and DXF Controllers will monitor status of dryers. Upon sensing any Dryer "ON" via static pressure sensor in duct-work, control sequence will initiate. Exhaust Fan will modulate to maintain pressure setpoint at the pressure sensor located in the exhaust ductwork. Upon sensing "OFF" for all dryers, the exhaust fan will ramp down. The makeup air fan will be interlocked with the dryer exhaust fan and ramp up and down accordingly.

Device	Qty	Part Number	Description	Manufacturer
CSR-1	2	VER-H608	CURRENT SWITCH N.O. SPLIT CORE	Hawkeye
XXF-1-R1	2	VER-V100	Veris V100 Relay	Schneider Electric
DPS-1	1	KEL-AFS-222	.05-12IN DIFF PRESS SWITCH	Schneider Electric [AFS-222]
StPrs	1	2323-500	Pressure Transmitter	Schneider Electric
Controller	1	SXWMPC	DDC Controller	Schneider Electric

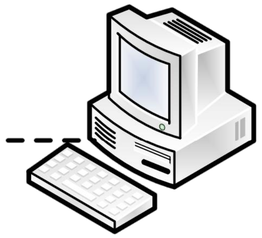
1 DRYER EXHAUST & MAKEUP AIR FROM CONTROL DIAGRAM
NTS

Property of NY Engineers

REMOTE 4G LTE
WAN
CONNECTION

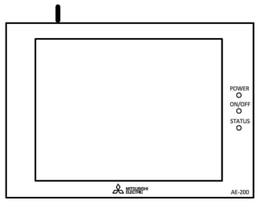
ENERGY
MANAGEMENT
PANEL

ETHERNET



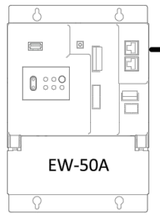
LOCAL USER WORKSTATION

ETHERNET

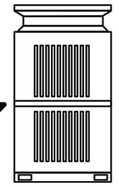


DEDICATED AE-200 WITH
SW-CHARGE MASTER
LICENSE

ETHERNET



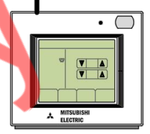
EW-50A WITH SW-CHARGE
EXPANSION LICENSE



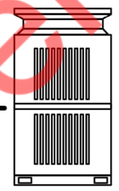
OUTDOOR UNIT

M-NET

INDOOR UNITS



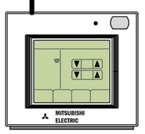
SMART ME REMOTE
CONTROLLER



OUTDOOR UNIT

M-NET

INDOOR UNITS



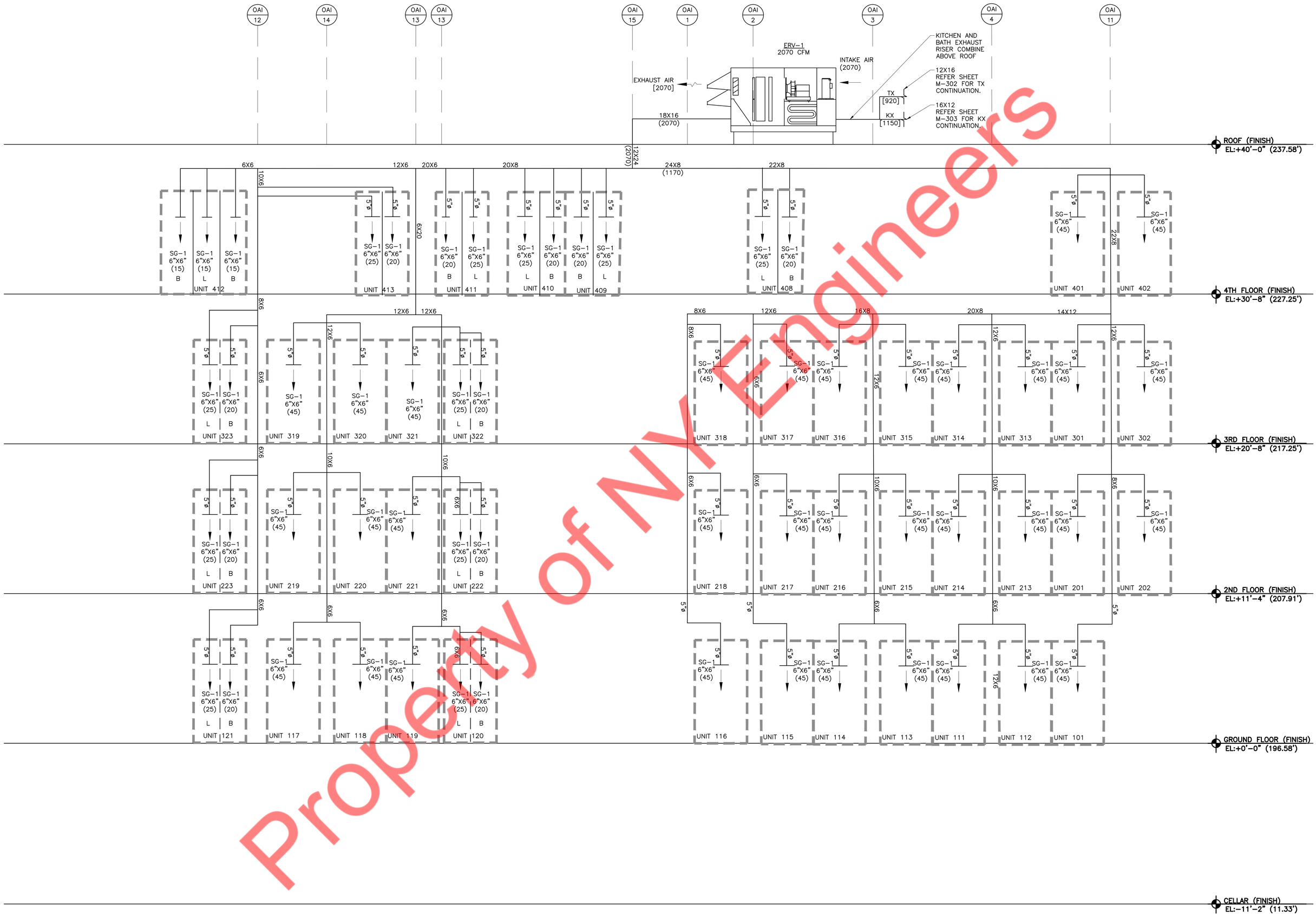
SMART ME REMOTE
CONTROLLER

REQUIRED EQUIPMENTS FOR ENERGY ALLOCATION SYSTEM:
(DESIGN BASIS: MITSUBISHI–TRANE)

- ENERGY MANAGEMENT PANEL: DC–EMP–8400
- UL LISTED NEMA 1 ENCLOSURE
- INDUSTRIAL PANEL MOUNTED SERVER PC
- 4G LTE REMOTE ACCESS FOR 1 YEAR
- NIAGARA DC–PRO LICENSE
- UNINTERRUPTABLE POWER SUPPLY FOR BATTERY BACKUP
- 24VAC POWER SUPPLY
- 5 PORT MANAGED NETWORK SWITCH
- (QUANTITY:8) POWER METER(S) AND (24) CURRENT TRANSDUCER
- REQUIRED PULSE INPUT CONTROLLERS
- (QUANTITY:24) FUSES
- (QUANTITY:1) AE–200 CENTRAL CONTROLLER
- (QUANTITY:3) EW–50 CENTRAL CONTROLLER

Property of NY Engineers

1 ENERGY ALLOCATION CONTROL DIAGRAM
NTS



1 ERV-1 SUPPLY AIR RISER DIAGRAM (1 OF 6)
NTS

NOTES:

1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.

2-ALL DIMENSIONS ARE IN INCHES

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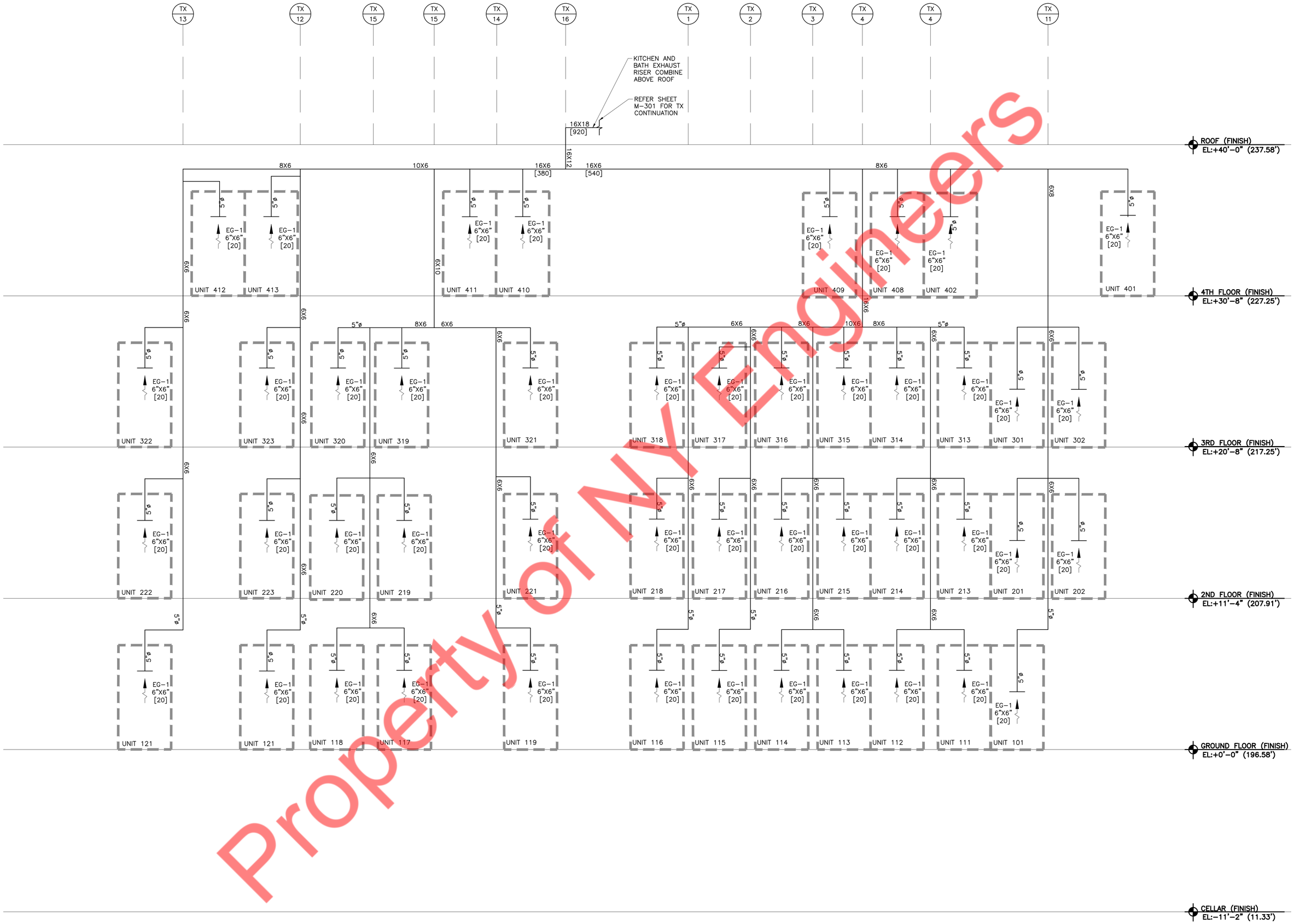

1 ERV-1 TOILET AIR RISER DIAGRAM (2 OF 6)
NTS

NOTES:
1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.
2-ALL DIMENSIONS ARE IN INCHES

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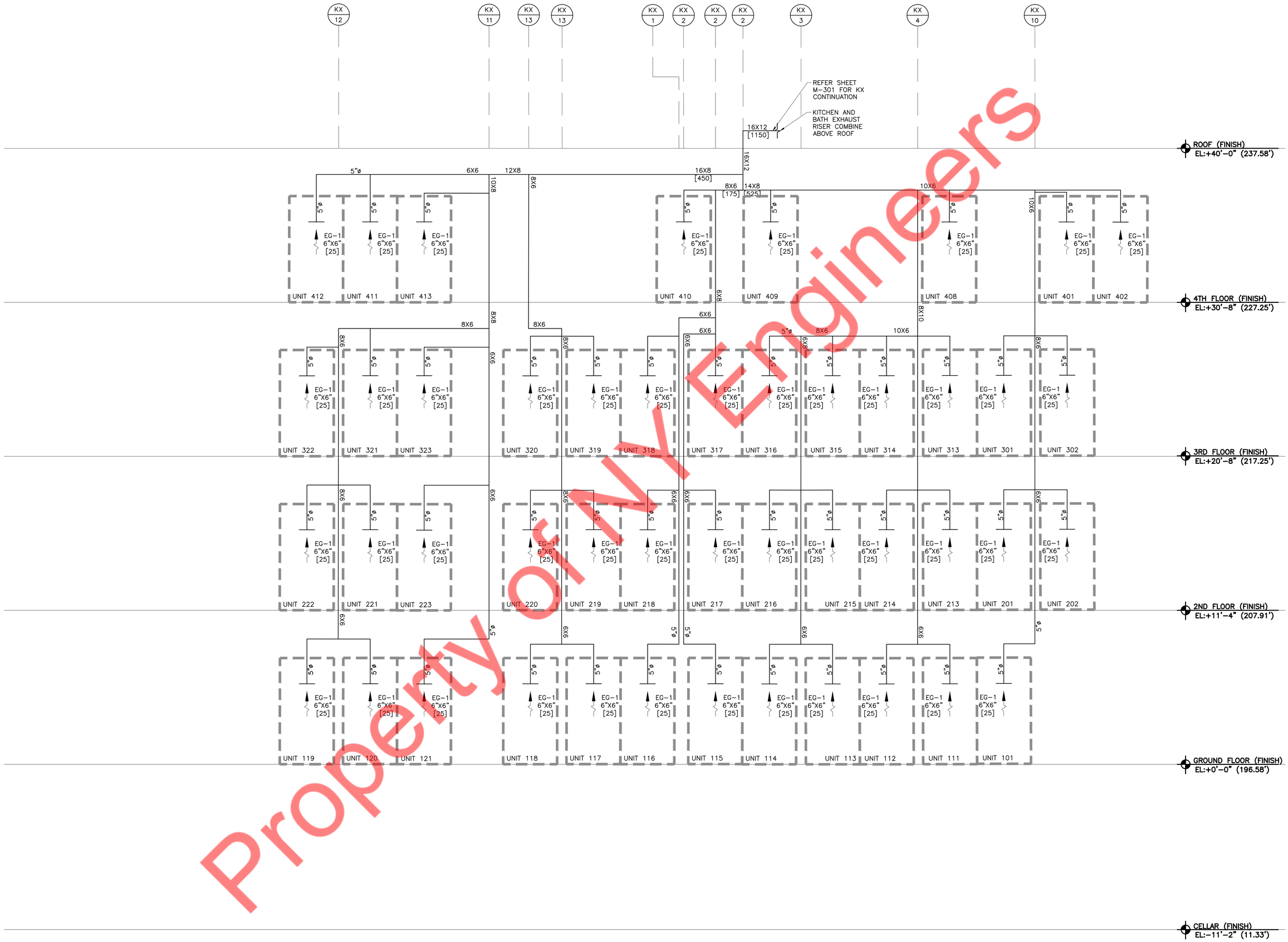

1 ERV-1 KITCHEN AIR RISER DIAGRAM (3 OF 6)
NTS

NOTES:
1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.
2-ALL DIMENSIONS ARE IN INCHES

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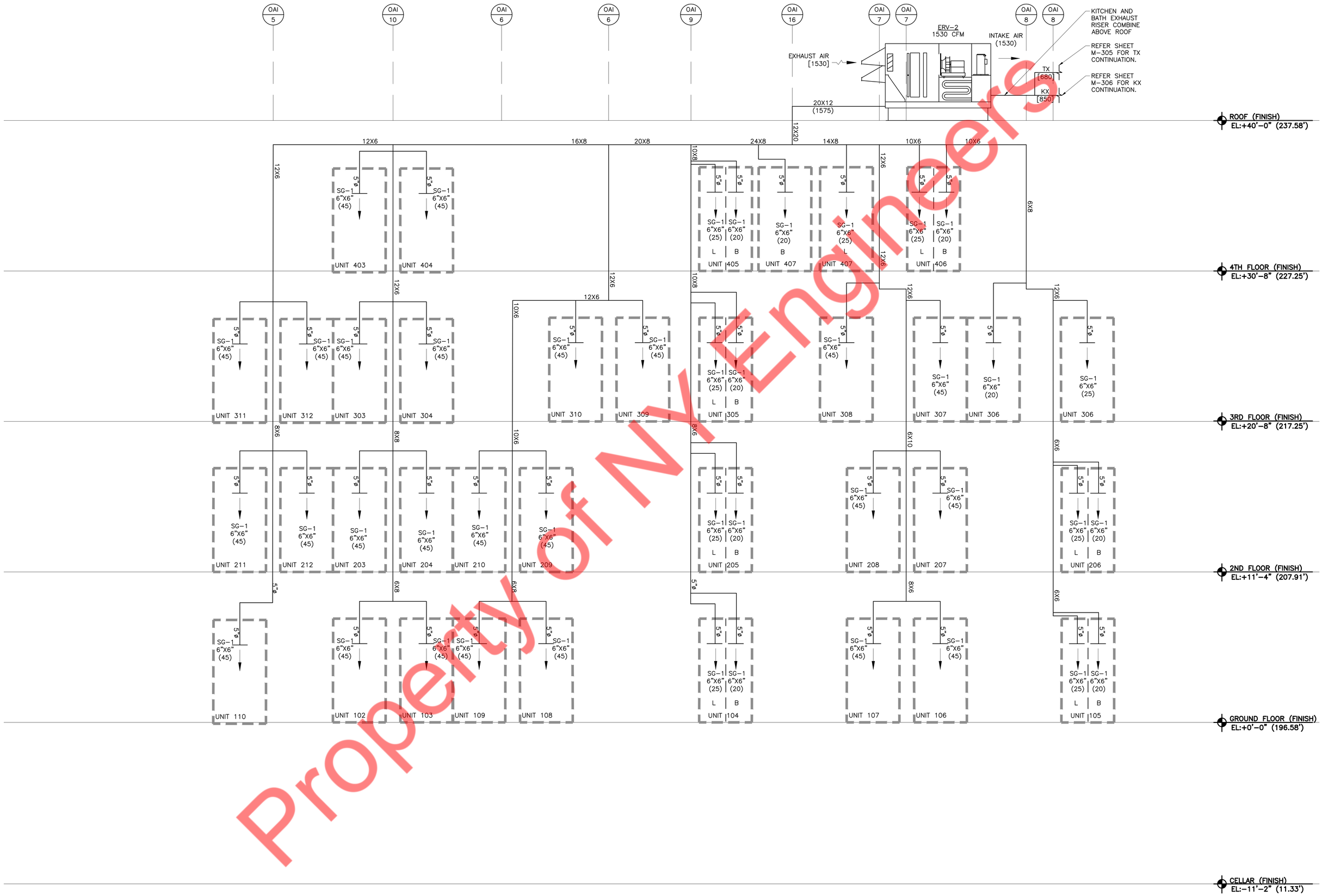

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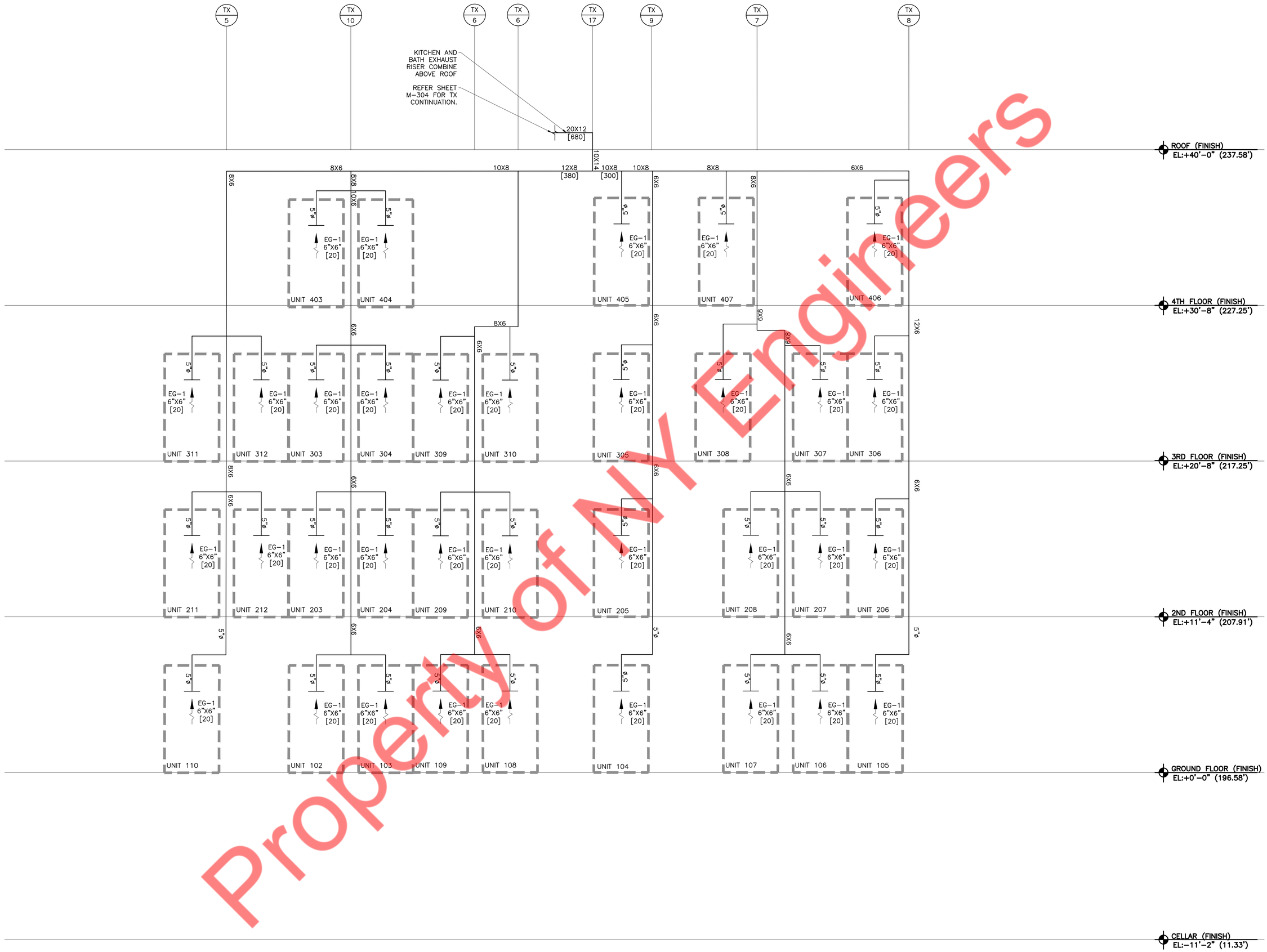
1 ERV-2 SUPPLY AIR RISER DIAGRAM (4 OF 6)
NTS

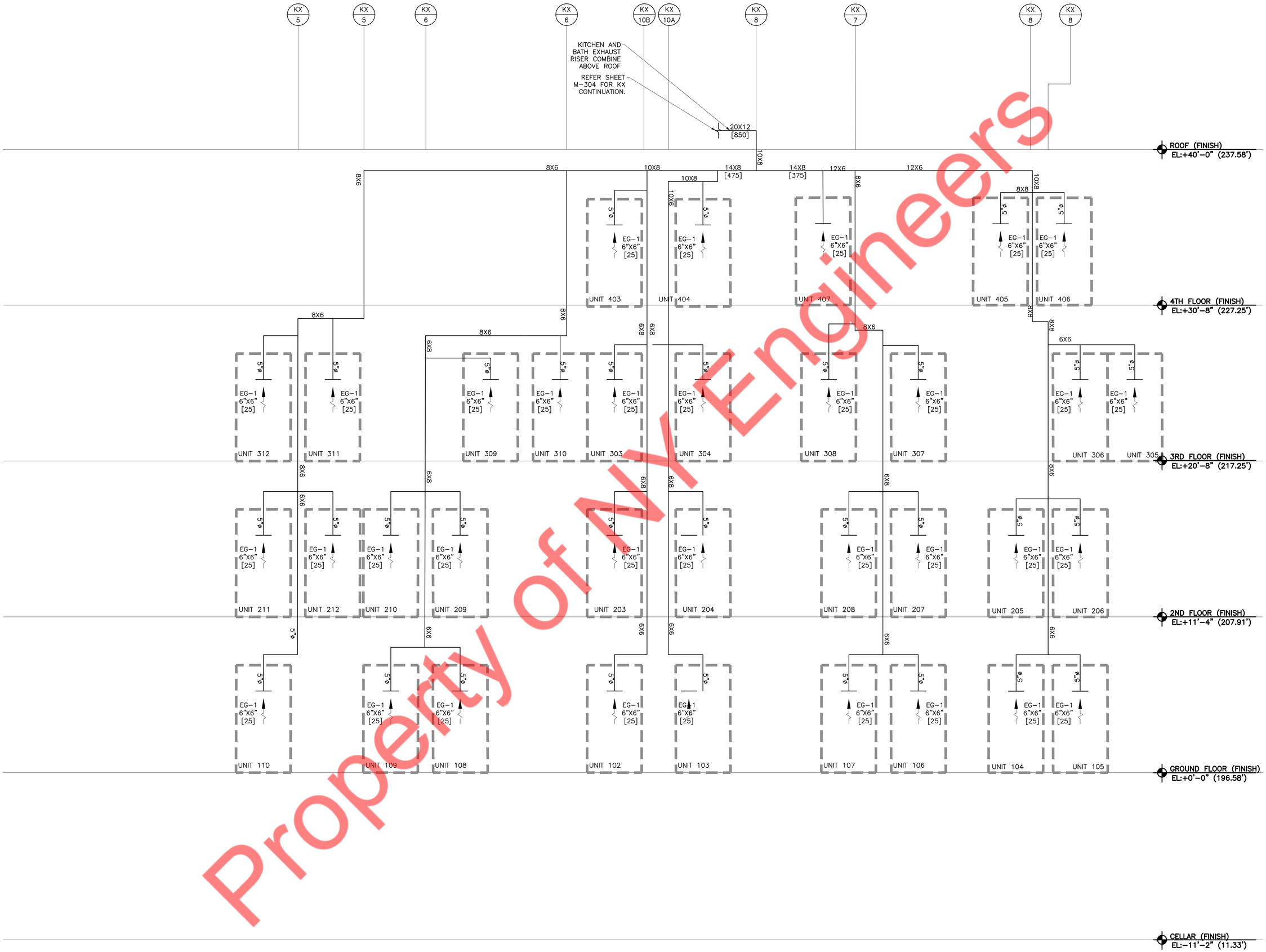
NOTES:
1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.
2-ALL DIMENSIONS ARE IN INCHES



1 ERV-2 TOILET AIR RISER DIAGRAM (6 OF 6)
NTS

NOTES:
1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.
2-ALL DIMENSIONS ARE IN INCHES

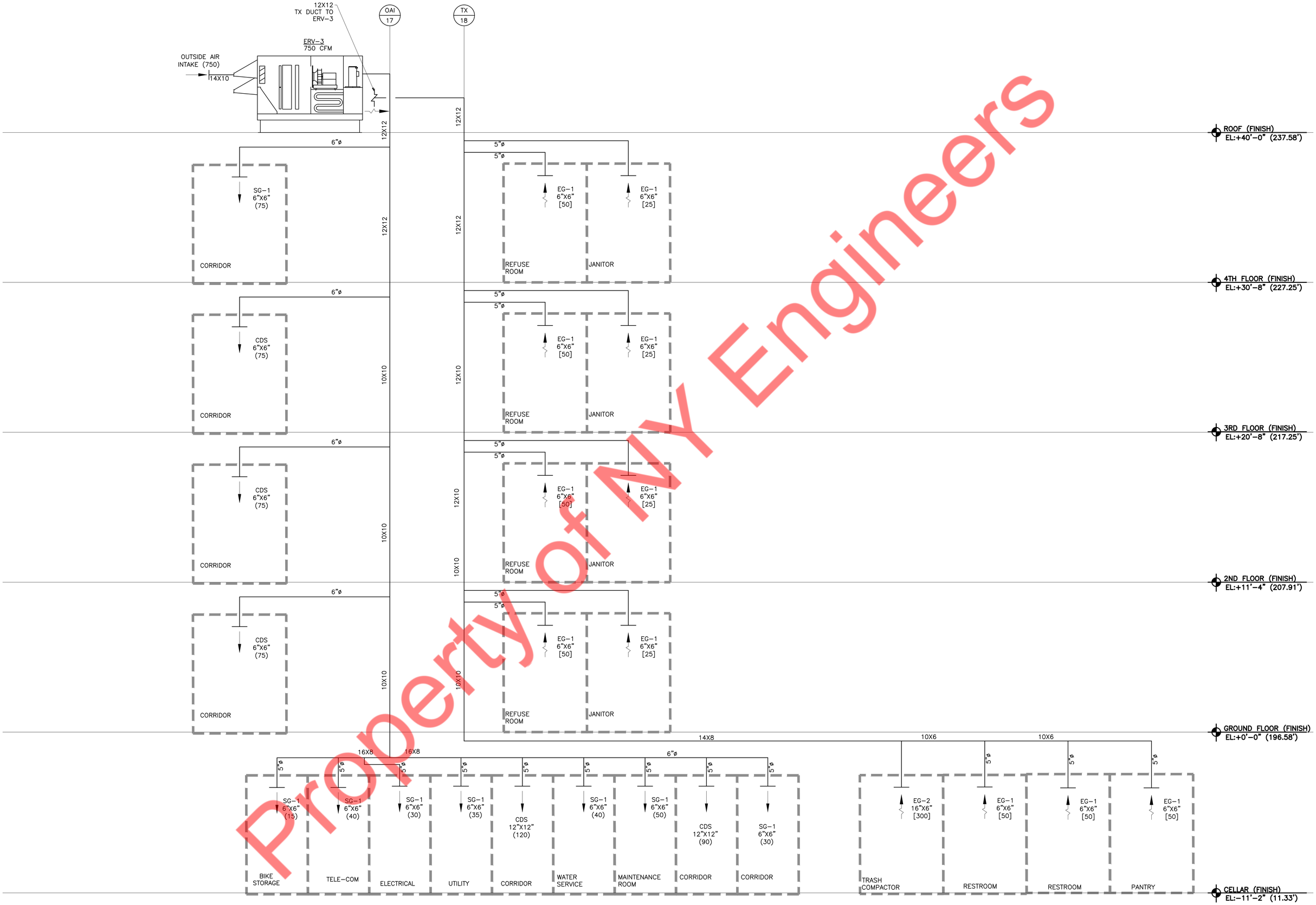
Property of NY Engineers



1 ERV-2 KITCHEN AIR RISER DIAGRAM (6 OF 6)
NTS

NOTES:
1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.
2-ALL DIMENSIONS ARE IN INCHES

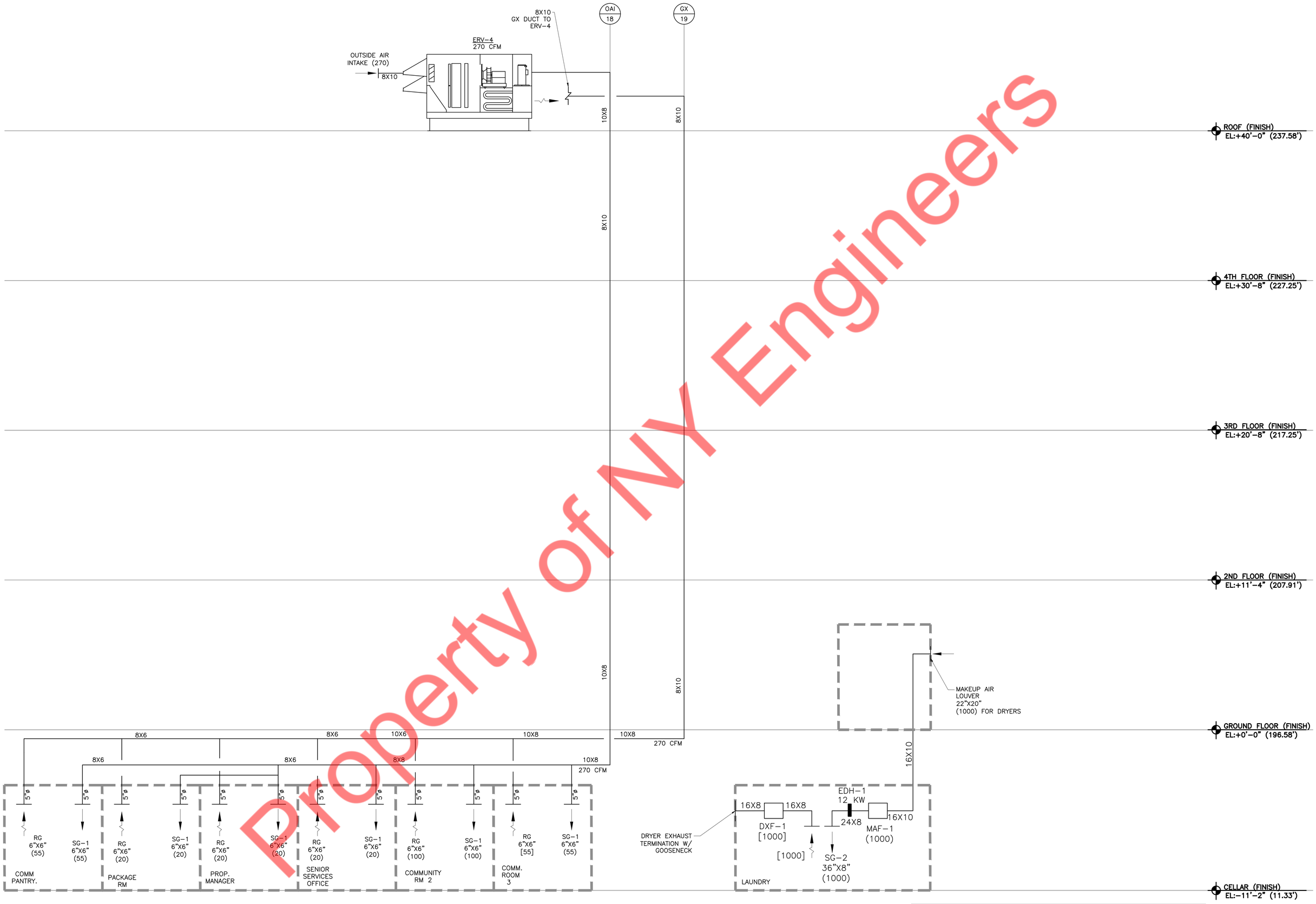
Property of MY Engineers



1 ERV-3 AIR RISER DIAGRAM (7 OF 8)
NTS

NOTES:
1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.
2-ALL DIMENSIONS ARE IN INCHES

Property of NY Engineers



1 ERV-4 AIR RISER DIAGRAM (8 OF 8)
NTS

NOTES:
1-SEE MECHANICAL FLOOR PLANS FOR ALL DAMPERS, DUCT OFFSETS AND ACTUAL SIZES.
2-ALL DIMENSIONS ARE IN INCHES

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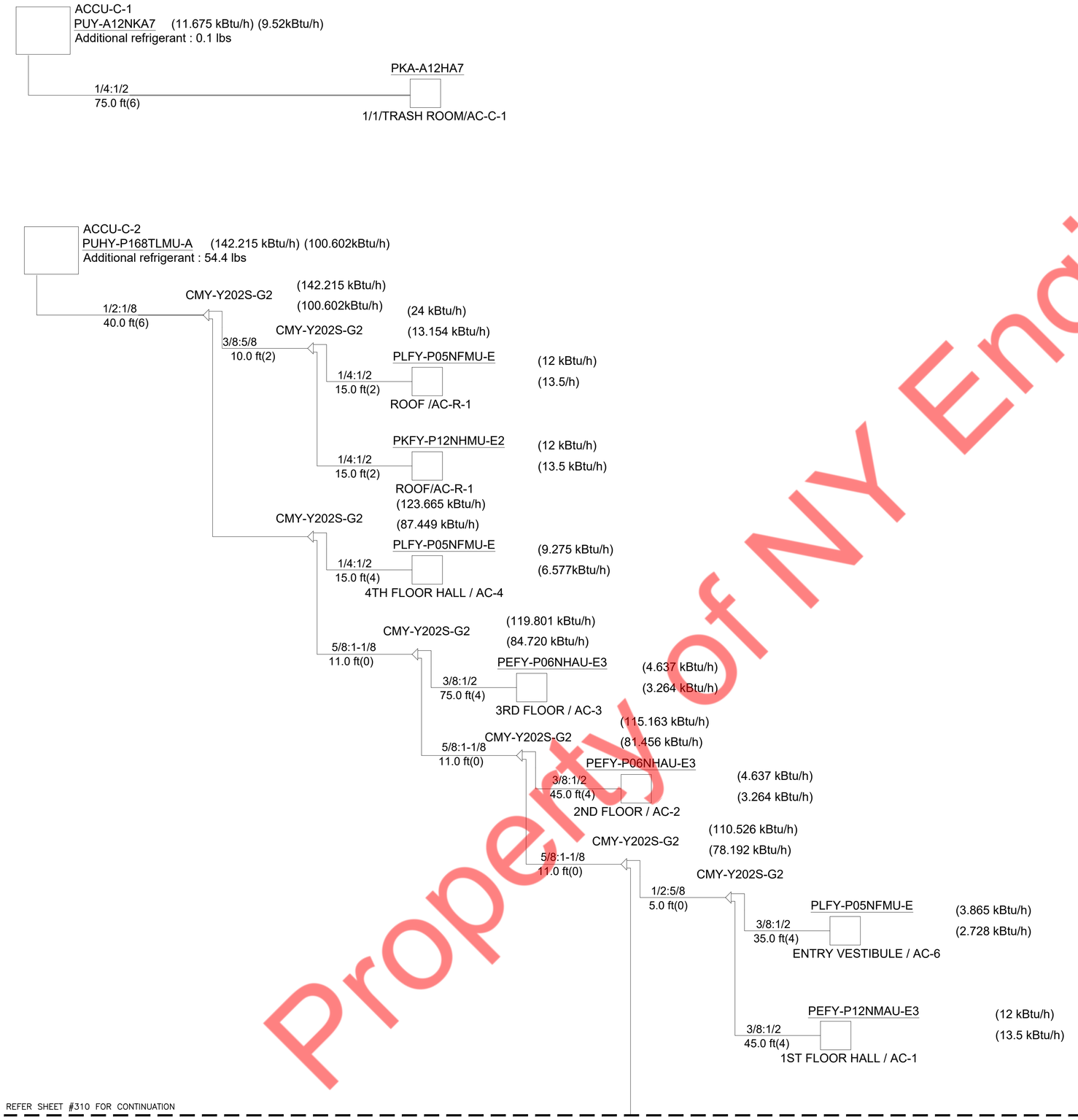

1 REFRIGERANT PIPING RISER DIAGRAM (1 OF 15)
NTS

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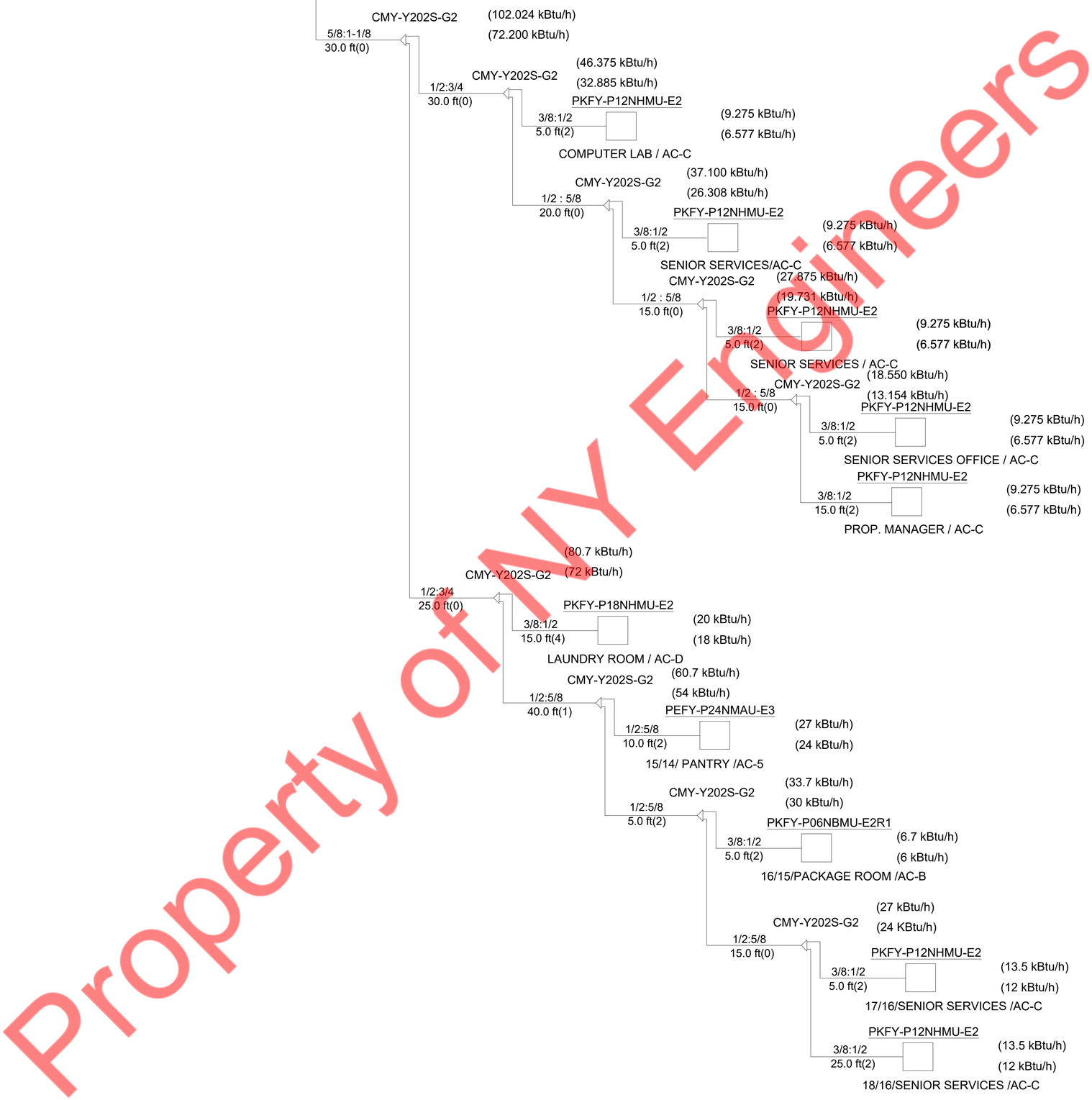
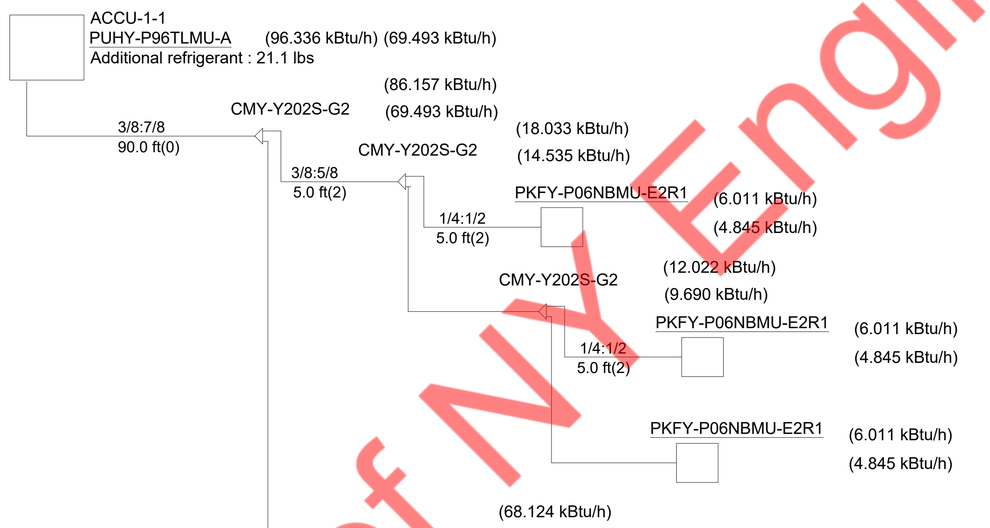
REFER SHEET #309 FOR CONTINUATION



1 REFRIGERANT PIPING RISER DIAGRAM (2 OF 15)
NTS

Property of NY Engineers

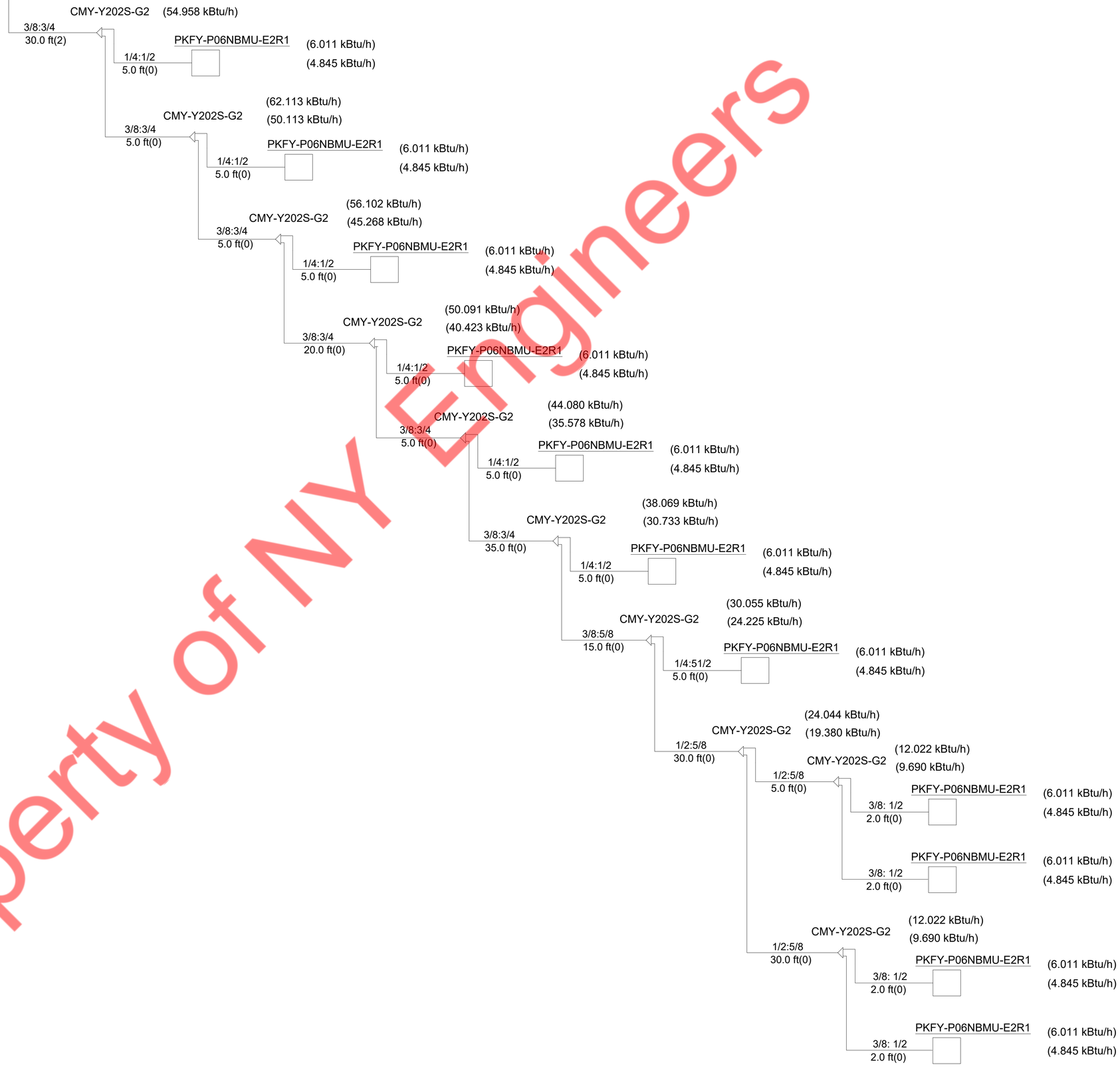


REFER SHEET #312 FOR CONTINUATION

1 REFRIGERANT PIPING RISER DIAGRAM (3 OF 15)
NTS

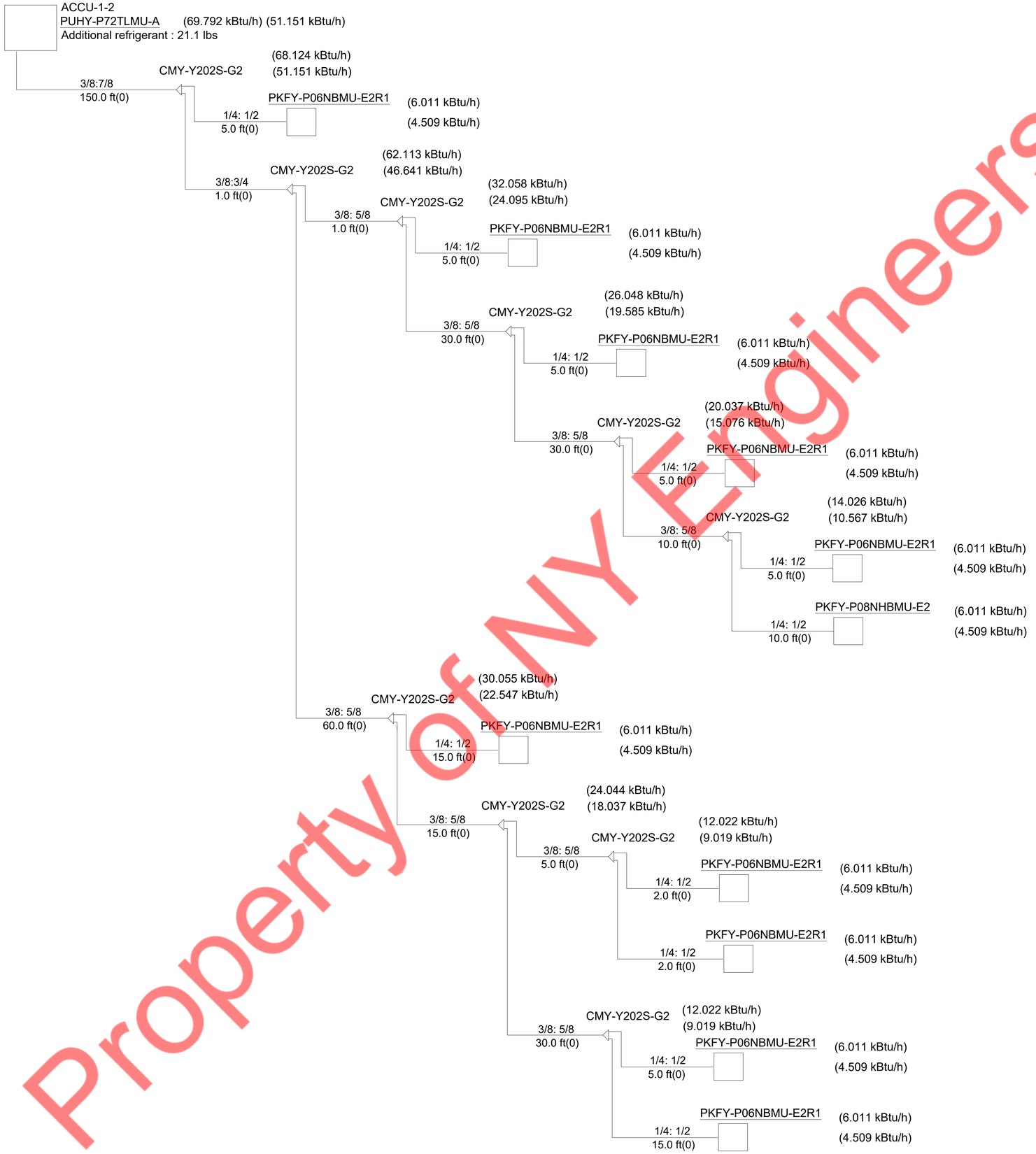
Property of NY Engineers

REFER SHEET #311 FOR CONTINUATION



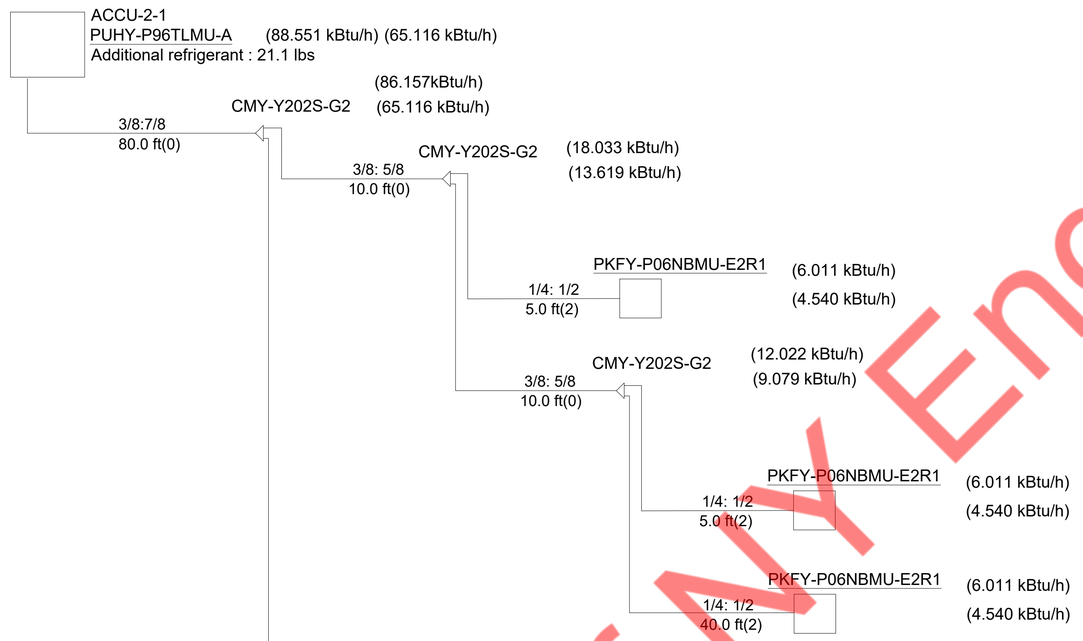
1 REFRIGERANT PIPING RISER DIAGRAM (4 OF 15)
NTS

Property of NY Engineers



1 REFRIGERANT PIPING RISER DIAGRAM (5 OF 15)
NTS

Property of NY Engineers

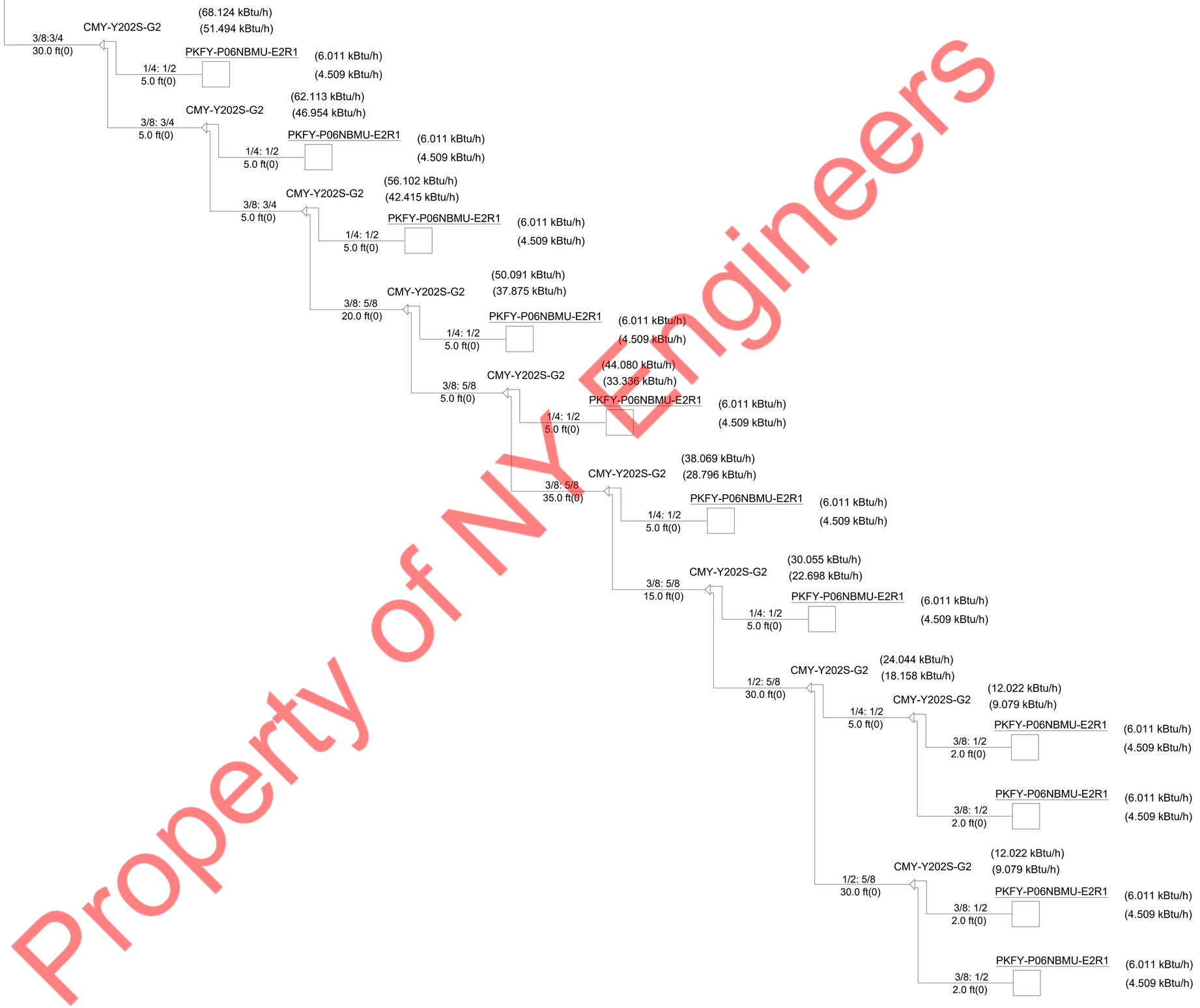


REFER SHEET #315 FOR CONTINUATION

1 REFRIGERANT PIPING RISER DIAGRAM (6 OF 15)
NTS

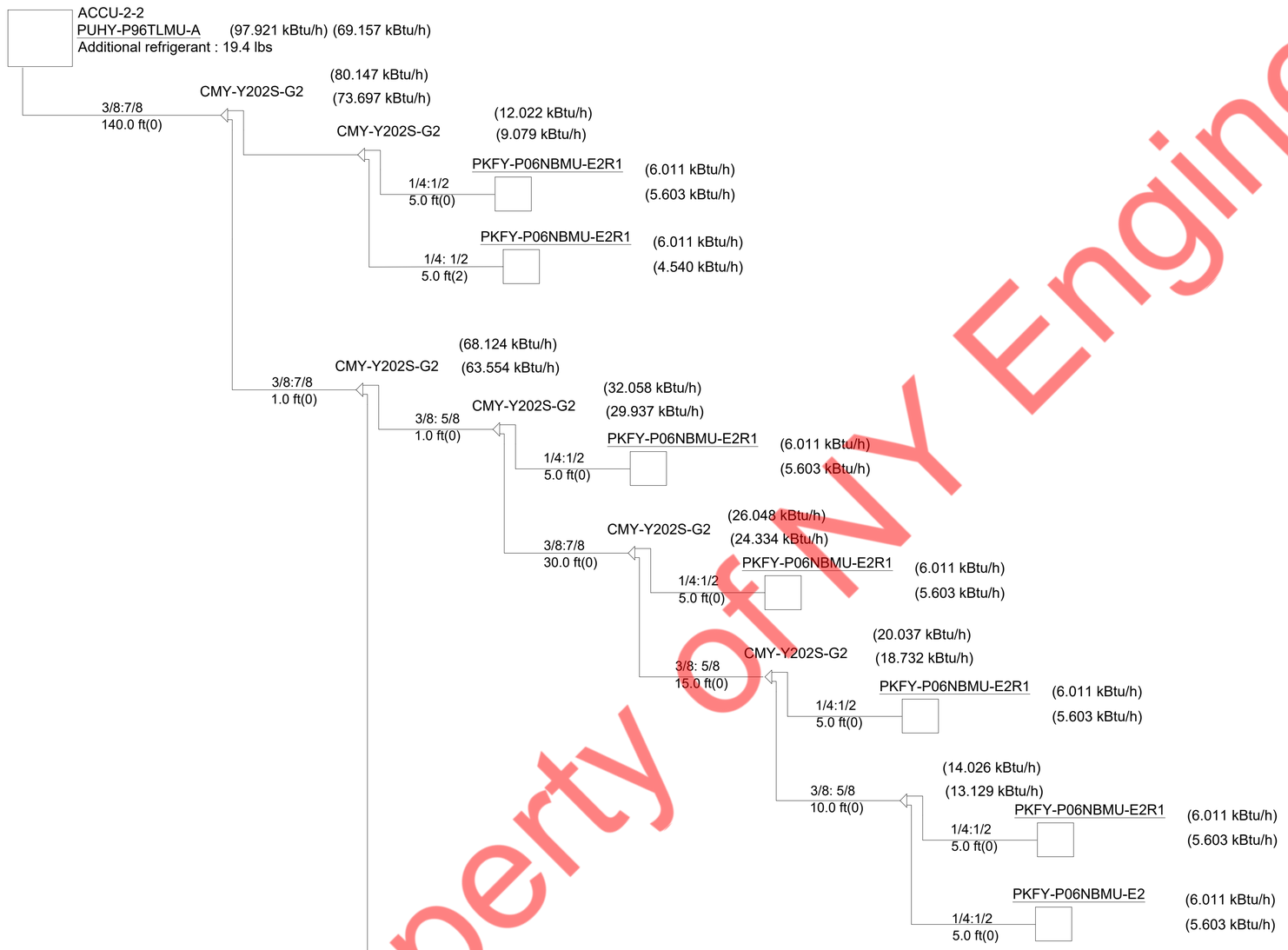
Property of NY Engineers

REFER SHEET #314 FOR CONTINUATION



1 REFRIGERANT PIPING RISER DIAGRAM (7 OF 15)
NTS

Property of NY Engineers

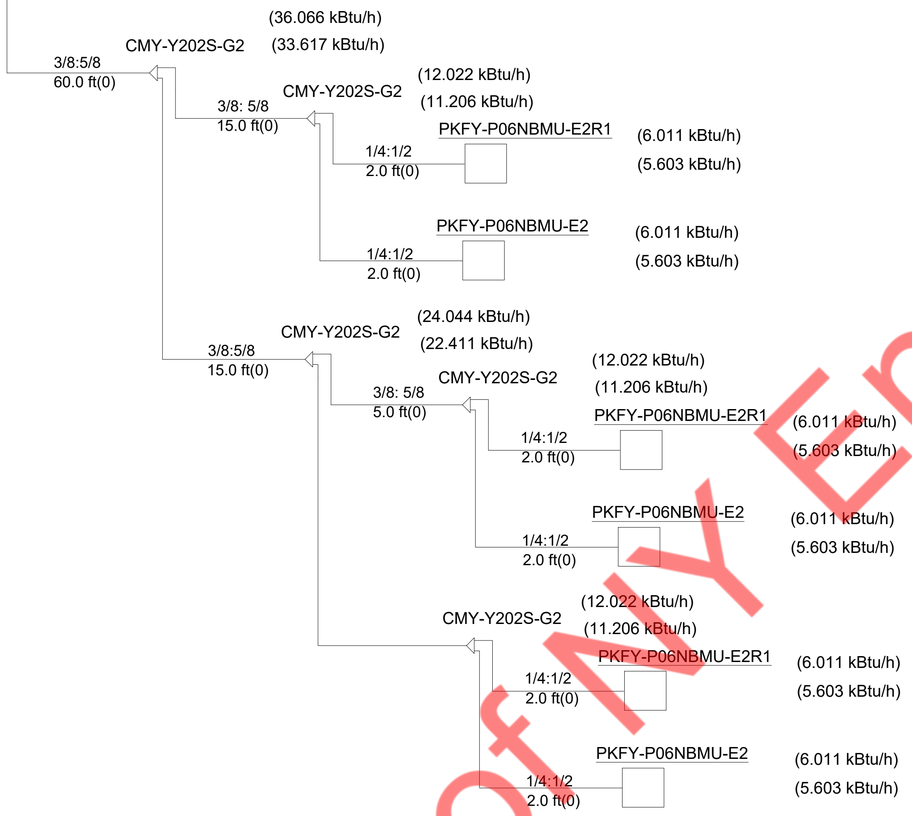


REFER SHEET #317 FOR CONTINUATION

1 REFRIGERANT PIPING RISER DIAGRAM (8 OF 15)
NTS

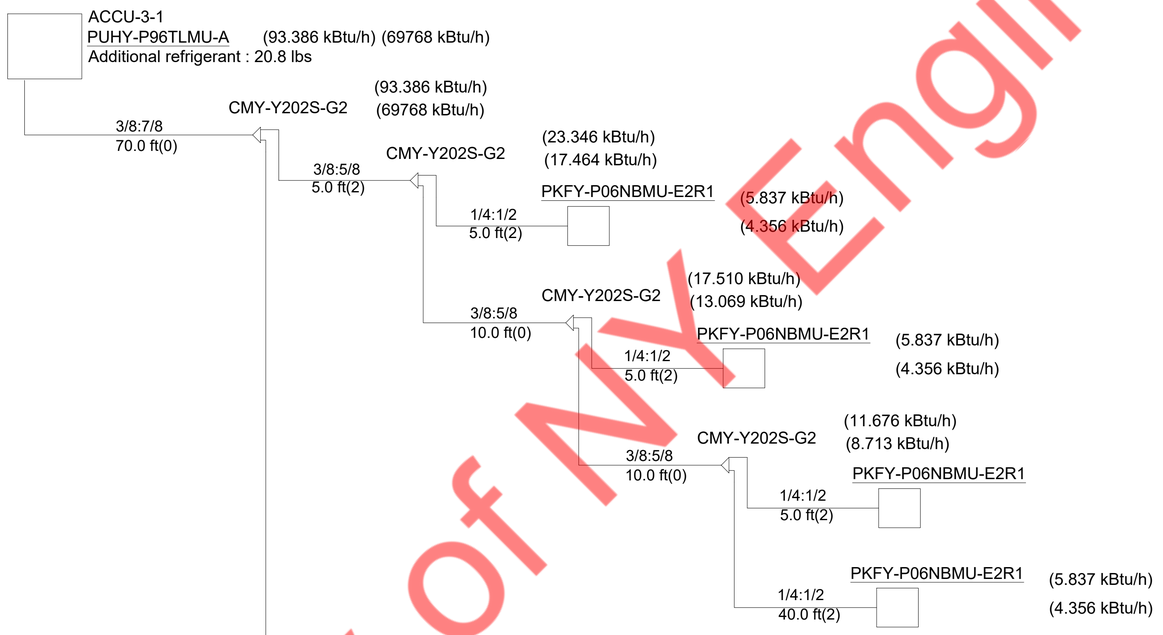
Property of NY Engineers

REFER SHEET #316 FOR CONTINUATION



1 REFRIGERANT PIPING RISER DIAGRAM (9 OF 15)
NTS

Property of CMY Engineers

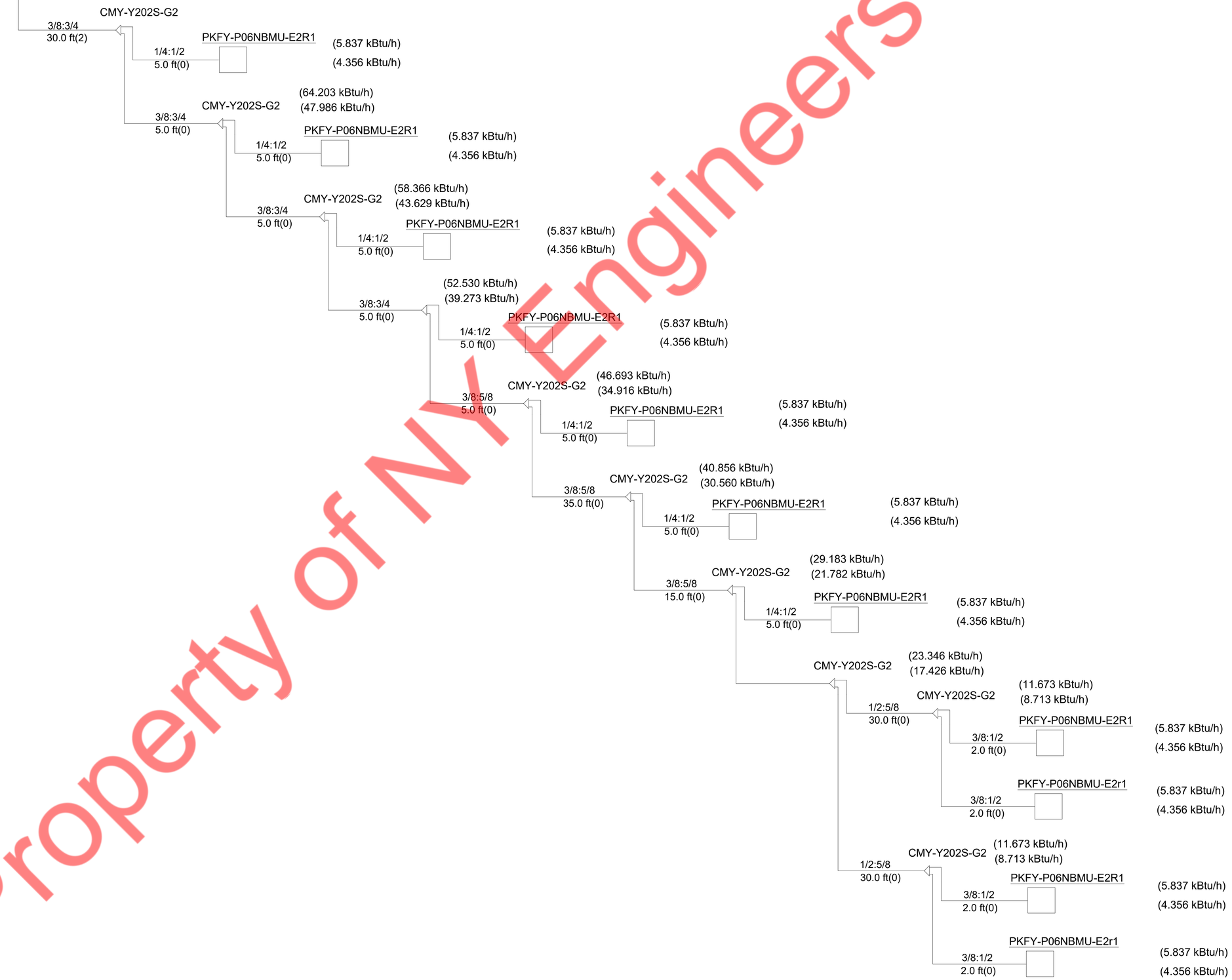


REFER SHEET #319 FOR CONTINUATION

1 REFRIGERANT PIPING RISER DIAGRAM (10 OF 15)
NTS

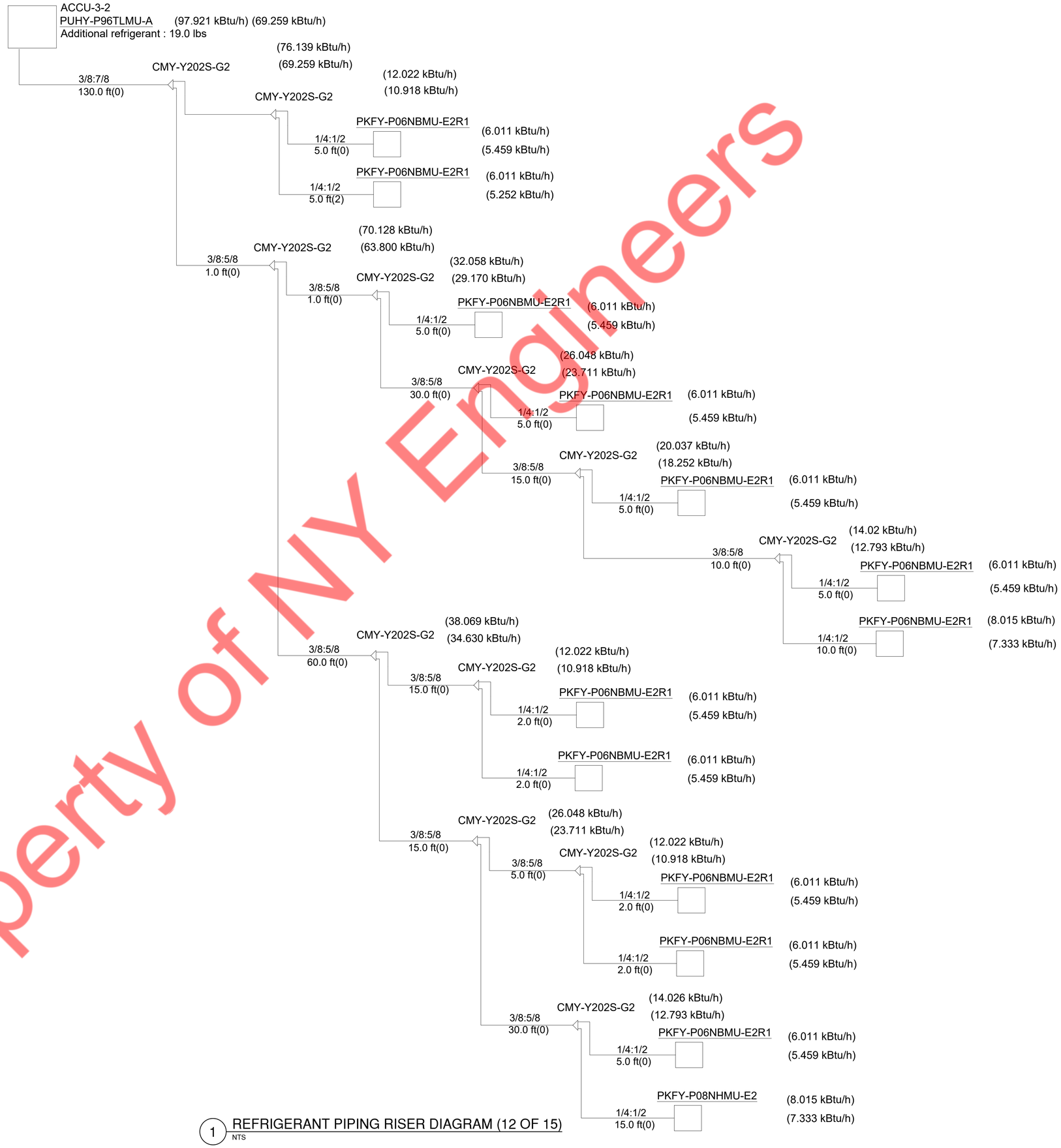
Property of NY Engineers

REFER SHEET #318 FOR CONTINUATION



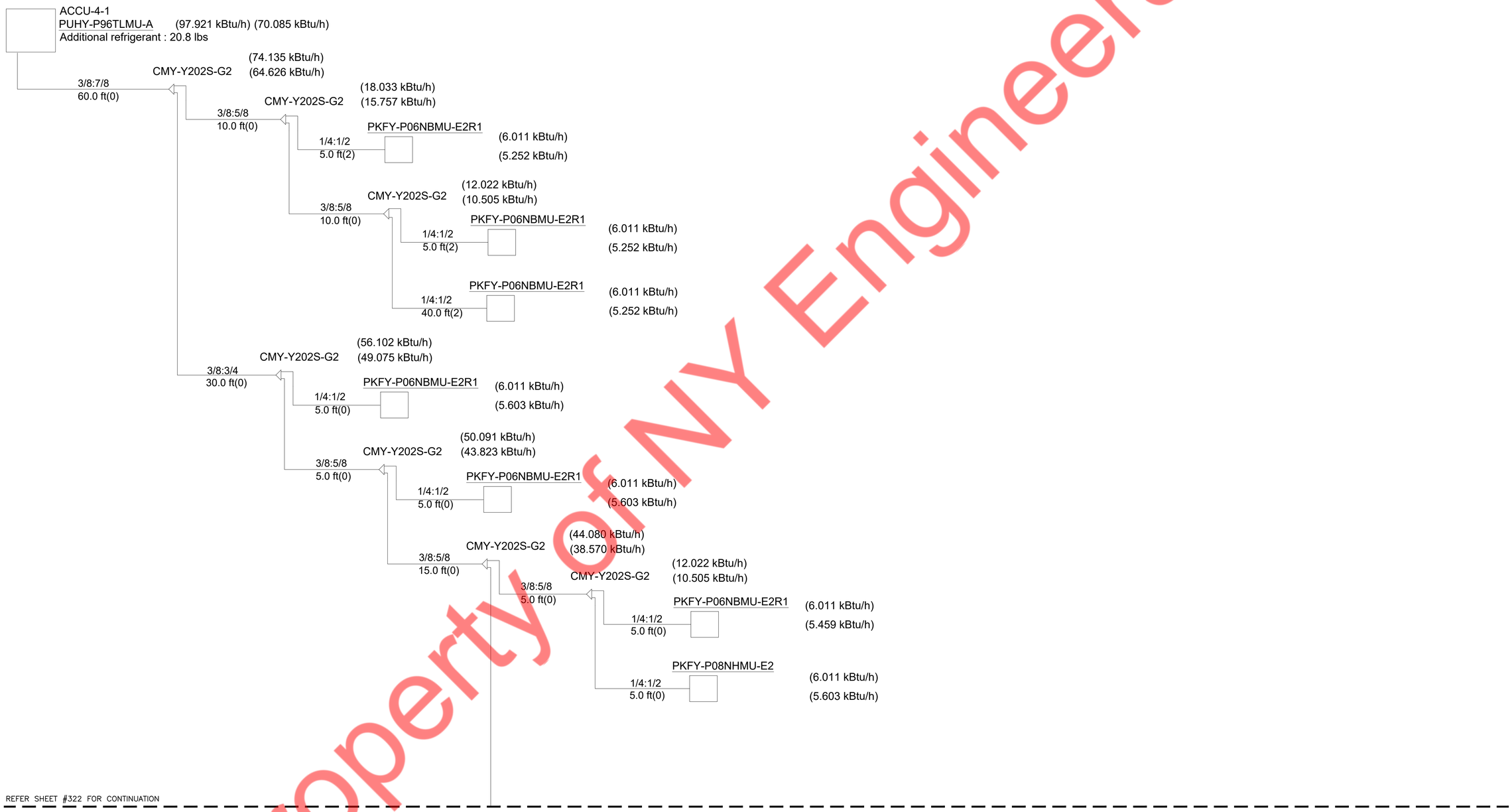
1 REFRIGERANT PIPING RISER DIAGRAM (11 OF 15)
NTS

Property of NY Engineers



1 REFRIGERANT PIPING RISER DIAGRAM (12 OF 15)
NTS

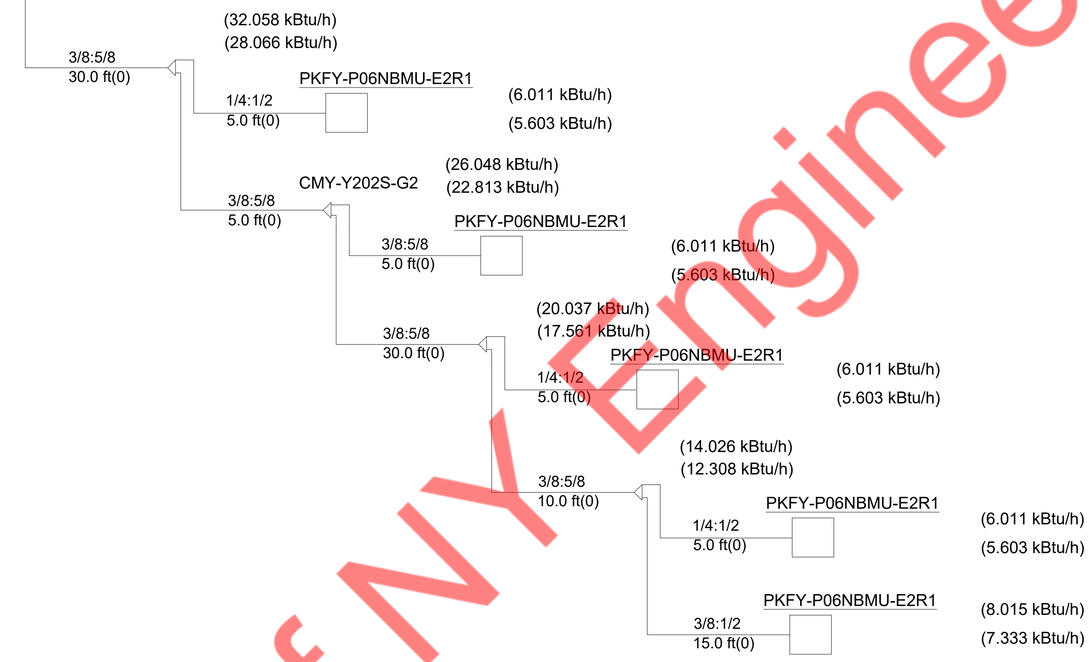
Property of NY Engineers



1 REFRIGERANT PIPING RISER DIAGRAM (13 OF 15)
NTS

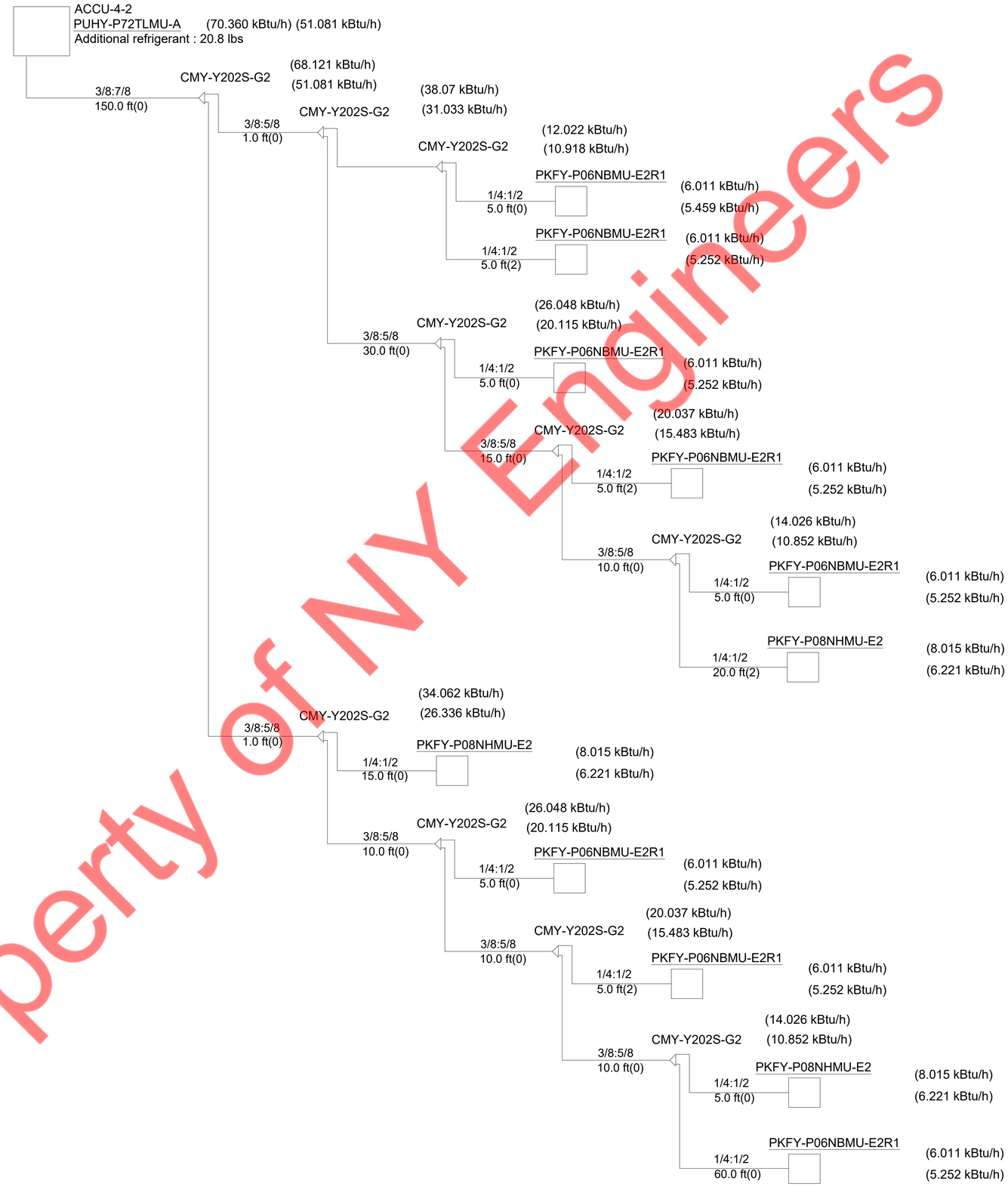
Property of NY Engineers

REFER SHEET #321 FOR CONTINUATION



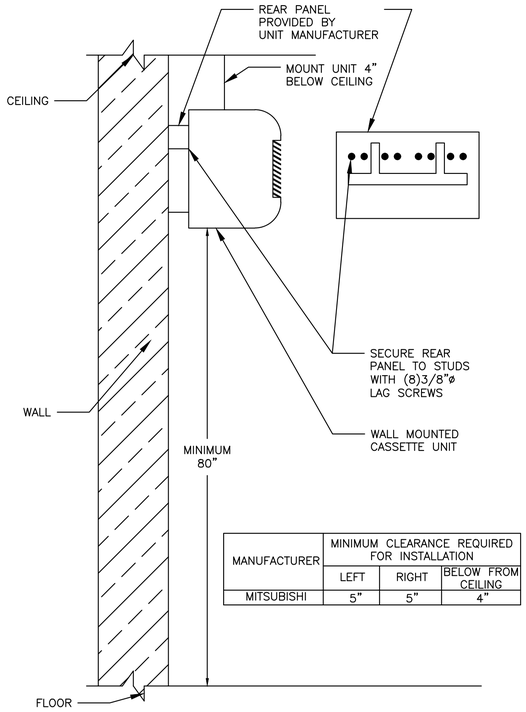
1 REFRIGERANT PIPING RISER DIAGRAM (14 OF 15)
NTS

Property of NY Engineers



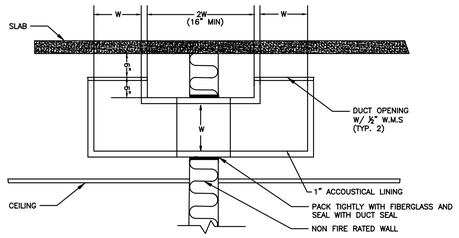
1 REFRIGERANT PIPING RISER DIAGRAM (15 OF 15)
NTS

Property of NY Engineers

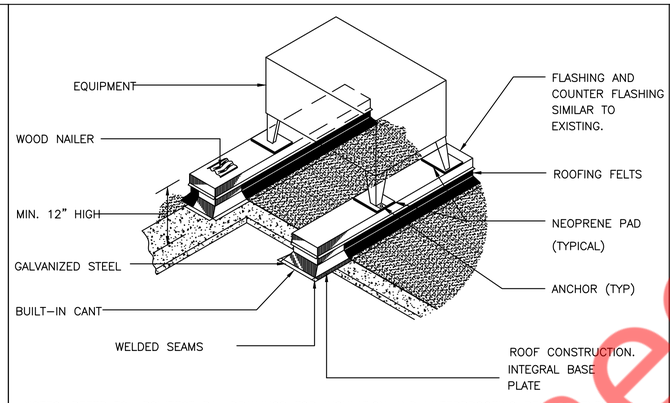


MANUFACTURER	MINIMUM CLEARANCE REQUIRED FOR INSTALLATION		
	LEFT	RIGHT	BELOW FROM CEILING
MITSUBISHI	5"	5"	4"

1 M-501 N.T.S — WALL MOUNTED AC UNIT DETAIL

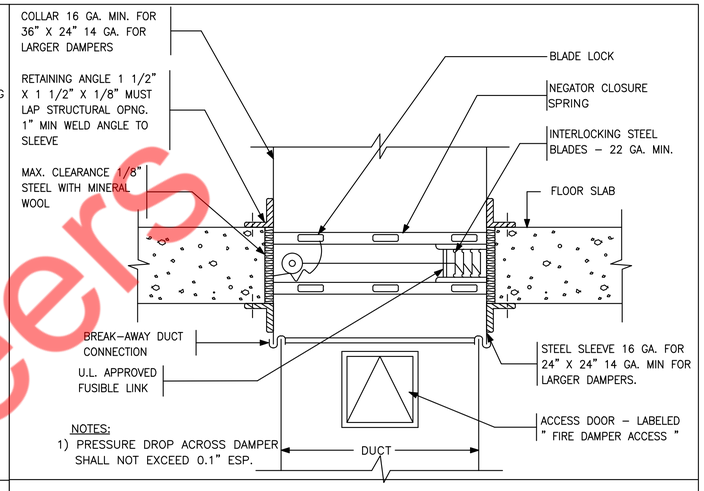


2 M-501 N.T.S — TRANSFER DUCT DETAIL



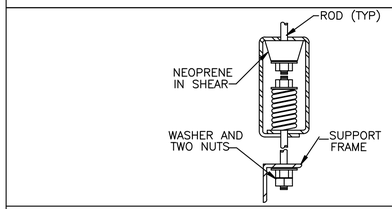
NOTES; REFER TO ARCHITECTURAL DRAWINGS FOR INSULATION AND WATERPROOFING REQUIREMENTS

3 M-501 N.T.S — EQUIPMENT RAILS ROOF SUPPORT DETAIL

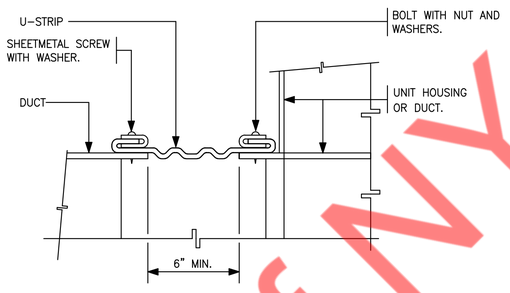


NOTES:
1) PRESSURE DROP ACROSS DAMPER SHALL NOT EXCEED 0.1" ESP.

4 M-501 N.T.S — HORIZONTAL FIRE DAMPER DETAIL

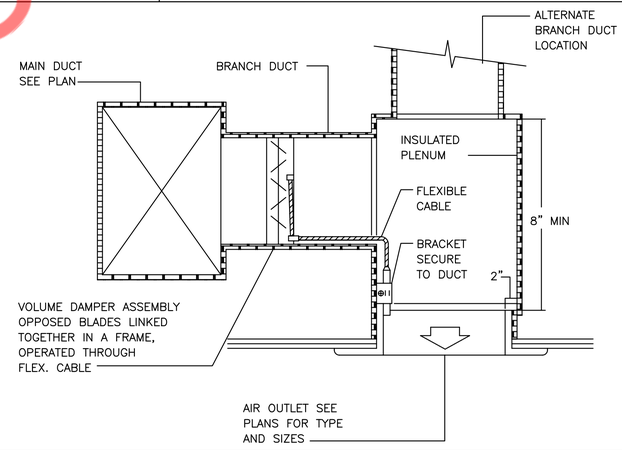


5 M-501 N.T.S — VIBRATION ISOLATOR DETAIL

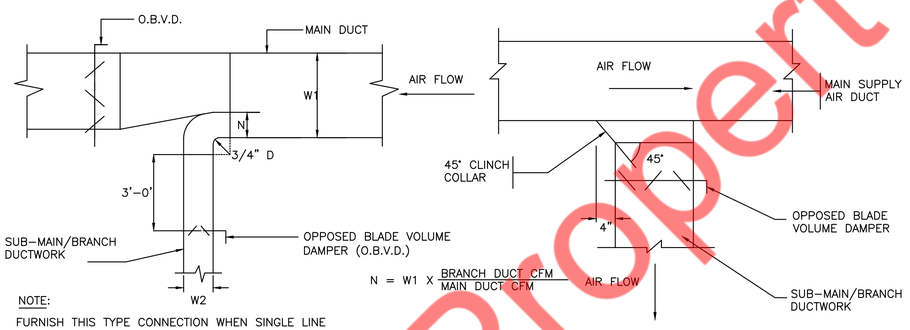


NOTE:
PROVIDE WEATHER PROOF COATING FOR CONNECTORS EXPOSED TO OUTDOOR.

6 M-501 N.T.S — FLEXIBLE CONNECTION (DUCT-EQUIPMENT)

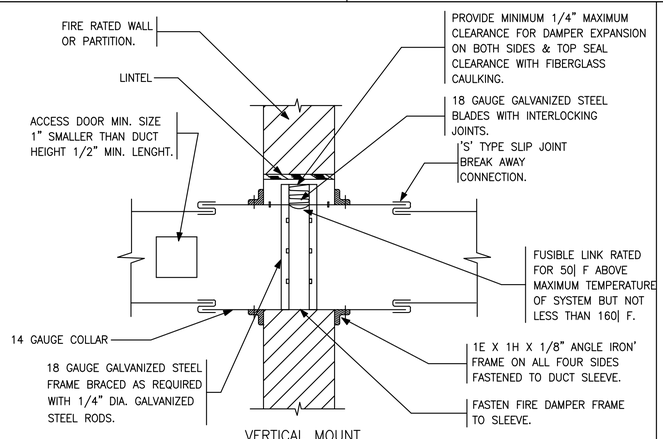


7 M-501 N.T.S — LINEAR DIFFUSER



NOTE:
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS

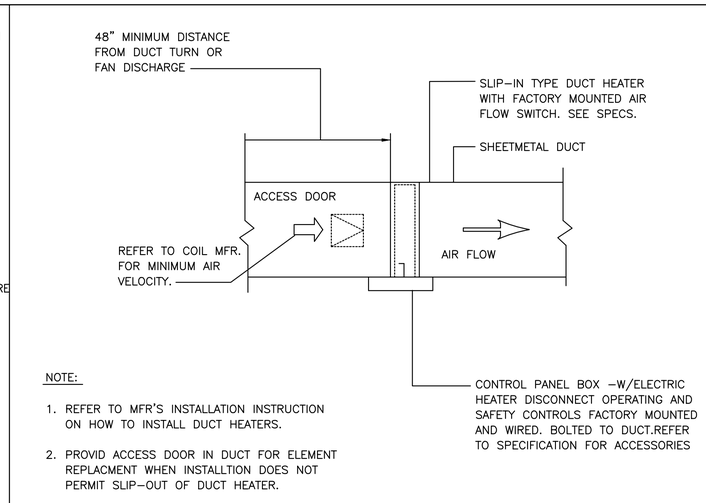
8 M-501 N.T.S — SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION



VERTICAL MOUNT

NOTES:
1) PRESSURE DROP ACROSS DAMPER SHALL NOT EXCEED 0.1" ESP.

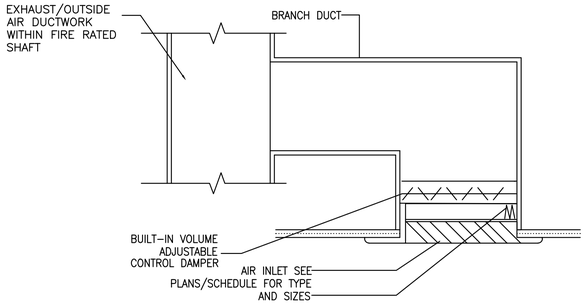
DAMPER LOW PRESSURE SYSTEM
9 M-501 N.T.S — DETAIL OF SHUTTER TYPE FIRE DAMPER



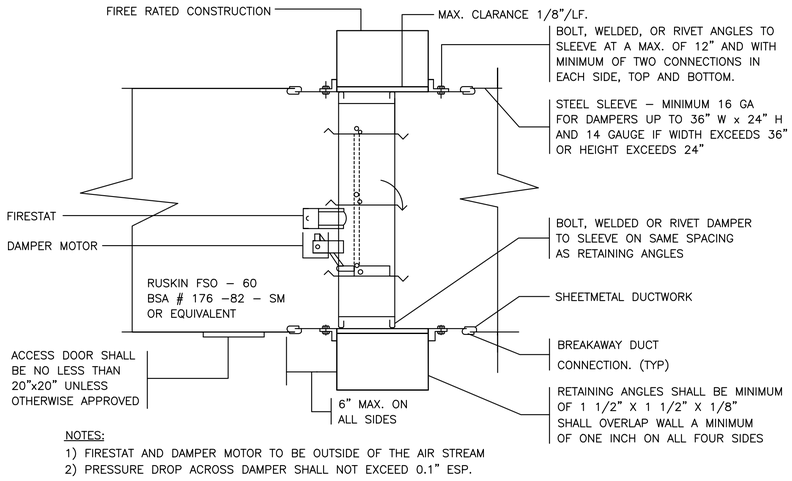
NOTE:
1. REFER TO MFR'S INSTALLATION INSTRUCTION ON HOW TO INSTALL DUCT HEATERS.
2. PROVID ACCESS DOOR IN DUCT FOR ELEMENT REPLACMENT WHEN INSTALLTION DOES NOT PERMIT SLIP-OUT OF DUCT HEATER.

10 M-501 N.T.S — ELECTRIC DUCT HEATER

Property of NY Engineers

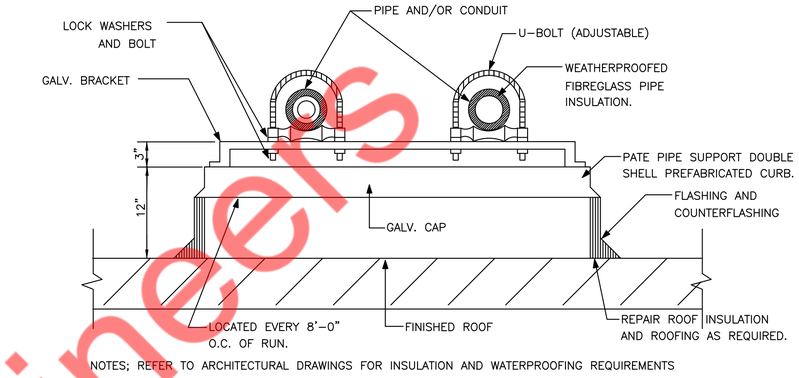


1 M-502 GRILLE DETAIL N.T.S



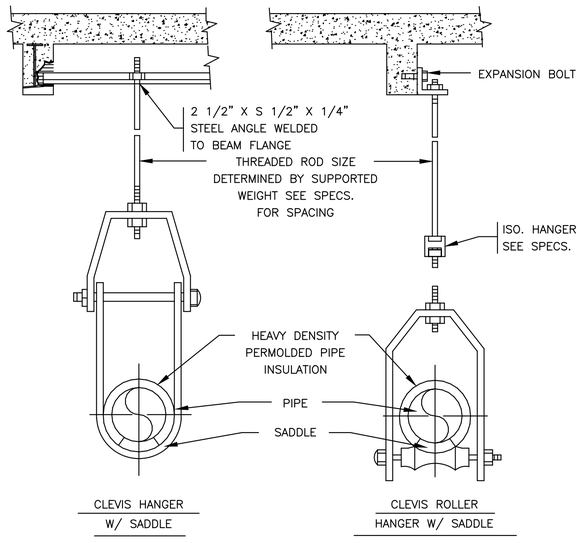
NOTES:
1) FIRESTAT AND DAMPER MOTOR TO BE OUTSIDE OF THE AIR STREAM
2) PRESSURE DROP ACROSS DAMPER SHALL NOT EXCEED 0.1" ESP.

2 M-502 COMBINATION FIRE AND SMOKE DAMPER DETAIL N.T.S

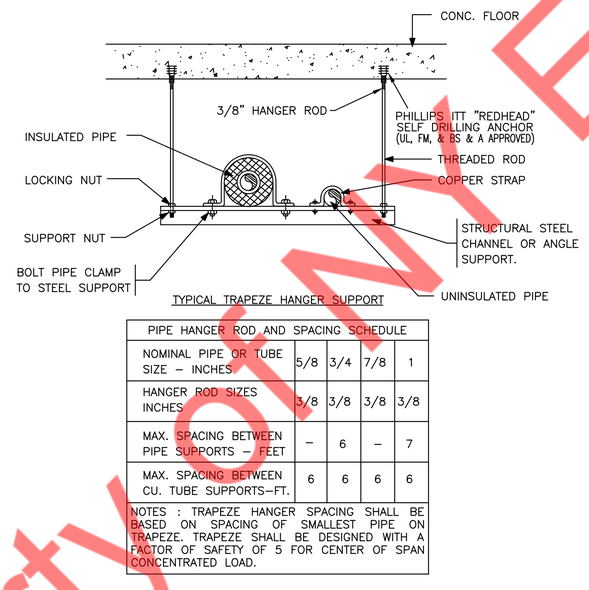


NOTES; REFER TO ARCHITECTURAL DRAWINGS FOR INSULATION AND WATERPROOFING REQUIREMENTS

3 M-502 DETAIL OF PIPE AND CONDUIT SUPPORT ON ROOF N.T.S



4 M-502 PIPE HANGING DETAIL N.T.S

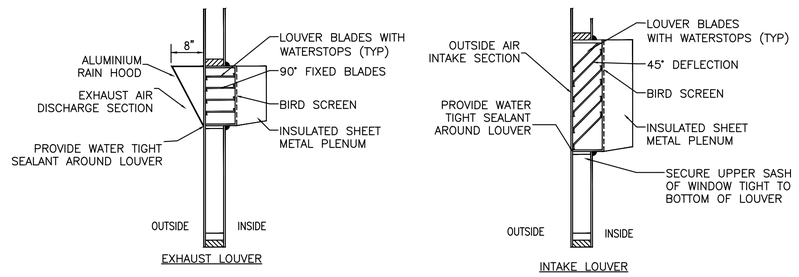


TYPICAL TRAPEZE HANGER SUPPORT

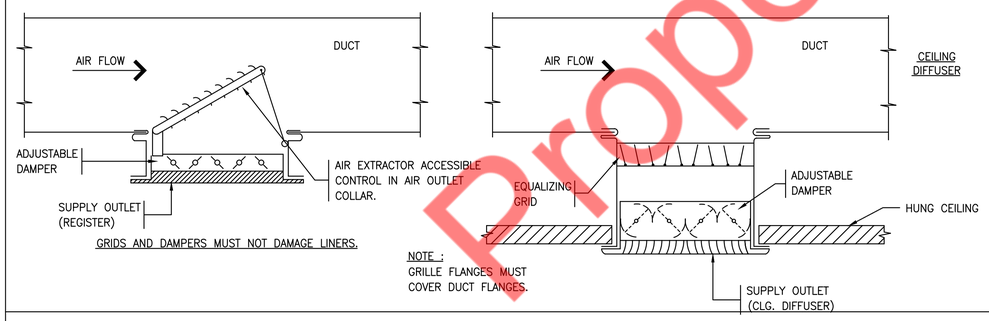
PIPE HANGER ROD AND SPACING SCHEDULE				
NOMINAL PIPE OR TUBE SIZE – INCHES.	5/8	3/4	7/8	1
HANGER ROD SIZES INCHES	3/8	3/8	3/8	3/8
MAX. SPACING BETWEEN PIPE SUPPORTS – FEET	–	6	–	7
MAX. SPACING BETWEEN CU. TUBE SUPPORTS–FT.	6	6	6	6

NOTES : TRAPEZE HANGER SPACING SHALL BE BASED ON SPACING OF SMALLEST PIPE ON TRAPEZE. TRAPEZE SHALL BE DESIGNED WITH A FACTOR OF SAFETY OF 5 FOR CENTER OF SPAN CONCENTRATED LOAD.

5 M-502 METHOD OF HANGING REFRIGERANT PIPING N.T.S



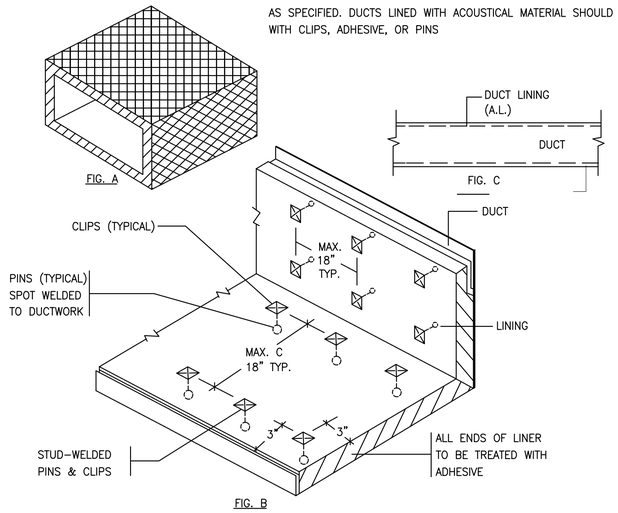
6 M-502 LOUVER DETAIL N.T.S



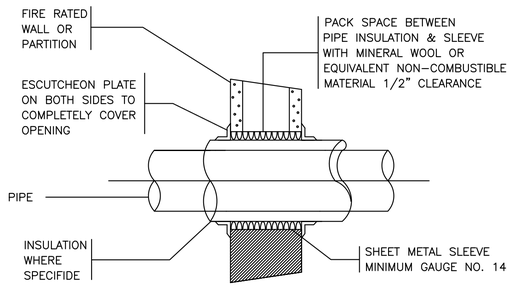
7 M-502 DIFFUSER AND REGISTER CONNECTIONS N.T.S

Property of NY Engineers

NOTES:
DUCTS TO BE ACOUSTICALLY LINED SHALL BE DESIGNATED BY THE SYMBOL IN FIG. "C" TO THE EXTENT OF LINING. THICKNESS SHALL BE AS SPECIFIED. DUCTS LINED WITH ACOUSTICAL MATERIAL SHOULD BE FASTENED WITH CLIPS, ADHESIVE, OR PINS

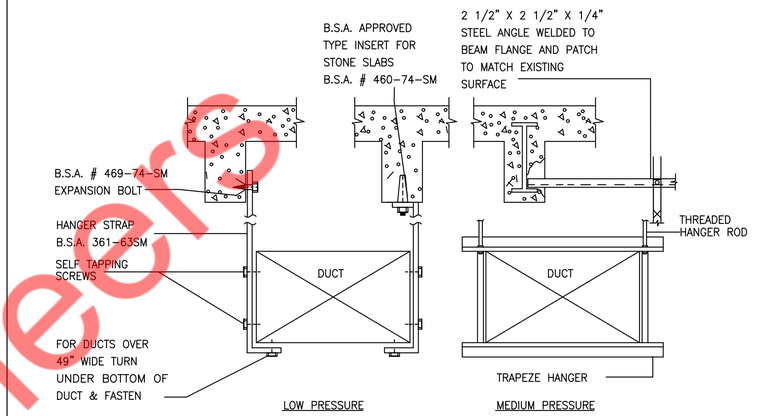


1 M-503 N.T.S
ACOUSTICAL TREATMENT DUCT LINING



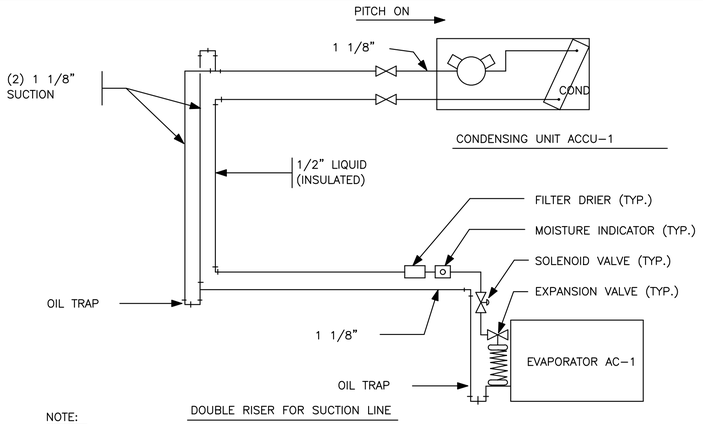
NOTE:
1.) THE INSTALLATION OF FIRE STOPPING MATERIALS SHALL BE SUBJECT TO CONTROLLED INSPECTION IN ACCORDANCE WITH C26-106.3.

2 M-503 N.T.S
PIPE SLEEVE THRU RATED WALL



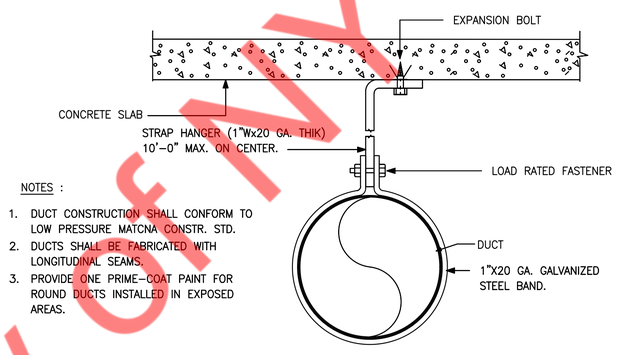
NOTE:
DISTANDE BETWEEN DUCTS HANGERS SHALL BE IN ACCORDANCE WITH RS-13-1 OF NYC BLDG. CODE.

3 M-503 N.T.S
METHOD OF HANGING DUCTWORK



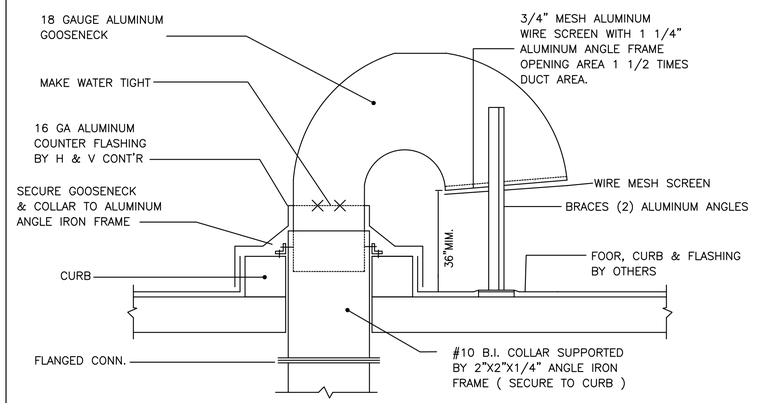
NOTE:
THE HORIZONTAL DIMENSION OF OIL TRAPS TO BE AS SHORT AS POSSIBLE.

4 M-503 N.T.S
REFRIGERANT PIPING SCHEMATIC



NOTES :
1. DUCT CONSTRUCTION SHALL CONFORM TO LOW PRESSURE MATCNA CONSTR. STD.
2. DUCTS SHALL BE FABRICATED WITH LONGITUDINAL SEAMS.
3. PROVIDE ONE PRIME-COAT PAINT FOR ROUND DUCTS INSTALLED IN EXPOSED AREAS.

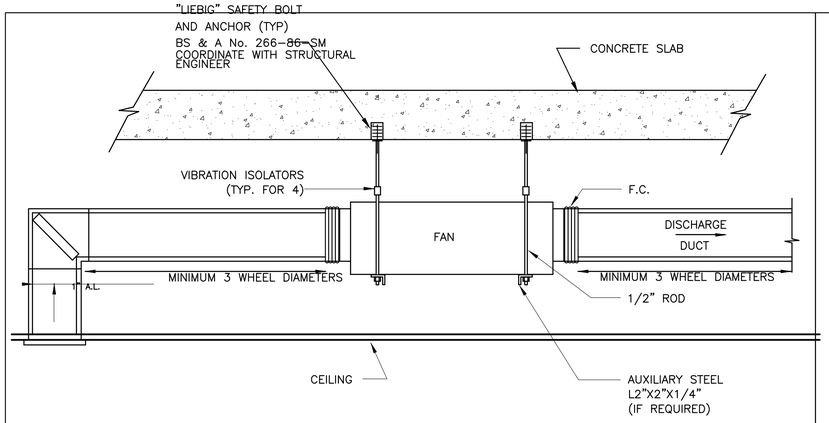
5 M-503 N.T.S
METHOD OF HANGING DUCTWORK (ROUND)



NOTES; REFER TO ARCHITECTURAL DRAWINGS FOR INSULATION AND WATERPROOFING REQUIREMENTS

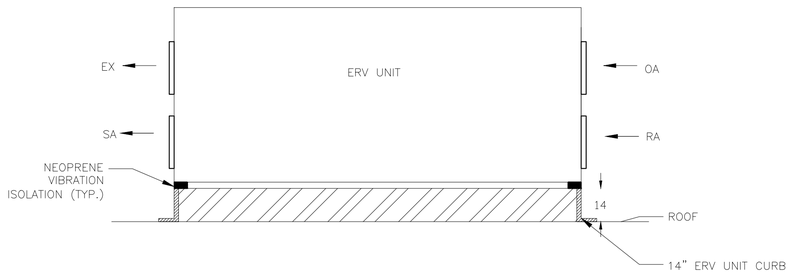
6 M-503 N.T.S
TYPICAL DETAIL OF ROOF GOOSENECK

Property Of NY Engineers

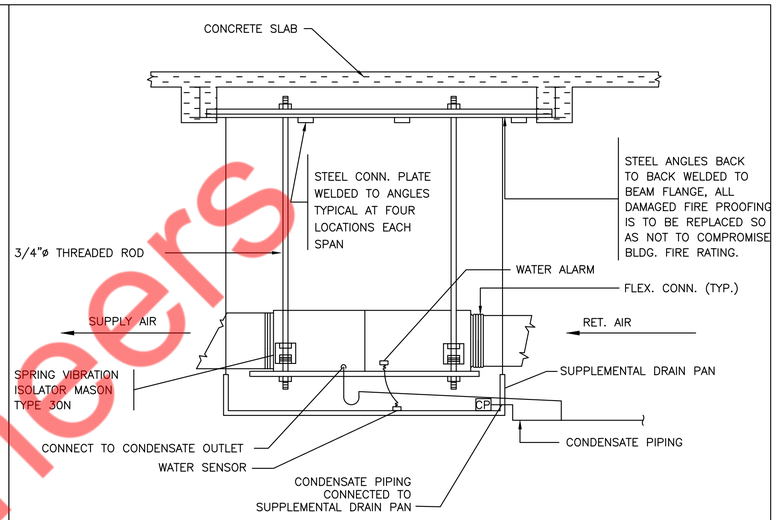


NOTE:
1. DUCT LENGTH TO BE MINIMUM THREE WHEEL DIAMETER ON DISCHARGE AND INLET.

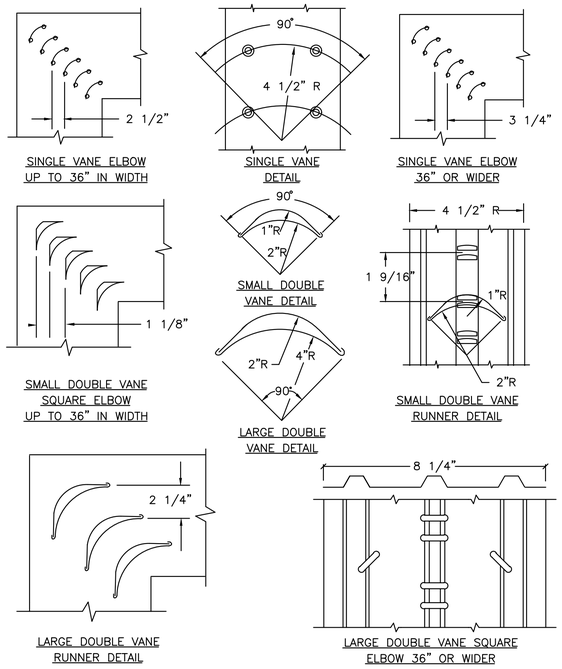
1 M-504 **INLINE FAN HANGING SUPPORT DETAIL** N.T.S



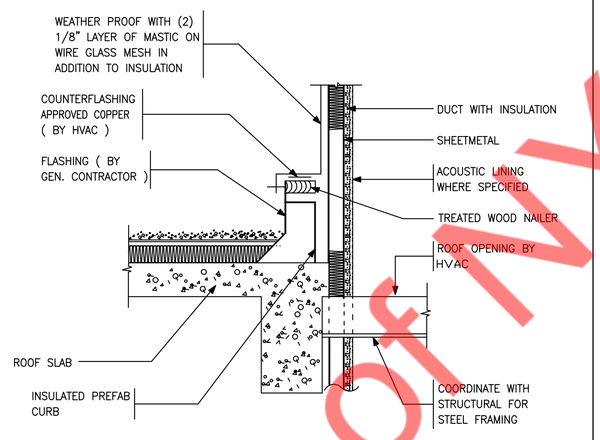
2 M-504 **ERV UNIT SUPPORT FRAME DETAIL** N.T.S



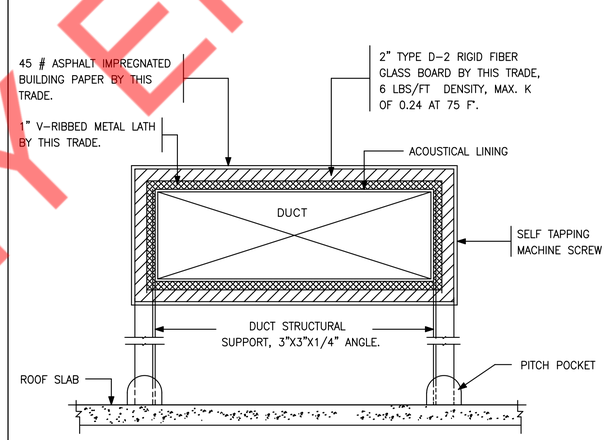
3 M-504 **A.C. UNIT INSTALLATION DETAIL** N.T.S



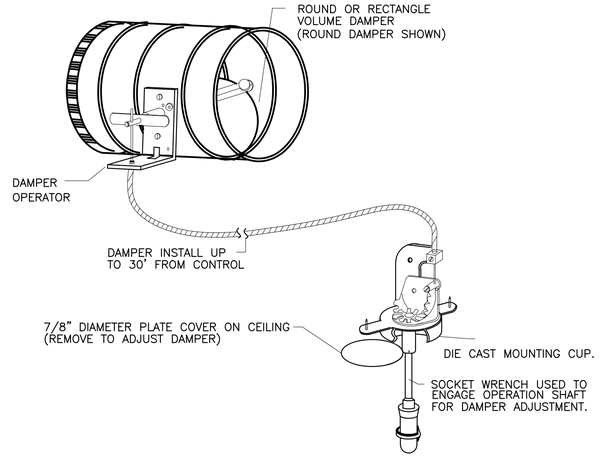
4 M-504 **LOW VELOCITY DUCTWORK ELBOWS** N.T.S



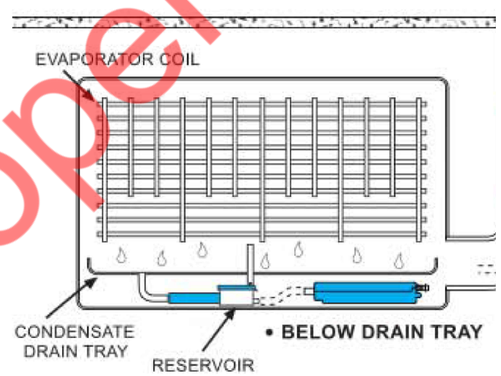
5 M-504 **DUCT PENETRATION THRU CONCRETE ROOF** N.T.S



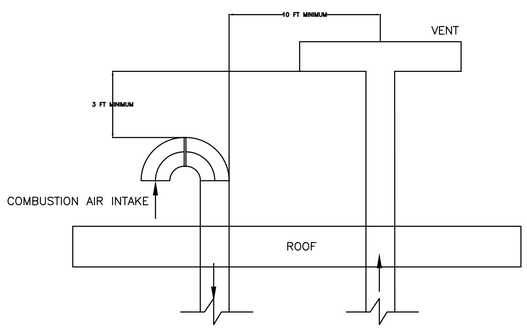
6 M-504 **INSULATED DUCT ON ROOF DETAIL** N.T.S



7 M-504 **CABLE CONTROL DAMPER** N.T.S



8 M-504 **CONDENSATE PUMP INSIDE CASING DETAIL** N.T.S



9 M-504 **COMBUSTION AIR INTAKE & VENT CONFIGURATION DETAILS** N.T.S

Property of NY Engineers

AC — AIR CONDITIONER SCHEDULE (INDOOR VARIABLE REFRIGERANT FLOW UNITS)

BASIS OF DESIGN: MITSUBISHI

INDOOR UNIT

UNIT NAME	LOCATION	AREA SERVED	TYPE	TON (TR)	COOLING MBH	HEATING MBH	SUPPLY FAN DATA				POWER				DIMENSIONS (WxHxD)	PIPE SIZE			WEIGHT (LBS.)	MODEL NO.
							CFM	STANDARD ESP(IN. WC)	WATTS	SOUND PRESS. LEVEL UNIT (dBA)	(PH/VOLT/Hz)	NOMINAL INPUT CURRENT (A)	MCA (A)	MOCP (A)		LIQUID (IN.)	SUCTION (IN.)	DRAIN (ID) (IN.)		
AC-1	SEE PLAN	CORRIDOR	DUCTED HSP	1.0	12	13.5	370	0.6	–	29	1/208-230/60	0.66/0.62	1.20	15	29X28X10	1/4	1/2	1 1/4	34	PEFY-P12NMAU-E3
AC-2/3	SEE PLAN	CORRIDOR	DUCTED HSP	0.5	6	6.7	300	0.6	6	29	1/208-230/60	0.56/0.52	1.05	15	29X28X10	1/4	1/2	1 1/4	49	PEFY-P06NMAU-E3
AC-4	SEE PLAN	RECEPTION	CASSETTE	0.5	5	5.6	280	–	–	26-30	1/208-230/60	0.19	0.24	15	23X23X9	1/4	1/2	1 1/4	29	PLFY-P05NFMU-E
AC-R-1/R-2/C	SEE PLAN	SEE PLAN	WALL MOUNTED	1	12	13.5	413	–	–	36-43	1/208-230/60	–	1	15	36X12X10	1/4	1/2	5/8	29	PKFY-P12NHMU-E2
AC-5	SEE PLAN	SEE PLAN	DUCTED HSP	2	24	27	880	0.14	–	39-30	1/208-230/60	1.31	2.73	15	44X10X29	3/8	5/8	1 1/4	67	PEFY-P24NMAU-E3
AC-A	SEE PLAN	SEE PLAN	WALL MOUNTED	0.75	8	9	412	–	–	34-43	1/208-230/60	–	0.38	15	12X36X10	1/4	1/2	5/8	29	PKFY-P08NHMU-E2
AC-B	SEE PLAN	SEE PLAN	WALL MOUNTED	0.5	6	6.7	210	–	–	32-36	1/208-230/60	–	0.19	15	12X33X10	1/4	1/2	5/8	22	PKFY-P06NBMU-E2R1
AC-D	SEE PLAN	SEE PLAN	WALL MOUNTED	1.5	18	20	425	–	–	36-45	1/208-230/60	–	0.38	15	12X36X10	1/4	1/2	5/8	29	PKFY-P18NHMU-E2
AC-C-1	SEE PLAN	TRASH ROOM	WALL MOUNTED	1.0	12	–	320-425	–	30	43-36	1/208-230/60	0.33	1	15	12X36X10	1/4	1/2	5/8	29	PKA-A12HA7

NOTES:
1. SUPPLY AIR CFM BASED ON HIGH SPEED.
2. REFRIGERANT R410A SHALL BE PROVIDED.
3. PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCESSORIES.
4. ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
5. PROVIDE MERV 8 FILTER ON RETURN TO ALL DUCTED CORRIDOR AC UNITS.
6. SEE FLOOR PLAN FOR QUANTITIES.
7. INDOOR UNIT ACCESS PANEL FIELD-PROVIDED
8. CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
9. PROVIDE CONDENSATE PUMP W/ 4' WG LIFT MIN AND CONNECT TO NEAREST INDIRECT WASTE LINE.(MODEL- ASP-MA-UNI)
10. PROVIDE BACNET CARDS IN EACH AC UNITS.

ACCU — OUTDOOR UNITS (HEAT PUMP TYPE) 208-230V

BASIS OF DESIGN: MISTSUBISHI

UNIT TAG	SYSTEM QTY	NO. OF MODULE	LOCATION	AREA SERVED	PERFORMANCE CAPACITIES (MBH)		NOMINAL OPERATING RANGE		COMPRESSOR TYPE	UNIT DIMENSIONS (EACH MODULE) (IN)				REFRIGERANT PIPE SIZE (INø)		ELECTRICAL (3,208-230V,60)		EER	IEER	COP	SOUND LEVEL EA MOD. (dBA)	MODEL	REMARKS
					COOLING : 80° FDB/67° FWB 95° FDB	HEATING:70° FDB 47°FDB/43° FWB	COOLING °FDB	HEATING °FWB		WIDTH	HEIGHT	DEPTH	WEIGHT (LBS)	LIQUID	GAS	MCA	MAX BREAKER	DUCTED	DUCTED	DUCTED			
ACCU-1-1	1	1	ROOF	UNIT 111 TO 121 & UNIT 101	96	108	23 TO 126	-4 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	49	65	30	499	3/8	7/8	32	50	13.1	23.1	3.79	58	PUHY-P96TLMU-A	SEE NOTES
ACCU-1-2	1	1	ROOF	UNIT 102 TO 110	72	80	23 TO 126	-13 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	37	65	30	435	3/8	7/8	24	35	13.7	23.1	3.84	58	PUHY-P72TLMU-A	SEE NOTES
ACCU-2-1	1	1	ROOF	UNIT 213 TO 223 & UNIT 201	96	108	23 TO 126	-4 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	49	65	30	499	3/8	7/8	32	50	13.1	23.1	3.79	58	PUHY-P96TLMU-A	SEE NOTES
ACCU-2-2	1	1	ROOF	UNIT 202 TO 212	96	108	23 TO 126	-4 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	49	65	30	499	3/8	7/8	32	50	13.1	23.1	3.79	58	PUHY-P96TLMU-A	SEE NOTES
ACCU-3-1	1	1	ROOF	UNIT 313 TO 323 & UNIT 301	96	108	23 TO 126	-4 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	49	65	30	499	3/8	7/8	32	50	13.1	23.1	3.79	58	PUHY-P96TLMU-A	SEE NOTES
ACCU-3-2	1	1	ROOF	UNIT 302 TO 312	96	108	23 TO 126	-4 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	49	65	30	499	3/8	7/8	32	50	13.1	23.1	3.79	58	PUHY-P96TLMU-A	SEE NOTES
ACCU-4-1	1	1	ROOF	UNIT 409 TO 413 & UNIT 401	96	108	23 TO 126	-4 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	49	65	30	499	3/8	7/8	32	50	13.1	23.1	3.79	58	PUHY-P96TLMU-A	SEE NOTES
ACCU-4-2	1	1	ROOF	UNIT 402 TO 408	72	80	23 TO 126	-13 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	37	65	30	435	3/8	7/8	24	35	13.7	23.1	3.84	58	PUHY-P72TLMU-A	SEE NOTES
ACCU-C-2	1	1	ROOF	AC-1/2/3/4/5/ R-1/R-2 & ALL CELLAR AC UNIT EXCEPT AC-C-1	168	188	23 TO 126	-13 TO +60	INVERTER-DRIVEN SCROLL HERMETIC	69	65	30	673	5/8	1-1/8	58/54	90/80	11.6	18.7	3.47	62	PUHY-P168TLMU-A	SEE NOTES

NOTES:
1. UNIT SHALL HAVE FIVE YEAR EXTENDED WARRANTY FOR COMPRESSORS.
2. PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -13°F.
3. PROVIDE COMPRESSOR CYCLE PROTECTOR.
4. PROVIDE STEEL RAIL FOR CONDENSER MOUNTING.
5. CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING CONNECTIONS, AUXILIARY DEVICES AND CONTROL WIRING DIAGRAMS TO COMPLETE THE CONTROL SYSTEM AND ATTAIN THE DESCRIBED SEQUENCE OF OPERATION.
7. AIR CONDITIONER UNIT SHALL NOT PRODUCE NOISE LEVELS IN EXCESS OF 42 DECIBELS FOR A SINGLE AIR CIRCULATING DEVICE AND 45 DECIBELS FOR THE CUMULATIVE NOISE LEVEL OF MULTIPLE AIR CIRCULATING DEVICES AS MEASURED 3 FEET FROM THE NOISE SOURCE AT AN OPEN DOOR OR WINDOW OF A NEARBY RESIDENCE. (CONTRACTOR TO VERIFY FINAL LOCATION IN FIELD.)
8. PROVIDE ENERGY METER AND ALL CONTROLS ASSOCIATED WITH IT.

ACCU — OUTDOOR UNITS (COOLING ONLY TYPE)

BASIS OF DESIGN: MISTSUBISHI

UNIT TAG	SYSTEM QTY	NO. OF MODULE	LOCATION	UNIT SERVED	PERFORMANCE CAPACITIES (MBH)	NOMINAL OPERATING RANGE	COMPRESSOR TYPE	UNIT DIMENSIONS (EACH MODULE) (IN)				REFRIGERANT PIPE SIZE (INø)		ELECTRICAL (1,208-230V,60)		EER	SEER	SOUND LEVEL EA MOD. (dBA)	MODEL	REMARKS
					COOLING : 80° FDB/67° FWB 95° FDB	COOLING °FDB		WIDTH	HEIGHT	DEPTH	WEIGHT (LBS)	LIQUID	GAS	MCA	MAX BREAKER	NON DUCTED	NON DUCTED			
ACCU-C-1	1	1	ROOF	AC-C-1	12.0	-20/115	INVERTER-DRIVEN TWIN ROTARY	32	25	17	92	1/4	1/2	11	28	12.0	20.8	44-46	PUY-A12NKA7	SEE NOTES

NOTES:
1. UNIT SHALL HAVE FIVE YEAR EXTENDED WARRANTY FOR COMPRESSORS.
2. PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -13°F.
3. AIR CONDITIONER UNIT SHALL NOT PRODUCE NOISE LEVELS IN EXCESS OF 42 DECIBELS FOR A SINGLE AIR CIRCULATING DEVICE AND 45 DECIBELS FOR THE CUMULATIVE NOISE LEVEL OF MULTIPLE AIR CIRCULATING DEVICES AS MEASURED 3 FEET FROM THE NOISE SOURCE AT AN OPEN DOOR OR WINDOW OF A NEARBY RESIDENCE. (CONTRACTOR TO VERIFY FINAL LOCATION IN FIELD.)
4. PROVIDE COMPRESSOR CYCLE PROTECTOR.
5. PROVIDE STEEL RAIL FOR CONDENSER MOUNTING.
6. CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING CONNECTIONS, AUXILIARY DEVICES AND CONTROL WIRING DIAGRAMS TO COMPLETE THE CONTROL SYSTEM AND ATTAIN THE DESCRIBED SEQUENCE OF OPERATION.

ERV — ENERGY RECOVERY VENTILATOR

BASIS OF DESIGN: VENTACITY

UNIT TAG	SYSTEM QTY	LOCATION	CFM	UNIT DIMENSIONS (EACH MODULE) (IN)				ELECTRICAL DATA				V/PH/HZ	ESP (IN WG)	OUTSIDE AIR CONDITIONS (°F)			MODEL	REMARKS
				WIDTH	HEIGHT	DEPTH	WEIGHT (LBS)	MCA	MAX BREAKER	FLA	MOTOR HP			SUMMER (DBT)	SUMMER (WBT)	WINTER (DBT)		
ERV-1	1	ROOF	2070	87	49	74	1720	68.6	70	56	2.56	208/3/60	1.5	91	82.4	11	VS3000	SEE NOTES
ERV-2	1	ROOF	1530	87	49	74	1720	68.6	70	56	2.56	208/3/60	1.5	91	82.4	11	VS3000	SEE NOTES
ERV-3	1	ROOF	750	64	36	53	662	36.5	40	29.3	0.65	208/1/60	1.5	91	82.4	11	VS1000	SEE NOTES
ERV-4	1	ROOF	270	64	36	53	662	36.5	40	29.3	0.65	208/1/60	1.5	91	82.4	11	VS1000	SEE NOTES

NOTES:
1) SUPPLY FILTER – MERV 13
2) RETURN FILTER – MERV 8
3) UNIT SHALL HAVE A COUNTER FLOW CORE MADE OF POLYMER MEMBRANE
4) UNIT SHALL HAVE FACTORY SUPPLIED FROST PROTECTION
5) FIELD WIRED FACTORY CONTROL PANEL
6) FIELD SUPPLIED ELECTRICAL DISCONNECT
7) PIPE CONDENSATE CONNECTION TO NEAREST DRAIN
8) ERV-1, ERV-2, AND ERV-3 ARE CONTINUOUS OPERATION AND ERV-4 IS ON TIME SCHEDULE.
9) PROVIDE COMMISSIONING FOR ERV UNITS.

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SCHEDULE OF DIFFUSERS

BASIS OF DESIGN: TITUS

SYMBOL	TYPE	CFM RANGE	NECK SIZE	NOMINAL FACE SIZE	MODEL NO.	MAX NC dBA	ACCESSORIES
☒	CLNG. SUPPLY DIFFUSER	51–140	6"ø	12" x 12"	OMNI	18	OPPOSED BLADE DAMPER
☐	CLNG. RETURN DIFFUSER	0–315	8"ø	12" x 12"	OMNI	24	OPPOSED BLADE DAMPER

NOTES:
1. ALL DIFFUSERS & REGISTERS: CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
2. PROVIDE REMOTE CORD OPERATED OPPOSED BLADE DAMPERS FOR ALL DIFFUSERS LOCATED IN INACCESSIBLE CEILINGS (E.G. CORRIDORS, ETC.).
3. COORDINATE COLOR/FINISH WITH ARCHITECT.
4. SUPPLY, RETURN AND EXHAUST AIR OUTLETS/INLETS IN WET AREAS SHALL BE ALUMINUM. (E.G. KITCHENS ETC.)
5. PROVIDE BLACK SCREEN BACKING.

EUH ELECTRIC UNIT HEATER SCHEDULES

UNIT ID	MODEL	SERVING	TYPE	CFM	KW	EAT °F	LAT °F	ELECTRICAL HZ.	ELECTRICAL VOLTS	ELECTRICAL ø	ELECTRICAL AMPS	WEIGHT LBS.	DIMENSIONS INCH.	MAKE
EUH–C–1	CZ1512T	STORAGE	WALL MOUNTED	50	0.5	40	85	60	120	1	4.2	8.1	4"DX8"WX12"H	BERKO
EUH–C–4	CZ1012T	MAINTENANCE ROOM	WALL MOUNTED	50	0.5	40	85	60	120	1	4.2	8.1	4"DX8"WX12"H	BERKO
EUH–R–1	CZ1012T	HWH ROOM	WALL MOUNTED	50	1	40	85	60	120	1	8.4	8.1	4"DX8"WX12"H	BERKO
EUH–R–2	CZ1012T	STAIR 1	WALL MOUNTED	50	1	40	85	60	120	1	8.4	8.1	4"DX8"WX12"H	BERKO
EUH–R–3	CZ1012T	STAIR 2	WALL MOUNTED	50	1	40	85	60	120	1	8.4	8.1	4"DX8"WX12"H	BERKO

NOTES:
1) PROVIDE DISCONNECT SWITCH
2) "HEATER ON" PILOT LIGHT
3) THREE–POSITION SELECTOR SWITCH (HEATER–STANDBY–FAN)
4) BUILT–IN THERMOSTAT 40°F TO 100°F RANGE
5) ALL UNIT HEATERS SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6) SUSPENDED–TYPE UNIT HEATER SHALL BE SUPPORTED BY ELEMENTS THAT ARE DESIGNED AND CONSTRUCTED TO ACCOMMODATE THE WEIGHT AND DYNAMIC LOADS.

FAN SCHEDULES

BASIS OF DESIGN: GREENHECK

MARK	USE	TYPE	SERVICE	MODEL	CFM	SP (IN W.G.)	ELEC. V/~/ø	MOTOR SIZE NEMA (HP)	FAN SPEED (RPM)	WEIGHT LBS	INLET dBA (dB)
MAF–1	SUPPLY	INLINE	LAUNDRY	SQ–120–VG	1000	1.0	208/60/1	1/2	1725	54	58
DXF–1	EXHAUST	INLINE	LAUNDRY	EQB–9–5	1000	1.0	208/60/3	1/2	2112	88	59

NOTES:
1) PROVIDE RUBBER IN SHEAR ISOLATION AND ALL–THREAD HANGING RODS FOR INLINE FANS.
2) PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
3) PROVIDE WALL SWITCH AND COORDINATE HEIGHT WITH OWNER AND ARCHITECT.
4) COORDINATE WITH ARCH./G.C. ACCESS DOORS FOR SERVICING ALL FANS WITHIN CEILINGS.
5) ALL DIRECT DRIVE FANS SHALL BE FURNISHED WITH VARI–GREEN MOTOR CONTROL.
7) PROVIDE FAN WITH STARTER.
8) FAN SPEED SHALL BE EASILY FILED ADJUSTABLE.
9) FANS SHALL BE UL–705 LISTED.
10) PROVIDE ACOUSTIC ENCLOSURE/JACKET TO DXF–1 FAN.

ELECTRIC DUCT HEATER SCHEDULE

BASIS OF DESIGN: GREENHECK

UNIT ID	DUCT HEATER DIMENSIONS (INCH) W	H	D	ELECTRICAL SECTION kW	AMPS	V	PH	Hz	MODEL	HEATER TYPE
EDH–1	24	8	5	12	33.31	208	3	60	IDHE	MODULATING

NOTES:
1. INSTALL ELECTRIC DUCT HEATER AS PER MANUFACTURER'S RECOMMENDATION.
2. PROVIDE DUCT MOUNTED T–STAT AND WIRE TO DUCT HEATER FOR EDH–1. EDH–1 SHALL BE MODULATING DUCT HEATER & PROVIDE SCR–CONTROLES TO THE DUCT HEATER.
3. PROVIDE FAN INTERLOCK SWITCH.

ACOUSTICAL ENCLOSURE FOR FAN SCHEDULE

UNIT TAG	EQUIPMENT TYPE	QTY:	ISOLATION AND NOISE CONTROL SILENCER SIZE (WXHXL)	SILENCER PRESSURE DROP IN.WG	DBA LEVEL REQUIRED	MANUFACTURER
DXF–1	INLINE FAN	SEE PLAN	24X8X36	0.04	45	VIBROACOUSTICS

NOTES:

1. PROVIDE ACOUSTICAL ENCLOSURE FOR DXF–1 FAN WITH INLET AND OUTLET SILENCERS WITH HTL CASING TO MEET THE REQUIRED DBA CRITERIA.
2. PROVIDE ACCESS AS REQUIRED BY MANUFACTURER.

GRILLE SCHEDULES

BASIS OF DESIGN: TITUS

SYMBOL	TAG NAME	SERVICE	TYPE	CFM RANGE	MODULATE SIZE	DEFLECTION	MODEL NO.	SPACING WIDTH (IN.)	MAX NC (dBA)	MANUFACTURER	SERVING
SUPPLY	SG–1	SUPPLY	SIDEWALL	0–100	6X6	22.5°	300FL	3/4"	–	TITUS	SEE PLAN
EXHAUST GRILLE	EG–1/RG–1	EXHAUST	SIDEWALL	0–100	6X6	35°	350FS	3/4"	–	TITUS	SEE PLAN
	EG–1	EXHAUST	SIDEWALL	0–100	6X6	35°	350FLF1	3/4"	–	TITUS	KITCHEN AREA
SUPPLY	SG–2	SUPPLY	SIDEWALL	1000	36X8	45°	300FL	3/4"	25	TITUS	LAUNDRY
EXHAUST GRILLE	EG–2	EXHAUST	SIDEWALL	100–300	16X6	0°	350FS	3/4"	18	TITUS	TRASH ROOM

NOTES:

1. ALL DIFFUSERS & REGISTERS: CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
2. PROVIDE REMOTE CORD OPERATED OPPOSED BLADE DAMPERS FOR ALL DIFFUSERS LOCATED IN INACCESSIBLE CEILINGS (e.g. CORRIDORS, ETC.) .
3. COORDINATE COLOR/FINISH/BORDER WITH ARCHITECT.
4. GRILLE SHALL INCLUDE INBUILD VOLUME DAMPER.
5. ALL APARTMENT KITCHEN EXHAUST GRILLES MUST BE EQUIPPED WITH A MERV 3 OR WASHABLE MESH FILTER FOR TRAPPING GREASE.
6. PROVIDE FACTORY INSTALLED OPPOSED BLADE DAMPER (AG–15) AND RELATED ACCESSORIES.

LINEAR BAR SCHEDULES

BASIS OF DESIGN:TITUS

TAG	MODEL	DIMENSIONS	NUMBER OF SLOTS	CFM/FT	MAX TOTAL PRESS. IN. OF W.G.)	MAX NC	SERVICE
LDS–1	CT–480	6"	–	155	0.066	13	SUPPLY
LDR–1	CT–480	6"	–	176	0.054	17	RETURN
LDS–2	FL–15–1	1.5"	1	45	0.073	14	SUPPLY

NOTES:
1. ALL DIFFUSERS & REGISTERS: CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
2. PROVIDE REMOTE CORD OPERATED OPPOSED BLADE DAMPERS FOR ALL DIFFUSERS LOCATED IN INACCESSIBLE CEILINGS (e.g. CORRIDORS, ETC.) TYPICAL ALL.
3. COORDINATE COLOR/FINISH/BORDER WITH ARCHITECT.

EXPLOSION PROOF ELECTRIC UNIT HEATER SCHEDULES

BASIS OF DESIGN: BERKO

UNIT TAG	SERVING	TYPE	BUTH	KW	AIR TEMP. RISE (°F)	ELECTRICAL DATA ø	V	TOTAL AMPS	WEIGHT (LBS.)	DIMENSIONS (WXHXD) (INCHES)	MODEL NO.
EUH–C–2 EUH–C–3	SEE PLAN	EXPLOSION PROOF ELECT.UNIT HEATER	10,236	3	13	1	208	16.7	11	23X19X21	RUX300812

NOTES:
1) PROVIDE DISCONNECTION SWITCH.
2) "HEATER ON" PILOT LIGHT.
3) THREE–POSITION SELECTOR SWITCH (HEATER–STANDBY–FAN).
4) BUILT–IN THERMOSTAT 40°F TO 85°F RANGE.
5) ALL UNIT HEATERS SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6) SUPPOSED–TYPE UNIT HEATER SHALL BE SUPPORTED BY ELEMENTS THAT ARE DESIGNED AND CONSTRUCTED TO ACCOMMODATE THE WEIGHT AND DYNAMIC LOADS.

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ELECTRICAL SYMBOLS LIST

LIGHTING

	FLUORESCENT LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR "EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.
A 2 a	LUMINAIRE TYPE : INDICATE BY LIPPERCASE LETTER SEE LIGHTING EXTURE SCHEDULE. CIRCUIT NUMBER : INDICATED BY NUMBER SWITCHING INDICATED BY LOWER CASE LETTERS.
EM	DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.
NL	DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT.
	EMERGENCY BATTERY UNIT WITH ATTACHED EMERGENCY FIXTURES AND OUTLET BOX.

SWITCHES AND CONTROLS

$a	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
$a3	20A 3-WAY TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED
$a OS	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE.
PC	WALL MOUNTED PHOTOCELL MOUNTED IN NEMA 3R ENCLOSURE.
OS A	CEILING OCCUPANCY SENSOR, NUMBER INDICATES TYPE. 'A' LETTER REFERES TO LIGHTING FIXTURE CONTROLLED..
VI	VIDEO INTERCOM.
ENT	ENTRANCE DOOR STATION.
PL	POSTAL LOCK.
EL	ELECTRIC DOOR LOCK
DS	CEILING MOUNTED DAYLIGHT SENSOR.
$0V	WALL MOUNTED SPRING WOUND TIME SWITCH TORK
	ASCO CONTACTOR C-25 TORK TIMER T-25 STACKED.
OS	RADIO POWER SAVER CEILING MOUNTED OCCUPANCY SENSOR BY LUTRON.

WIRING SYSTEMS

3 UP-	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
3 5 UP-	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
3 5 7 UP-	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
	CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.
	CONDUIT TUIRNING DOWN, SEE FLOOR PLANS FOR CONDITION.
	CONDUIT AND WIRE TO BUILDING GROUND.
	UNDERGROUND
	EXISTING
	NEW
S/CO	COMBINATION OF SMOKE AND CO DETECTOR.

ELECTRICAL DRAWING LIST

E-001.00	ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES
E-002.00	LIGHT FIXTURE SCHEDULE AND CONTROLS
E-003.00	ELECTRICAL SPECIFICATIONS SHEET 1 OF 2
E-004.00	ELECTRICAL SPECIFICATIONS SHEET 2 OF 2
E-100.00	CELLAR LIGHTING PLAN
E-101.00	GROUND FLOOR LIGHTING PLAN
E-102.00	2ND FLOOR LIGHTING PLAN
E-103.00	3RD FLOOR LIGHTING PLAN
E-104.00	4TH FLOOR LIGHTING PLAN
E-105.00	ROOF LIGHTING PLAN
E-200.00	CELLAR ELECTRICAL POWER PLAN
E-201.00	GROUND FLOOR ELCTRICAL POWER PLAN
E-202.00	2ND FLOOR ELECTRICAL POWER PLAN
E-203.00	3RD FLOOR ELECTRICAL POWER PLAN

POWER AND TELECOMMUNICATION

J	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..
A	SIMPLEX RECEPTACLE, +18" AFF OR AS NOTED. SUFFIXE DENOTES FOLLOWING: A- NEMA 5-15R B- NEMA 14-30R C- NEMA 14-50R
	DEDICATED DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.
	DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.
CL	CLOCK OUTLET INSTALLED AT TV LOCATIONS. OUTLET SHALL BE DUPLEX RECESSED, 15A, DECORA STYLE, LEVITON MODEL-012-00690-00W OR EQUIVALENT
	DOUBLE DUPLEX RECEPTACLE - 20A-1P, 125V, NEMA 5-20R.
	SWITCHED RECEPTACLE
NID	NETWORK INTERFACE DEVICE. NID IS 'ONT' BOX WHICH INCLUDES BOTH 'ONT' AND ITS SISTER BOX AS PER VERIZON STANDARDS.
	TELEPHONE/DATA OUTLET, 4"SQUARE OUTLET BOX WITH SINGLE GANG COLLAR AND BLANK PLATE. RUN (2) COMPOSITE CABLES FROM EACH OUTLET TO NID BOX.
	DATA OUTLET - (1) PORT UNO, +18" AFF, UNO TEL / DATA OUTLET TO BE RUN (2) COMPOSITE CABLES FROM EACH OUTLET TO NID BOX
CL	CEILING MOUNTED DATA OUTLET - (1) PORT UNO, +18" AFF, UNO TEL / DATA OUTLET TO BE PROVIDED WITH 1" CONDUIT U.O.N.
TV	CABLE TV OUTLET, WALL-MOUNTED AT 18" AFF U.O.N.

MOTORS AND CONTROLS

M	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
M WP	AC OUTDOOR UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.
	NON FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES AS NOTED.
A	30A/240V NON FUSED DISCONNECT SWITCH
B	60A/240V NON FUSED DISCONNECT SWITCH
C	100A/240V NON FUSED DISCONNECT SWITCH
D	200A/240V NON FUSED DISCONNECT SWITCH
	COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
MD	MOTORIZED DAMPER.
FSD	FIRE SMOKE DAMPER
M M	DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.
S_T	THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS AS PER MOTOR RATING.
S_M	MANUAL MOTOR SWITCH
1.5 kW	ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING

ANNOTATION

+24"	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
X	KEYED NOTE REFERENCE
1 E/2-1	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM

POWER DISTRIBUTION

	MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED.
	BRANCH LOADCENTER, 208Y/120V FLUSH MOUNTED, SIZE AS NOTED.
	DISTRIBUTION PANELBOARD, 208Y/120V-SURFACE MOUNTED, SIZE AS NOTED.

E-204.00	4TH FLOOR ELECTRICAL POWER PLAN
E-205.00	ROOF ELECTRICAL POWER PLAN
E-300.00	LIGHTING UNIT PLANS SHEET (1 OF 4)
E-301.00	LIGHTING UNIT PLANS SHEET (2 OF 4)
E-302.00	LIGHTING UNIT PLANS SHEET (3 OF 4)
E-303.00	LIGHTING UNIT PLANS SHEET (4 OF 4)
E-304.00	ELECTRICAL POWER UNIT PLANS SHEET (1 OF 4)

ELECTRICAL ABBREVIATIONS

A	AMPERES	EA	EACH
A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AT	AMP TRIP	FA	FIRE ALARM
AUTO	AUTOMATIC	FDR	FEEDER
AWG	AMERICAN WIRE GAUGE	FIXT	FIXTURE
C	CONDUIT	FL	FLOOR
C/B,CB	CIRCUIT BREAKER	G	GROUND
CKT	CIRCUIT	GFI	GROUND FAULT INTERRUPTER
CLG	CEILING	GP	GENERAL PURPOSE
CT	CURRENT TRANSFORMER	HP	HORSEPOWER
CU	COPPER	HWH	HOW WATER HEATER
°C	DEGREE CELSIUS	HZ	HERTZ
°F	DEGREE FAHRENHEIT	IC	INTERRUPTING CAPACITY
DIA	DIAMETER	TC	TRASH COMPARATOR
DISC	DISCONNECT	PVC	POLYVINYL CHLORIDE
DP	DISTRIBUTION PANEL	PWR	POWER
DWG	DRAWING	R	REMOVE
JB	JUNCTION BOX	RE	RELOCATED EXISTING
KCMIL	ONE THOUSAND CIRCULAR MILS	REC	RECEPTACLE
KV	KILOVOLT	RGS	RIGID GALVANIZED STEEL
KVA	KILOVOLT-AMPERES	SECT	SECTION
KW	KILOWATTS	SPEC	SPECIFICATION
LTG	LIGHTING	SW	SWITCH
MAX	MAXIMUM	SYM	SYMMETRICAL
MC	MOTOR CONTROLLER	TELE	TELEPHONE
MCB	MAIN CIRCUIT BREAKER	TEMP	TEMPERATURE
MIN	MINIMUM	TXF	TOILET EXHAUST FAN
MLO	MAIN LUGS ONLY	TYP	TYPICAL
MTD	MOUNTED	UON	UNLESS OTHERWISE NOTED
N	NEUTRAL	V	VOLT/VOLTAGE
NIC	NOT IN CONTRACT	VA	VOLT AMPERE
NL	NIGHT LIGHT	VFD	VARIABLE FREQUENCY DRIVE
NTS	NOT TO SCALE	MR	MESH RECIEVER
P	POLES	WP	WEATHER PROOF
PB	PULLBOX	RA	RANGE
ø	PHASE	RH	RANGE HOOD
PNL	PANEL	WA	WASHER
W	WATT	DR	DRYER
W	WIRE	DW	DISHWASHER
E	EXISTING	REF	REFRIGERATOR
U	USB	MR	MESH RECEIVER

E-305.00	ELECTRICAL POWER UNIT PLANS SHEET (2 OF 4)
E-306.00	ELECTRICAL POWER UNIT PLANS SHEET (3 OF 4)
E-307.00	ELECTRICAL POWER UNIT PLANS SHEET (4 OF 4)
E-400.00	ELECTRICAL DETAILS SHEET 1 OF 3
E-401.00	ELECTRICAL DETAILS SHEET 2 OF 3
E-402.00	ELECTRICAL DETAILS SHEET 3 OF 3
E-500.00	ELECTRICAL ONE LINE DIAGRAM 1 OF 2
E-501.00	ELECTRICAL ONE LINE DIAGRAM 2 OF 2
E-600.00	ELECTRICAL PANEL SCHEDULES SHEET 1 OF 5
E-601.00	ELECTRICAL PANEL SCHEDULES SHEET 2 OF 5
E-602.00	ELECTRICAL PANEL SCHEDULES SHEET 3 OF 5
E-603.00	ELECTRICAL PANEL SCHEDULES SHEET 4 OF 5
E-604.00	ELECTRICAL PANEL SCHEDULES SHEET 5 OF 5

GENERAL NOTES

(APPLY TO ALL "E" DRAWINGS)

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE NYC ELECTRICAL CODE, 2008 NEC WITH NYC AMENDMENTS, LOCAL JURISDICTION REQUIREMENTS, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
2. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
3. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.
4. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK). NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
5. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.
6. VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
7. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
8. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
9. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
10. MINIMUM SIZE OF CONDUIT SHALL BE ¾", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
11. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
12. PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CANCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
13. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
14. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
15. ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAINTIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
16. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
17. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. ALL CONDUITS AND EQUIPMENT TO BE CONCEAL ED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.
19. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
20. OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZED.
21. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
22. COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL DRAWINGS AND DETAILS.
23. REFER TO ARCHITECTURAL PLANS FOR FINAL LOACTIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
24. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
25. LIGHTING FIXTURES PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL.
26. NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.
27. ELEVATOR CONTROLS SHALL BE PROVIDED THAT WILL DE-ENERGIZE LIGHTING AND VENTILATION FAN WHEN THE ELEVATOR IS STOPPED, UNOCCUPIED AND WITH ITS DOORS CLOSED FOR OVER 15 MINUTES.
28. LUMINAIRES IN EACH ELEVATOR CAB: THE SUM OF ALL LUMENS/SUM OF ALL WATTS SHALL NOT BE <35 LUMENS/WATT. VENTILATION FANS IN ELEVATORS THAT DO NOT HAVE THEIR OWN AIR CONDITIONING SYSTEM SHALL NOT CONSUME >0.33WATT/CFM AT THE MAXIMUM RATED SPEED OF THE FAN. ELEVATOR CONTROLS SHALL DE-ENERGISE FANS AND LIGHTING WHEN THE ELEVATOR IS STOPPED, UNOCCUPIED, WITH DOORS CLOSED.

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LIGHTING CONTROLS:

AREA	CONTROLS
CORRIDORS/ELEV.LOBBIES	AUTO ON/OFF OF NORMAL FIXTURES UTILIZING CEILING MOUNTED OCCUPANCY SENSORS USING 'BILEVEL LIGHTING CONTROL'. FIXTURES DESIGNATED 'EM/NL' (EMERGENCY/NIGHT LAMP) TO REMAIN ENERGIZED AT ALL TIMES.
BIKE STORAGE, UTILITY, TELECOM, GAS, OFFICE ROOM, MECHANICALNROOM.	WALL MOUNTED OCCUPANCY SENSOR SWITCH FOR MANUAL/AUTOMATIC ON/OFF OF FIXTURES. FIXTURES DESIGNATED 'EM' (EMERGENCY) TO REMAIN ENERGIZED AT EMERGENCY (POWER OUT) CONDITION.
STORAGE, WATER SERVICE,TRASH COMPACTOR, ERV ROOM, LAUNDRY, PANTRY, SENIOR SERVICES ROOM, HWH ROOM.	LOCAL SWITCHES FOR MANUAL ON/OFF OF LIGHT FIXTURES WITH CEILING MOUNTED OCCUPANCY SENSOR FOR AUTOMATIC ON/OFF OF FIXTURES. FIXTURES DESIGNATED 'E' (EMERGENCY) TO REMAIN ENERGIZED AT EMERGENCY (POWER OUT) CONDITION.
ELECTRICAL ROOM	LOCAL 3-WAY SWITCHES FOR MANUAL ON/OFF OF LIGHT FIXTURES WITH CEILING MOUNTED OCCUPANCY SENSOR FOR AUTOMATIC ON/OFF OF FIXTURES.
GLASS ROOM	LOCAL SWITCHES FOR MANUAL ON/OFF OF LIGHT FIXTURES WITH WALL MOUNTED DAYLIGHT SENSOR FOR AUTOMATIC ON/OFF OF FIXTURES.
STAIRCASE	100% LIGHTS TO BE ENERGIZED AT ALL TIMES (i.e. EMERGENCY FIXTURES TO REMAIN ON)
EXTERIOR LIGHTS	AUTO ON/OFF OF LIGHT FIXTURES UTILIZING PHOTOCELL CONTROLS.
PARKING LIGHTS.	AUTO ON/OFF OF LIGHT FIXTURES UTILIZING OCCUPANCY SENSOR.

LIGHTING CONTROLS NOTES:

1. AUTOMATIC LIGHTING CONTROLS: OCCUPANCY SENSOR SHALL BE CAPABLE OF TURNING OFF LIGHTS WITHIN 20 MINUTES OF ALL OCCUPANT LEAVING THE SPACE.
2. ALL ILLUMINATED EXIT SIGN TO HAVE A MAX WATTAGE OF 5 PER SIDE.
3. EXTERIOR LIGHTING CONTROLS: ALL EXTERIOR LIGHTING SHALL AUTOMATICALLY TURNS OFF LIGHTING WHEN DAYLIGHT IS AVAILABLE.
4. SEPARATE SUB METERING IS PROVIDED FOR DWELLING UNIT.
5. LUMINAIRES IN EACH ELEVATOR CAB: THE SUM OF ALL LUMENS/SUM OF ALL WATTS SHALL NOT BE <35 LUMENS/WATT. VENTILATION FANS IN ELEVATORS THAT DO NOT HAVE THEIR OWN AIR CONDITIONING SYSTEM SHALL NOT CONSUME >0.33WATT/CFM AT THE MAXIMUM RATED SPEED OF THE FAN. ELEVATOR CONTROLS SHALL DE-ENERGISE FANS AND LIGHTING WHEN THE ELEVATOR IS STOPPED, UNOCCUPIED, WITH DOORS CLOSED.
6. LIGHTING REDUCTION IS ACHIEVED BY CONTROLLING ALL LUMINAIRES.

LIGHTING FIXTURE SCHEDULE

Fixture Type	COUNT	LAMP TYPE	LUMENS/WATT	WATTAGE	MODEL NUMBER	MANUFACTURER	INITIAL COLOR TEMPERATURE	LOCATION
A	12	LED	90 LM/W	12W	SK12XL12RDYN	RAB LIGHTING	2700 K	SURFACE CEILING MOUNT
B	40	LED	84 LM/W	20W	ND6R20D(HOUSING)/NDLED6RD 50YN-W-W (TRIM)	RAB LIGHTING	2700 K	OFFICE COMMOM SPACE,CELLAR
C	96	LED	137 LM/W	10W	RP-DRU-11N-14L-40K-WC-G2	REMPHOS	2700 K	BATH CEILING SURFACE MOUNT
D	80	LED	83 LM/W	16W	WS-14818BN	MODERN FORM	2800 K	BATHROOM WALL SCONCE, GREY
E(ADD ALT)	80	LED	51 LM/W	10W	1-LIGHT LED OUTDOOR FLUSH MOUNT	HAMBELTON	3200 K	HALLWAY WALL SCONCE
EX	14	LED	5W/SIDE	NA	ELCNYCELSM-R	EXIT LIGHT CO		EDGE LIT LED EXIT SIGN
F	22	LED	133 LM/W	15W	RPT-P-LIVC-G2-2FT-20L-840_FWFC-EMG	REMPHOS	4230 K	STAIR
G	31	LED	106 LM/W	18W	GUS2-18YNW_D10	RAB LIGHTING	4230 K	SURFACE MOUNT CEILING LIGHT
H	15	LED	105 LM/W	40W	WPTLEAD-40-5000S-BRONZE	RAB LIGHTING	4000 K	EXTERIOR WALL PACK
I	157	LED	137 LM/W	9W	WS-3611-BN	MODERN FORM	2700 K	L.R/B.R/VERTICAL WALL SCONCE
J	74	LED	77 LM/W	9W	6PR L10 930 EM/10W UNV LW OF WH N	HE WILLIAMS	2700 K	HALLWAY 4" RECESSED CAN-EM BACKUP
K	8	LED	75 LM/W	10W	1-LIGHT LED OUTDOOR FLUSH MOUNT	HAMBELTON	3200 K	EXTERIOR WALLSCONCE
L	2	LED	37 LM/W	5W	WPLED-5	RAB LIGHTING	4000 K	EXT. WALL PACK MT. 42" @PARAPET
M	480LF	LED	66 LM/W	5W	KNOOK8YW	RAB LIGHTING	2700 K	UNDER CABINET STRIP LIGHTING
N	8	LED	58 LM/W	3W	GL-WW3-U60	GLUX	2700 K	LINKABLE GROUND LED LIGHTS
O	4	HALOGEN	84 LM/W	200W	SMITHFIELD	FLOS	2700 K	LOBBY PEDANT
P	5	INCANDESCENT	84 LM/W	150W	SAUCER BUBBLE PEDANT (MED)	NELSON	2700 K	CELLAR PEDANT

NOTES:

1. COORDINATE FINAL FIXTURE MAKE, MODEL AND WATTAGE WITH ARCHITECT.
2. 75 PERCENT OF THE PERMANENTLY INSTALLED LIGHTING FIXTURES IN DWELLING UNITS SHALL CONTAIN HIGH-EFFICACY LAMPS PER 2016 NYCECC R503.1.4 AND R404.1.
3. ALL LIGHT FIXTURE QUANTITIES MUST BE VERIFIED.

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ELECTRICAL SPECIFICATIONS

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.

C. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOROPERATION,MAINTANANCE AND REPAIR, MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

E. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY 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 AND CHARGES IN MAKING UP THE WORK PROPOSAL.

F. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES. AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

H. 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.

I. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.

J. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.

K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT ND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

L. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

M. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, 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.

N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.

2. GENERAL PROVISIONS FOR ELECTRICAL WORK:

A. DEFINITIONS:

1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE. AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5) "WIRING": RACEWAY. FITTINGS, WIRE, BOXES, AND RELATED ITEMS.

6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.

C. QUALITY ASSURANCE

1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.

3) CURRENT CHARACTERISTICS:

a. SERVICE: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

4) HEIGHTS OF OUTLETS:

a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:

– RECEPTACLES AND TELEPHONES: 1 FT–6 IN.

– WALL SWITCHES: 4 FT–0 IN.

– WALL FIXTURES: 7 FT–0 IN.

– MOTOR CONTROLLERS: 5 FT–0 IN.

– CLOCKS: 7 FT 6 IN

b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.

D. PRODUCT DELIVERY, STORAGE AND HANDLING

1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED, CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

E. MATERIALS

1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.

2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.

3) INSERTS AND SUPPORTS:

a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.

– SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.

– MULTI–ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.

– CLIP FORM NAILS FLUSH WITH INSERTS.

– MAXIMUM LOADING 75 PERCENT OF RATING.

b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.

c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.

d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.

F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD–APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.

G. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

H. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.

I. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

3. SCOPE OF WORK:

A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE 2008 NATIONAL ELECTRICAL CODE (NEC) NYC AMENDMENTS, AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.

B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.

C. 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 FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER, DATE IS EARLIER, THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

E. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE NYC BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

F. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.

4. SHOP DRAWINGS

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

1) PROJECT NAME AND LOCATION

2) NAME OF ARCHITECT AND ENGINEER

3) ITEM IDENTIFICATION

4) APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:

1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

1) SAFETY/DISCONNECT SWITCHES

2) FUSES

3) CIRCUIT BREAKERS

4) PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).

5) RACEWAYS

6) WIRE AND CABLE

7) WALL SWITCHES

8) INSERTION RECEPTACLES

9) MOMENTARY CONTACT SWITCHES

10) TIME SWITCHES

11) LIGHTING FIXTURES.

E. ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING. PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.

5. AS–BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8–1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS–BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS–BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

6. LOW–VOLTAGE DISTRIBUTION EQUIPMENT:

A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.

B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.

C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO–POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE–POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE–BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK–MAKE– QUICK–BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.

7. FUSES:

A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW–PEAK DUAL–ELEMENT TIME–DELAY LPN–RK (AMP)SP (250V) /LPS–RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

B. MOTOR CIRCUITS – ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW–PEAK DUAL–ELEMENT TIME–DELAY LPN–RK (AMP)SP (250V) /LPS–RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.

D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.

E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL–MAGNETIC, QUICK–MAKE–QUICK–BREAK, BOLT–ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP–FREE HANDLE. MULTI–POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT–TRIPPING, OPEN A ND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

1) 120 VOLTS, 100–AMP FRAME: 10,000 AMPS, 1 POLE.

2) 120/240 VOLTS, 225–AMP FRAME: 22,000 AMPS MINIMUM

8. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:

A. THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS. ALL THROUGH BUS SHALL BE INSULATED.

B. NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH AND DOOR INTERLOCKS. COVERS TO BE PAD–LOCKABLE.

C. PANELBOARD SHALL BE CONSTRUCTED OF CODE–GAUGE STEEL, GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAME SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.

D. ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).

E. DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.

F. DISCONNECTS

1) DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.

2) SWITCHING MECHANISM SHALL BE QUICK–MAKE, QUICK–BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE MECHANICALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.

3) SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.

4) SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.

G. INSTALLATION

1) DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.

H. IDENTIFICATION

1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.

2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF–TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF ¼" HIGH WHITE LETTERING.

I. DISTRIBUTION AND SUB–DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

J. POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMR", AS MANUFACTURED BY ATLAS SWITCH COMPANY, ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.

K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

9. RACEWAYS:

A. PROVIDE RACEWAYS COMPLETE WITH BOXES, FITTINGS AND ACCESSORIES. CONDUIT OR TUBING SIZES REFERRED TO IN SPECIFICATIONS AND ON DRAWINGS ARE NOMINAL DIAMETERS. MINIMUM DIAMETER SHALL BE 3/4 IN.

B. MATERIALS

1) RACEWAYS:

a. RIGID STEEL CONDUIT: FULL–WEIGHT PIPE, GALVANIZED, THREADED.

b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADLESS.

c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.

d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 CAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW–ON.

e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW–ON.

2) FITTINGS AND ACCESSORIES:

a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.

b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.

c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.

3) BOXES:

a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1–1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2–3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1–1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE: FURNISH BLANK COVER. OFFSET BACK–TO–BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION.

b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW–ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

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ELECTRICAL SPECIFICATIONS (CONT.)

C. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAP HANGERS, OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB. FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM. FOR ABOVE FLOOR FITTINGS TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED FOR OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK, MACHINE SCREWS ON METAL, BEAM CLAMPS ON FRAMEWORK, WOOD SCREWS ON WOOD, AND PAN THROUGH STRAPS IN METAL DECK. NAILS, RAWL PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISHPLATES.

EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS, IN MASONRY AND POURED CONCRETE, RUN VERTICALLY ONLY.

MAINTAIN GROUNDING CONTINUITY OF INTERRUPTED METALLIC RACEWAYS WITH GROUND CONDUCTOR, AND IN FLEXIBLE CONDUIT FOR FEEDERS AND MOTOR TERMINAL CONNECTIONS.

EMPTY RACEWAYS OVER 10 FT LONG: PROVIDE FISH OR PULL WIRE, GALVANIZED OR NYLON ROPE.

RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT MALE THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS, CRC-COLD GALVANIZED. EMT SHALL BE PERMITTED FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS, HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS. FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

ALL COUPLINGS SHALL BE COMPRESSION TYPE. NO SET SCREW FITTINGS.

EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED IN EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION.

RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT.

D. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS MANUFACTIURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300.19(A).

ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.

E. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITIONS ROOMS.

F. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

10. WIRE AND CABLE:

A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.

D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCEA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).

E. ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE 'BX'.

F. COLOR CODING SHALL BE AS FOLLOWS:

120/208 VOLT SYSTEM:	277/480 VOLT SYSTEM:
BLACK FOR A PHASE	BROWN FOR A PHASE
RED FOR B PHASE	ORANGE FOR C PHASE
BLUE FOR C PHASE	YELLOW FOR C PHASE

1) NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

G. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS.

H. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.

I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/460 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

J. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

K. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

11. WIRING DEVICES:

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED, UNLESS OTHERWISE NOTED. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED.

B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/277 VOLT, AC. SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).

C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.

1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).
2) USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT,

D. INSERTION RECEPTACLES SHALL BE HOSPITAL GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT. GROUNDED, EXCEPT AS NOTED.

1) GROUND FAULT INTERRUPTER RECEPTACLES:

A. 20 AMP DUPLEX FEED-THROUGH TYPE. SIMILAR TO NO. GF8300.

E. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.

F. COLORS: COORDINATE COLORS WITH ARCHITECT.

G. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.

B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.

C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ETI AND CBM APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALLASTS; NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL.

D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLY WITH NEMA SSL 1 "ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS". LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.

E. DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE, DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.

F. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.

G. FLUORESCENT LIGHTING FIXTURES, INCLUDING GENERAL CONSTRUCTION, LAMPS AND BALLASTS SHALL CONFORM TO THE ENERGY EFFICIENCY REQUIREMENTS OF CONSOLIDATED EDISON CO. AND QUALITY FOR A UTILITY REBATE TO OWNER UNDER CON EDISON'S ENLIGHTENED ENERGY LIGHTING REBATE PROGRAM. CONTRACTOR SHALL COORDINATE REBATE PROGRAM WITH CON EDISON AND ARRANGE FOR CON EDISON TO PERFORM A SURVEY TO INVENTORY ALL EXISTING FIXTURES PRIOR TO DEMOLITION.

H. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MEA APPROVED FOR USE IN NEW YORK CITY. AC POWERED WITH PREMIUM LONG-LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3-HOUR RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. GROUNDING AND BONDING:

A. PROVIDE GROUNDING SYSTEM IN ACCORDANCE WITH (2011 NATIONAL ELECTRICAL CODE WITH NYC AMENDMENTS), AND THESE SPECIFICATIONS. THE WIRING SYSTEM SHALL BE INSTALLED AS REQUIRED TO PROVIDE A CONTINUOUSLY GROUNDED SYSTEM. WHERE FLEXIBLE CONDUIT IS USED FOR PART OF A CONDUIT RUN, EXCEPT LIGHTING BRANCH CIRCUITS, AN INSULATED GROUNDING CONDUCTOR SHALL BE PROVIDED IN THE CONDUIT AND CONNECTED TO GROUNDING BUSHINGS AT EACH END OF THE RUN.

B. USE EXOTHERMIC WELDING PROCESS FOR INACCESSIBLE CONNECTIONS.

C. EXTEND EXISTING SYSTEM GROUND TO INCLUDE ALL THE ELECTRICAL EQUIPMENT IN THE SCOPE OF WORK.

D. WHERE FLEXIBLE METALLIC CONDUIT IS USED AN INTERNAL BONDING CONDUCTOR SHALL BE INSTALLED.

E. IN ADDITION, FURNISH A SEPARATE INSULATED GREEN EQUIPMENT GROUND CONDUCTOR WHERE INDICATED ON DRAWINGS AND FOR THE FOLLOWING BRANCH CIRCUITS:
1) CIRCUITS SERVING ANY WALL BOX DIMMER.

2) CIRCUITS SERVING ANY ISOLATED GROUND RECEPTACLES. TERMINATE GROUND DIRECTLY AT AN EQUIPMENT GROUNDING CONDUCTOR TERMINAL OF THE SOURCE AT THE SOURCE , OR AS OTHER WISE NOTED ON DRAWINGS.

3) CIRCUITS SERVING ANY DUPLEX OR SIMPLEX COMPUTER RECEPTACLES

4) ANY CIRCUIT SERVED VIA AN ISOLATION TRANSFORMER OR COMPUTER POWER DISTRIBUTION UNIT.

14. PANELBOARDS:

A. PANELBOARDS SHALL BE OF THE DEAD FRONT TYPE MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYED ALIKE.

B. CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. MINIMUM GUTTER SPACES SHALL BE 5-3/4". SIDES, TOP AND BOTTOM, INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.

C. LOCKING TABS SHALL BE PROVIDED ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, FIRE ALARM SYSTEM, SECURITY SYSTEMS AND OTHER EMERGENCY OR CRITICAL EQUIPMENT AND AS NOTED ON THE CONTRACT DRAWINGS. A TOTAL OF 5 SPARE LOCKING TABS SHALL BE FURNISHED TO THE OWNER.

D. BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.

E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. COVERS SHALL BE HINGED DOOR-IN-DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911 KEY.

F. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

G. ALL STANDARD PANELBOARDS SHALL BE A MINIMUM OF 20" WIDE AND 5 3/4" DEEP.

H. FURNISH ALL PANELBOARDS WITH FEED-THRU LUGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

I. ALL NEW PANELBOARDS SHALL BE PROVIDED WITH AN ENGRAVED WHITE CORE LAMACOID NAMEPLATE, WITH 3/4 IN. WHITE LETTERING ON A BLACK BACKGROUND, WITH DESIGNATION LISTED (PANELBOARD NAME), FASTENED WITH EPOXY CEMENT OR OVAL HEAD CHROME PLATED MACHINE SCREWS.

J. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.

K. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.

L. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG.

M. SHORT CIRCUIT RATING OF PANELBOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANELBOARD, BUT IN NO CASE LESS THAN 10,000 AMPERES R.M.S. SYMMETRICAL FOR 208Y/120 VOLT SYSTEM AND 14,000 AMPERES R.M.S. SYMMETRICAL FOR 480Y/277 VOLT SYSTEM. SERIES RATED PANELBOARDS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

N. FOR ALL EXISTING PANELBOARDS, CONTRACTOR SHALL PROVIDE NEW CIRCUIT BREAKERS TO REPLACE EXISTING AS REQUIRED AS INDICATED ON DRAWINGS.

15. LOADCENTERS

A. LOAD CENTERS SHALL COMPLY WITH UL67 AND MEET FEDERAL SPECIFICATION W-P-115C.

B. CIRCUIT BREAKERS SHALL BE OF THE PLUG-IN, THERMAL MAGNETIC, MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. TANDEM OR DUPLEX TYPE CIRCUIT BREAKERS SHALL NOT BE PERMITTED. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.

C. BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.

D. ENCLOSURES MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR FLUSH MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYED ALIKE. MINIMUM GUTTER SPACES SHALL BE 5-3/4". SIDES, TOP AND BOTTOM, INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED. ALL LOAD CENTERS SHALL BE 14 ⅜" WIDE AND 3 ⅜" DEEP.

E. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.

F. SHORT CIRCUIT RATING OF PANELBOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANELBOARD, BUT IN NO CASE LESS THAN 22,000/10,000 AMPERES R.M.S. SYMMETRICAL SERIES RATING FOR 208Y/120 VOLT. SERIES RATED LOAD CENTERS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

16. SMOKE ALARMS

A. PROVIDE SOLID STATE, PHOTOELECTRIC TYPE, HARD-WIRED SMOKE ALARM WITH 9V BATTERY BACKUP AND INTEGRAL TEMPORAL PATTER EVACUATION HORN. EDWARDS 517 SERIES OR APPROVED EQUAL.

B. THREE POSITION TEST FEATURE THAT SIMULATES ACTUAL SMOKE CONDITIONS. SHALL CONTAIN MAINTENANCE INDICATOR.

C. PROVIDE WITH INTEGRAL 135 DEGREE F ISOLATED HEAT DETECTION OR INTEGRAL RELAY RATED 0.6A AT 125V AC., AS INDICATED ON THE PLANS AND DRAWINGS.

D. DEVICE SHALL BE RATED TO OPERATE AT A RANGE OF 40°F TO 100°F.

E. UL LISTED TO UL217 AND APPROVED FOR USE IN NEW YORK CITY.

17. TELEPHONE/ DATA/ TELEVISION CABLING SYSTEM

A. PROVIDE COMPLETE SYSTEM CONSISTING OF CABLING/ WIRING, OUTLETS BOXES, SLEEVES AND FISHWIRES AS REQUIRED.

B. EQUIPMENT SHALL BE LATEST MODEL YEAR AVAILABLE IN ACCORDANCE WITH UTILITY COMPANY AND TV PROVIDE REQUIREMENTS.

C. OUTLETS SHALL BE:

1) WALL: 4 IN. SQUARE WITH REDUCING COVER

D. CABLE SHALL BE COMPOSITE CABLE, BELDEN 5353GF, MEETING ANSI/TIA/EIA-570-B RESIDENTIAL INFRASTRUCTURE GRADE 2 WIRING REQUIREMENTS CONSISTING OF:

1) COAXIAL: (2) RG6 DUOBOND PLUS SHIELD - 3.0GHZ
2) DATA: (2) CAT6 - 24AWGUTP, NEC CMR RATED, 3RD PARTY VERIFIED TO TIA/EIA-568-B 2.1
3) FIBER OPTIC: 62.5/125 NM MULTIMODE FIBER OPTIC CABLE

E. RUN COMPOSITE CABLE FROM EACH DATA, TELEPHONE OR TELEVISION LOCATION TO 'NID' BOX IN APARTMENT OR AS INDICATED ON DRAWINGS IF DIFFERENT.

18. INTERCOM SYSTEM

A. EQUIPMENT SPACE REQUIREMENTS:

1) THE TYPICAL HEAD END EQUIPMENT REQUIRES A SPACE 96" WIDE BY 48" HIGH WITH A 36" CLEARANCE FROM THE WALL TO ALLOW SERVING. VERIFY SYSTEM CONFIGURATION WILL DICTATE NECESSARY SPACE.

B. EQUIPMENT SPACE NOTES & RECOMMENDATIONS

1) EQUIPMENT LOCATIONS MUST BE IN A DRY AREA WITH AN AVERAGE TEMPERATURE 68°. IF THESE CONDITIONS CAN NOT BE CONFIRMED,PLEASE CONTACT VIRTUAL SERVICE TO DISCUSS OPTIONS.
2) THE EQUIPMENT LAYOUT AND SPACING CAN BE ALTERED TO ACCOMMODATE MANY CONFIGURATIONS.

C. POWER REQUIREMENTS

1) SYSTEM REQUIRES A DEDICATED 20 AMP CIRCUIT FOR THE HEAD END EQUIPMENT. THIS CIRCUIT IS TO BE BROUGHT DIRECTLY INTO SERVICE EQUIPMENT ENCLOSURE USING CONDUIT AND IS TO BE INSTALLED BY THE ELECTRICAL CONTRACTOR. THE CIRCUIT SHOULD TERMINATE INSIDE THE ENCLOSURE IN THE FORM OF FOUR NEMA 5-20P RECEPTACLES.

2) THE HEAD END EQUIPMENT REQUIRES AN ISOLATED GROUND TO BE PROVIDED AND INSTALLED INSIDE THE HEAD END EQUIPMENT ENCLOSURE.

3) ADDITIONAL POWER REQUIREMENTS MAY BE NECESSARY DEPENDING ON SYSTEM CONFIGURATION.

D. LOCK HARDWARE REQUIREMENTS

1) ALL LOCK HARDWARE MUST COMPLY WITH LOCAL BUILDING CODES AND REGULATIONS.

2) ELECTRONIC LOCKS SHOULD BE FAIL-SECURE WHEN ALLOWED BY CODE. IN THE EVENT OF A POWER FAILURE, THE LOCK WILL REMAIN IN THE LOCKED POSITION. ALTERNATIVELY, FAIL-SAFE LOCKS ARE AVAILABLE WHICH BECOME UNLOCKED WHEN POWER FAILS.

3) ALL LOCKS FOR A PROJECT MUST BE OF THE SAME VOLTAGE. IF VOLTAGES DIFFER BETWEEN LOCKS, THERE WILL BE AN ADDITIONAL EQUIPMENT CHARGE AS MULTIPLE POWER SUPPLIES WILL BE REQUIRED.

4) SERVICE REQUIRES 12 VOLT, DIRECT CURRENT LOCKS (12VDC).

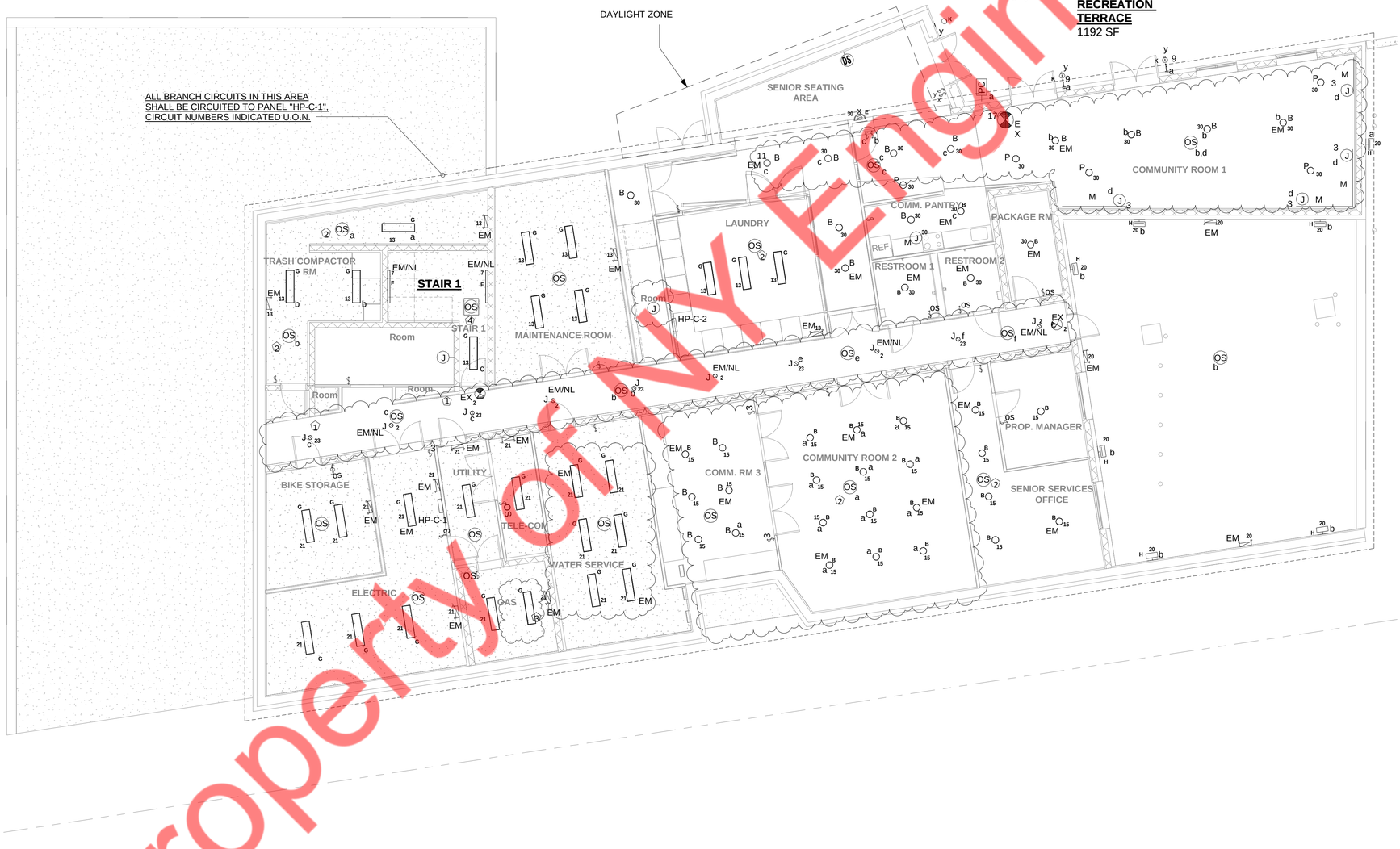
5) LOCKS ARE TO BE RATED ANSI/BHMA GRADE 1

6) LOCKS ARE TO BE RATED FOR CONTINUOUS DUTY WHERE NECESSARY.

18. SUBMETER

THE BFM136 IS A 3-PHASE, MULTI-CHANNEL, MULTI-FUNCTION ENERGY METER.

1) MULTI-CHANNEL SUBMETERING - UP TO 36 SINGLE-PHASE OR 18 TWO-PHASE OR 12 THREE-PHASE SUBMETERS IN A SINGLE DEVICE. ANY COMBINATION OF SINGLE-, TWO-, AND THREE-PHASE CONSUMERS CAN BE CHOSEN UP TO A TOTAL OF 36 CURRENT INPUTS.
2) 3-PHASE/2-PHASE/SINGLE-PHASE METERS (TRUE RMS, VOLTS, AMPS, POWER, POWER FACTOR, NEUTRAL CURRENT)
3) AMPERE/VOLT DEMAND METER
4) IMPORT/EXPORT ENERGY AND POWER DEMANDS
5) AUTOMATIC 120-DAY DAILY PROFILE FOR IMPORT/EXPORT 2 ENERGY AND MAXIMUM DEMAND READINGS (TOTAL AND TARIFF REGISTERS) SEPARATE FOR EACH SUBMETER
6) EVENT RECORDER FOR LOGGING INTERNAL DIAGNOSTIC EVENTS AND SETPOINTS OPERATIONS
7) DATA RECORDERS; PROGRAMMABLE PERIODICAL DATA LOGS SEPARATE FOR EACH SUBMETER
8) EMBEDDED PROGRAMMABLE CONTROLLER (4 CONTROL SETPOINTS, PROGRAMMABLE THRESHOLDS AND DELAYS) SEPARATE FOR EACH SUBMETER
9) EASY TO READ 2-ROW X 16 CHARACTERS LCD DISPLAY WITH BACKLIGHT (BFM136 ONLY)
10) 50/60 HZ OPERATION
11) INTERNAL CLOCK, KEEPING THE CLOCK RUNNING OVER ONE WEEK WITHOUT EXTERNAL POWER.
12) STANDARD RS-485 SERIAL PORT.
13) OPTIONAL SECOND COMMUNICATION PORT.



1 CELLAR LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORKED NOTES:

1. LIGHT FIXTURE TO REMAIN 'ON' CONTINUOUSLY .
2. REFER SHEET 5/E-401 FOR MORE INFORMATION .
3. FIXTURES AND SWITCHES TO BE EXPLOSION PROOF .
4. FIXTURES IN THE STARWAYS ARE CONTROLLED BY RADIO POWER SAVER OCCUPANCY SENSOR (LUTRON) WHICH ALLOWS THE FIXTURE TO BE DE-ENERGIZED TO HAVE 50% BRIGHTNESS WHEN NO OCCUPACY AND HAVE FULL BRIGHTNESS IF THE SPACE IS OCCUPIED.

LIGHTING DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.

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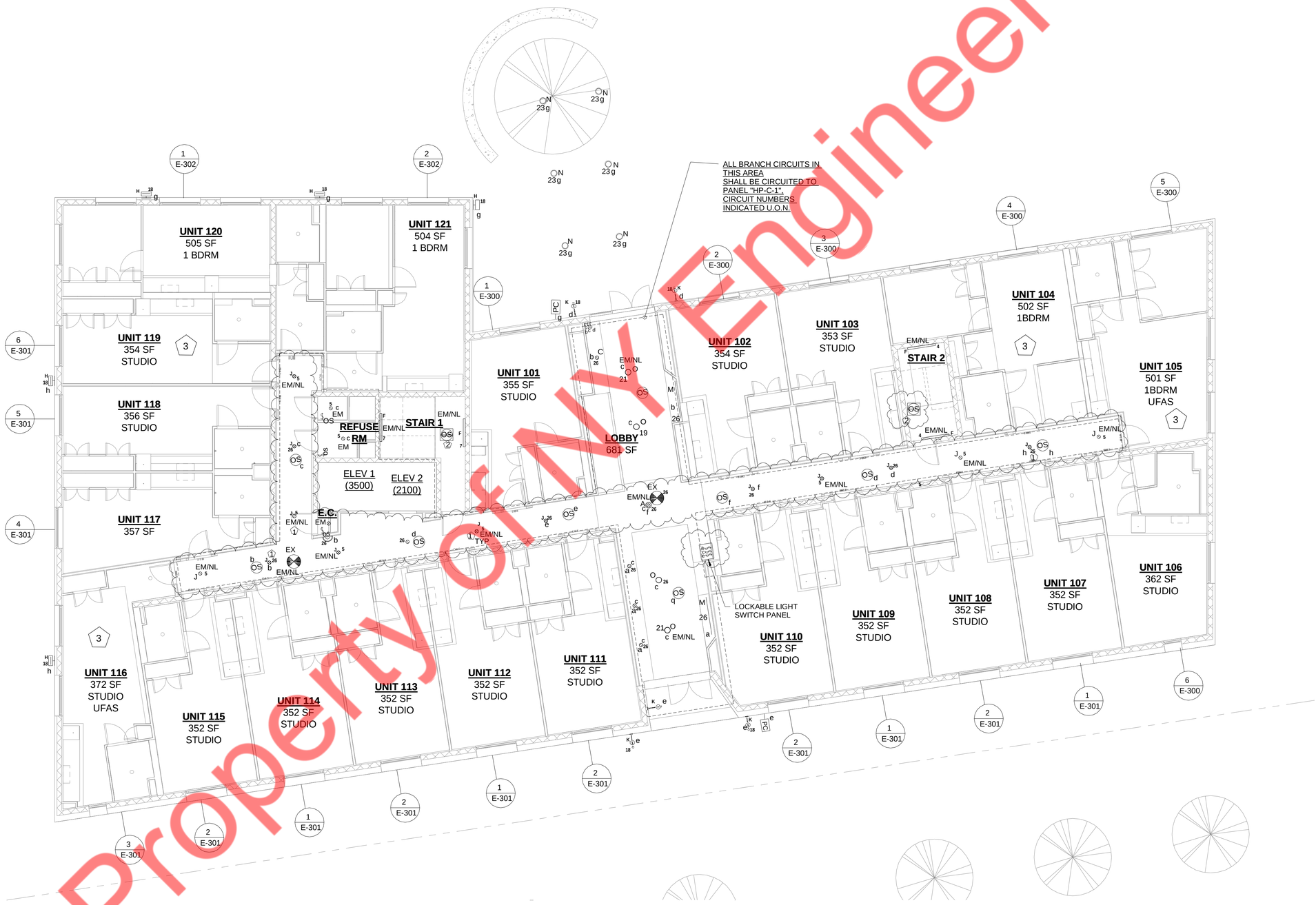

1 GROUND FLOOR LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORKED NOTES:

1. LIGHT FIXTURE TO REMAIN 'ON' CONTINUOUSLY .
2. FIXTURES IN THE STAIRWAYS ARE CONTROLLED BY RADIO POWER SAVER OCCUPANCY SENSOR (LUTRON) WHICH ALLOWS THE FIXTURE TO BE DE-ENERGIZED TO HAVE 50% BRIGHTNESS WHEN NO OCCUPACY AND HAVE FULL BRIGHTNESS IF THE SPACE IS OCCUPIED.
3. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

LIGHTING DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.

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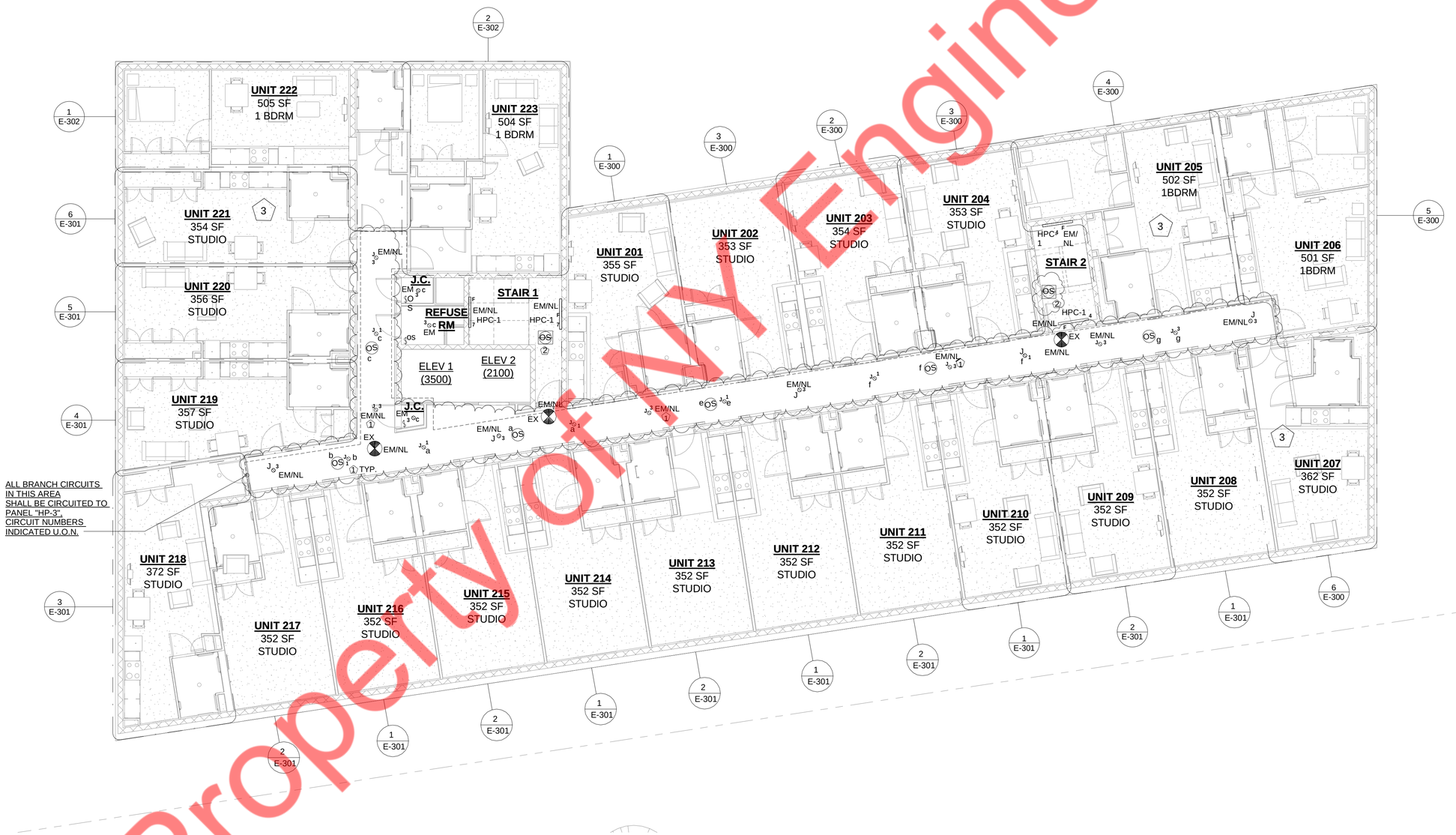

1 2ND FLOOR LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORKED NOTES:

1 LIGHT FIXTURE TO BE REMAIN 'ON' CONTINUOUSLY .

2 FIXTURES IN THE STAIRWAYS ARE CONTROLLED BY RADIO POWER SAVER OCCUPANCY SENSOR (LUTRON) WHICH ALLOWS THE FIXTURE TO BE DE-ENERGIZED TO HAVE 50% BRIGHTNESS WHEN NO OCCUPACY AND HAVE FULL BRIGHTNESS IF THE SPACE IS OCCUPIED.

3 ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

LIGHTING DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.

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1 3RD FLOOR LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORKED NOTES:

1. LIGHT FIXTURE TO REMAIN 'ON' CONTINUOUSLY .
2. FIXTURES IN THE STAIRWAYS ARE CONTROLLED BY RADIO POWER SAVER OCCUPANCY SENSOR (LUTRON) WHICH ALLOWS THE FIXTURE TO BE DE-ENERGIZED TO HAVE 50% BRIGHTNESS WHEN NO OCCUPACY AND HAVE FULL BRIGHTNESS IF THE SPACE IS OCCUPIED.
3. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

LIGHTING DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.

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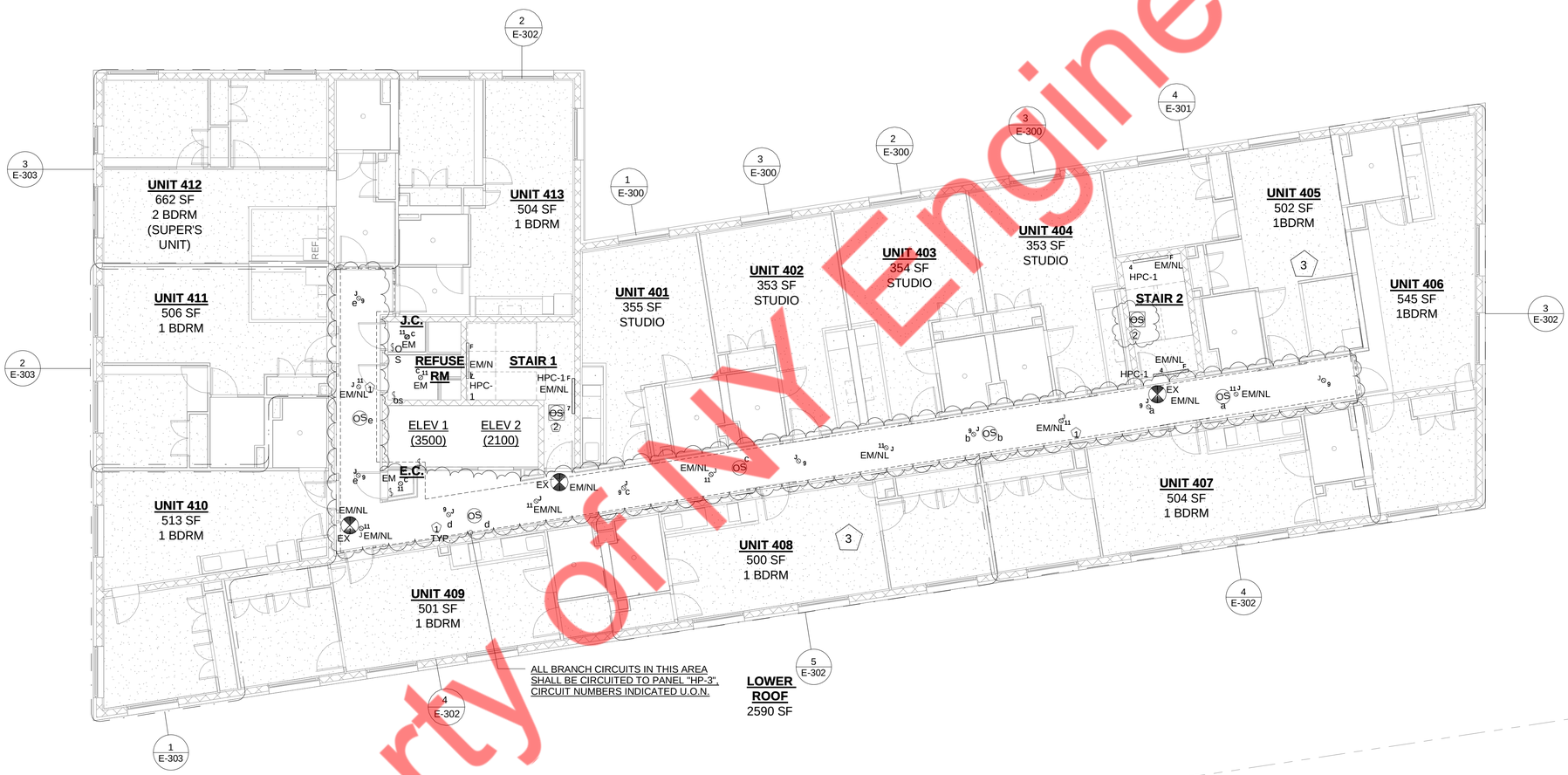

1 4TH FLOOR LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORKED NOTES:

1. LIGHT FIXTURE TO REMAIN 'ON' CONTINUOUSLY .
2. FIXTURES IN THE STAIRWAYS ARE CONTROLLED BY RADIO POWER SAVER OCCUPANCY SENSOR (LUTRON) WHICH ALLOWS THE FIXTURE TO BE DE-ENERGIZED TO HAVE 50% BRIGHTNESS WHEN NO OCCUPACY AND HAVE FULL BRIGHTNESS IF THE SPACE IS OCCUPIED.
3. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

LIGHTING DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.
3. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

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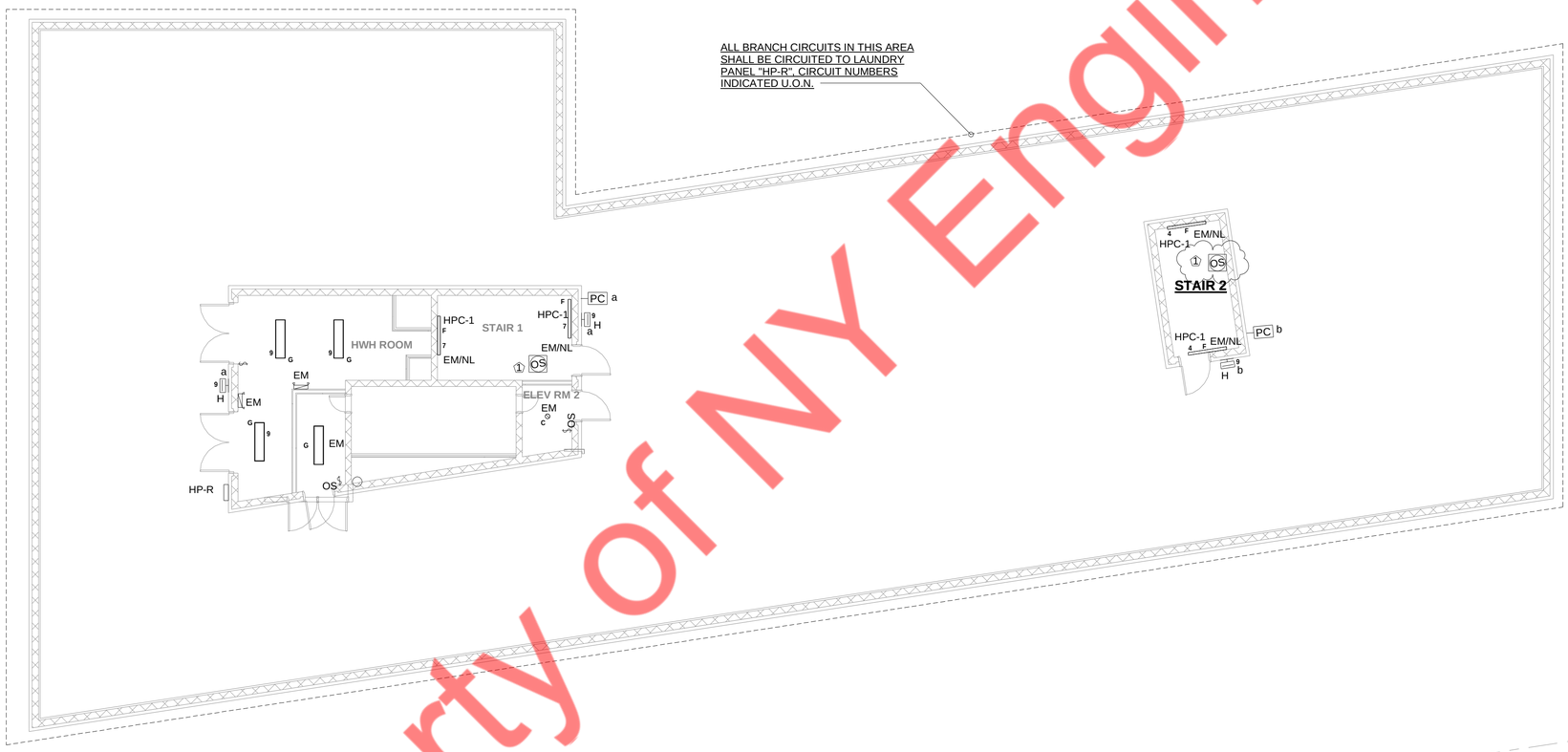

1 ROOF LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORKED NOTES:

1 FIXTURES IN THE STAIRWAYS ARE CONTROLLED BY RADIO POWER SAVER OCCUPANCY SENSOR (LUTRON) WHICH ALLOWS THE FIXTURE TO BE DE-ENERGIZED TO HAVE 50% BRIGHTNESS WHEN NO OCCUPACY AND HAVE FULL BRIGHTNESS IF THE SPACE IS OCCUPIED.

LIGHTING DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.

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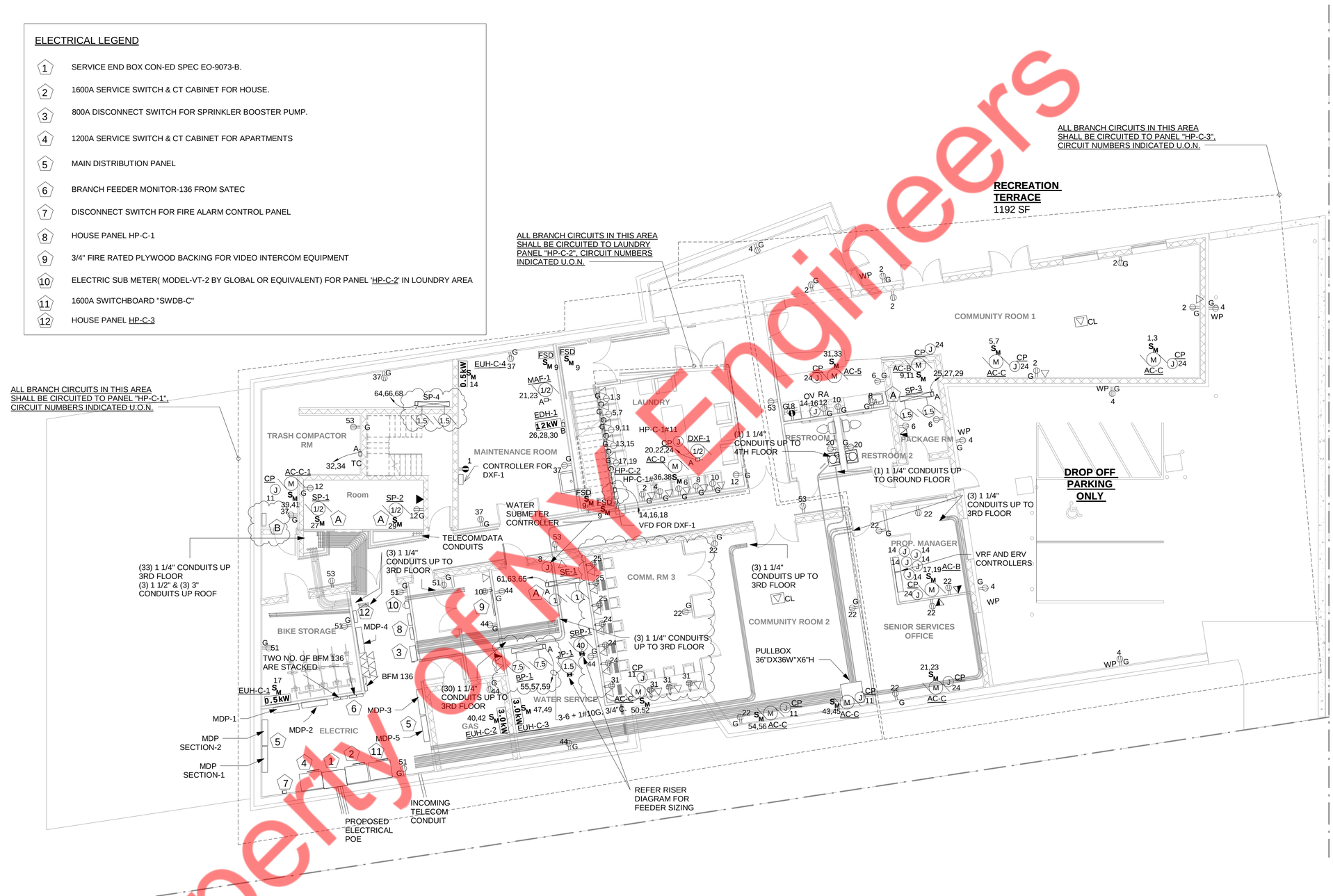
ELECTRICAL LEGEND

1. SERVICE END BOX CON-ED SPEC EO-9073-B.
2. 1600A SERVICE SWITCH & CT CABINET FOR HOUSE.
3. 800A DISCONNECT SWITCH FOR SPRINKLER BOOSTER PUMP.
4. 1200A SERVICE SWITCH & CT CABINET FOR APARTMENTS
5. MAIN DISTRIBUTION PANEL
6. BRANCH FEEDER MONITOR-136 FROM SATEC
7. DISCONNECT SWITCH FOR FIRE ALARM CONTROL PANEL
8. HOUSE PANEL HP-C-1
9. 3/4" FIRE RATED PLYWOOD BACKING FOR VIDEO INTERCOM EQUIPMENT
10. ELECTRIC SUB METER(MODEL-VT-2 BY GLOBAL OR EQUIVALENT) FOR PANEL 'HP-C-2' IN LOUNDRY AREA
11. 1600A SWITCHBOARD "SWDB-C"
12. HOUSE PANEL HP-C-3



1 CELLAR ELECTRICAL POWER PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORK NOTE:

A. COORDINATE LOCATION OF SEWAGE EJECTOR AND SUMP WITH THE PLUMBING ENGINEER'S DRAWING.

B. REFER TO CELLAR PLUMBING PLAN FOR SCOPE/LOCATION OF HEAT TRACE CABLE AND ASSOCIATED EQUIPMENT SPECIFICATION. REFER DWG. E-600.00 FOR ELECTRICAL SPECIFICATIONS.

POWER DRAWING NOTES:

1. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO PANEL AS MENTIONED ON PLANS, CIRCUIT NUMBER INDIACATED, U.O.N
2. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. E-003.00 & E-004.00 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS
3. E.C. TO COORDINATE WITH PLUMBING CONTRACTOR FOR INSTALLATION OF HEAT TRACING SYSTEM.

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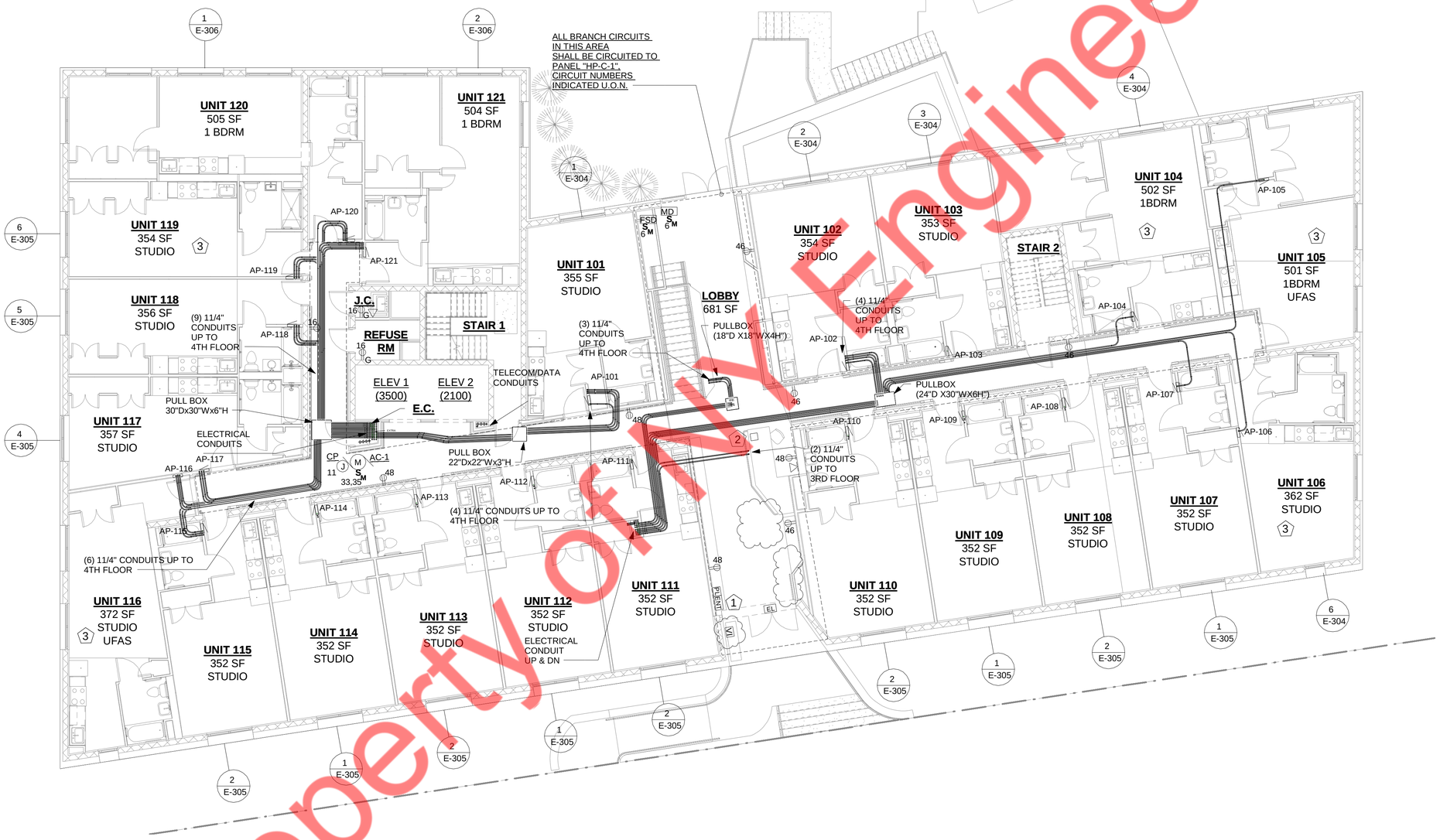


1 GROUND FLOOR ELECTRICAL POWER PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

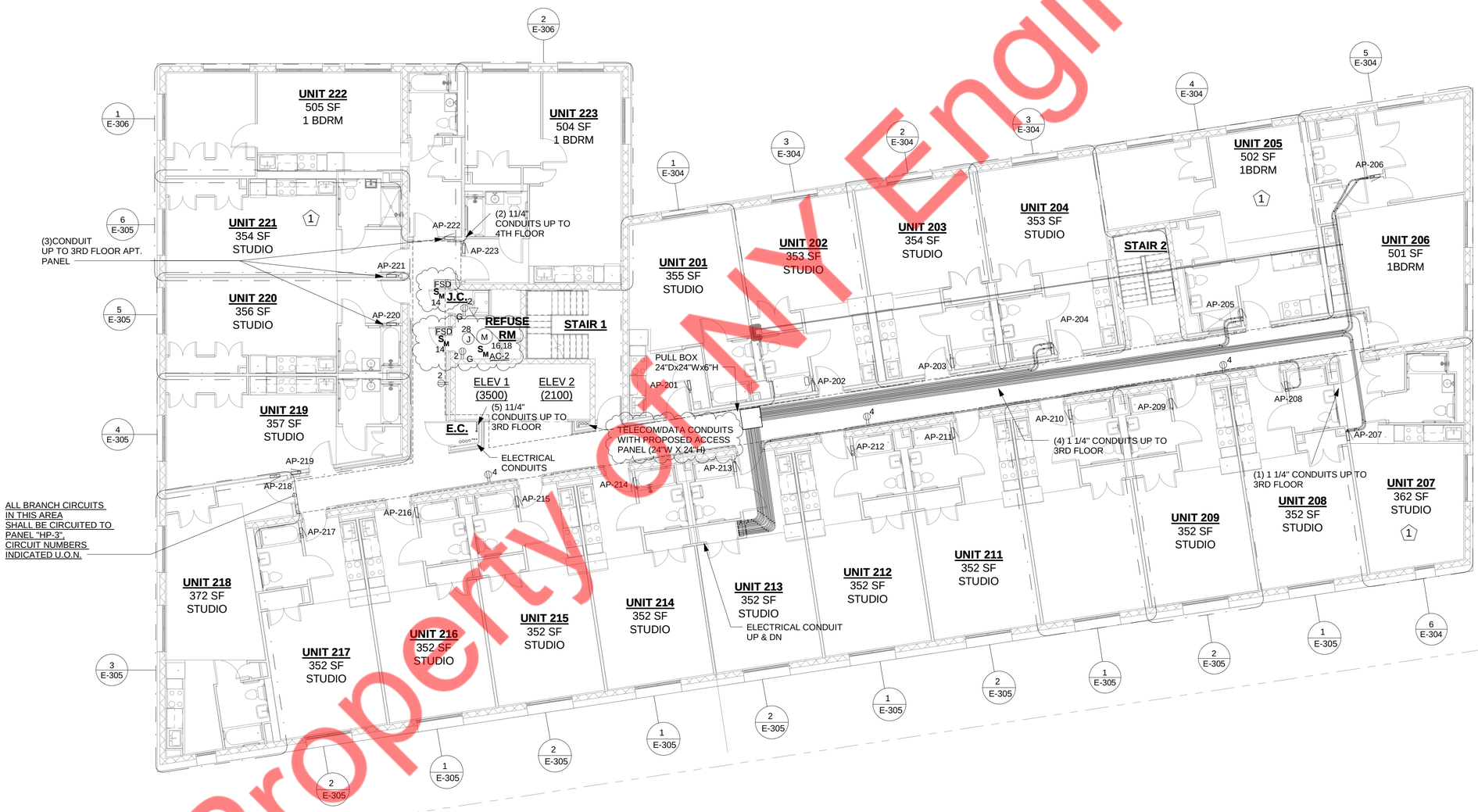
KEYED WORK NOTE:

1. REFER DETAIL #1/E-402.00 FOR MORE INFROMATION.
2. VIDEO INTEGRATED SERVER FOR INTERCOM SYTEM FEED TO SECURITY DESK. CORDINATE WITH SECURITY VENDOR/CONTRACTOR FOR MORE DETAILS.
3. ELECTRICAL CONTRACTOR TO COORDINATE RECEPTACLE HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

POWER DRAWING NOTES:

1. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO PANEL AS MENTIONED ON PLANS, CIRCUIT NUMBER INDIACATED, U.O.N
2. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. E-003.00 & E-004.00 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS

Property of NY Engineers



1 2ND FLOOR ELECTRICAL POWER PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORK NOTE:

1 ELECTRICAL CONTRACTOR TO COORDINATE RECEPTACLE HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

POWER DRAWING NOTES:

1. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO PANEL AS MENTIONED ON PLANS, CIRCUIT NUMBER INDIACATED, U.O.N

2. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. E-003.00 & E-004.00 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS

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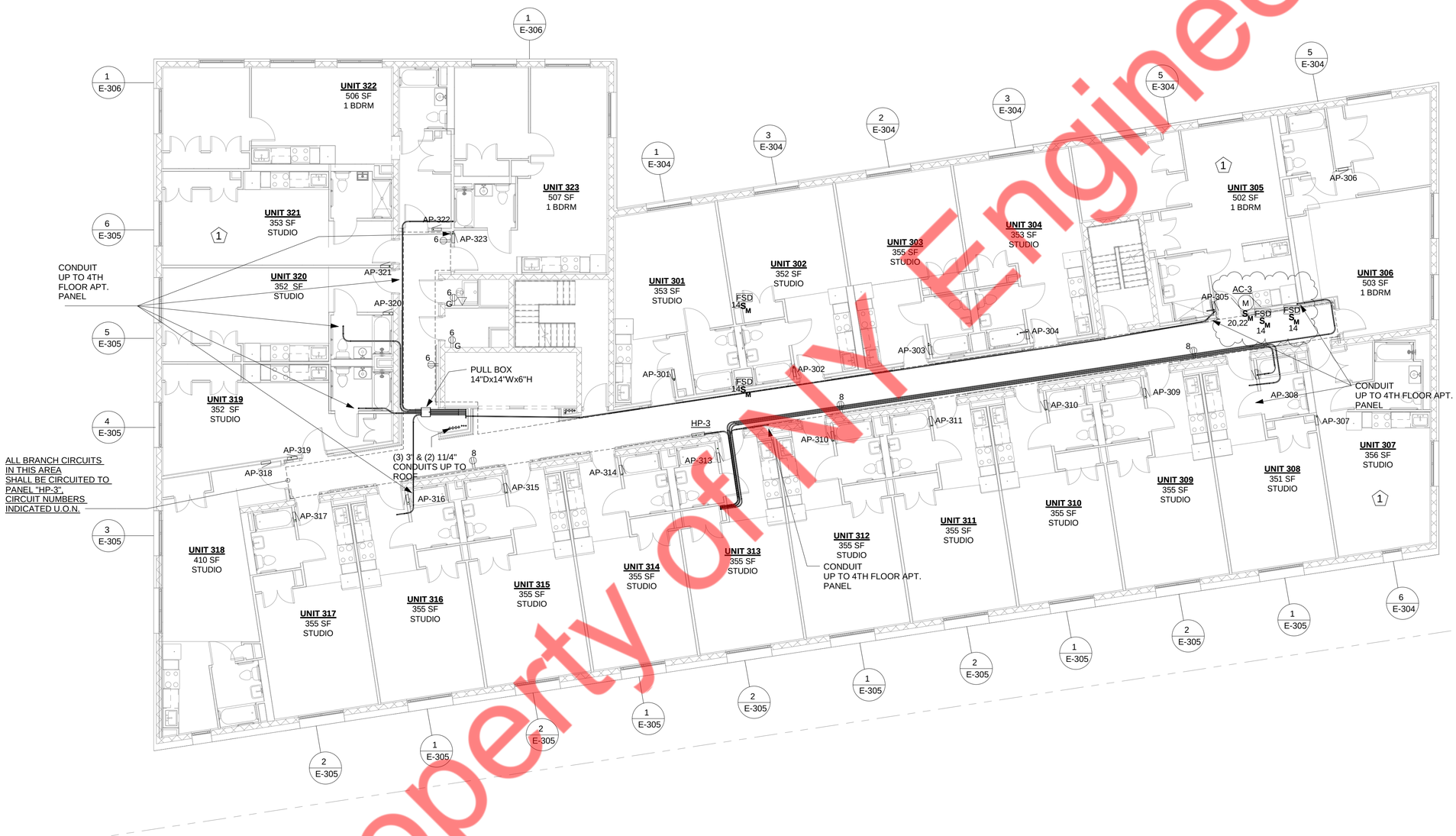

1 3RD FLOOR ELECTRICAL POWER PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORK NOTE:

1 ELECTRICAL CONTRACTOR TO COORDINATE RECEPTACLE HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

POWER DRAWING NOTES:

1. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO PANEL AS MENTIONED ON PLANS, CIRCUIT NUMBER INDIACATED, U.O.N

2. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. E-003.00 & E-004.00 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS

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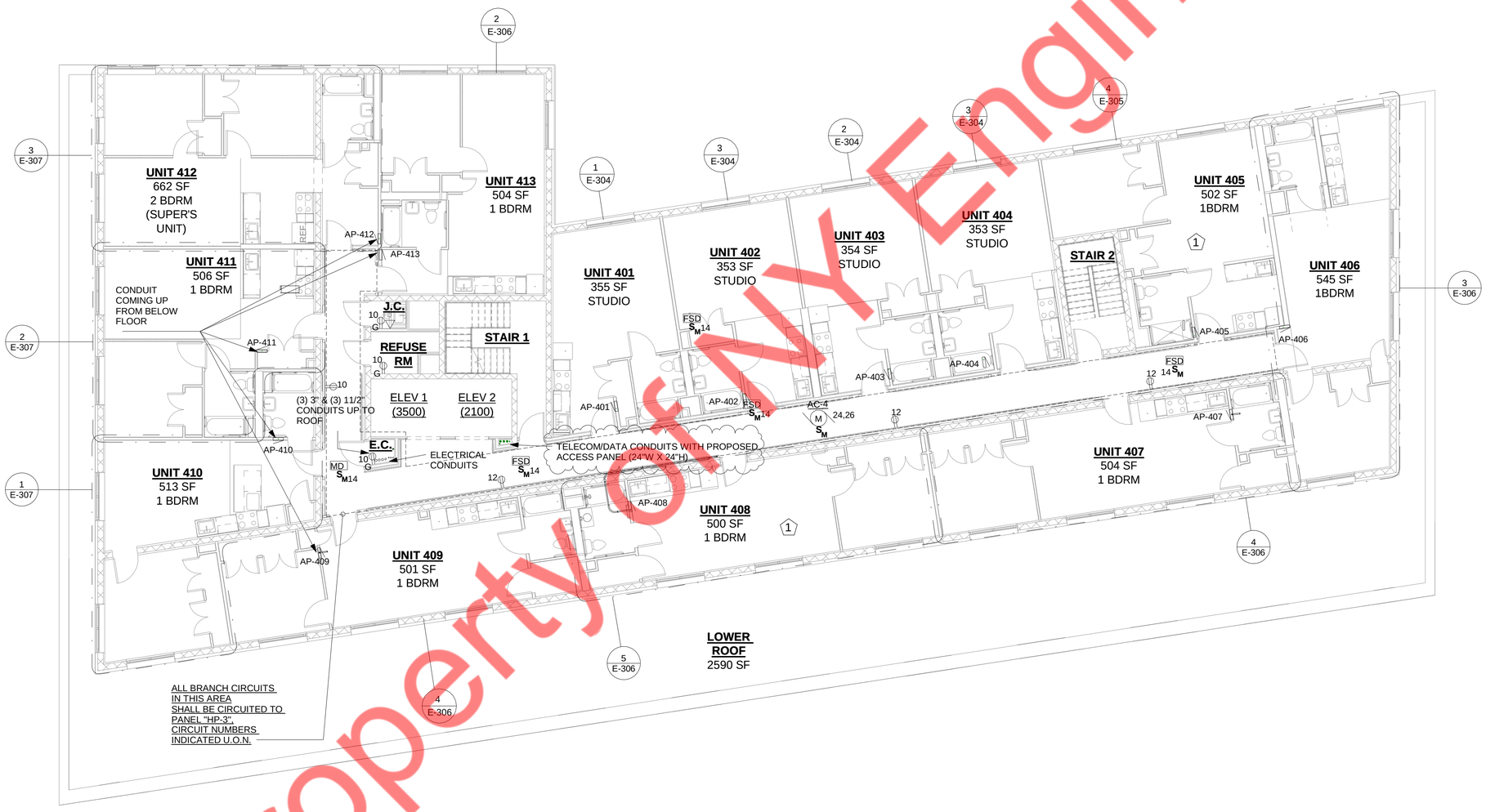


1 4TH FLOOR ELECTRICAL POWER PLAN
1/8" = 1'-0"

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORK NOTE:

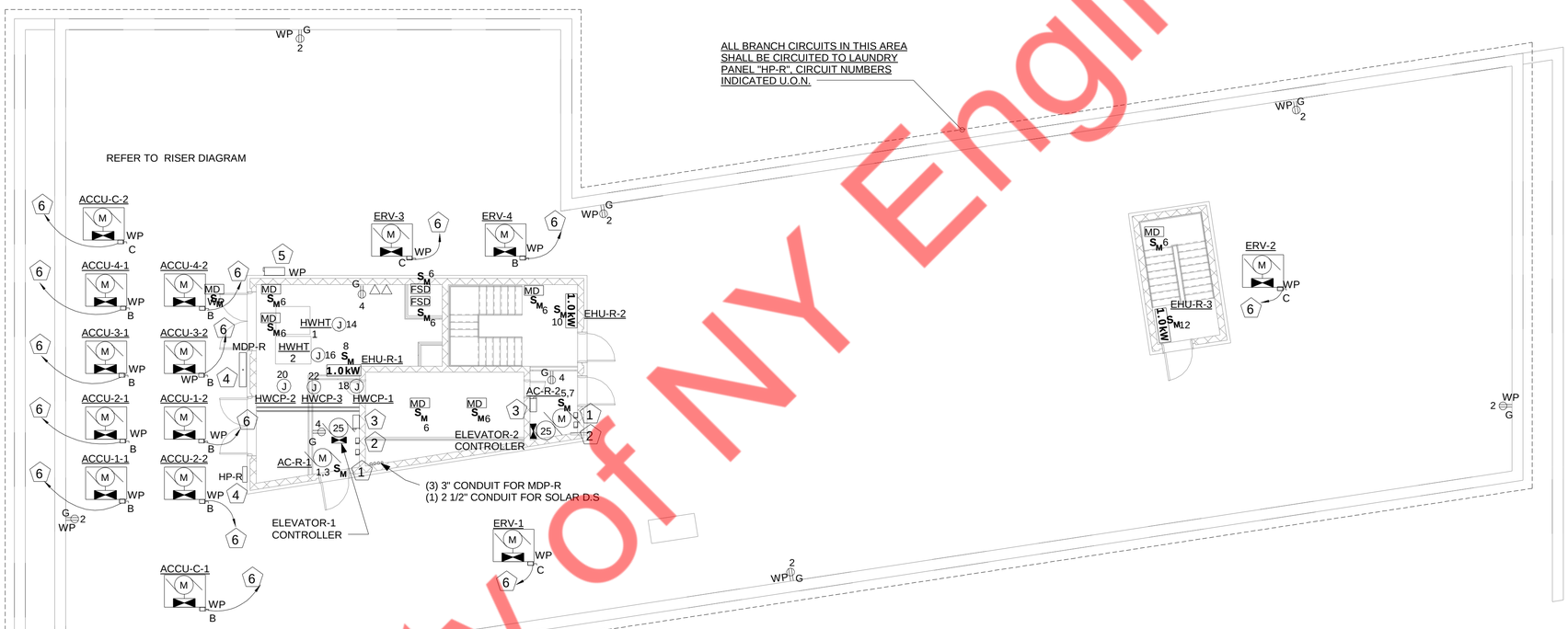
1 ELECTRICAL CONTRACTOR TO COORDINATE RECEPTACLE HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

POWER DRAWING NOTES:

1. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO PANEL AS MENTIONED ON PLANS, CIRCUIT NUMBER INDIACATED, U.O.N

2. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. E-003.00 & E-004.00 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS

Property of NLY Engineers



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

GENERAL NOTE:

1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.

KEYED WORK NOTES:

1. 30AS/20AF/240V DISCONNECT SWITCH FOR ELEVATOR CAB LIGHTING
2. 30AS/20AF/240V DISCONNECT SWITCH FOR ELEVATOR CAB AUX. POWER.
3. 200AS/150AF/240V DISCONNECT SWITCH FOR ELEVATOR CONTROLLER
4. PROVIDE NEMA 3R ENCLOSURE FOR PANEL' HP-R' AND 'MDP-R'
5. 200AS/200AF/240V DISCONNECT SWITCH FOR SOLAR PANEL
6. REFER TO RISER DIAGRAM ON SHEET NO. E-500 FOR BREAKER SIZE AND WIRE SIZE

POWER DRAWING NOTES:

1. ALL BRANCH CIRCUITS HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO PANEL AS MENTIONED ON PLANS, CIRCUIT NUMBER INDIACATED, U.O.N

2. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. E-003.00 & E-004.00 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS

Property of NY Engineers

LIGHTING DRAWING NOTES:

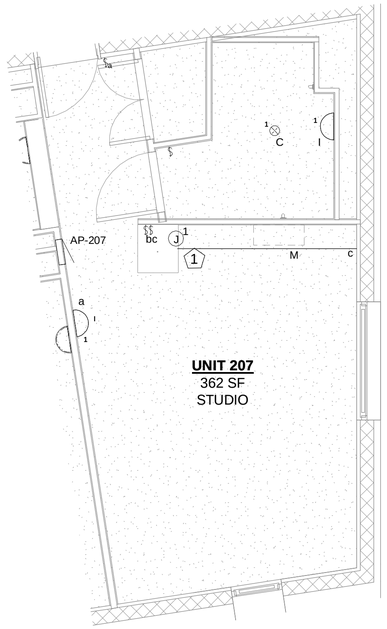
1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS .
3. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.

KEYED WORK NOTE:

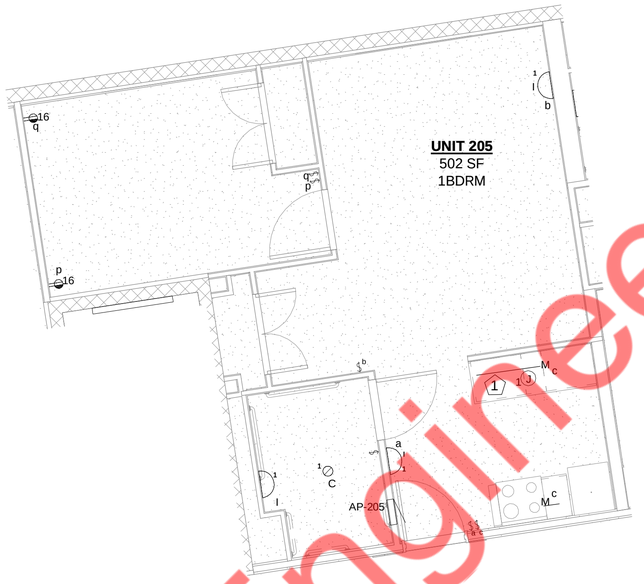
(1) PROVIDE ROCKER SWITCH FOR UNDERCABINET TASK LIGHT.COORDINATE WITH ARCHITECT FOR FINAL FIXTURE MANUFACTURER AND MODEL.

GENERAL NOTE:

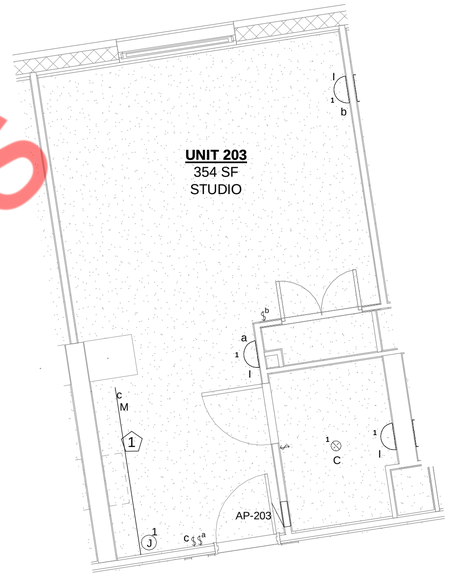
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.



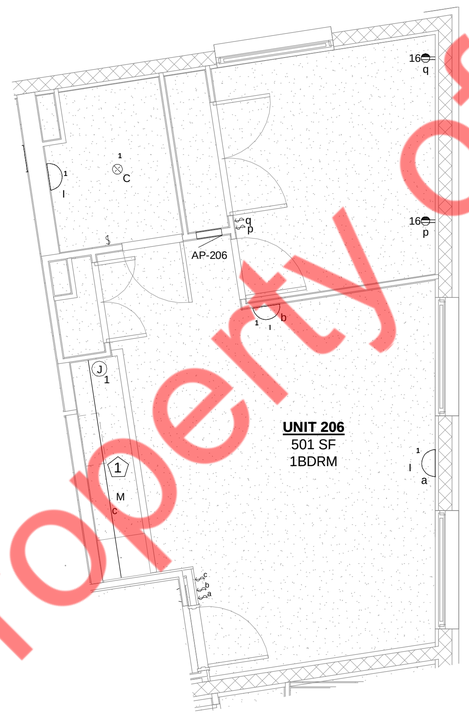
6 UNIT 106, 207, 307 - STUDIO UNIT
1/4" = 1'-0"



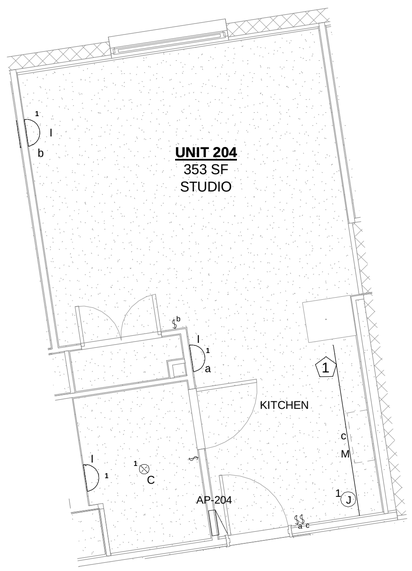
4 UNIT 104, 205, 305, 405 - 1 BEDROOM UNIT
1/4" = 1'-0"



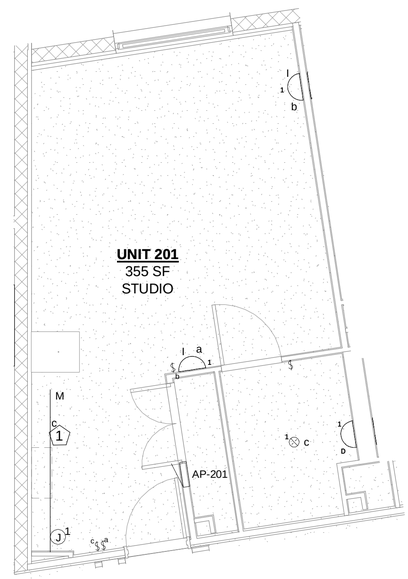
2 UNIT 102,111, 203,209, 303, 403 - STUDIO UNIT
1/4" = 1'-0"



5 UNIT 105(UFAS), 206, 306 - 1 BEDROOM UNIT
1/4" = 1'-0"



3 UNIT 103, 202, 204, 302, 304, 402, 404 - STUDIO UNIT
1/4" = 1'-0"



1 UNIT 101, 201, 303, 401 - STUDIO UNIT
1/4" = 1'-0"

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LIGHTING DRAWING NOTES:

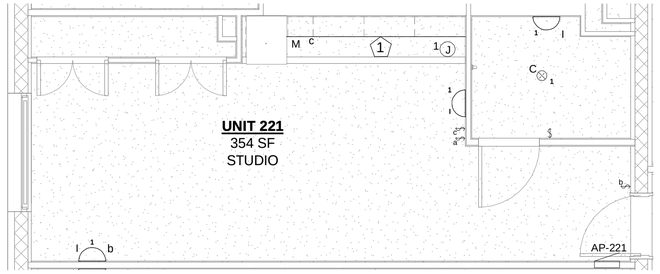
1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS .
3. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.

KEYED WORK NOTE:

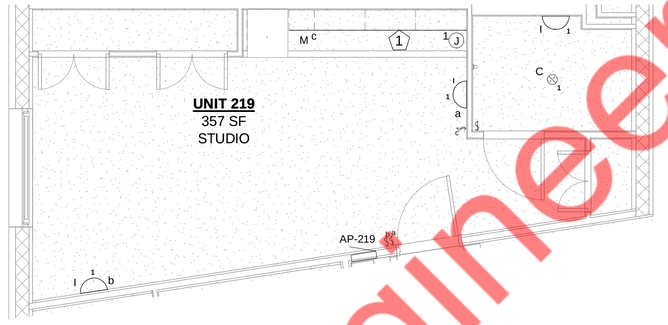
(1) PROVIDE ROCKER SWITCH FOR UNDERCABINET TASK LIGHT.COORDINATE WITH ARCHITECT FOR FINAL FIXTURE MANUFACTURER AND MODEL.

GENERAL NOTE:

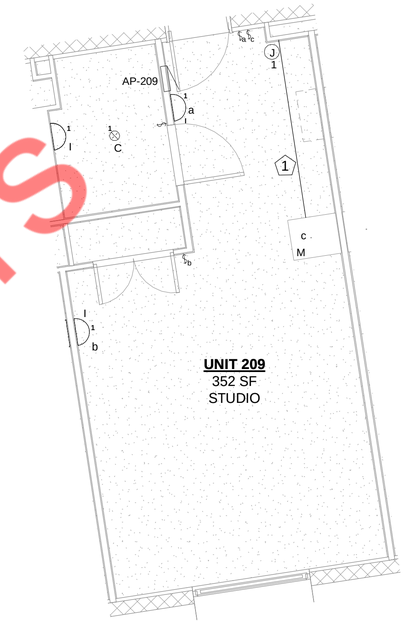
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.



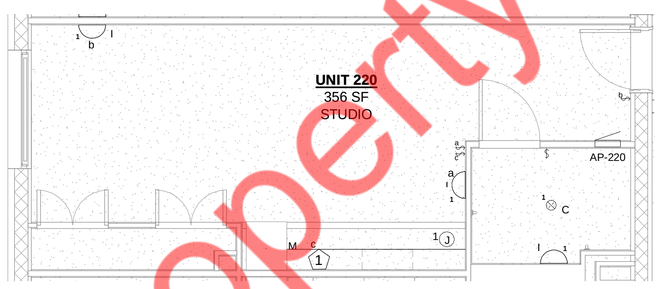
6 UNIT 119, 221, 321 - STUDIO UNIT
1/4" = 1'-0"



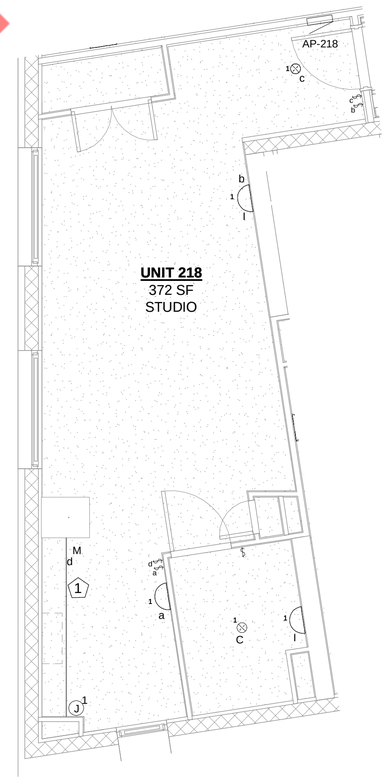
4 UNIT 117, 219, 319 -STUDIO UNIT
1/4" = 1'-0"



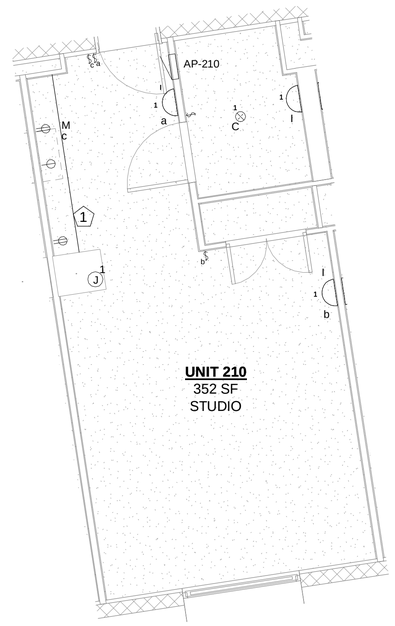
2 UNIT 108, 110, 113, 115, 219,211, 213, 215, 217, 309, 311, 313, 315, 317 - STUDIO UNIT
1/4" = 1'-0"



5 UNIT 118, 220, 320 - STUDIO UNIT
1/4" = 1'-0"



3 UNIT 116(UFAS),218, 318 - STUDIO UNIT
1/4" = 1'-0"



1 UNIT 107, 109, 112, 114, 208, 210, 212, 214, 216, 308, 310, 312, 314, 316 - STUDIO UNIT
1/4" = 1'-0"

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LIGHTING DRAWING NOTES:

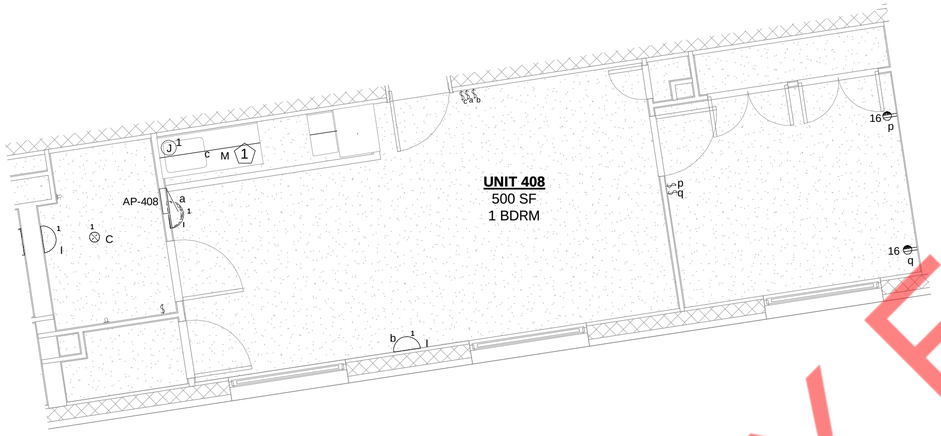
1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.
3. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

KEYED WORK NOTE:

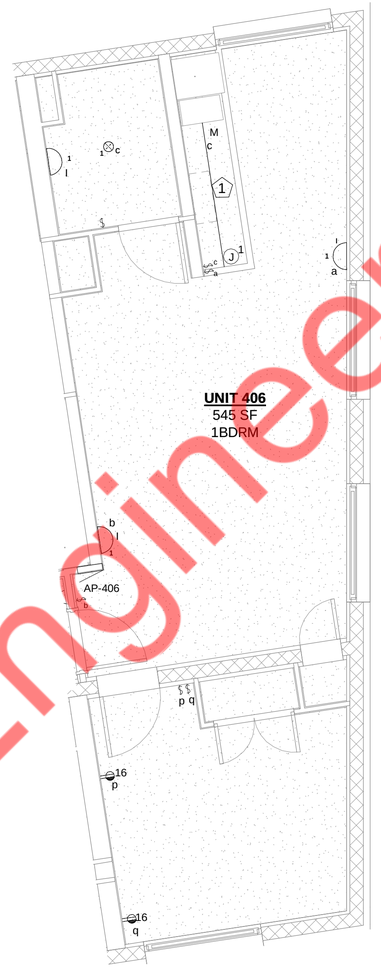
(1) PROVIDE ROCKER SWITCH FOR UNDERCABINET TASK LIGHT.COORDINATE WITH ARCHITECT FOR FINAL FIXTURE MANUFACTURER AND MODEL.

GENERAL NOTE:

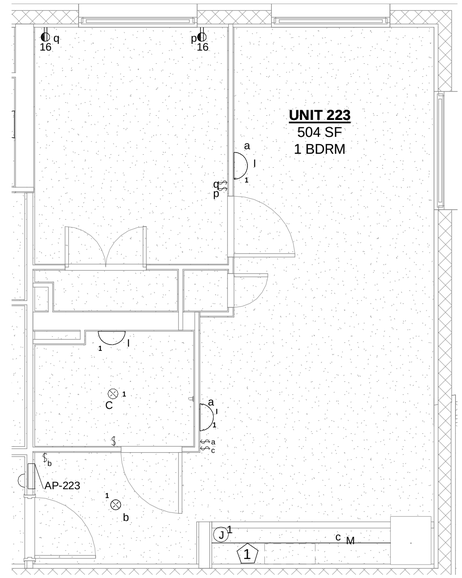
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.



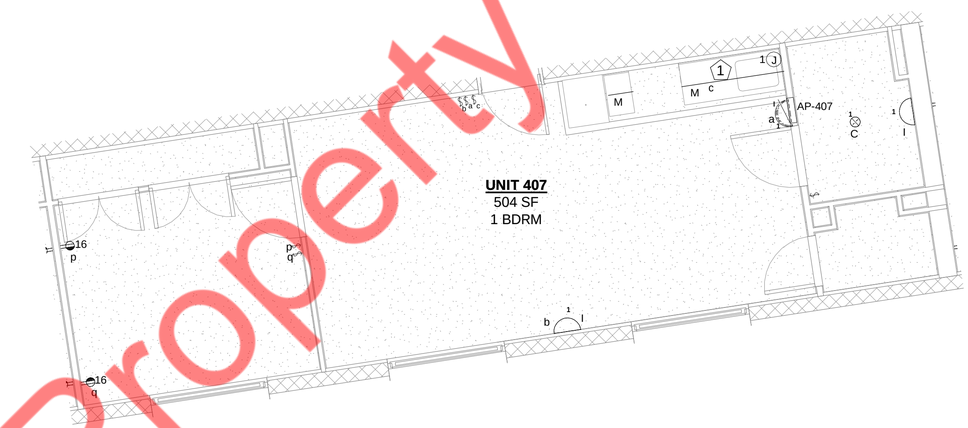
5 UNIT 408 - 1 BEDROOM UNIT
1/4" = 1'-0"



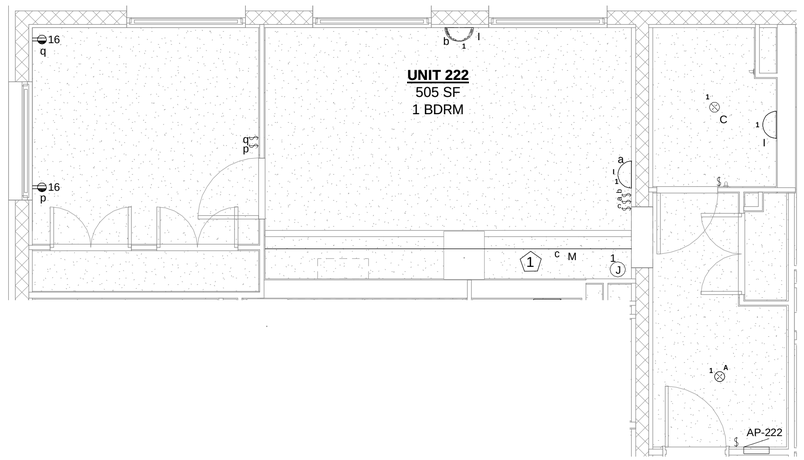
3 UNIT 406 - 1 BEDROOM UNIT
1/4" = 1'-0"



2 UNIT 121, 223, 323, 413 - 1 BEDROOM UNIT
1/4" = 1'-0"



4 UNIT 407, 409 - 1 BEDROOM UNIT
1/4" = 1'-0"



1 UNIT 120, 222, 322 - 1 BEDROOM UNIT
1/4" = 1'-0"

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LIGHTING DRAWING NOTES:

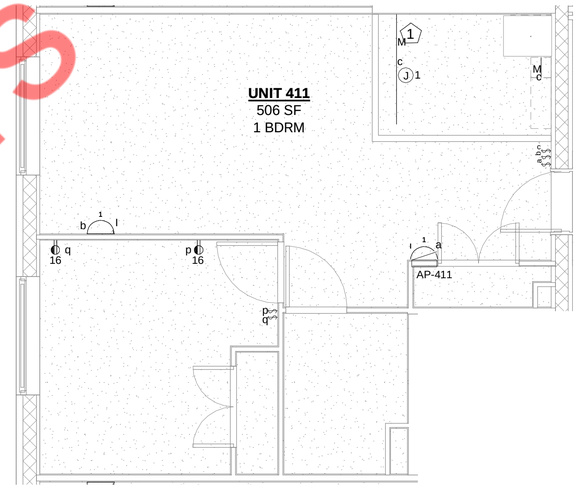
1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS AND E-002.00 FOR LIGHT FIXTURE SCHEDULE AND LIGHTING CONTROLS
2. ELECTRICAL CONTRACTOR TO COORDINATE THE LOCATION OF ALL VISIBLE ITEMS SUCH AS LIGHTING, SWITCHES, ACCESS PANELS, S/CO DETECTORS ETC WITH THE ARCHITECT/RCP.
3. ELECTRICAL CONTRACTOR TO COORDINATE SWITCH HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.

KEYED WORK NOTE:

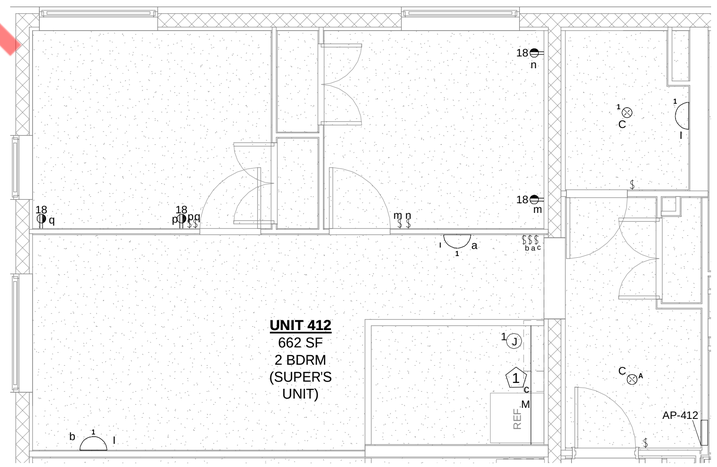
(1) PROVIDE ROCKER SWITCH FOR UNDERCABINET TASK LIGHT.COORDINATE WITH ARCHITECT FOR FINAL FIXTURE MANUFACTURER AND MODEL.

GENERAL NOTE:

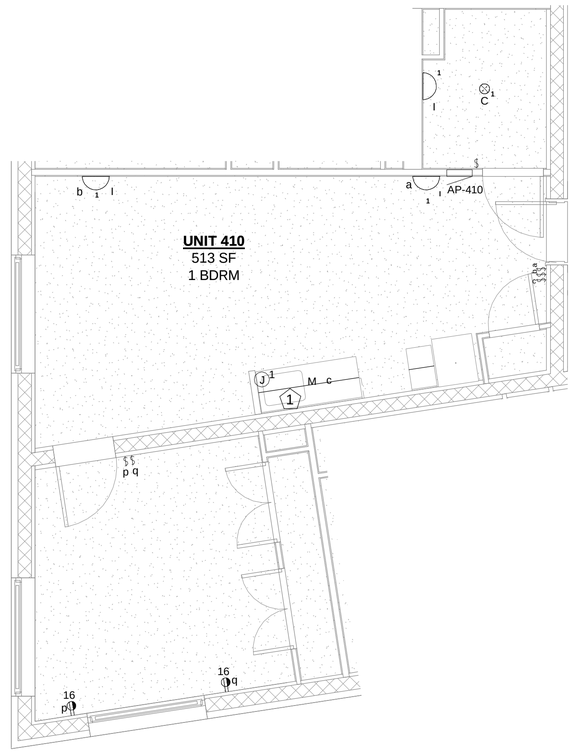
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.



(2) UNIT 411 - 1 BEDROOM UNIT
1/4" = 1'-0"



(3) UNIT 412 - 2 BEDROOM UNIT (SUPER'S UNIT)
1/4" = 1'-0"



(1) UNIT 410 - 1 BEDROOM UNIT
1/4" = 1'-0"

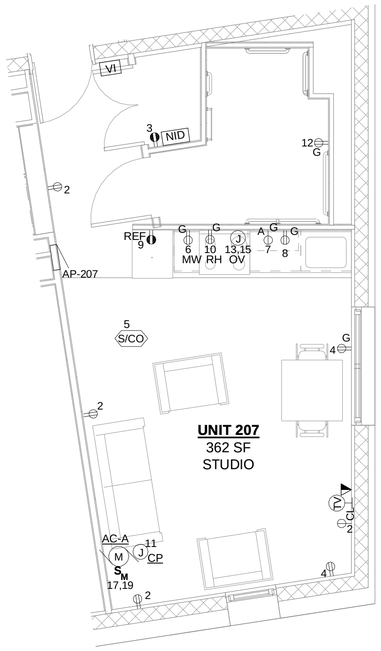
Property of NY Engineers

POWER DRAWING NOTES:

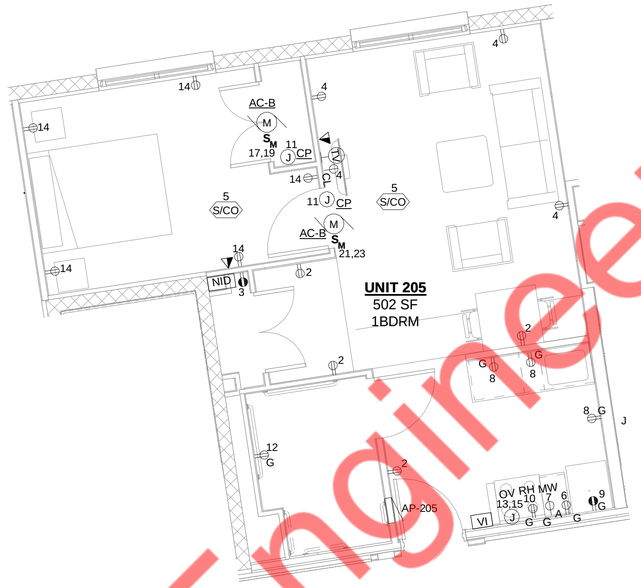
1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS.
2. ELECTRICAL CONTRACTOR TO COORDINATE RECEPTACLE HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.
3. ELECTRICAL CONTRACTOR TO PROVIDE 120V,20A SINGLE POLE TOGGLE SWITCH FOR SIMULTANEOUS CONTROL OF HOOD FAN AND LIGHT IN THE UFAS APARTMENTS. COORDINATE EXACT LOCATION OF SWITCH WITH ARCHITECT.
4. ELECTRICAL CONTRACTOR TO PROVIDE S/CO DETECTORS WITH SOUNDER BASE FOR UFAS UNITS.
5. COORDINATE EXACT LOCATION OF TEL/DATA WITH ARCHITECT.
6. PROVIDE DATA IN ALL BEDROOMS AND LIVING ROOM.PLEASE REFER TO SHEETS FROM E-304 TO E-307.

GENERAL NOTE:

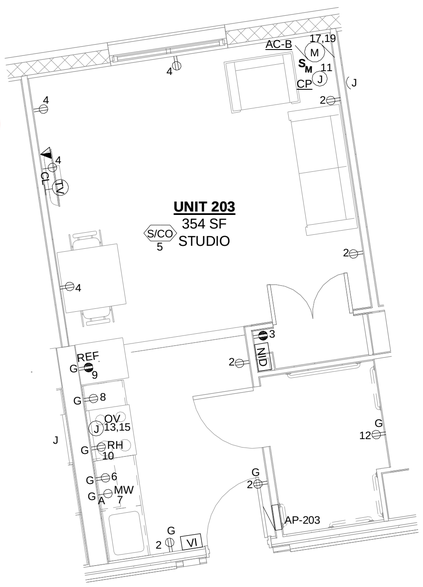
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.



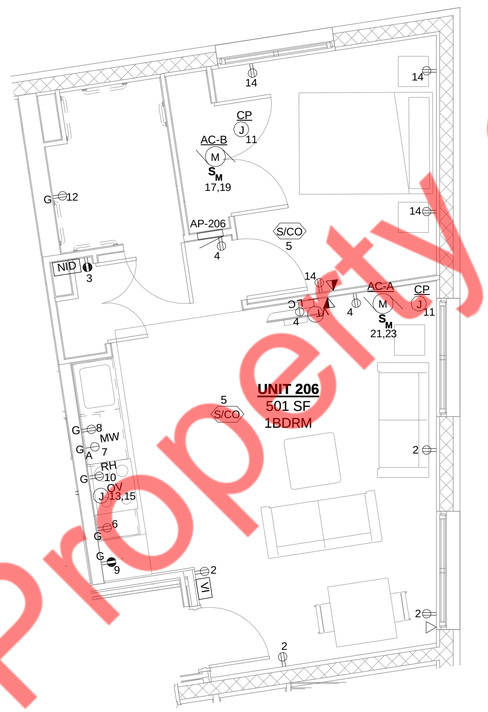
6 UNIT 106, 207, 307 - STUDIO UNIT
1/4" = 1'-0"



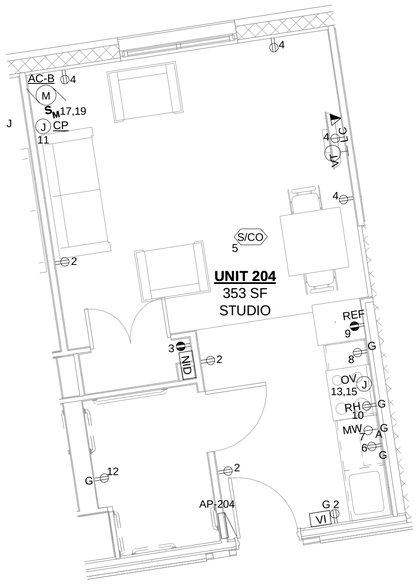
4 UNIT 104, 205, 305, 405 - 1 BEDROOM UNIT
1/4" = 1'-0"



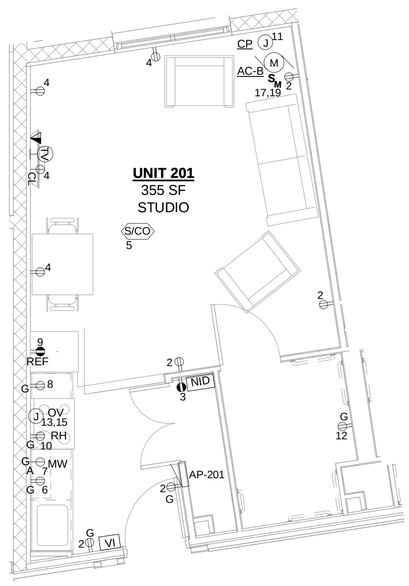
2 UNIT 102,111, 203,209, 303, 403 - STUDIO UNIT
1/4" = 1'-0"



5 UNIT 105(UFAS), 206, 306 - 1 BEDROOM UNIT
1/4" = 1'-0"



3 UNIT 103, 202, 204, 302, 304, 402, 404 - STUDIO UNIT
1/4" = 1'-0"



1 UNIT 101, 201, 303, 401 - STUDIO UNIT
1/4" = 1'-0"

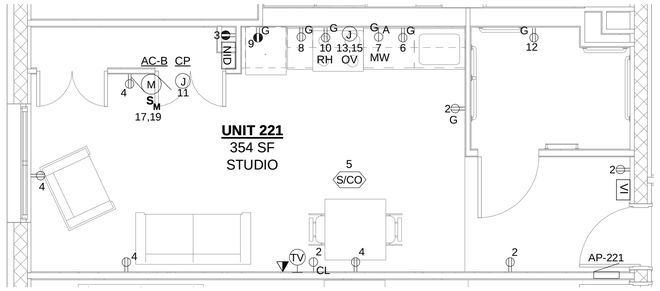
Property of NY Engineers

POWER DRAWING NOTES:

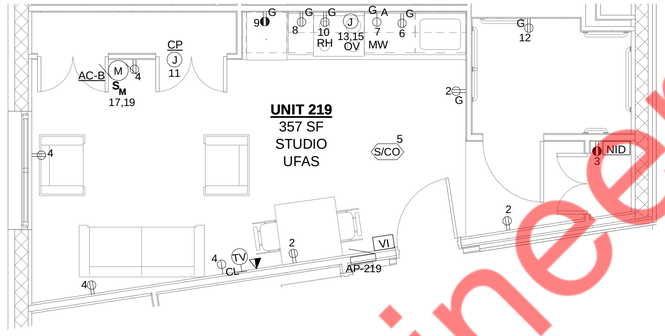
1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS ANDE-003 & E-004 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS.
2. ELECTRICAL CONTRACTOR TO COORDINATE RECEPTACLE HEIGHT WITH UFA STANDARDS AND ARCHITECT FOR UFAS APARTMENTS.
3. ELECTRICAL CONTRACTOR TO PROVIDE 120V, 20A SINGLE POLE TOGGLE SWITCH FOR SIMULTANEOUS CONTROL OF HOOD FAN AND LIGHT IN THE UFAS APARTMENTS. COORDINATE EXACT LOCATION OF SWITCH WITH ARCHITECT.
4. ELECTRICAL CONTRACTOR TO PROVIDE S/CO DETECTORS WITH SOUNDER BASE FOR UFAS UNITS.
5. COORDINATE EXACT LOCATION OF TEL/DATA WITH ARCHITECT.
6. PROVIDE DATA IN ALL BEDROOMS AND LIVING ROOM.PLEASE REFER TO SHEETS FROM E-304 TO E-307.

GENERAL NOTE:

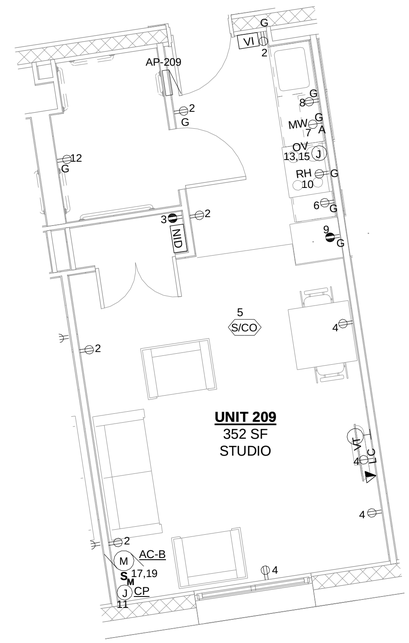
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.



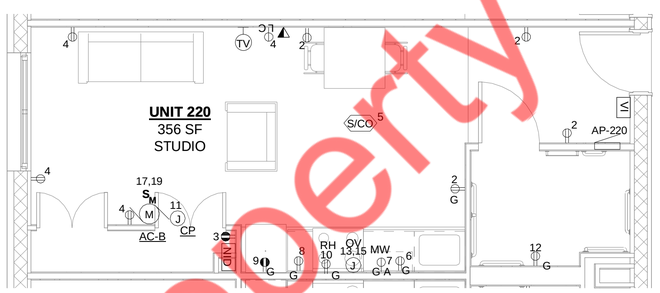
6 UNIT 119, 221, 321 - STUDIO UNIT
1/4" = 1'-0"



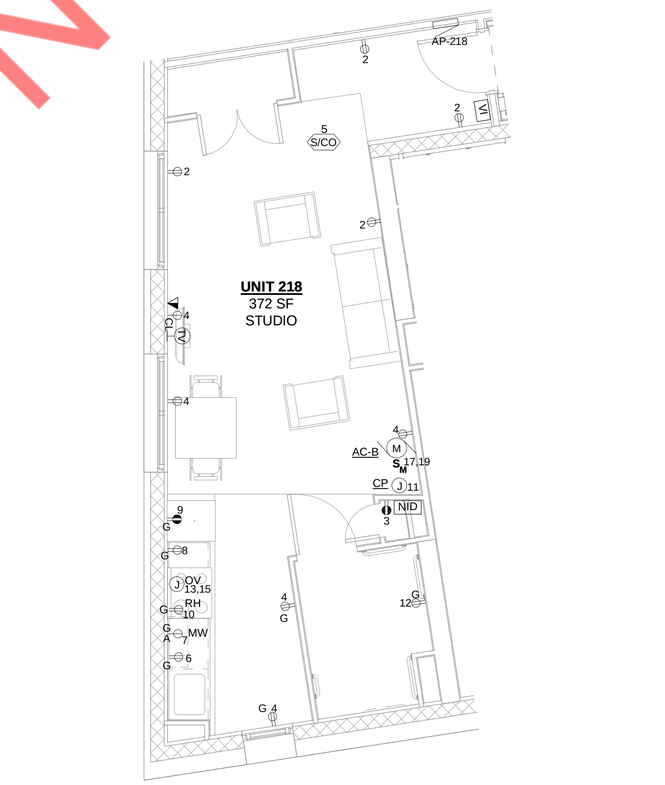
4 UNIT 117, 219, 319 - STUDIO UNIT
1/4" = 1'-0"



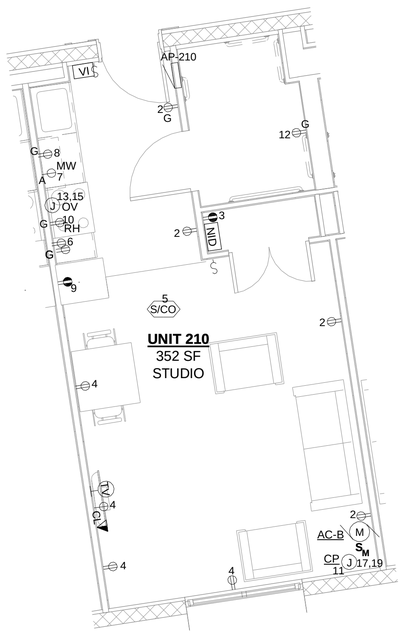
2 UNIT 108, 110, 113, 115,209, 211, 213, 215, 217, 309, 311, 313, 315, 317 - STUDIO UNIT
1/4" = 1'-0"



5 UNIT 118, 220, 320 - STUDIO UNIT
1/4" = 1'-0"



3 UNIT 116(UFAS),218, 318 - STUDIO UNIT
1/4" = 1'-0"



1 UNIT 107, 109, 112, 114, 208, 210, 212, 214, 216, 308, 310, 312, 314, 316 - STUDIO UNIT
1/4" = 1'-0"

Property of NY Engineers

POWER DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS ANDE-003 & E-004 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS.
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3. COORDINATE EXACT LOCATION OF TEL/DATA WITH ARCHITECT.
4. PROVIDE DATA IN ALL BEDROOMS AND LIVING ROOM.PLEASE REFER TO SHEETS FROM E-304 TO E-307.
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6. ELECTRICAL CONTRACTOR TO PROVIDE S/CO DETECTORS WITH SOUNDER BASE FOR UFAS UNITS.

GENERAL NOTE:

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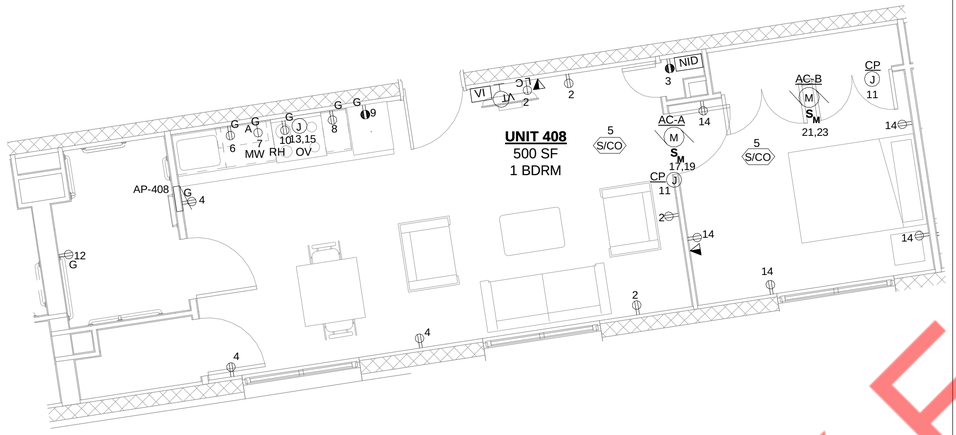
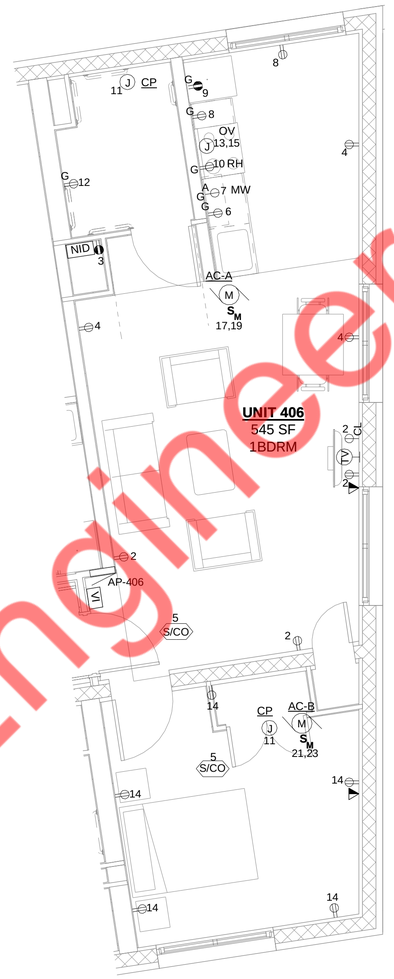
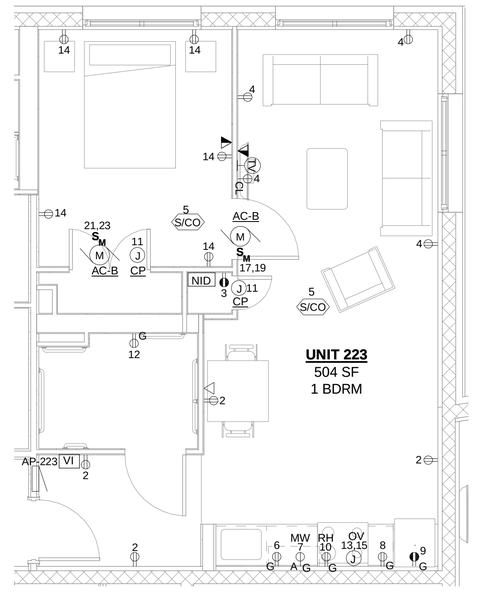


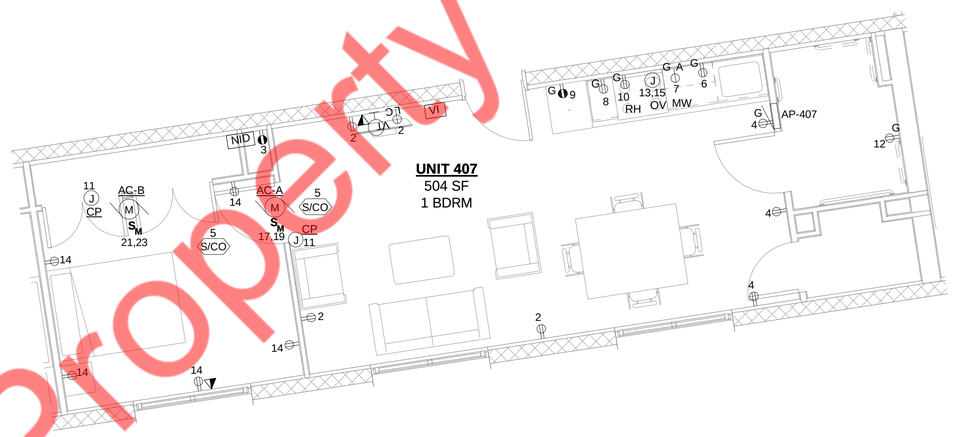
5 UNIT 408 - 1 BEDROOM UNIT
1/4" = 1'-0"



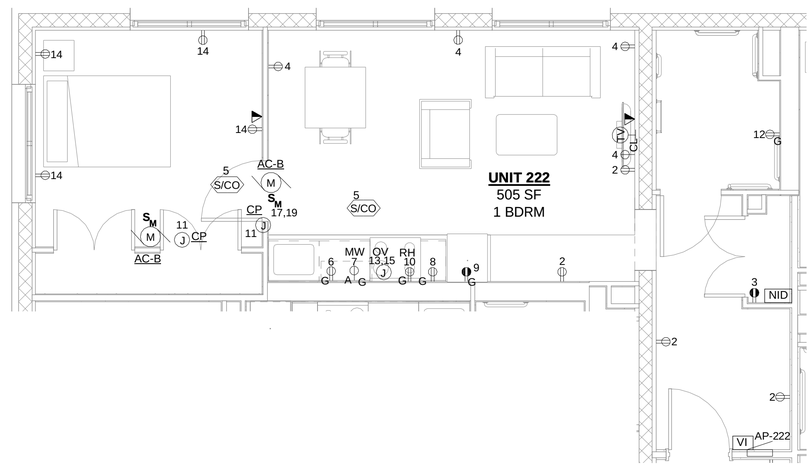
3 UNIT 406 - 1 BEDROOM UNIT
1/4" = 1'-0"



2 UNIT 121, 223, 323, 413 - 1 BEDROOM UNIT
1/4" = 1'-0"



4 UNIT 407, 409 - 1 BEDROOM UNIT
1/4" = 1'-0"



1 UNIT 120, 222, 322 - 1 BEDROOM UNIT
1/4" = 1'-0"

Property of NY Engineers

POWER DRAWING NOTES:

1. REFER TO DWG. E-001.00 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS ANDE-003 & E-004 FOR ADDITIONAL ELECTRICAL SPECIFICATIONS.
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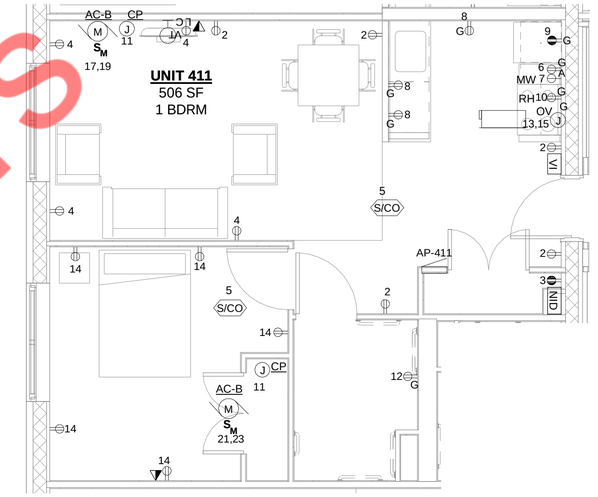
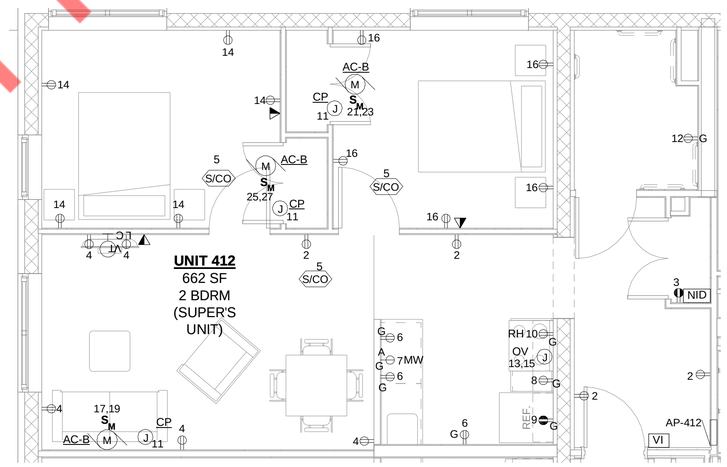
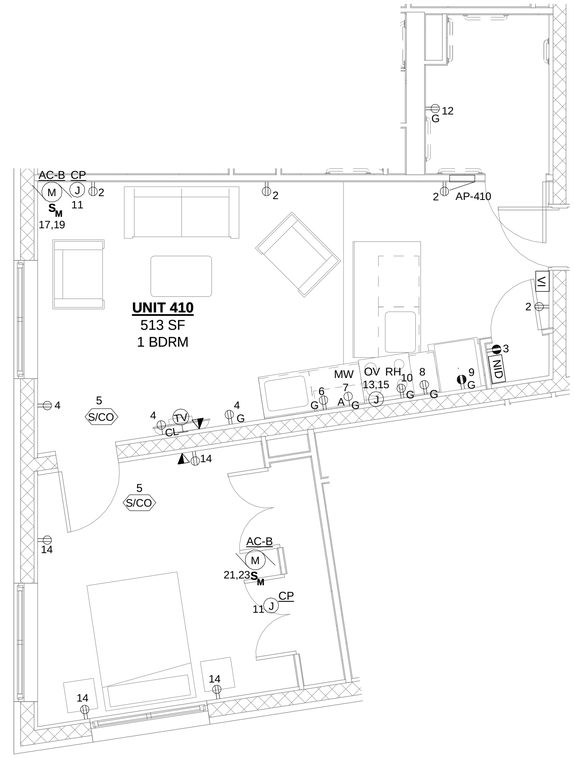


2 UNIT 411 - 1 BEDROOM UNIT
1/4" = 1'-0"

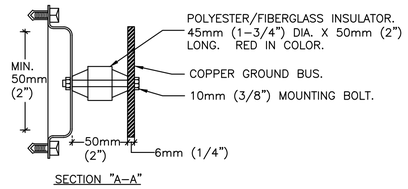


3 UNIT 412 - 2 BEDROOM UNIT (SUPER'S UNIT)
1/4" = 1'-0"

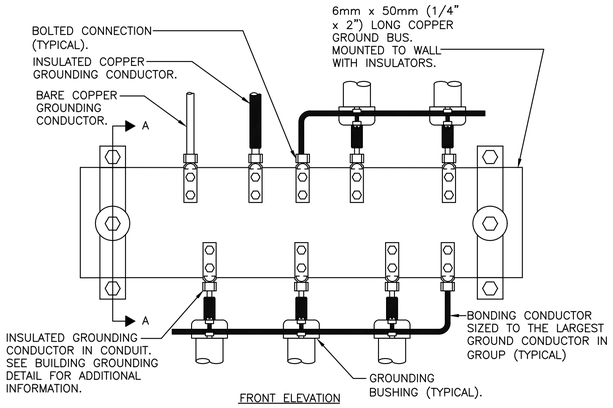


1 UNIT 410 - 1 BEDROOM UNIT
1/4" = 1'-0"

Property of NY Engineers



SECTION "A-A"



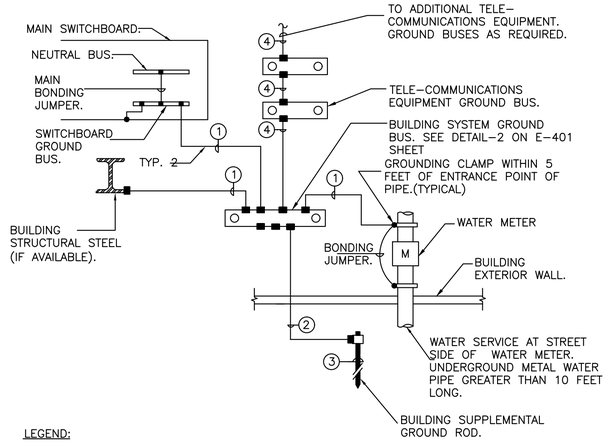
FRONT ELEVATION

NOTES:

1. REFER TO BUILDING GROUNDING ELECTRODE SYSTEM DETAIL FOR EXACT CONFIGURATION.

6 E-400 BUILDING ELECTRICAL SYSTEMS GROUND BUS

N.T.S

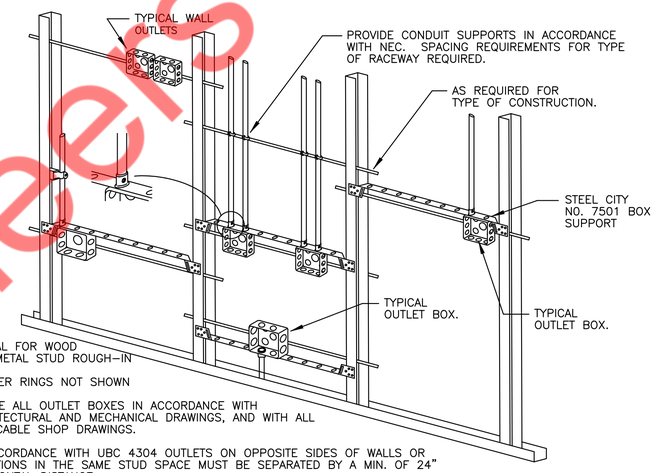


LEGEND:

- ● INDICATES BOLTED CONNECTION.
- ■ INDICATES EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIALS BEING JOINED.
- (1) INSULATED COPPER GROUNDING ELECTRODE CONDUCTOR IN CONDUIT SIZED AS PER NEC ARTICLE 250.66.
- (2) 4/0 AWG BARE COPPER GROUND CONDUCTOR.
- (3) 3/4" x 10'-0" LONG COPPER-CLAD GROUND ROD DRIVEN WITH TOP 12" BELOW GRADE.
- (4) 2/0 AWG INSULATED COPPER GROUND CONDUCTOR IN 30mm CONDUIT.

4 E-400 BUILDING GROUNDING ELECTRODE SYSTEM

N.T.S



NOTES:

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN
2. PLASTER RINGS NOT SHOWN
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. IN ACCORDANCE WITH UBC 4304 OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24" HORIZONTAL DISTANCE.

2 E-400 DETAIL TYPICAL ROUGH-IN REQUIREMENTS

N.T.S

AUTOMATIC MODE OPERATION:

1. WHEN SENSOR ACTIVATES, LOAD TURNS ON.
2. LOAD TURNS OFF, WHEN SENSOR TIMES OUT.
3. SWITCHES CAN BE USED TO TURN LOAD OFF.

RECOMMENDED WIRE:

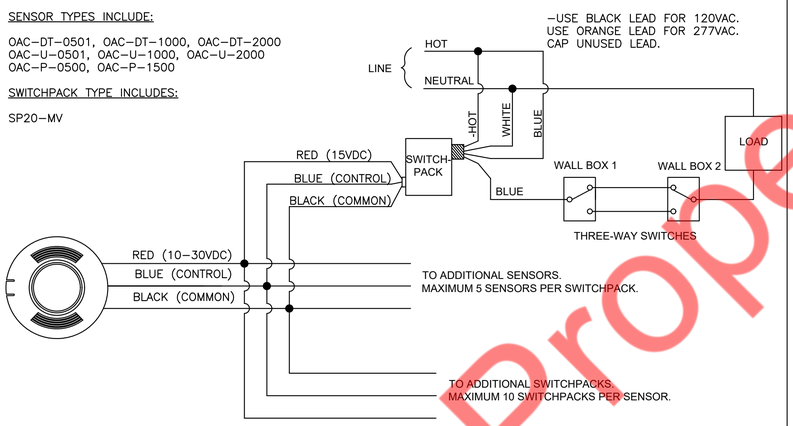
18-3 AWG STRANDED WIRE SHIELDED OR NON-SHIELDED

SENSOR TYPES INCLUDE:

OAC-DT-0501, OAC-DT-1000, OAC-DT-2000
OAC-U-0501, OAC-U-1000, OAC-U-2000
OAC-P-0500, OAC-P-1500

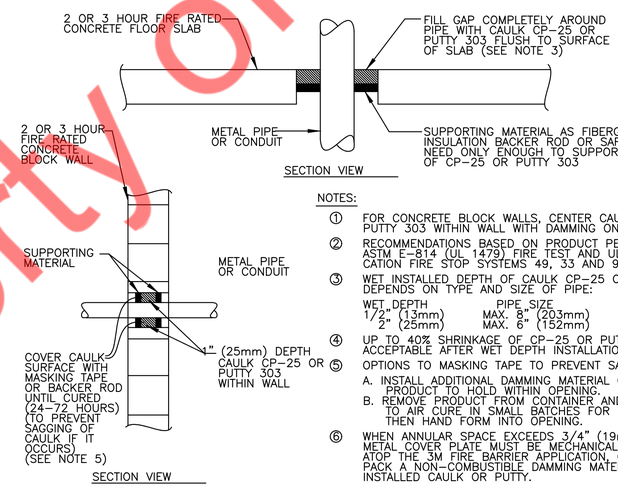
SWITCHPACK TYPE INCLUDES:

SP20-MV



5 E-400 OCCUPANCY - AUTO ON/OFF. WIRING DIAGRAM - LOW VOLTAGE CEILING SENSOR

N.T.S



NOTES:

① FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.

② RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.

③ WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:

WET DEPTH	PIPE SIZE	FIRE RATING
1/2" (13mm)	MAX. 8" (203mm)	2 HRS.
2" (25mm)	MAX. 6" (152mm)	3 HRS.

④ UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.

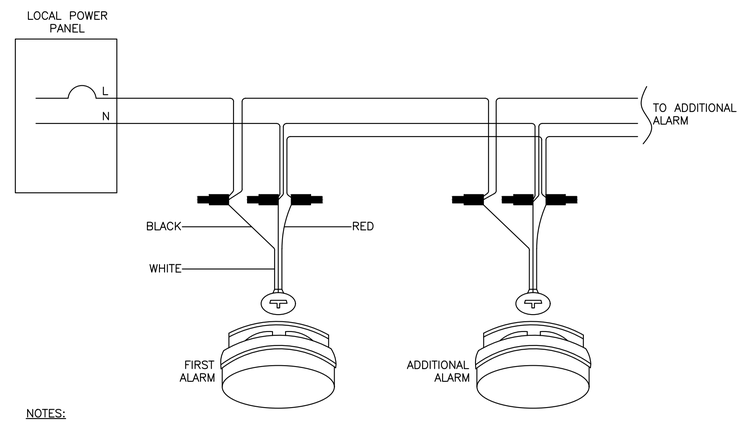
⑤ OPTIONS TO MASKING TAPE TO PREVENT SAGGING:

A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.

⑥ WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm), A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.

3 E-400 FIRE STOP DETAIL

N.T.S



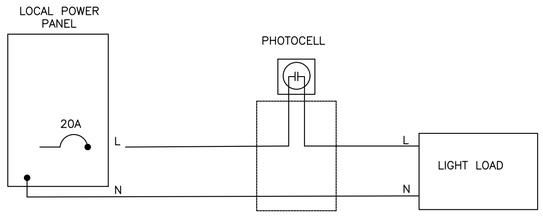
NOTES:

1. ALL ALARMS ARE WIRED TO A SINGLE, CONTINUOUS (NON SWITCHED) POWER LINE, WHICH IS NOT PROTECTED BY A GROUND FAULT INTERRUPTER.
2. A MAXIMUM OF 1000 ft OF WIRE CAN BE USED IN THE INTERCONNECT SYSTEM AND MAXIMUM 24 NO. OF KIDDE DEVICES CAN BE CONNECTED.
3. USE STANDARD UL LISTED HOUSEHOLD WIRE AS REQUIRED BY THE CODE.
4. ALL ALARMS IN A TANDEM INSTALLATION MUST BE CONTROLLED BY THE SAME FUSE OR CIRCUIT BREAKER. OTHERWISE TANDEM UNITS WILL NOT OPERATE.

1 E-400 SMOKE ALARM TANDEM WIRING DIAGRAM

N.T.S

Property of NY Engineers



KEYED NOTES:

1. PHOTOCELL SHALL BE MOUNTED ABOVE SNOW LINE (18") ON ROOF OR WALL MOUNTED. EXACT LOCATION SHALL BE FIELD COORDINATED.
2. FOR EXACT CIRCUIT NUMBER, REFER TO LIGHTING PLANS.

6 E-401 N.T.S — PHOTOCELL WIRING DETAILS

MANUAL MODE OPERATION:

1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

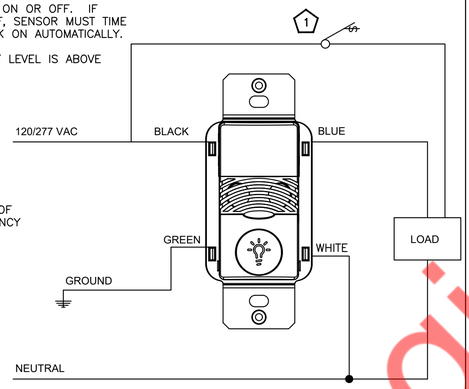
AUTOMATIC MODE OPERATION:

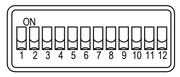
1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
2. PUSHBUTTON CAN BE USED TO TURN LOAD ON OR OFF. IF PUSHBUTTON IS USED TO TURN LOAD OFF, SENSOR MUST TIME OUT FIRST, BEFORE LOAD CAN TURN BACK ON AUTOMATICALLY.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

SENSOR TYPES INCLUDE:

ONW-D-1001-MV-N

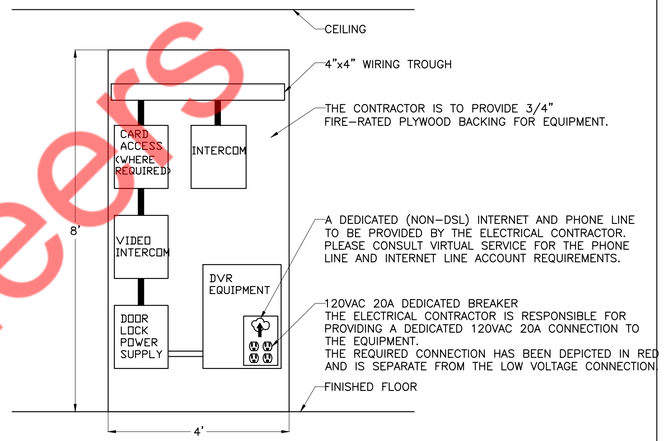
(1) PROVIDE SENSING CONDUCTOR TAPPED AHEAD OF ANY SWITCHES WHERE SWITCH SERVES EMERGENCY FIXTURES.





(ONW-D-1001-MV-N SENSORS)
ON (UP) = MANUAL ON
OFF (DOWN) = AUTO ON

4 E-401 N.T.S — CONNECTION) OCCUPANCY/VACANCY-SINGLE LEVEL WIRING DIAGRAM-LINE VOLTAGE WALL SWITCH SENSOR(NEUTRAL



SYTEM DEPICTED CONSISTS OF THE FOLLOWING COMPONENTS:
1. VIRTUAL DOORMAN AT FRONT ENTRANCE.
2. CARD ACCESS.
3. CCTV.
4. COLOR VIDEO INTERCOM.

2 E-401 N.T.S — VIDEO INTERCOM EQUIPMENT

AUTOMATIC MODE OPERATION:

1. WHEN SENSOR ACTIVATES, LOAD TURNS ON.
2. LOAD TURNS OFF, WHEN SENSOR TIMES OUT.
3. SWITCHES CAN BE USED TO TURN LOAD OFF.

RECOMMENDED WIRE:

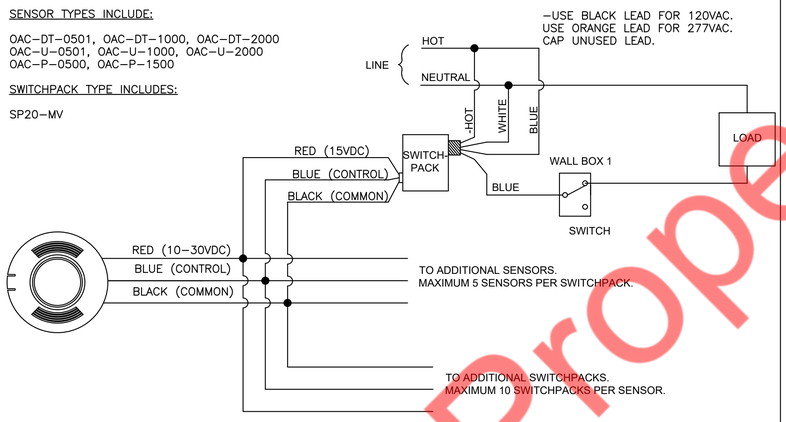
18-3 AWG STRANDED WIRE SHIELDED OR NON-SHIELDED

SENSOR TYPES INCLUDE:

OAC-DT-0501, OAC-DT-1000, OAC-DT-2000
OAC-U-0501, OAC-U-1000, OAC-U-2000
OAC-P-0500, OAC-P-1500

SWITCHPACK TYPE INCLUDES:

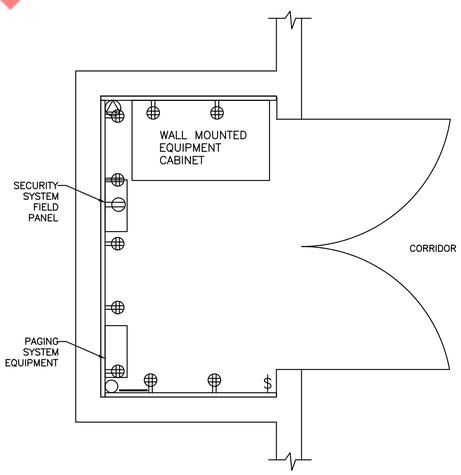
SP20-MV



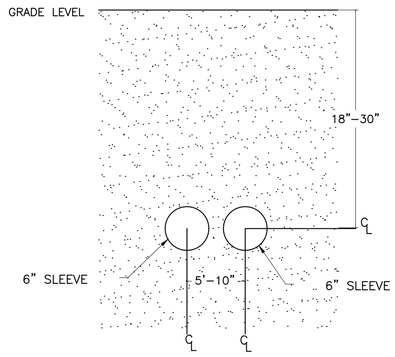
5 E-401 N.T.S — OCCUPANCY - AUTO ON/OFF. WIRING DIAGRAM - LOW VOLTAGE CEILING SENSOR

KEYED NOTES:

1. INSTALL CONDUITS FROM PONT OF CONNECTION TO NETWORK(AS DETERMINED BY THE LANL TELECOMMUNICATIONS GROUP).TERMINATE THE CONDUITS WITH INSULATING BUSHING 4" ABOVE FLOOR IN LEFT REAR CORNER OF THE ROOM AND ADJACENT TO THE LEFT WALL.INSTALL 1200LB.TEST PULL TAPE WITH STAMPED FOOTAGE IN EACH CONDUIT AND TIE OFF AT EACH END.PROVIDE TEMPORARY CAPS TO EXCLUDE CONSTRUCTION DEBRIS.
2. INSTALL 4"X12"X¼" COPPER GROUND BAR WITH INSULATED STANDOFFS AND PRE-DRILLED WITH ¼" HOLES IN LEFT REAR CORNER OF THE ROOM.INSTALL DEDICATED THW INSULATED 4/0 AWG GROUND BAR IN MAIN ELECTRICAL ROOM AND TO NEARBY BUILDING STRUCTURAL STEEL IF PRESENT.
3. LINE THREE WALLS OF THE ROOM WITH SHEETS OF ¾" APA GRADE A-B GROUP 1 SANDED INTERIOR PLYWOOD FINISHED WITH TWO COATS OF WHITE OR LIGHT GRAY FIRE RETARDING PAINT.ON ALL SIDES.
4. INSTALL 120V QUAD RECEPTACLES AT 6 FT INTERVALS AROUND THE ROOM,6 INCHES AFF.
5. INSTALL DOUBLE CIRCUIT MULT-OUTLET ASSEMBLY WITH RECEPTACLES 12 INCHES ON CENTER AT 4' AFF ON LEFT WALL.INSTALL TWO 20 AMP,120 VOLT CIRCUITS TO THE MULT-OUTLET ASSEMBLY.
6. PROVIDE A DEDICATED 20A 120V CIRCUIT FROM ISOLATED GROUND PANELBOARD FOR FOR SCURITY PANEL



3 E-401 N.T.S — TELECOM ROOM DETAILS



NOTES:

1. COORDINATE EXACT LOCATION WITH CON EDISON.
2. PROVIDE QUANTITY OF SLEEVES AS SHOWN ON DRAWINGS. NOT LESS THAN NUMBER REQUIRED BY UTILITY PLUS 50% SPARE.
3. EXTENND SLEEVES 12" OUTSIDE WALL IN ACCORDANCE WITH UTILITY STANDARDS.

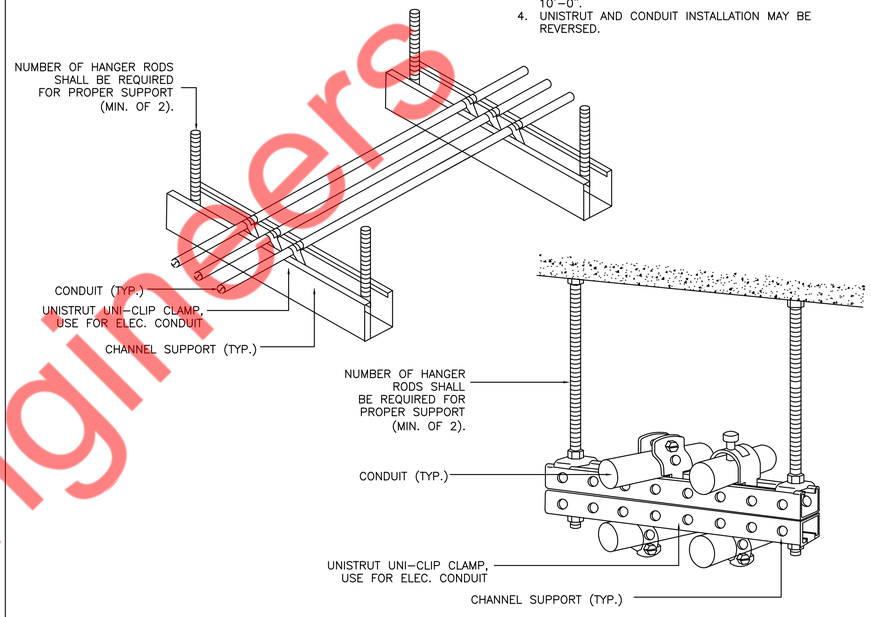
1 E-401 N.T.S — INCOMING SERVICE SLEEVE DETAILS

Property of NY Engineers

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.

NOTES:

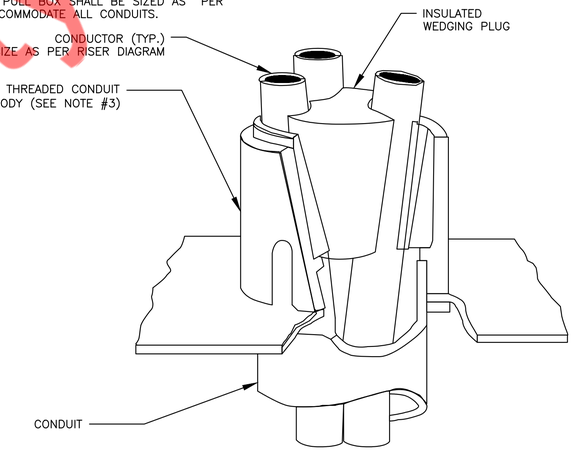
1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.



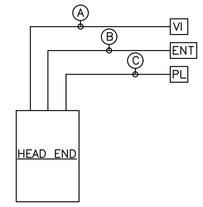
2 / E-402 CONDUIT SUPPORT DETAIL
N.T.S

NOTES:

1. ALL CONDUCTORS IN VERTICAL RACEWAYS SHALL BE SUPPORTED IN ACCORDANCE WITH ARTICLE 300.19 OF NEC. CABLE SUPPORTS SHALL BE LOCATED AT THE INTERVALS REQUIRED BY THE NEC.
2. CABLE SUPPORT SYSTEM SHALL BE AS MANUFACTURED BY O-Z GEDNEY WITH pOZi-GRIP "S-STYLE" WEDGING PLUG OR APPROVED EQUAL.
3. FOR THREADLESS CONDUIT (RIGID, IMC OR EMT), ATTACH CONDUIT BODY TO MALE THREADS OF A SET SCREW OR COMPRESSION CONNECT, AS PERMITTED BY SPECIFICATIONS.
4. PROVIDE PULL BOX AT EACH LOCATION OF CABLE SUPPORTS. PULL BOX SHALL BE SIZED AS PER CODE TO ACCOMMODATE ALL CONDUITS.



3 / E-402 VERTICAL CABLE SUPPORT DETAIL
N.T.S



SR.NO.	SYSTEM	FROM	TO	QTY	AWG	CONDUCTORS	STRANDING
A	INTERCOM	APARTMENT UNIT (ONE HOME RUN PER APT. UNIT)	HEAD END	1	18	4	7
B	INTERCOM	FRONT ENTRANCE DOOR STATION	HEAD END	1	18	4	7
C	ACCESS CONTROL	POSTAL LOCK (AT FRONT ENTRANCE DOOR ONLY)	HEAD END	1	18	4	7

NOTES:
1. ALL THE CONDUCTORS TO BE NON-SHIELDED.

1 / E-402 VIDEO INTERCOM WIRING
N.T.S

Property of NY Engineers

Property of NY Engineers

ROOF

FOURTH FLOOR

THIRD FLOOR

SECOND FLOOR

GROUND FLOOR

CELLAR

ACCU-4-2 ACCU-4-1 ACCU-3-2 ACCU-3-1 ACCU-2-2 ACCU-2-1 ACCU-1-2 ACCU-1-1 ACCU-C-2 ACCU-C-1 EF-4 EF-3 EF-2 EF-1

HP-R

4-3 + 1#6G, 1¼"C.

3-8 + 1#10G, 3/4"C.

2-10 + 1#8G, 3/4"C.

MDP-R
208/120V, 3PH, 4W + GRD BUS
800A
65 KA RMS, SYM.

100AF/100AS 35AF/60AS 50AF/60AS 50AF/60AS 50AF/60AS 50AF/60AS 50AF/60AS 35AF/60AS 50AF/60AS 80AF/100AS 25AF/30AS 40AF/60AS 40AF/60AS 70AF/100AS 70AF/100AS SPARE SPARE

ELEVATOR-1

4-1/0 + 1#6G, 1 ½" C.

ELEVATOR LIGHTING 30AS/20AF

ELEVATOR AUX.POWER 30AS/20AF

200AS/125AF

ELEVATOR-2

SOLAR DISC 200AS/200AF

3-3/0 + 1#8G, 2-1/2"C.

FACP

HP-3

HP-C-2

HP-C-3

HP-C-1

SBP (40)

JP (30)

AP 211 AP 210 AP 209 AP 208 AP 207 AP 206 AP 205 AP 204 AP 203 AP 202 AP 201

AP 121 AP 120 AP 119 AP 118 AP 117

AP 116 AP 115 AP 114 AP 113 AP 112 AP 111 AP 110 AP 109 AP 108 AP 107 AP 106 AP 105 AP 104 AP 103 AP 102 AP 101

3-3 + 1#6G, 1"C.

3-2 + 1#6G, 1¼"C.

BFM136 (SUBMETERING)

20A, 208V, 3PH
FROM PANE 'HP-C-3'

CT(TYP)

MDP-1
208/120V,3PH,4W+GRD BUS
400A
100 KA RMS, SYM.

100AF/100AS

(TYP.) 1

BFM136 (SUBMETERING)

20A, 208V, 3PH
FROM PANE 'HP-C-3'

THREE SETS OF (4-600KCM + 1#3G, 4"C.

MDP-2
208/120V,3PH,4W+GRD BUS
400A
100 KA RMS, SYM.

THREE SETS OF (4-400KCM + 1#1/0G, 3"C.)

4-3/0 + 1#6G, 2"C.

4-1 + 1#6G, 1¼"C.

4-6 + 1#10G, 3/4"C.

4-1/0 + 1#6G, 1½"C.

4-1/0 + 1#6G, 1½"C.

3-3/0 + 1#8G, 2-1/2"C.

4-3 + 1#8G, 1¼"C.

(3) SETS OF (1#2 MI COPPER SHEATHED CABLE)

2-10 + 1#8G, 3/4"C. (RGS). SEE NOTE#2

30AS/20AF

SWDB-C
208/120V,3PH,4W+GRD BUS
1600A
100 KA RMS, SYM.

800AF/800AS 200AF/200AS 125AF/150AS 60AF/100AS 150AF/200AS 150AF/200AS 200AF/200AS 200AF/200AS 100AF/100AS

FOUR SETS OF (4-600KCM + 1#4/0G, 4"C)

FIVE SETS OF (4-600KCM + 1#3/0G, 4"C)

REFER TO SHEET 501.00 FOR CONTINUATION

TO MDP -3

TO MDP -4

TO MDP -5

THREE SETS OF (4-600KCM + 1#3G, 4"C.

THREE SETS OF (4-600KCM + 1#3G, 4"C.

THREE SETS OF (4-600KCM + 1#3G, 4"C.

FOUR SETS OF (4-600KCM + 1#3G, 4"C.

MDP
208/120V,3PH,4W+GRD BUS
1200A
65 KA RMS, SYM.

400AF/400AS

SS#3 SS#1 SS#2

200AF/200AS 1600AF/1600AS 800AF/800AS

CT CABINET CT CABINET

INCOMING 120/208V/3ø/4W ELECTRICAL SERVICE BY CON EDISON

3#2/0 & 1#6G - 2" C.

2-10 + 1#8G, 3/4"C.

KEYED WORK NOTE:

1. THIS IS ONLY FOR PRESENTATION BUT IN ACTUAL CTs WILL BE MOUNTED INSIDE MDP.
2. TAP BOX LOCATED INSIDE FIRE PUMP ROOM FIRE PUMP CONDUCTORS SHALL NOT BE CUT.TAP SHALL BE DONE USING SPLIT BOLTS.
3. ELECTRIC SUBMETER FOR LAUNDRY AREA.(MODEL VT-2 BY GLOBAL OR EQUIVALENT)

ELECTRICAL ONE-LINE DIAGRAM
N.T.S.

NOTE:

1. PROVIDE SERVICE GROUNDING AND BONDING IN ACCORDANCE WITH NYC ELECTRICAL CODE (NEC W/ AMMENDMENTS).
2. TAP AHEAD OF THE MAIN SWITCH. TAP LENGTH NOT TO EXCEED 10 FEET.

ROOF

FOURTH FLOOR

THIRD FLOOR

SECOND FLOOR

GROUND FLOOR

CELLAR

AP 413 AP 412 AP 411 AP 410 AP 409 AP 408 AP 407 AP 406 AP 405 AP 404 AP 403 AP 402 AP 401

AP 323 AP 322 AP 321 AP 320 AP 319 AP 318 AP 317 AP 316 AP 315 AP 314 AP 313 AP 312 AP 311 AP 310 AP 309 AP 308 AP 307 AP 306 AP 305

AP 304 AP 303 AP 302 AP 301

AP 223 AP 222 AP 221 AP 220 AP 219 AP 218 AP 217 AP 216 AP 215 AP 214 AP 213 AP 212

3-4 + 1#8G, 1"C.

3-2 + 1#6G, 1¼"C.

3-4 + 1#8G, 1"C.

3-2 + 1#6G, 1¼"C.

3-4 + 1#8G, 1"C.

3-2 + 1#6G, 1¼"C.

3-4 + 1#8G, 1"C.

3-2 + 1#6G, 1¼"C.

20A, 208V, 3PH
FROM PANE 'HP-C-1'

BFM136 (SUBMETERING)

CT (TYP)

100AF 100AS

MDP-3
208/120V,3PH,4W+GRD BUS

400A
100 KA RMS. SYM.

BFM136 (SUBMETERING) — 20A, 208V, 3PH
FROM PANE 'HP-C-1'

MDP-4
208/120V,3PH,4W+GRD BUS

400A
100 KA RMS. SYM.

BFM136 (SUBMETERING) — 20A, 208V, 3PH
FROM PANE 'HP-C-1'

MDP-5
208/120V,3PH,4W+GRD BUS

400A
100 KA RMS. SYM.

THREE SETS OF (4-600KCM + 1#3G, 4"C.

FROM MDP

FROM MDP

FROM MDP

REFER TO SHEET 500.00 FOR CONTINUATION

THREE SETS OF (4-600KCM + 1#3G, 4"C.

FOUR SETS OF (4-600KCM + 1#3G, 4"C.

Property of NY Engineers

PANELBOARD

Branch Panel: HP-C-1

Location:
Supply From:
Mounting:
Enclosure: NEMA -1

Volts: 120/208
Phases: 3
Wires: 4

A.I.C. Rating: 22 KAIC
Bus Rating: 225 A
MCB Rating: 200 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	Fan Controller(DXF-1)	15 A	1	10 VA	321 VA					1	20 A	EM CORRIDOR LIGHTING	2
3	Cove lighting	20 A	1			20 VA	150 VA			1	20 A	STAIR CASE #2 LIGHTING	4
5	GROUND FL CORRIDOR EM LIGHTING	20 A	1					266 VA	160 VA	1	20 A	FSD/MD (GROUND FLOOR)	6
7	STAIR CASE #1 LIGHTING	20 A	1	180 VA	300 VA					1	20 A	WATER SUBMETER CONTROLLER	8
9	FSD(CELLAR)	20 A	1			240 VA	360 VA			1	20 A	CELLAR RECEPTACLES	10
11	CP	20 A	1					300 VA	360 VA	1	20 A	ELEVATOR PIT RECEPTACLES	12
13	GENERAL LIGHTING	20 A	1	438 VA	500 VA					1	20 A	EUH-C-4	14
15	GENERAL LIGHTING	20 A	1			480 VA	540 VA			1	20 A	GROUND FLOOR RECEPTACLES	16
17	EUH-C-1	20 A	1					500 VA	573 VA	1	20 A	GROUND FL EXTERIOR LIGHTING	18
19	ELEVATOR SHAFT LIGHTING	20 A	1	600 VA	736 VA					1	20 A	PARKING LIGHTING	20
21	GENERAL LIGHTING	20 A	1			630 VA	720 VA			1	20 A	CELLAR RECEPTACLES	22
23	CELLAR CORRIDOR LIGHTING	20 A	1					300 VA	1080 VA	1	20 A	COMPUTER LAB RECEPTACLES	24
25	COMPUTER LAB RECEPTACLES	20 A	1	1080 VA	503 VA					1	20 A	GROUND FL CORRIDOR LIGHTING	26
27	SP-1	20 A	1			1200 VA	0 VA			1	20 A	Spare	28
29	SP-2	20 A	1					1200 VA	1349 VA	1	20 A	GENERAL LIGHTING	30
31	COMPUTER LAB RECEPTACLES	20 A	1	1440 VA	500 VA					2	20 A	TRASH COMPACTOR	32
33	AC-1(GROUND FLOOR)	15 A	2			15 VA	500 VA			--	--	--	34
35	--	--	--					15 VA	15 VA	2	15 A	AC-D	36
37	CELLAR RECEPTACLES	20 A	1	900 VA	15 VA					--	--	--	38
39	AC-C-1	15 A	2			150 VA	1500 VA			2	20 A	EUH-C-2	40
41	--	--	--					150 VA	1500 VA	--	--	--	42
43	AC-C	15 A	2	15 VA	900 VA					1	20 A	CELLAR RECEPTACLES	44
45	--	--	--			15 VA	720 VA			1	20 A	GROUND FLOOR RECEPTACLES	46
47	EUH-C-3	20 A	2					1500 VA	720 VA	1	20 A	GROUND FLOOR RECEPTACLES	48
49	--	--	--	1500 VA	15 VA					2	15 A	AC-C	50
51	CELLAR RECEPTACLES	20 A	1			900 VA	15 VA			--	--	--	52
53	CELLAR RESTROOM RCPT	20 A	1					900 VA	15 VA	2	15 A	AC-C	54
55	BP-1	80 A	3	2906 VA	15 VA					--	--	--	56
57	--	--	--			2906 VA	1067 VA			3	50 A	HT-1	58
59	--	--	--					2906 VA	1067 VA	--	--	--	60
61	SE-1	30 A	3	900 VA	1067 VA					--	--	--	62
63	--	--	--			900 VA	792 VA			3	20 A	SP-4	64
65	--	--	--					900 VA	792 VA	--	--	--	66
67	BFM-136 SUBMETERING	20 A	3	100 VA	792 VA					--	--	--	68
69	--	--	--			100 VA	100 VA			3	20 A	BFM-136 SUBMETERING	70
71	--	--	--					100 VA	100 VA	--	--	--	72
73	BFM-136 SUBMETERING	20 A	3	100 VA	100 VA					--	--	--	74
75	--	--	--			100 VA	0 VA			1	20 A	Spare	76
77	--	--	--					100 VA	0 VA	1	20 A	Spare	78
79	Spare	20 A	1	0 VA	0 VA					1	20 A	Spare	80
81	Spare	20 A	1			0 VA	0 VA			1	20 A	Spare	82
83	Spare	20 A	1					0 VA	0 VA	1	20 A	Spare	84
		Total Load:		15860 VA		14062 VA		16784 VA					

Legend:

Branch Panel: HP-C-2

Location:
Supply From:
Mounting:
Enclosure: NEMA-1

Volts: 120/208
Phases: 3
Wires: 4

A.I.C. Rating:
Bus Rating: 125A
MCB Rating: 100A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	DRYER	30 A	2	2500 VA	1500 VA					1	20 A	WASHER	2
3	--	--	--			2500 VA	1500 VA			1	20 A	WASHER	4
5	DRYER	30 A	2					2500 VA	1500 VA	1	20 A	WASHER	6
7	--	--	--	2500 VA	1500 VA					1	20 A	WASHER	8
9	DRYER	30 A	2			2500 VA	1500 VA			1	20 A	WASHER	10
11	--	--	--					2500 VA	180 VA	1	20 A	RECEPTACLE	12
13	DRYER	30 A	2	2500 VA	0 VA					3	20 A	VFD	14
15	--	--	--			2500 VA	0 VA			--	--	--	16
17	DRYER	30 A	2					2500 VA	600 VA	--	--	--	18
19	--	--	--	2500 VA	500 VA					3	20 A	DXF-1	20
21	MAF-1	20 A	2			825 VA	500 VA			--	--	--	22
23	--	--	--					825 VA	500 VA	--	--	--	24
25					4000 VA					3	50 A	EDH-1	26
27	Spare	20 A	1			0 VA	4000 VA			--	--	--	28
29	Spare	20 A	1					0 VA	4000 VA	--	--	--	30
		Total Load:		17500 VA		15825 VA		15105 VA					

Legend:

Branch Panel: HP-C-3

Location:
Supply From:
Mounting:
Enclosure:

Volts: 120/208
Phases: 3
Wires: 4

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	AC-C	15 A	2	15 VA	1080...					1	20 A	CELLAR RECEPTACLES	2
3	--	--	--			15 VA	1080 VA			1	20 A	EXTERIOR RECEPTACLES	4
5	AC-C	15 A	2					15 VA	540 VA	1	20 A	CELLAR RECEPTACLES	6
7	--	--	--	15 VA	180 VA					1	20 A	SMALL APLLIANCE CKT(CELLAR...	8
9	AC-B	15 A	2			15 VA	180 VA			1	20 A	SMALL APLLIANCE CKT (CELLAR...	10
11	--	--	--					15 VA	720 VA	1	20 A	RANGE HOOD(CELLAR PANTRY)	12
13					4000...					2	50 A	OVEN (CELLAR PANTRY)	14
15							4000 VA			--	--	--	16
17	AC-B	15 A	2					15 VA	180 VA	1	20 A	REFRIGERATOR(CELLAR PANTRY)	18
19	--	--	--	15 VA	360 VA					1	20 A	CELLAR RESTROOM RCPT	20
21	AC-C	15 A	2			15 VA	900 VA			1	20 A	CELLAR RECEPTACLES	22
23	--	--	--					15 VA	300 VA	1	20 A	CP	24
25	SP-3	30 A	3	1300 VA	100 VA					3	20 A	BFM-136 SUBMETERING	26
27	--	--	--			1300 VA	100 VA			--	--	--	28
29	--	--	--					1300...	100 VA	--	--	--	30
31	AC-5	15 A	2	150 VA	0 VA					1	20 A	Spare	32
33	--	--	--			150 VA	0 VA			1	20 A	Spare	34
35	BFM-136 SUBMETERING	20 A	3					100 VA	0 VA	1	20 A	Spare	36
37	--	--	--	100 VA	0 VA					1	20 A	Spare	38
39	--	--	--			100 VA	0 VA			1	20 A	Spare	40
41	Spare	20 A	1					0 VA	0 VA	1	20 A	Spare	42
		Total Load:		7315 VA		7855 VA		3300 VA					

Legend:

Branch Panel: HP-3

Location:
Supply From:
Mounting:
Enclosure:

Volts: 120/208
Phases: 3
Wires: 4

A.I.C. Rating: 22 KAIC
Bus Rating: 125
MCB Rating: 60

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	2ND FL CORRIDOR LIGHTING	20 A	1	114 VA	540 VA					1	20 A	2ND FLOOR RECEPTACLE	2
3	2ND FL EM CORRIDOR LIGHTING	20 A	1			356 VA	540 VA			1	20 A	2ND FLOOR RECEPTACLE	4
5	3RD FL CORRIDOR LIGHTING	20 A	1					123 VA	720 VA	1	20 A	3RD FLOOR RECEPTACLE	6
7	3RD FL EM CORRIDOR LIGHTING	20 A	1	326 VA	540 VA					1	20 A	3RD FLOOR RECEPTACLE	8
9	4TH FL CORRIDOR LIGHTING	20 A	1			123 VA	720 VA			1	20 A	4TH FLOOR RECEPTACLE	10
11	4TH FL EM CORRIDOR LIGHTING	20 A	1					278 VA	540 VA	1	20 A	4TH FLOOR RECEPTACLE	12
13	Space	--	--	0 VA	700 VA					1	20 A	2nd, 3RD AND 4TH FLOOR FSD/MD	14
15	Spare	20 A	1			0 VA	15 VA			2	15 A	AC-2 (2ND FL)	16
17	Spare	20 A	1					0 VA	15 VA	--	--	--	18
19	Spare	20 A	1	0 VA	15 VA					2	15 A	AC-3 (3RD FL)	20
21	Spare	20 A	1			0 VA	15 VA			--	--	--	22
23	Spare	20 A	1					0 VA	15 VA	2	15 A	AC-4	24
25	Spare	20 A	1	0 VA	15 VA					--	--	--	26
27	Space	--	--			0 VA	50 VA			1	15 A	CP	28
29	Space	--	--					0 VA	0 VA	--	--	Space	30
31	Space	--	--	0 VA	0 VA					--	--	Space	32
33	Space	--	--			0 VA	0 VA			--	--	Space	34
35	Space	--	--					0 VA	0 VA	--	--	Space	36
37	Space	--	--	0 VA	0 VA					--	--	Space	38
39	Space	--	--			0 VA	0 VA			--	--	Space	40
41	Space	--	--					0 VA	0 VA	--	--	Space	42
		Total Load:		2233 VA		1804 VA		1678 VA					

Legend:

Branch Panel: HP-R

Location:
Supply From: MDP-R
Mounting:
Enclosure: NEMA 3R

Volts:
Phases: 3
Wires: 4

A.I.C. Rating:
Bus Rating: 125 A
MCB Rating: MLO

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	AC-R-1	15 A	2	15 VA	1080 VA					1	20 A	ROOF RECEPTACLE	2
3	--	--	--			15 VA	540 VA			1	20 A	Receptacle	4
5	AC-R-2	15 A	2					15 VA	720 VA	1	20 A	FSD/MD	6
7	--	--	--	15 VA	1000 VA					1	20 A	EHU-R-1	8
9	ROOF LIGHTING	20 A	1			174 VA	1000 VA			1	20 A	EHU-R-2	10
11									1000 VA	1	20 A	EHU-R-3	12
13	Spare	20 A	1	0 VA	9000 VA					1	30 A	VRF AND ERV CONTROLLER	14
15	Spare	20 A	1			0 VA	1500 VA			1	30 A	HWHT-2	16
17	Spare	20 A	1					0 VA	1200 VA	1	20 A	HWCP-1	18
19	Spare	20 A	1	0 VA	2000 VA					1	20 A	HWCP-2	20
21	Space	--	--			0 VA	2000 VA			1	20 A	HWCP-3	22
23	Space	--	--					0 VA	0 VA	--	--	Space	24
25	Space	--	--	0 VA	0 VA					--	--	Space	26
27	Space	--	--			0 VA	0 VA			--	--	Space	28
29	Space	--	--					0 VA	0 VA	--	--	Space	30
		Total Load:		13110 VA		5221 VA		2935 VA					

Legend:

Property of NY Engineers

LOADCENTER

Branch Panel: AP-201

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL FOR PANEL AP-101, AP-303, AP-401

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	42 VA	900 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7255 VA		6425 VA					

Legend:

Branch Panel: AP-203

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL FOR PANEL AP-102,AP-111,AP-209,AP-303,AP-403

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	42 VA	900 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7255 VA		6425 VA					

Legend:

Branch Panel: AP-204

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL FOR PANEL AP-103, AP-202, AP-302, AP-304, AP-402, AP-404

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	42 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7075 VA		6425 VA					

Legend:

Branch Panel: AP-205

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL FOR UNITS AP-104, AP-305, AP-405

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	42 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	540 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	900 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-B	15 A	2	15 VA	0 VA			1	20 A	Spare	18
19	--	--	--			15 VA	0 VA	1	20 A	Spare	20
21	AC-B	15 A	2	15 VA	0 VA			1	20 A	Spare	22
23	--	--	--			15 VA	0 VA	1	20 A	Spare	24
25	Spare	20 A	1	0 VA	0 VA			1	20 A	Spare	26
27	Spare	20 A	1			0 VA	0 VA	1	20 A	Spare	28
29	Spare	20 A	1	0 VA	0 VA			1	20 A	Spare	30
			Total Load:	7990 VA		7210 VA					

Legend:

Branch Panel: AP-206

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: YPICAL FOR UNITS AP-105, AP-306

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	42 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	540 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	720 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-A	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7910 VA		6670 VA					

Legend:

Branch Panel: AP-207

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL FOR PANEL AP-106, AP-307

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	527 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	360 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7562 VA		6065 VA					

Legend:

NOTES:

1. * - DENOTES AFCI TYPE CIRCUIT BREAKER

Property of NK Engineers

LOADCENTER

Branch Panel: AP-209

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL PANEL AP- 108, AP-110, AP-113, AP-115, AP-211, AP-213, AP-215, AP-217, AP-309, AP-311, AP-313, AP-315, AP-317

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	900 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7750 VA		6425 VA					

Legend:

Branch Panel: AP-210

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL PANEL AP-107, AP-109, AP-112, AP-114, AP-208, AP-212, AP-214, AP-216, AP-308, AP-310, AP-312, AP-314, AP-316

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7570 VA		6425 VA					

Legend:

Branch Panel: AP-218

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL PANEL AP-116, AP- 318

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	545 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	900 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7580 VA		6605 VA					

Legend:

Branch Panel: AP-219

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL PANEL AP- 117, AP- 319

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	540 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7390 VA		6425 VA					

Legend:

Branch Panel: AP-220

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL FOR PANEL AP-118, AP-320

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7570 VA		6425 VA					

Legend:

Branch Panel: AP-221

Location: | **Volts:** 120/208
Supply From: | **Phases:** 1 | **A.I.C. Rating:** 22 KAIC
Mounting: Recessed | **Wires:** 3 | **Bus Rating:** 125 A
Enclosure: NEMA-1 | **MCB Rating:** 100 A

NOTES: TYPICAL FOR PANE AP-119, AP-321

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	100 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			50 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	0 VA			--	--	Space	14
15	--	--	--			4000 VA	0 VA	--	--	Space	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	Spare	20 A	1	0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1			0 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	7570 VA		6425 VA					

Legend:

NOTES:

1. * - DENOTES AFCI TYPE CIRCUIT BREAKER

Property of NY Engineers

LOADCENTER

Branch Panel: AP-222

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES: TYPICAL FOR PANEL AP-120, AP-322

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	547 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	720 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-B	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	8417 VA		6850 VA					

Legend:

Branch Panel: AP-223

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES: TYPICAL FOR PANEL AP- 121, AP- 323, AP- 413

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	545 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	900 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-B	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	8595 VA		6850 VA					

Legend:

Branch Panel: AP-406

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES:

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	540 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	360 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	900 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-A	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-B	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	8585 VA		6850 VA					

Legend:

Branch Panel: AP-407

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES: TYPICAL FOR PANEL AP-409

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	540 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	900 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-A	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-B	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	8585 VA		6670 VA					

Legend:

Branch Panel: AP-408

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES:

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	540 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	900 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-A	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-B	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	8585 VA		6670 VA					

Legend:

Branch Panel: AP-410

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES:

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	540 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	720 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-B	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	8405 VA		6670 VA					

Legend:

NOTES:

1. * - DENOTES AFCI TYPE CIRCUIT BREAKER

Property of NY Engineers

LOADCENTER

Branch Panel: AP-411

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES:

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	517 VA	900 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	720 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	200 VA	180 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	540 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			100 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	900 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	360 VA	1	20 A	SWITCHED RECEPTACLE *	16
17	AC-B	15 A	2	15 VA	0 VA			--	--	Space	18
19	--	--	--			15 VA	0 VA	--	--	Space	20
21	AC-B	15 A	2	15 VA	0 VA			--	--	Space	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	Spare	20 A	1	0 VA	0 VA			--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	8747 VA		7210 VA					

Legend:

Branch Panel: AP-412

Location:
Supply From:
Mounting: Recessed
Enclosure: NEMA-1

Volts: 120/208
Phases: 1
Wires: 3

A.I.C. Rating: 22 KAIC
Bus Rating: 125 A
MCB Rating: 100 A

NOTES:

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	LIGHTING *	20 A	1	535 VA	720 VA			1	20 A	RECEPTACLE *	2
3	TEL/DATA RECEPTACLE *	20 A	1			180 VA	900 VA	1	20 A	RECEPTACLE *	4
5	S/CO DETECTOR *	15 A	1	300 VA	540 VA			1	20 A	SMALL APPLIANCE CKT	6
7	MICROWAVE	20 A	1			1100 VA	180 VA	1	20 A	SMALL APPLIANCE CKT	8
9	REFRIGERATOR	20 A	1	1300 VA	720 VA			1	20 A	RANGE HOOD	10
11	CP	20 A	1			150 VA	180 VA	1	20 A	BATHROOM GFI	12
13	OVEN	50 A	2	4000 VA	900 VA			1	20 A	RECEPTACLE *	14
15	--	--	--			4000 VA	900 VA	1	20 A	RECEPTACLE *	16
17	AC-B	15 A	2	15 VA	720 VA			1	20 A	SWITCHED RECEPTACLE *	18
19	--	--	--			15 VA	0 VA	1	20 A	Spare	20
21	AC-B	15 A	2	15 VA	0 VA			1	20 A	Spare	22
23	--	--	--			15 VA	0 VA	--	--	Space	24
25	AC-B	15 A	2	15 VA	0 VA			--	--	Space	26
27	--	--	--			15 VA	0 VA	--	--	Space	28
29	Spare	20 A	1	0 VA	0 VA			--	--	Space	30
			Total Load:	9780 VA		7635 VA					

Legend:

Property of NY Engineers

NOTES:
1. * - DENOTES AFCI TYPE CIRCUIT BREAKER

PLUMBING SYMBOLS LIST

SAN — UNDERGROUND SANITARY PIPING
ST — UNDERGROUND STORM PIPING
SAN — SANITARY PIPING
— — — — — VENT PIPING
— - — - — COLD WATER PIPING
— - - — HOT WATER PIPING
— - - - — HOT WATER RETURN PIPING
G — GAS PIPING
L — LEADER STORM PIPING
ST — STORM PIPING
FAI — FRESH AIR INTAKE PIPING
PD — PUMP DISCHARGE
P–TRAP
PIPE UP
PIPE DROP
PLUGGED OUTLET/CLEANOUT
SHUT–OFF VALVE
CHECK VALVE
STOP VALVE
GAS PLUG VALVE
SLEEVE
EJ — EJECTOR DISCHARGE PIPING

PLUMBING ABBREVIATIONS

CO	CLEANOUT
CODP	CLEAN OUT DECK PLATE
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
S	SOIL
ST	STORM
V	VENT
W	WASTE
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
G	GAS
AFF	ABOVE FINISH FLOOR
PD	PUMP DISCHARGE
FD	FLOOR DRAIN
SQ. FT.	SQUARE FEET
EJ	EJECTOR DISCHARGE
BFP	BACK FLOW PREVENTER
BT	BATH TUB
SH	SHOWER
KS	KITCHEN SINK
WM	WASHING MACHINE
HWHT	HOT WATER HEATER
CFRD	CONTROL FLOW ROOF DRAIN
OD	OVERFLOW DRAIN
FAI	FRESH AIR INTAKE

BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT WATER DISTRIBUTION AND GAS PIPING SYSTEMS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 THE NEW YORK CITY PLUMBING CODE (NYCPC) AND NEW YORK CITY FUEL GAS CODE (NYCFGC)
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 702.2
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION PC 305.
4. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION PC 306.
5. RODENT PROOFING AS PER PC 304
6. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 303, PC 605, PC 702, PC 902,PC 1102.
7. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 4, 5, 6, 7 AND 9.
8. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER PC 1002, AND CLEAN–OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 708
9. BUILDING HOUSE TRAPS SHALL BE PROVIDED AS PER SECTION PC 1002.
10. DRAINAGE PIPE CLEANOUTS AS PER SECTION PC 708.
11. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 308
12. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 SECTION PC 601–603, 604, 606, 607, 608, 610
13. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 SECTION PC 701, 704, 705, 706, 707, 708, 711.
14. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 9 SECTIONS PC 901 THROUGH PC 912 THROUGH PC 917
15. THE STORM DRAINAGE PIPING SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 11 SECTION PC 1101 THROUGH 1113.
16. INSPECTION AND TESTING OF PLUMBING AND GAS PIPING SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION PC 107, 312.

PLUMBING DRAWING LIST

P–001.00 PLUMBING NOTES, SYMBOLS, SPECIFICATIONS & ABBREVIATIONS (1 OF 2)
P–002.00 PLUMBING NOTES, SYMBOLS, SPECIFICATIONS & ABBREVIATIONS (2 OF 2)
P–100A.00 UNDERGROUND PLUMBING PLAN
P–100.00 CELLAR PLUMBING PLAN
P–101.00 GROUND FLOOR PLUMBING PLAN
P–102.00 2ND FLOOR PLUMBING PLAN
P–103.00 3RD FLOOR PLUMBING PLAN
P–104.00 4TH FLOOR PLUMBING PLAN
P–105.00 ROOF PLUMBING PLAN
P–300.00 PLUMBING UNIT PLANS SHEET (1 OF 4)
P–301.00 PLUMBING UNIT PLANS SHEET (2 OF 4)
P–302.00 PLUMBING UNIT PLANS SHEET (3 OF 4)
P–303.00 PLUMBING UNIT PLANS SHEET (4 OF 4) AND 3D VIEW
P–501.00 PLUMBING DETAILS (1 OF 4)
P–502.00 PLUMBING DETAILS (2 OF 4)
P–503.00 PLUMBING DETAILS (3 OF 4)
P–504.00 PLUMBING DETAILS (4 OF 4)
P–601.00 PLUMBING SCHEDULES
P–602.00 PLUMBING GAS & STORM RISER DIAGRAM
P–603.00 PLUMBING SANITARY RISER DIAGRAM(1 OF 4)
P–604.00 PLUMBING SANITARY RISER DIAGRAM(2 OF 4)
P–605.00 PLUMBING SANITARY RISER DIAGRAM(3 OF 4)
P–606.00 PLUMBING SANITARY RISER DIAGRAM(4 OF 4)
P–607.00 PLUMBING WATER RISER DIAGRAM(1 OF 4)
P–608.00 PLUMBING WATER RISER DIAGRAM(2 OF 4)
P–609.00 PLUMBING WATER RISER DIAGRAM(3 OF 4)
P–610.00 PLUMBING WATER RISER DIAGRAM(4 OF 4)

PLUMBING SPECIFICATIONS

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.

B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.

C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.

D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.

E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK.BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE. SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.

F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.

G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.

H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.

I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.

J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.

K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

1.02 SUBMITTALS

A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. PLUMBING PIPING LAYOUT
5. TESTS
6. PLUMBING FIXTURES
7. ALL SCHEDULED PLUMBING EQUIPMENT

B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.

C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.

E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.

F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.

G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS–BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.

H. RECORD AS–BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER /TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.04 DEFINITIONS

A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.

B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.

C. PROVIDE: TO FURNISH AND INSTALL.

D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.

E. REFER TO THE NATIONAL STANDARD PLUMBING CODE FOR ADDITIONAL DEFINITIONS.

1.05 DRAWINGS

A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.

B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.

C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.

D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.

E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.

F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

1.06 PRODUCTS

A. SANITARY AND VENT PIPING:

1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
3. PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE INSTALLED IN CEILING PLENUM SPACES.
4. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

B. DOMESTIC WATER PIPING:

1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD–DRAWN COPPER TUBE.
2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS.
3. JOINTS SHALL BE MADE WITH LEAD–FREE SOLDER.
4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
5. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE–RETARDANT, FACTORY–APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY–APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C403.2.10 REFER BELOW TABLE.

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU· IN./ (H· FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	<8
105–140	0.21–0.28	100	1.0	1.0	1.5	1.5	1.5
40–60	0.21–0.27	75	0.5	0.5	1.0	1.0	1.0

6. WATER DISTRIBUTION SYSTEM AS PER NYC ENERGY CONSERVATION CODE 2016 C404.7, HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED–WATER SUPPLY PIPE BACK TO THE HEATED–WATER SOURCE THROUGH A COLD–WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
   a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
   b. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD–WATER PIPING TO 104°F (40°C).
7. AS PER NYC ENERGY CONSERVATION CODE 2016 C404.6.1 HEATED–WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.
8. HEATED WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.5.1. THE FLOW RATE THROUGH 1/4–INCH PIPING SHALL BE NOT GREATER THAN 0.5 GPM. THE FLOW RATE THROUGH 5/16–INCH PIPING SHALL BE NOT GREATER THAN 1 GPM. THE FLOW RATE THROUGH 3/8–INCH PIPING SHALL BE NOT GREATER THAN 1.5 GPM.

HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER NYC ECC C404.5.1 & NYC PC 607.2 THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MIXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	20'
¾"	0.5'	20'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

9. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.
10. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

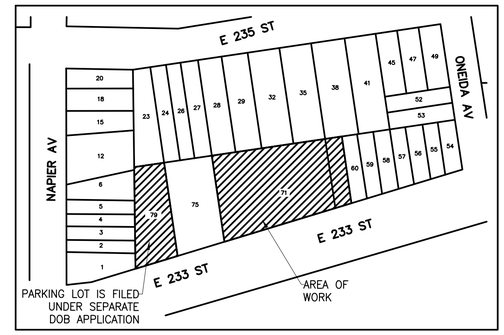
C. VALVES:

1. PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT–OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL VALVES. FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT–OFF DUTY.
2. ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER–EQUIPPED WATER CLOSETS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME–PLATED STOPS WITH CHROME–PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT–OFF VALVES ON SUPPLY LINES.
4. ALL BRANCH LINES TO HAVE SHUT–OFF VALVES.
5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

D. HANGERS AND SUPPORTS:

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVE SUPPORTS.
4. SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

KEY PLAN:



WOODLAWN SENIOR 69–85 EAST 233RD ST, BRONX, NY 10470
BLOCK: 3365
LOT: 71
ZONE: R5
MAP: 1C

Property of NY Engineers

I. SUMP PUMP

1. SUMP PUMP WILL BE COMPLETELY SUBMERSIBLE, AUTOMATIC OPERATION, WITH A SCREENLESS SUCTION, NON-CLOG IMPELLER, AND LIFTING BAIL.

2. EQUIP SUBMERSIBLE MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION

3. DESIGN TO OPERATE ON A SINGLE PHASE, 60 HERTZ, 120 VOLT CIRCUIT (NEMA STANDARD MOTOR VOLTAGE 115 V).

4. SUMP PUMP CASTING AND EXTERIOR COVER SHOULD BE BRASS OR BRONZE. IMPELLER SHOULD BE BRONZE, SHAFT SHOULD BE STEEL, SEALED AGAINST CONTACT WITH MOISTURE.

J. WATER BOOSTER PUMP

1. THE SYSTEM SHALL INCLUDE TWO CLOSE-COUPLED, BRONZE-FITTED, END SUCTION CENTRIFUGAL PUMPS, EACH RATED 90 GPM AT 196 FT. TDH.

2. THE PUMPS ARE TO BE OF THE BACK PULL-OUT DESIGN, WITH CENTER-LINE DISCHARGE, BRONZE SHAFT SLEEVE, ENCLOSED BRONZE IMPELLER AND MECHANICAL SHAFT SEAL.

3. INTERCONNECTING PIPING SHALL BE SUPPLIED IN LEAD FREE COPPER CONSTRUCTION WITH ALL ISOLATION VALVES AND CHECK VALVES PROVIDED IN BRASS CONSTRUCTION.

4. THE SYSTEM SHALL BE FACTORY ASSEMBLED ON A STEEL BASE AND SHALL INCLUDE COPPER SUCTION AND DISCHARGE HEADERS, A PRESSURE GAUGE FOR EACH HEADER, AN ISOLATION VALVE ON THE SUCTION AND DISCHARGE OF EACH PUMP AND A TEMPERATURE SENSING PURGE VALVE.

5. ALL MATERIAL SHOULD MEET SDWA 1.01.2014 AMENDMENT COMPATIBILITY AND DESIGNED IN ACCORDANCE WITH NSF-61 REQUIREMENTS.

K. MIXING VALVES

1. VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.

2. TYPES A, C & D VALVES: VALVE SHUTS OFF IN FULL COLD POSITION AND MUST PASS THROUGH COLD RANGE BEFORE DELIVERING WARM, AND/OR HOT WATER. TEMPERATURE LIMIT SET AT 105°F MAXIMUM DELIVERY TEMPERATURE. IF ONE SUPPLY SHOULD FAIL, THE OTHER WILL AUTOMATICALLY AND INSTANTLY SHUT DOWN. DELIVERY CAPACITY IS 5GPM @ 45 PSIG DIFFERENTIAL.

3. TYPES OF VALVES: TYPE A- THERMOSTATICALLY OPERATED BY MEANS OF BI-METALLIC STRIP, OR EXPANSION BELLOWS; TYPE B- SINGLE HANDLE MECHANICAL MIXER, OR INDIVIDUAL HOT AND COLD CONTROL VALVES; TYPE C- PRESSURE BALANCING SHOWER VALVE/PISTON OPERATED MIXING VALVE; TYPE D- BALANCED PRESSURE OPERATION, WITH INTEGRAL DIAL THERMOMETER INDICATING DELIVERED WATER TEMPERATURE.

4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

L. HOT WATER RE-CIRCULATING PUMP

1. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.

2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.

3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE DRIP-PROOF, SLEEVE- BEARING, QUIET OPERATING, RUBBER-MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION.

4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.

M. SEWAGE EJECTOR PUMP

1. SEWAGE EJECTOR PUMP WILL BE COMPLETELY SUBMERSIBLE, CAPABLE OF SELF-COMMINUTING UNSCREENED SEWAGE, AUTOMATIC OPERATION, WITH ONE PIECE CAST IRON OR BRONZE NON-CLOG BALANCED IMPELLER.

2. SEWAGE EJECTOR PUMP SHOULD HAVE HEAVY DUTY CAST IRON CASING, IMPELLER, AND MOTOR HOUSING.

3. THE PUMP PIT/BASIN SHALL HAVE A STEEL COVER WITH REQUIRED OPENINGS FOR PUMPS, CONTROLS, AND VENT CONNECTIONS.

4. COVER AND FRAME ARE TO BE OF GASTIGHT CONSTRUCTION AND SHALL BE TREATED WITH CORROSION RESISTANT COATING.

5. EQUIP SUBMERSIBLE MOTOR WITH NATIONAL ELECTRICAL CODE CLASS 1, DIVISION 1 (EXPLOSION-PROOF) RATED SERVICE; UL LISTED FOR CLASS 1, GROUP C AND D IN AIR OR SUBMERSIBLE IN SEWAGE SHAFTS SHOULD BE CARBON STEEL.

N. SLEEVES AND ESCUTCHEONS:

1. SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.

2. PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 20 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.

O. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.

P. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.

Q. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.

R. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL. REMOVE PROTECTIVE COATINGS PRIOR TO INSTALLATION.

S. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.

T. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

U. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.

V. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

W. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.

X. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

Y. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.

Z. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.

AA. ALL PIPING INSTALLED ON THE ROOF SHALL BE SUPPORTED BY "PILLOW BLOCK" PIPE STANDS AS MANUFACTURED BY MIRO INDUSTRIES, OR APPROVED EQUAL. WOOD PIPE SUPPORTS SHALL NOT BE ACCEPTABLE. PROVIDE TRAFFIC/WALK PADS BELOW ALL PIPE STANDS.

AB. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS. WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.

AC. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK-CLOSING VALVES.

AD. UNLESS OTHERWISE INDICATED, TRAPS SEALS AT ALL FLOOR DRAINS SHALL BE MAINTAINED BY AN APPROVED TRAP PRIMING DEVICE.

AE. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.

AF. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.

AG. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ALL PLUMBING V.T.R.S AND ALL OUTDOOR AIR INTAKES. OFFSET VENT STACKS AND STACK VENTS IF AND AS REQUIRED BELOW ROOF TO MAINTAIN SUCH CLEARANCE WHETHER OR NOT SUCH OFFSET IS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED SEISMIC SUPPORTS.

2. INSTALLATION

2.01 GENERAL

A. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.

B. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.

C. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.

D. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.

E. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.

F. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

2.02 ABOVE GRADE

A. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.

B. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.

C. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

2.03 INSULATION (PIPE AND FITTINGS)

COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1¼" AND 1½" THICK FOR PIPE SIZE 1½" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH ½" THICK FOR PIPE SIZE UP TO 1¼" AND 1" THICK FOR PIPE SIZE 1½" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULAT-ED FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE NEW YORK CITY BUILDING CODE REQUIREMENT OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH 2016 NYC ENERGY CONSERVATION CODE. INSULATE STORM PIPING IN CONDITIONED PLENUMS.

2.04 PRESS JOINERY SYSTEM:

A. FITTINGS ½" – 4":

1. WHERE APPROVED BY THE LOCAL JURISDICTION, THE NIBCO® PRESS SYSTEM™ MAY BE USED AT THE CONTRACTOR'S OPTION FOR THE FOLLOWING BUILDING SERVICES PIPING –20°F TO +250°F UP TO 200 PSI:
   a. HOT AND COLD DOMESTIC WATER; FITTINGS AND VALVES SHALL BE NSF-61 APPROVED.
   b. POTABLE WATER; FITTINGS AND VALVES SHALL BE NSF-61 APPROVED.
   c. HOT WATER HEATING SERVICE

   ALL LEAD FREE WROT COPPER PRESS FITTINGS SHALL BE MADE FROM COMMERCIALLY PURE COPPER MILL PRODUCTS PER ASTM B 75 ALLOY C12200. THESE FITTINGS SHALL BE THIRD-PARTY CERTIFIED TO NSF/ANSI 61 ANNEX G AND COMPLY WITH SECTION 116875 OF THE CALIFORNIA HEALTH AND SAFETY CODE AND VERMONT ACT 193. NIBCO LEAD FREE CAST DEZINCIFICATION-RESISTANT (DZR) FITTINGS SHALL BE MADE FROM A HIGH QUALITY LEAD FREE PERFORMANCE BRONZE ALLOY PER ASTM B 584 ALLOY C87850. THE PRESS FITTINGS CONNECTIONS SHALL BE COMPATIBLE WITH SEAMLESS K, L OR M COPPER TUBE MADE TO ASTM B 88. FITTINGS SHALL HAVE A MAXIMUM NON-SHOCK WORKING PRESSURE OF 200 PSI BETWEEN THE TEMPERATURES OF –20°F AND +250°F. ELASTOMERIC SEALS WITH LEAK DETECTION DESIGN SHALL BE MADE OF EPDM MATERIAL, AND THE FITTINGS SHALL BE MANUFACTURED WITH AN INBOARD BEAD DESIGN. NIBCO PRESS FITTINGS MEET ALL PERFORMANCE REQUIREMENTS OF ASME B16.22 AND B16.18ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ACCORDING TO LOCAL PLUMBING AND MECHANICAL CODES. THE PRESS-TO-CONNECT JOINT SHALL BE MADE WITH PRESSING TOOLS AND JAW SETS RECOMMENDED AND AUTHORIZED BY NIBCO. ALL FITTINGS, VALVES AND TOOLS SHALL BE PROVIDED BY SAME MANUFACTURER; NIBCO.

B. VALVES 2" AND SMALLER: BALL VALVES: (ON/OFF, ISOLATION OR THROTTLING)

1. BALL VALVES (STAINLESS STEEL BALL AND STEM) WITH MALE OR FEMALE PRESS-TO-CONNECT ENDS SHALL BE RATED AT 200 PSI CWP TO +250°F MAXIMUM. NIBCO LEAD FREE VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH MSS SP-110 AND CONSTRUCTED OF DEZINCIFICATION -RESISTANT (DZR) BRONZE BODIES AND END PIECES AND SHALL BE MADE FROM A HIGH QUALITY LEAD FREE PERFORMANCE BRONZE ALLOY PER ASTM B 584 ALLOY C87850. NO BRASS CONTAINING MORE THAN 15% ZINC SHALL BE APPROVED. VALVE SHALL HAVE REINFORCED TEFLON SEATS, BLOW-OUT PROOF STEM, SOLID STAINLESS STEEL BALL AND STEM. NO HOLLOW CHROME PLATED BALLS ACCEPTED. ALL VALVES SHALL BE FULL PORT. ALL ELASTOMERIC SEALS SHALL HAVE LEAK DETECTION DESIGN.
   a. WHERE PIPING IS TO BE INSULATED, BALL VALVES SHALL BE EQUIPPED WITH 2" EXTENDED HANDLES OF NON-THERMAL CONDUCTIVE MATERIAL. HANDLE TO HAVE EXTENDED SLEEVE INCORPORATING AN INSULATION PLUG TO PROVIDE A VAPOR BARRIER AND ALLOW VALVE OPERATION WITHOUT DISTURBING THE INSULATION, AND A MEMORY STOP, WHICH CAN BE SET AFTER INSTALLATION.
   b. ACCEPTABLE VALVES: (NSF-61, NON-INSULATED LINES): NIBCO PC585-66-LF, -HC, -LL.
   c. c. ACCEPTABLE VALVES: (NSF-61, INSULATED LINES): NIBCO PC585-66-LF-NS, -HC, -LL.

2. CHECK VALVES: (BACKFLOW PREVENTION)

   VALVES WITH PRESS-TO-CONNECT ENDS SHALL BE RATED TO 200 PSI CWP AT +250°F MAXIMUM. NIBCO LEAD FREE VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH MSS SP-80 AND CONSTRUCTED OF DEZINCIFICATION-RESISTANT (DZR) BRONZE BODY & CAP SHALL BE MADE FROM A HIGH QUALITY LEAD FREE PERFORMANCE BRONZE ALLOY PER ASTM B 584 ALLOY C87850. DISC SHALL BE TFE TEFLON. ALL ELASTOMERIC SEALS SHALL HAVE LEAK DETECTION DESIGN.

   a. ACCEPTABLE CHECK VALVES: NIBCO PS413-Y-LF: Y PATTERN, SWING TYPE CHECK VALVE; NIBCO PS480-Y-LF : IN-LINE SPRING LOADED SILENT CHECK VALVE

3. BUTTERFLY VALVES 2-1/2" – 4", (ON/OFF, ISOLATION OR THROTTLING) BUTTERFLY VALVES WITH FEMALE LEAD FREE PRESS-TO-CONNECT ENDS SHALL BE RATED AT 200 PSI. CWP TO +250°F MAXIMUM. VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH MSS SP-67 AND CONSTRUCTED OF A DUCTILE-IRON BODY, FOR BUBBLE-TIGHT SHUTOFF, EXTENDED-NECK FOR INSULATION, DISC AND LINING SUITABLE FOR POTABLE WATER, VALVES SHALL BE SUITABLE FOR BI-DIRECTIONAL DEAD END SERVICE AT FULL RATED PRESSURE, ONE-PIECE TYPE 416 STAINLESS-STEEL STEM, COPPER BUSHING, FASTENERS AND PINS SHALL NOT BE USED TO ATTACH STEM TO DISC, NO PINS OR FASTENERS IN WATERWAY, ALUMINUM-BRONZE DISC, AND MOLDED-IN EPDM SEAT (LINER). ALL ELASTOMERIC SEALS SHALL HAVE LEAK DETECTION DESIGN.

   a. ACCEPTABLE VALVES: NIBCO PFD2000 SERIES (NSF-61)
   b. GD4765N-LF (NSF-61)

3.01 TESTING

A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.

B. TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.

C. THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL, PARTITION OR BEAM.

D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.

E. ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.

F. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.

G. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.

H. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

I. ALL EQUIPMENT WILL BE FACTORY TESTED.

J. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.

K. REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

L. TESTING REQUIREMENTS
   a. TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 125 PSIG.
   b. HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 120 MINUTES.
   c. TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
   d. THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND ADJACENT TENANT OR ESB SPACES.

M. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.

N. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.

4. WARRANTY

A. EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

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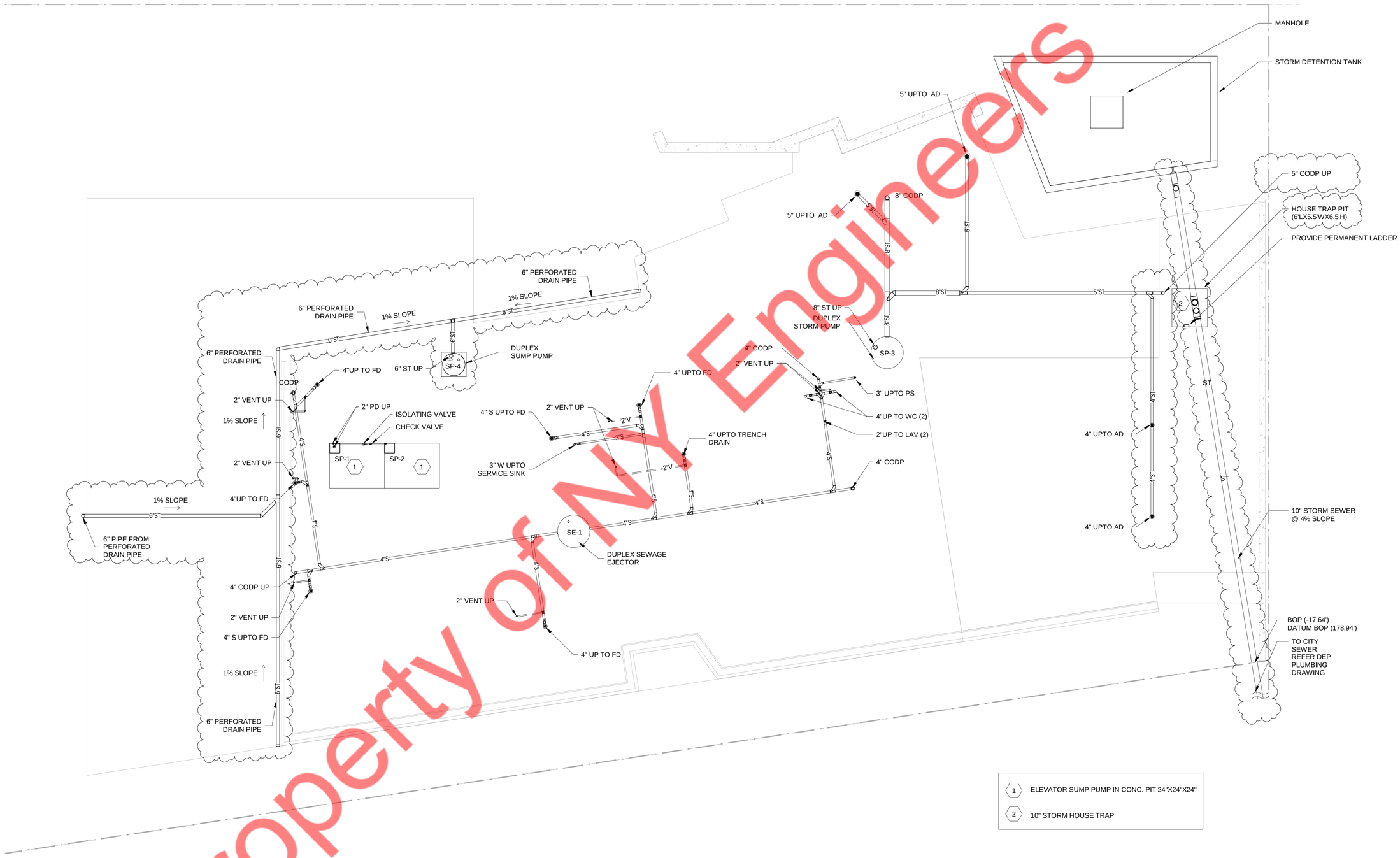
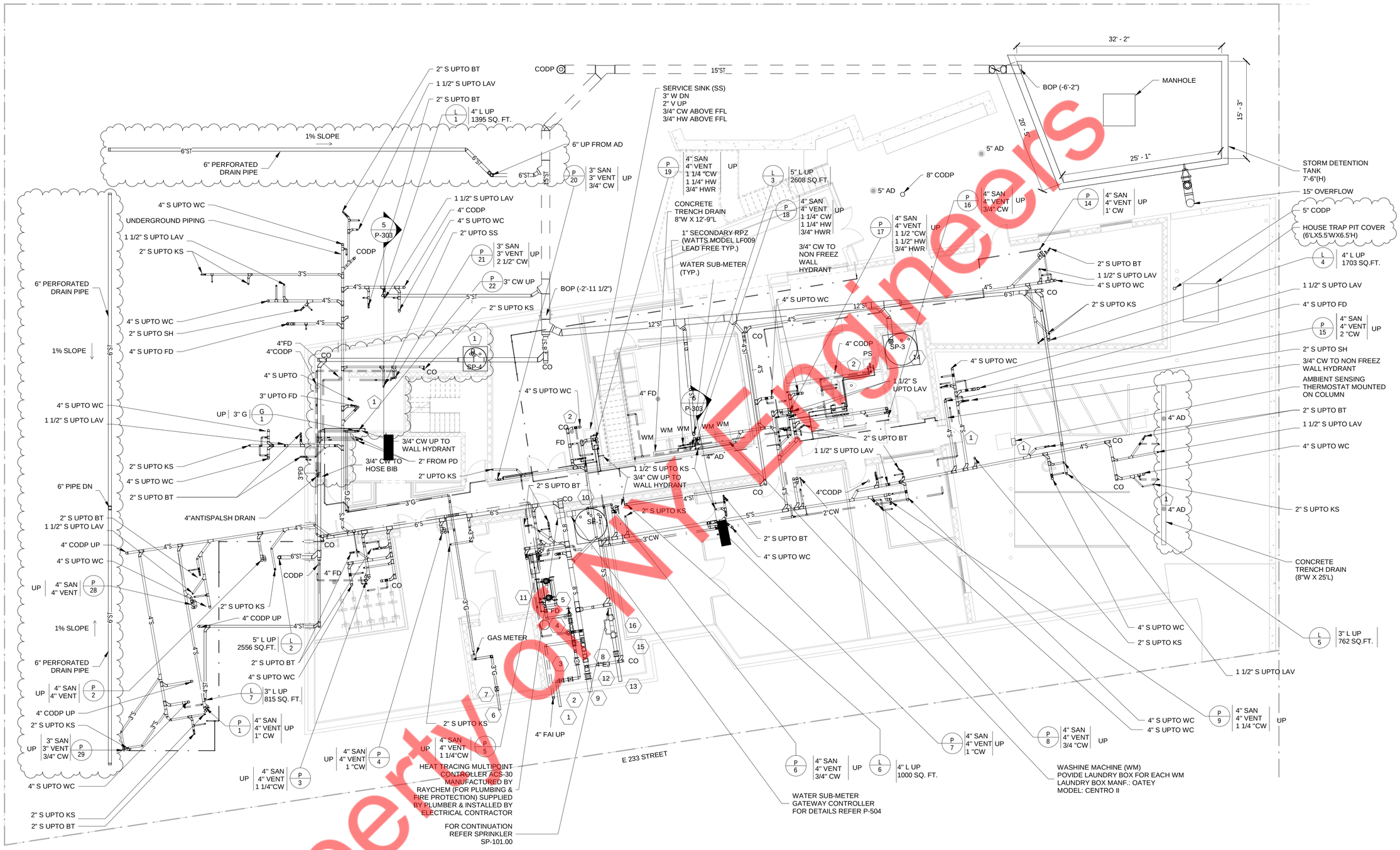


1 UNDERGROUND PLUMBING PLAN
1/8" = 1'-0"

GENERAL NOTE:
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
2. FOR PIPE SIZING, REFER TO RISER DIAGRAMS.
3. REFER DEP APPROVED SITE CONNECTION DRAWING FOR SANITARY AND STROM BUILDING SEWER CONNECTION TO CITY SEWER LINE.

Property of NY Engineers



1 CELLAR PLUMBING PLAN
1/8" = 1'-0"

Property of NY Engineers

ELECTRIC HEAT TRACING CABLE SCHEDULE

MANUFACTURE	MODEL	WATTS/FT	VOLTAGE/ PHASE	AMPS	LENGTH (FT.)	DISCIPLINE	AREA	REMARKS
RAYCHEM	5XL1-CR	4.5	120/1 PH	15	700	PLUMBING	CELLAR-SANITARY PIPING IN NON HEATED SPACE & SPRINKLER PIPING IN TRASH COMPACTOR ROOM	- PROVIDE CONNECTION KITS AND ACCESSORIES, SPLICES, POWER CONNECTRION, TEE KITS CROSS CONNECTIONS, TAPE, ETC. -PROVIDE AN AMBIENT THERMOSTAT SENSING RTD-200 BY RAYCHEM. -PROVIDE ONE CONTROLLER ACS-30 FOR ALL DATA ELECTRIC CIRCUITS. -PROVIDE MAX. FIVE (5) CIRCUITS PER PANEL ACS-PCM2-5

KEY NOTE

1. PROVIDE HEAT TRACING FOR EXPOSED SANITARY PIPING & FOR SPRINKLER PIPING COORDINATE WITH SPRINKLER CONTRACTOR.
2. PROVIDE SIGNAGE FOR EMERGENCY DRINKING WATER AS PER NYC PLUMBING CODE SECTION PC 614

GENERAL NOTE:

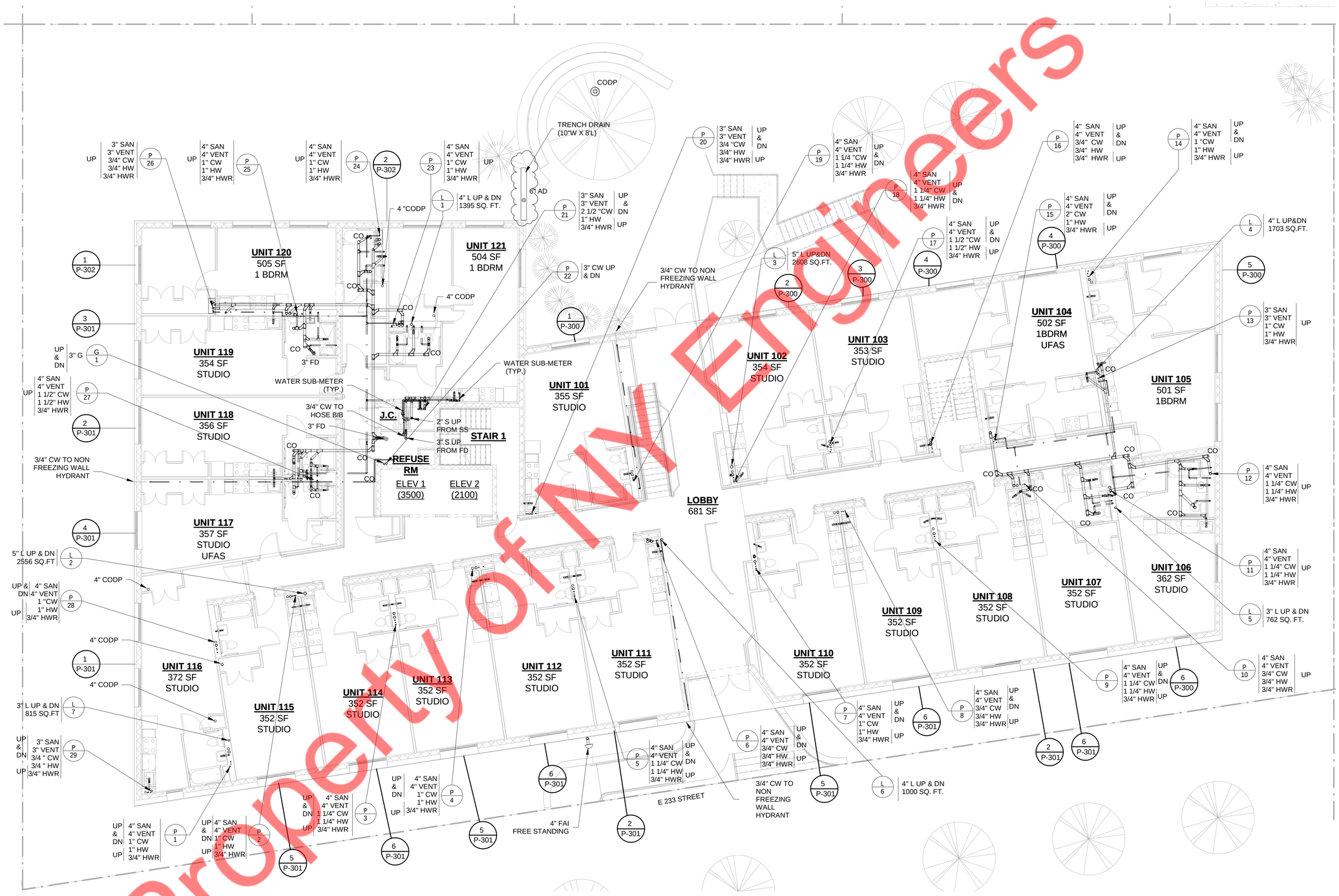
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
2. FOR PIPE SIZING, REFER TO RISER DIAGRAMS.
3. FOR DETAIL REGARDING BFP, SITE CONNECTION & STORM DETENTION, REFER DEP APPROVED FILING DRAWING
4. HEATED WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.5.1, MAXIMUM ALLOWED PIPE LENGTH METHOD.
5. PROVIDE WATER SUB METERS AT EACH COLD WATER AND HOT WATER RISER TAKE OFFS TO FIXTURES.
6. PROVIDE TRAP PRIMER FOR ALL FLOOR DRAIN.
7. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10

MINIMUM PIPE INSULATION THICKNESS

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU · IN./ (H · FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	<8
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0

LEGENDS

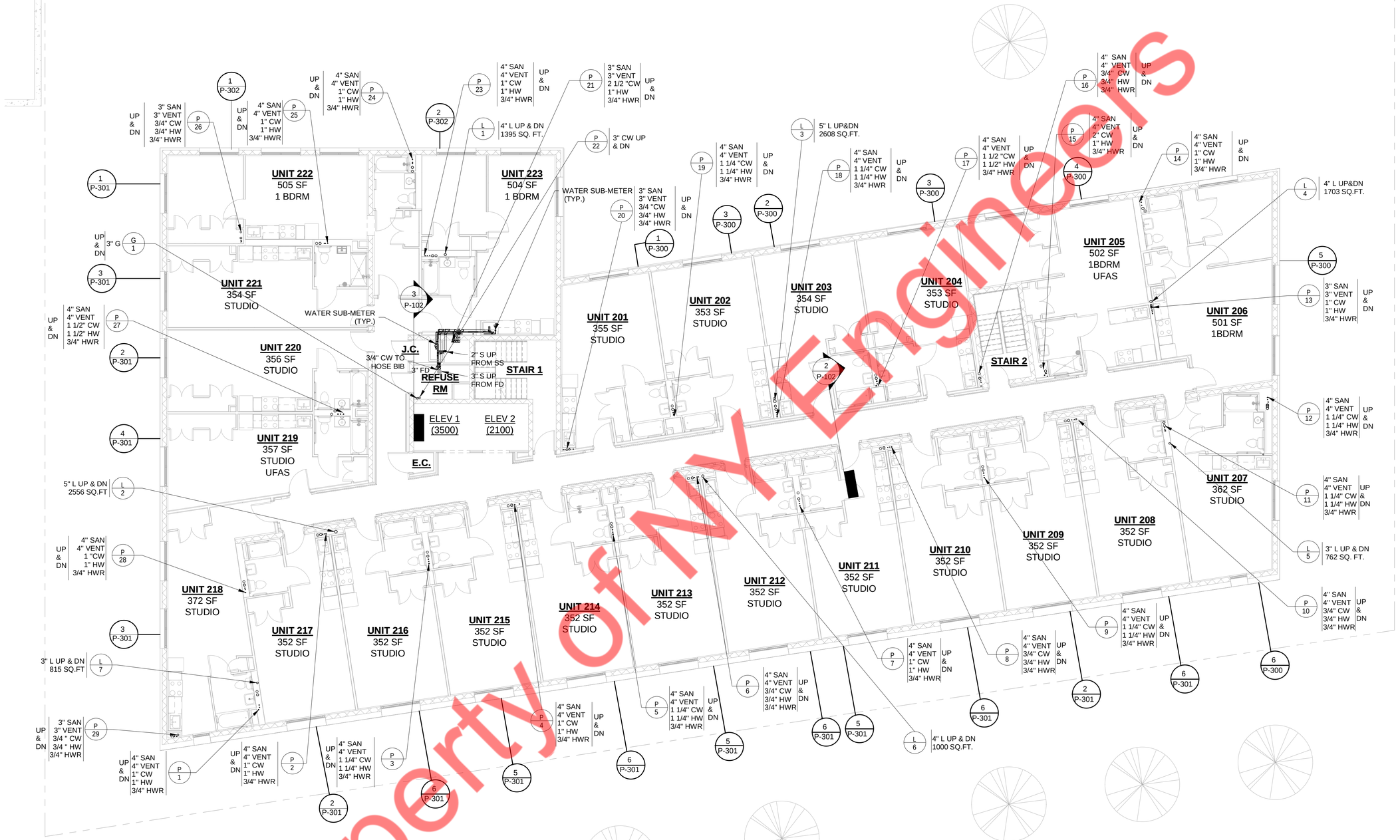
1. 4" INCOMING DOMESTIC WATER SERVICE
2. 4" HOUSE GATE VALVE OS&Y & 4" MICV
3. NYC APPROVED DOMESTIC WATER METER W/REMOTE READER ENCODER.
4. BACKFLOW PREVENTER 4" RPZ FOR DOMESTIC WATER SERVICE.
5. 4" MOCV INSTALLED VERTICALLY & TEST TEE CONNECTION W/VALVE.
6. 3" INCOMING GAS SERVICE WITH PIPE SLEEVE BY GAS UTILITY CO.
7. 3" GAS HOUSE VALVE.
8. 8" SANITARY HOUSE TRAP
9. 8" SANITARY BLDG. SEWER.
10. DUPLEX SEWAGE EJECTOR INSIDE UNDERGROUND FIBERGLASS BASIN FOR DETAILS REFER SCHEDULE
11. DOMESTIC WATER BOOSTER PUMP
12. BACK WATER VALVE
13. 6" INCOMING FIRE WATER SERVICE
14. DUPLEX STORM SUMP PUMP INSIDE PACKAGE ROOM.
15. 6" HOUSE GATE VALVE W/TAMPER SWITCH.
16. BACKFLOW PREVENTER 6" DCDA FOR FIRE



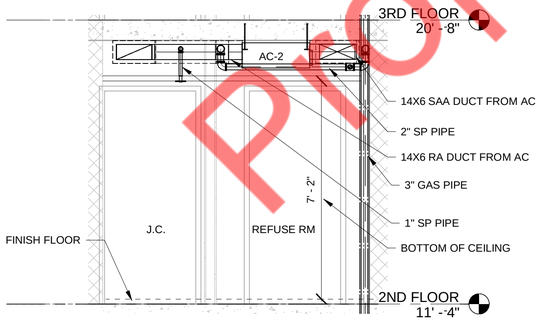
1 GROUND FLOOR PLUMBING PLAN
1/8" = 1'-0"

GENERAL NOTE:
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
2. FOR PIPE SIZING, REFER TO RISER DIAGRAMS.
3. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10
4. HEATED WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.5.1 04 C404.5.2.
5. PROVIDE 2HR RATED PROTECTION FOR GAS RISERS.
6. PROVIDE WATER SUB METERS AT EACH COLD WATER AND HOT WATER RISER TAKE OFFS TO FIXTURES.

Property of NY Engineers



Property of NY Engineers



3 2ND FLOOR REFUSE RM AC UNIT
3/8" = 1'-0"

1 2ND FLOOR PLUMBING PLAN
1/8" = 1'-0"

GENERAL NOTE:
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS..
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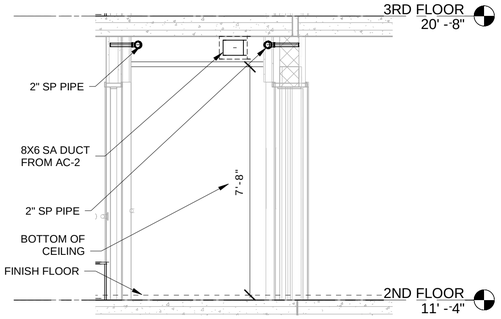
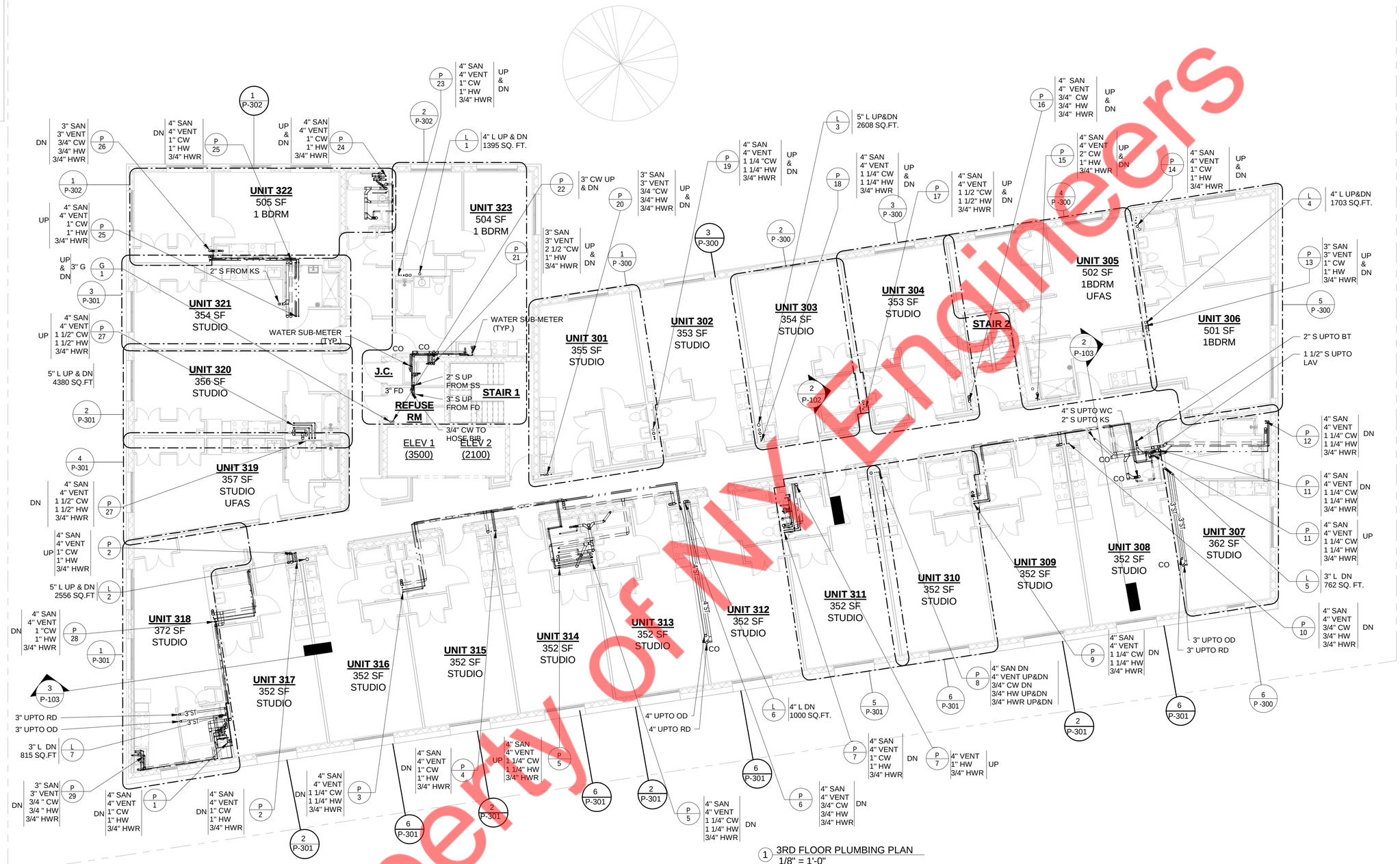
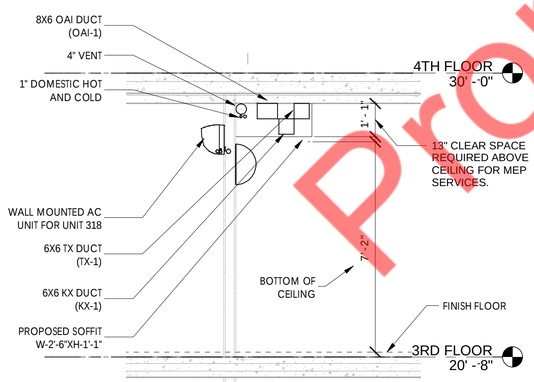


2 2ND FLOOR CORRIDOR
3/8" = 1'-0"



1 3RD FLOOR PLUMBING PLAN
1/8" = 1'-0"



3 3RD FLOOR UNIT 318 & 317
3/8" = 1'-0"

GENERAL NOTE:
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
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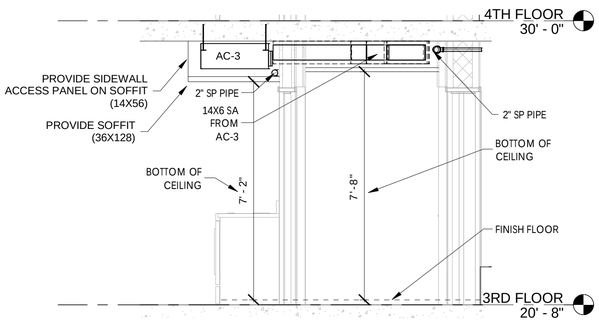
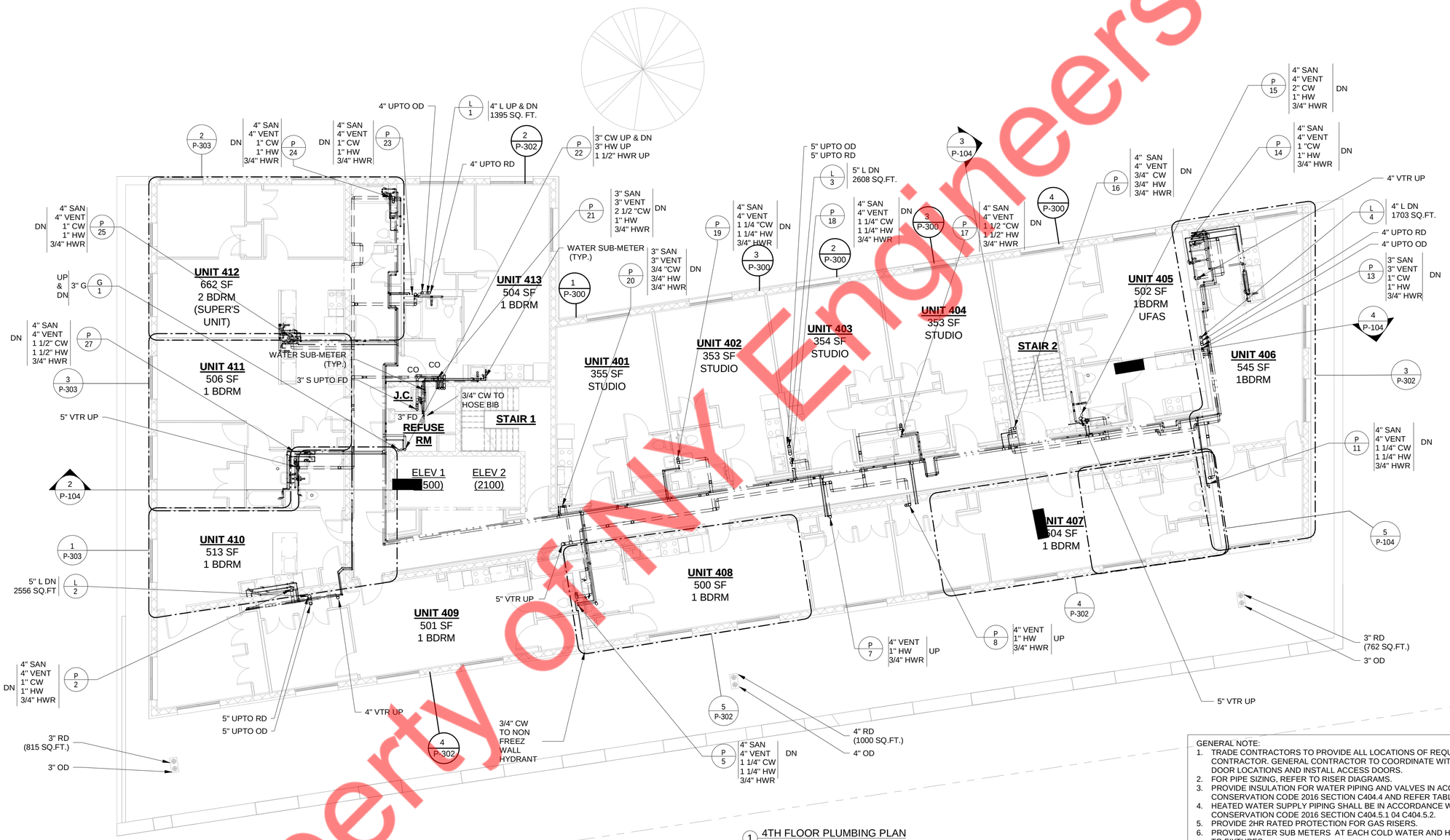
3. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10
4. HEATED WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.5.1 04 C404.5.2.
5. PROVIDE 2HR RATED PROTECTION FOR GAS RISERS.
6. PROVIDE WATER SUB METERS AT EACH COLD WATER AND HOT WATER RISER TAKE OFFS TO FIXTURES.



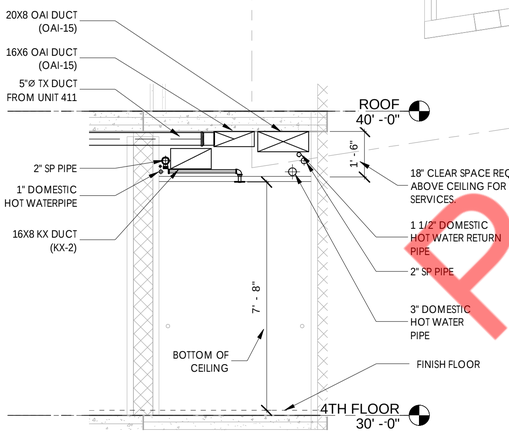
2 3RD FLOOR CORRIDOR
3/8" = 1'-0"

Property of NY Engineers

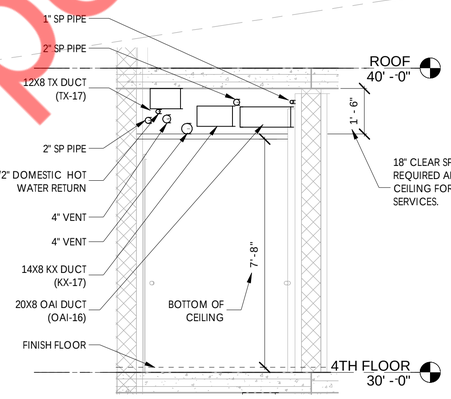


1 4TH FLOOR PLUMBING PLAN
1/8" = 1'-0"

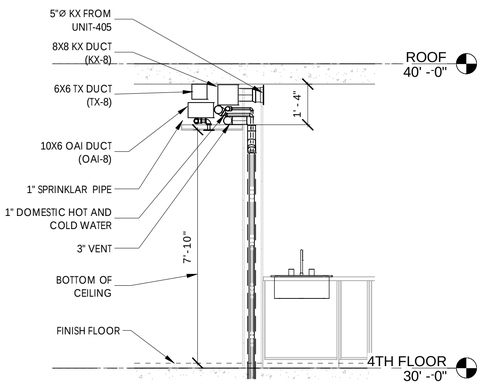
GENERAL NOTE:
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
2. FOR PIPE SIZING, REFER TO RISER DIAGRAMS.
3. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10
4. HEATED WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.5.1 04 C404.5.2.
5. PROVIDE 2HR RATED PROTECTION FOR GAS RISERS.
6. PROVIDE WATER SUB METERS AT EACH COLD WATER AND HOT WATER RISER TAKE OFFS TO FIXTURES.



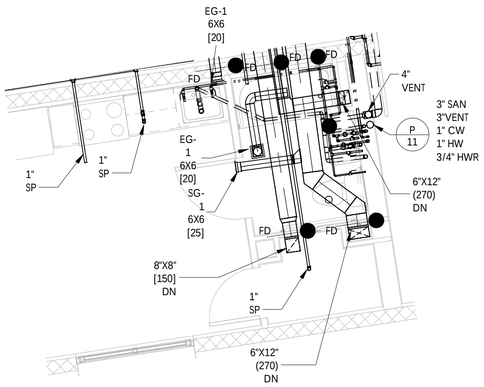
2 4TH FLOOR CORRIDOR-1
3/8" = 1'-0"



3 4TH FLOOR CORRIDOR-2
3/8" = 1'-0"

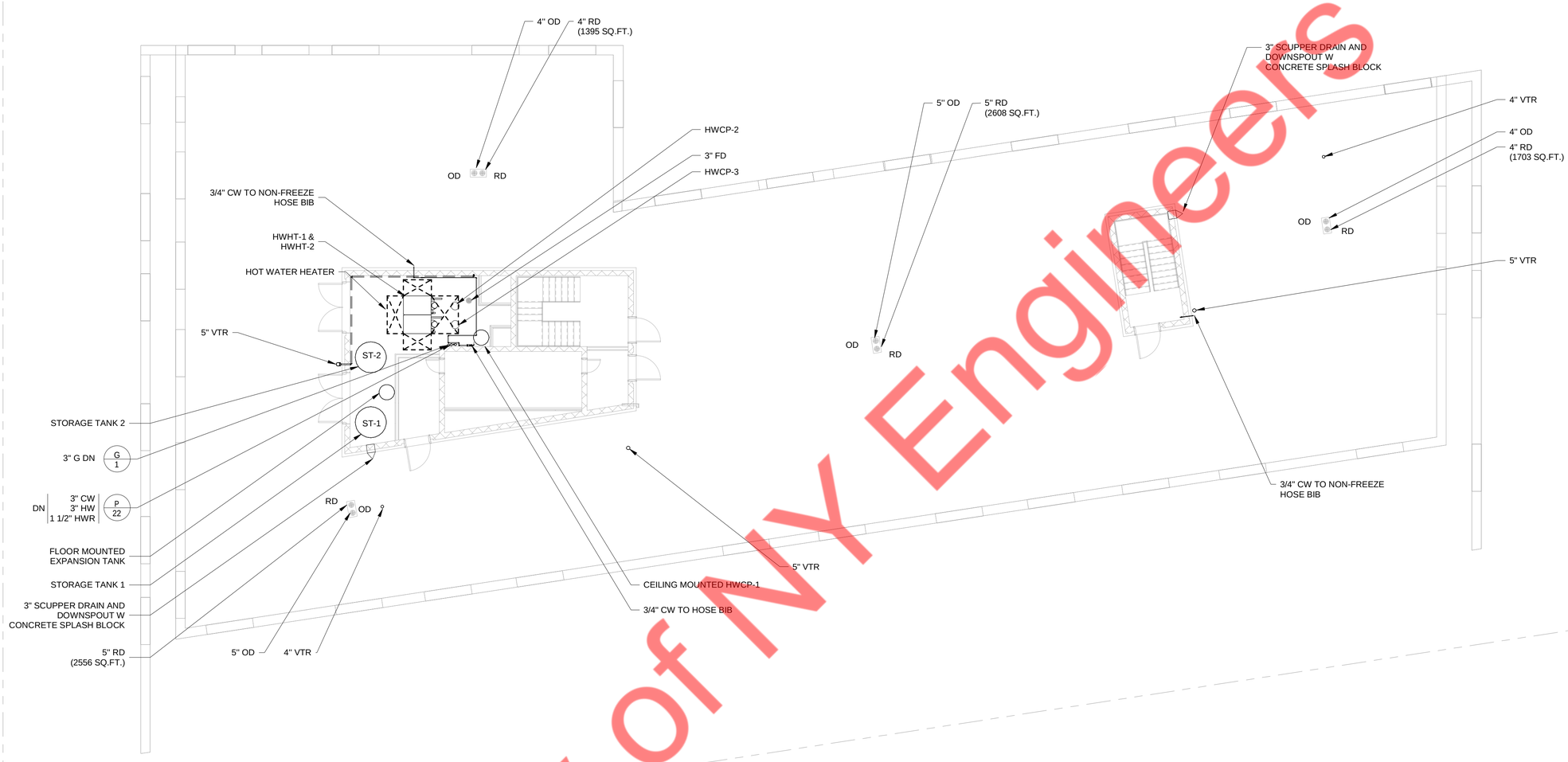


4 4TH FLOOR UNIT-406
3/8" = 1'-0"



5 4TH FLOOR-Unit 407
1/4" = 1'-0"

Property of NY Engineers



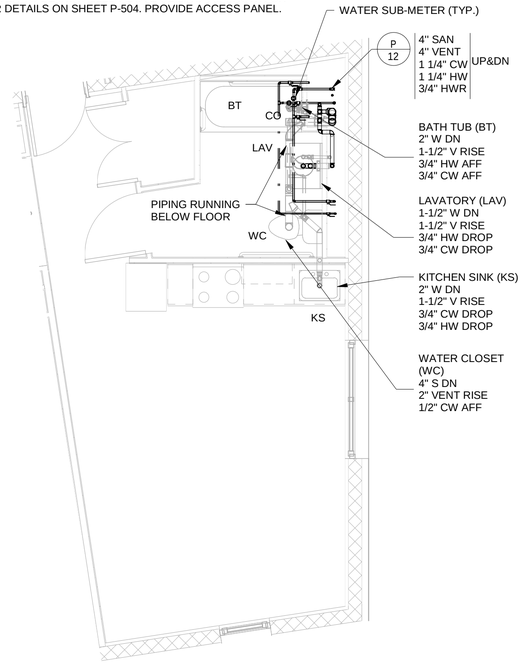
1 ROOF PLUMBING PLAN
1/8" = 1'-0"

GENERAL NOTE:

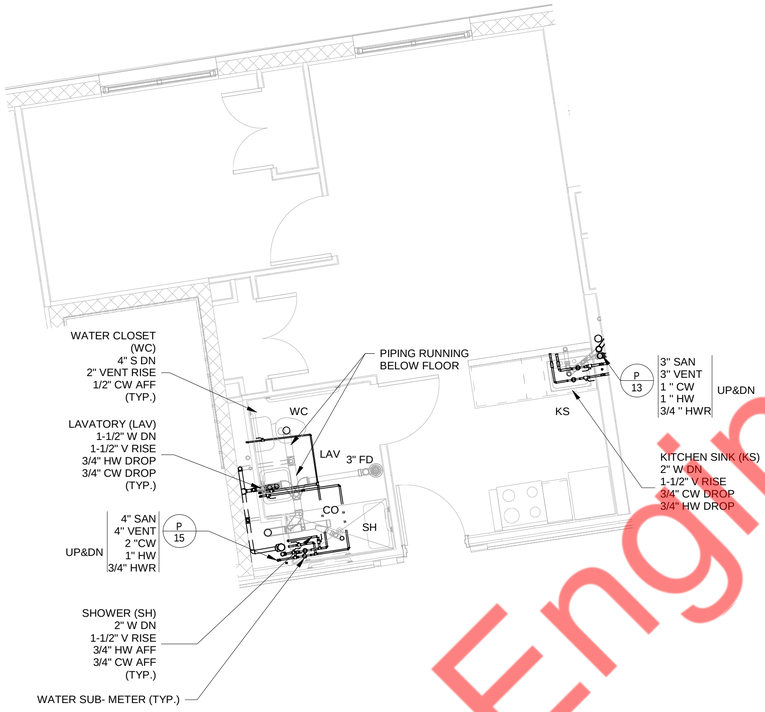
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
2. FOR PIPE SIZING, REFER TO RISER DIAGRAMS.
3. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10
4. HEATED WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.5.1 04 C404.5.2.
5. PROVIDE 2HR RATED PROTECTION FOR GAS RISERS.
6. AS PER NYC ENERGY CONSERVATION CODE 2016 C404.6.3 THE CONTROLS ON PUMPS THAT CIRCULATE WATER BETWEEN A WATER HEATER AND A HEATED-WATER STORAGE TANK SHALL LIMIT OPERATION OF THE PUMP FROM HEATING CYCLE STARTUP TO NOT GREATER THAN 5 MINUTES AFTER THE END OF THE CYCLE.

Property of NY Engineers

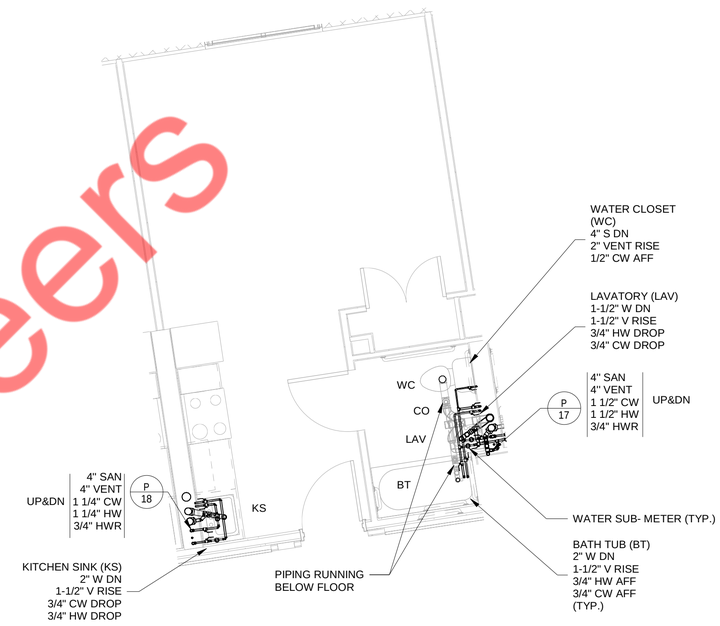
GENERAL NOTE:
1. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10.
2. ALL WATER SUB-METER TO BE INSTALLED ABOVE CEILING AS SHOWN ON PART PLANS. REFER DETAILS ON SHEET P-504. PROVIDE ACCESS PANEL.



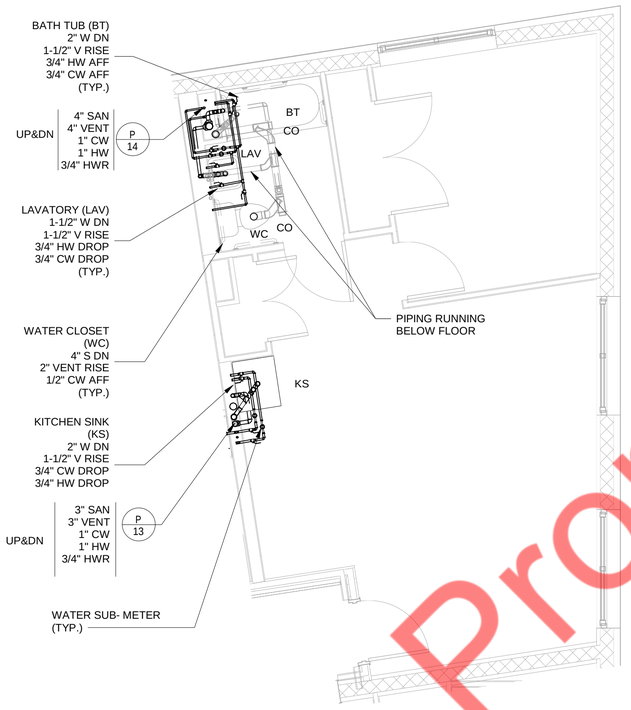
6 UNIT 106, 207, 307 - STUDIO UNIT
1/4" = 1'-0"



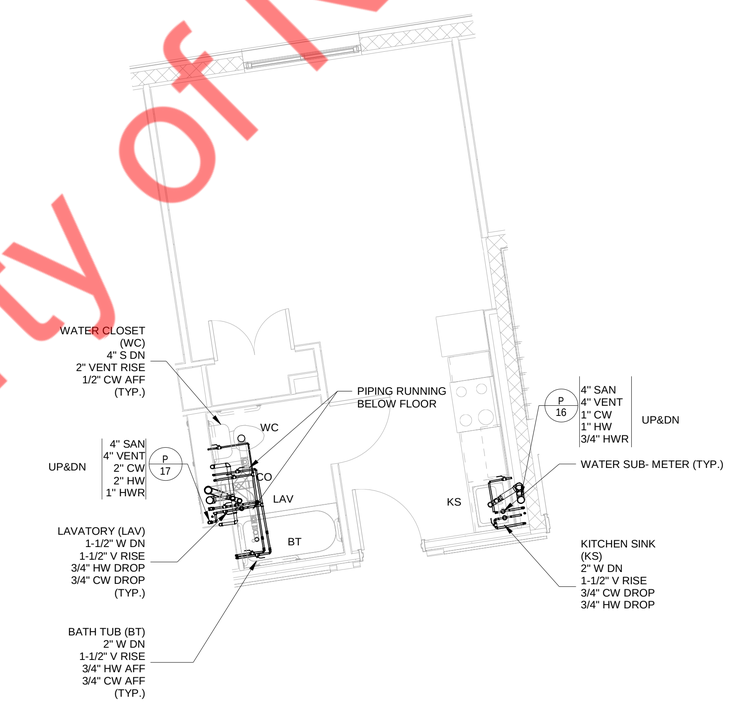
4 UNIT 104, 205, 305, 405 - UFAS 1
1/4" = 1'-0"



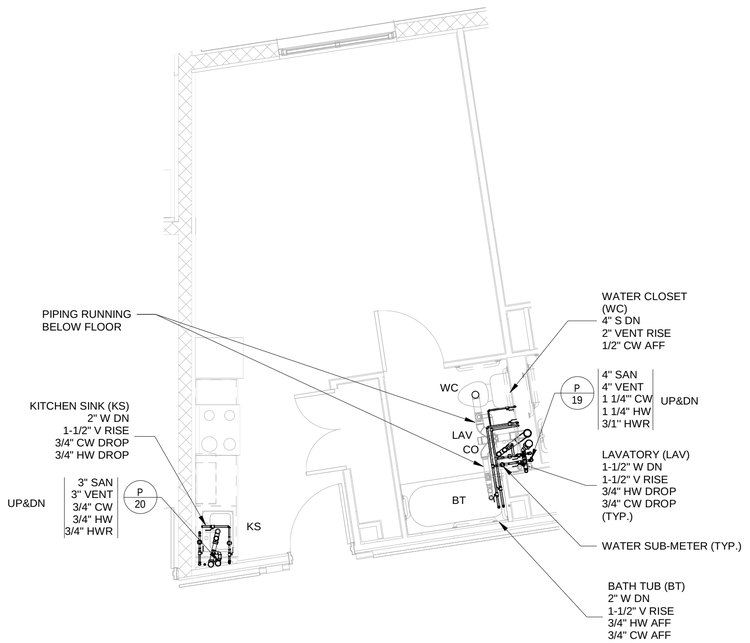
2 UNIT 102, 203, 303, 403 - STUDIO UNIT
1/4" = 1'-0"



5 UNIT 105, 206, 306 - 1 BEDROOM UNIT
1/4" = 1'-0"



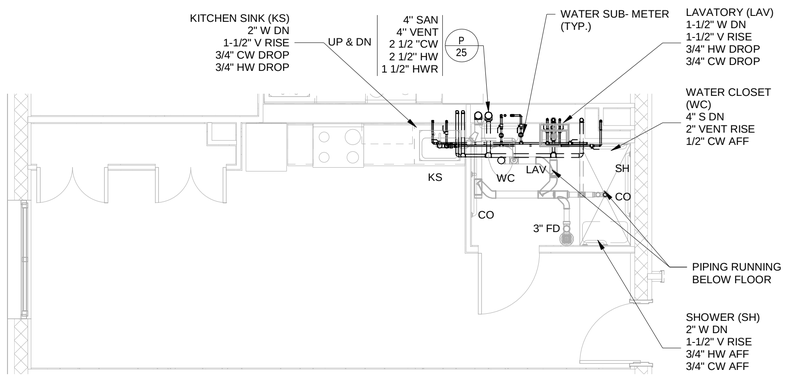
3 UNIT 103, 202, 204, 302, 304, 402, 404 -
1/4" = 1'-0"



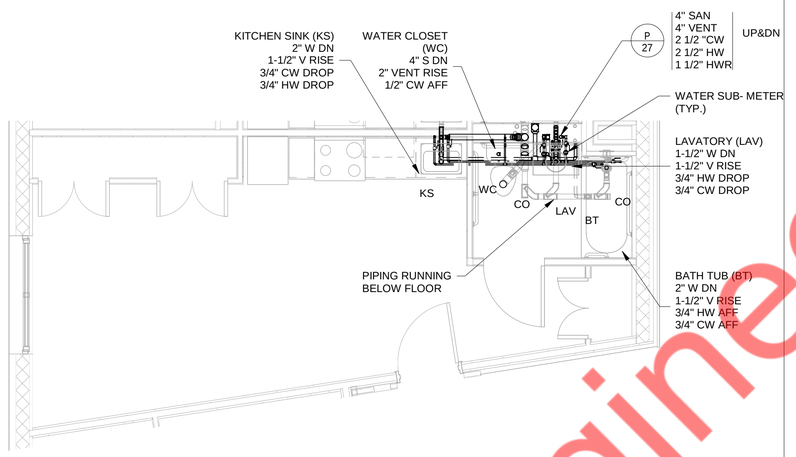
1 UNIT 101, 201, 303, 401 - STUDIO UNIT
1/4" = 1'-0"

Property of NY Engineers

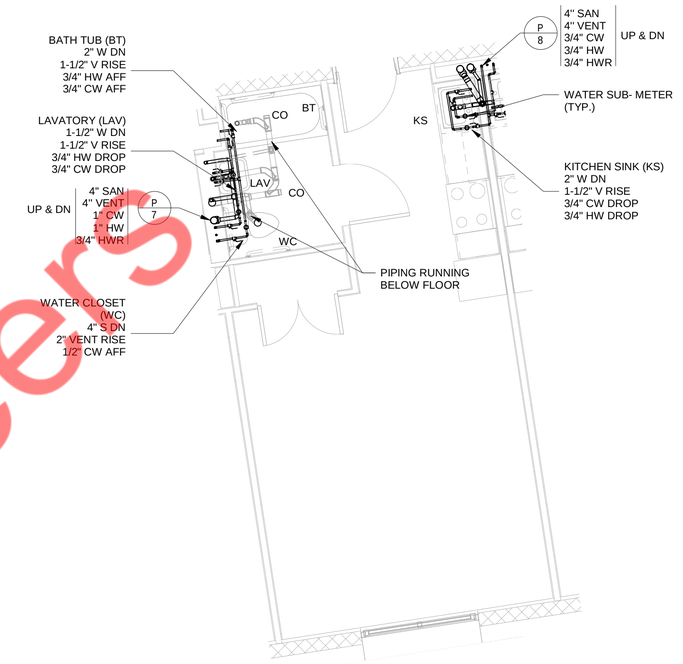
GENERAL NOTE:
1. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10.
2. ALL WATER SUB-METER TO BE INSTALLED ABOVE CEILING AS SHOWN ON PART PLANS. REFER DETAILS ON SHEET P-504. PROVIDE ACCESS PANEL.



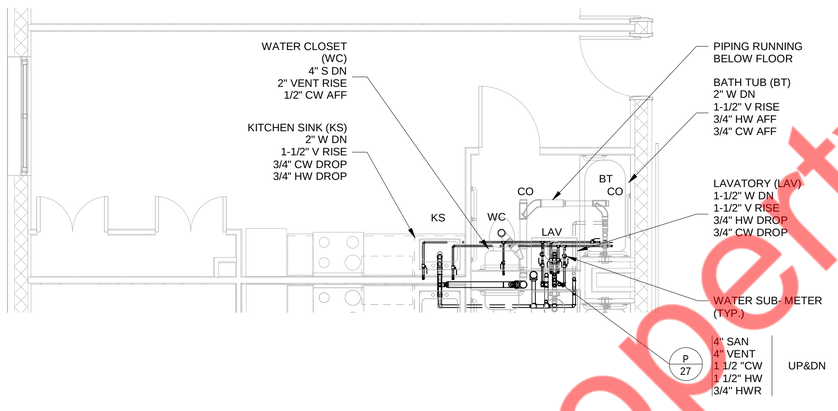
3 UNIT 119, 221, 321 - STUDIO UNIT
1/4" = 1'-0"



4 UNIT 117, 219, 319 - UFAS STUDIO UNIT
1/4" = 1'-0"

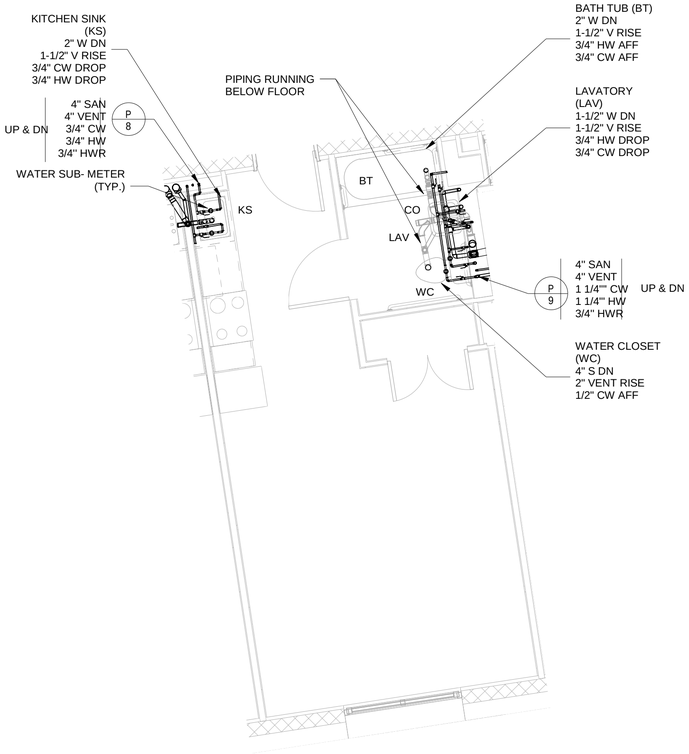


5 UNIT 108, 110, 113, 115, 211, 213, 215,
1/4" = 1'-0"



2 UNIT 118, 220, 320 - STUDIO UNIT
1/4" = 1'-0"

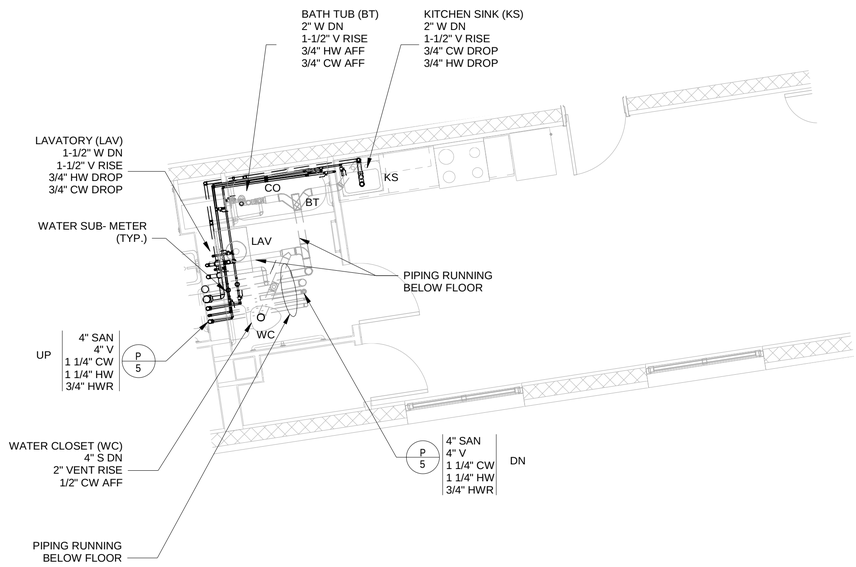
1 UNIT 116, 218, 318 - STUDIO UNIT
1/4" = 1'-0"



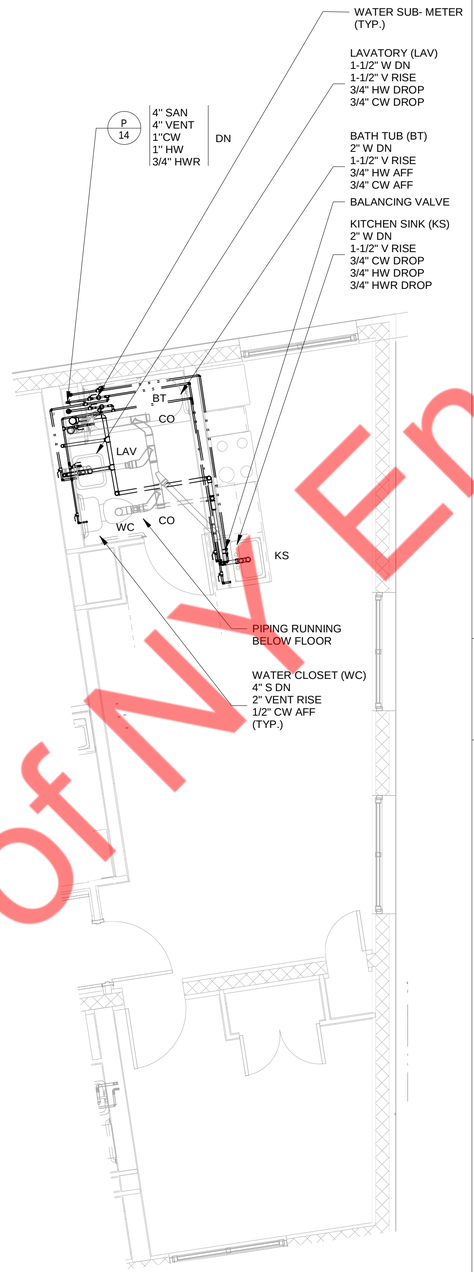
6 UNIT
107,109,112,114,208,210,212,214,216,308,312,314,316
1/4" = 1'-0"

Property of NY Engineers

GENERAL NOTE:
1. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10.
2. ALL WATER SUB-METER TO BE INSTALLED ABOVE CEILING AS SHOWN ON PART PLANS. REFER DETAILS ON SHEET P-504. PROVIDE ACCESS PANEL.



5 UNIT 408 - 1 BEDROOM UNIT
1/4" = 1'-0"



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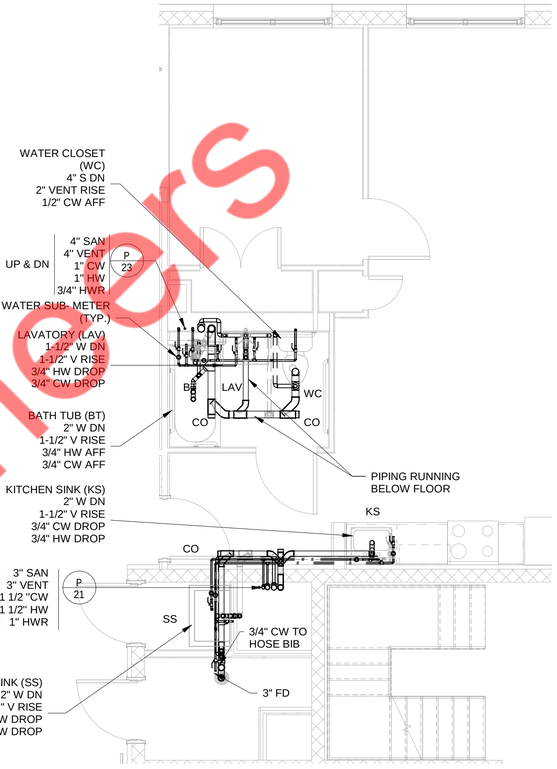
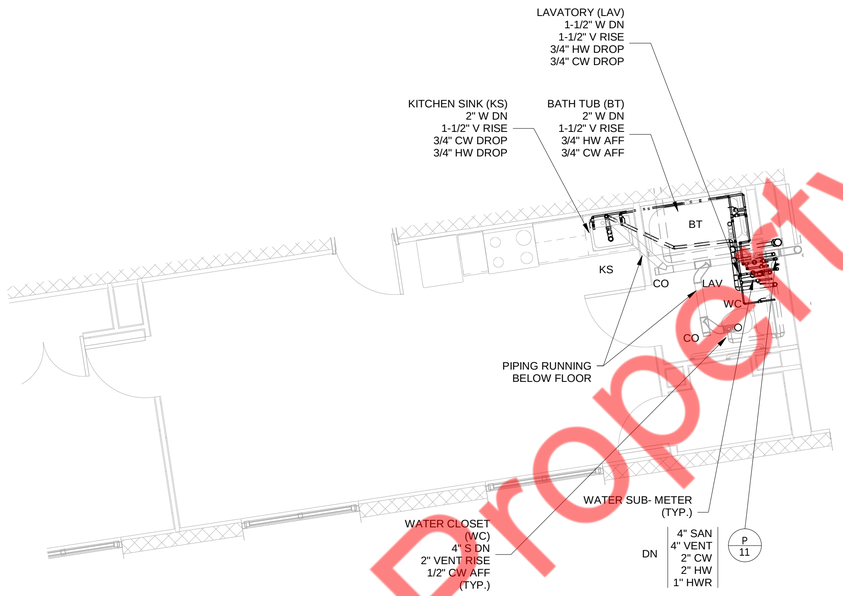


2 UNIT 121, 223, 323, 413 - 1 BEDROOM, J.C. & REFUSE RM
1/4" = 1'-0"



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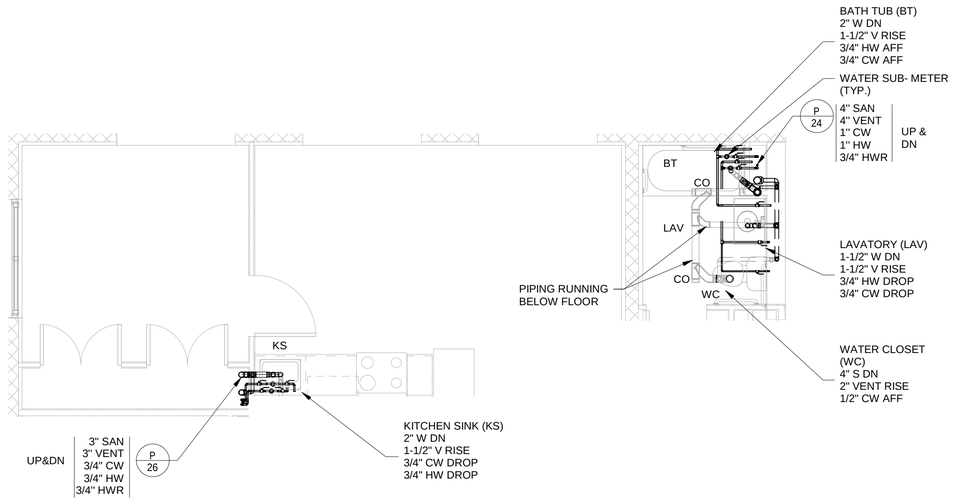
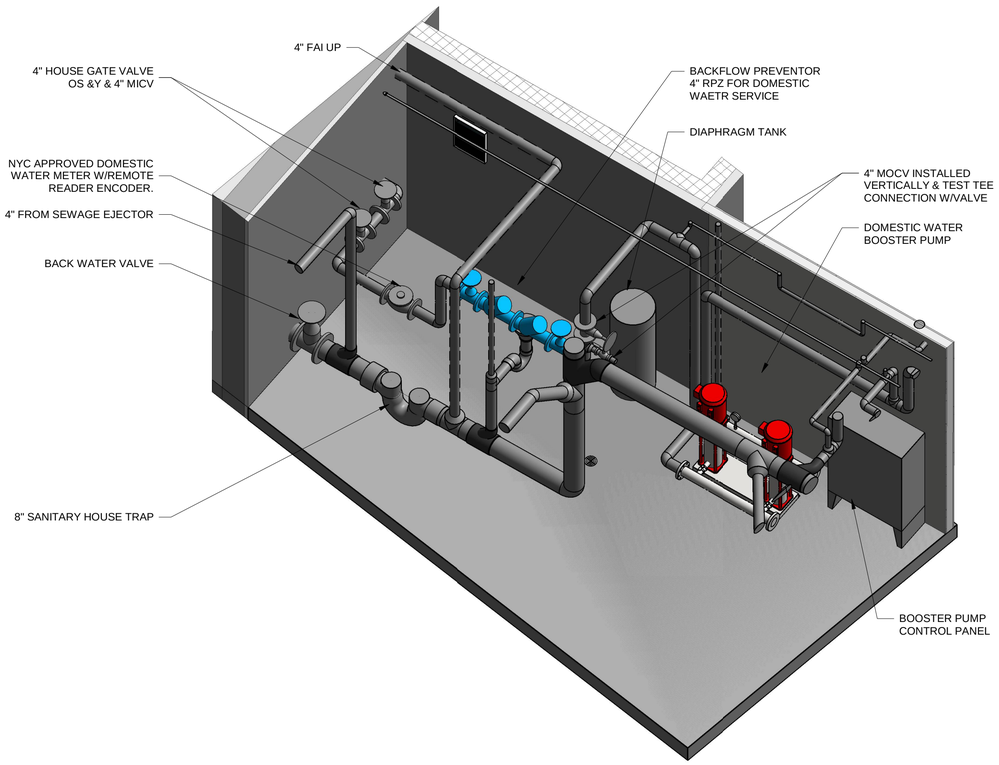
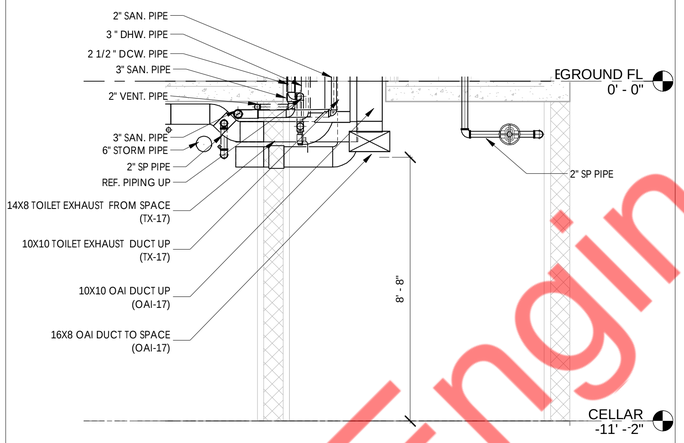


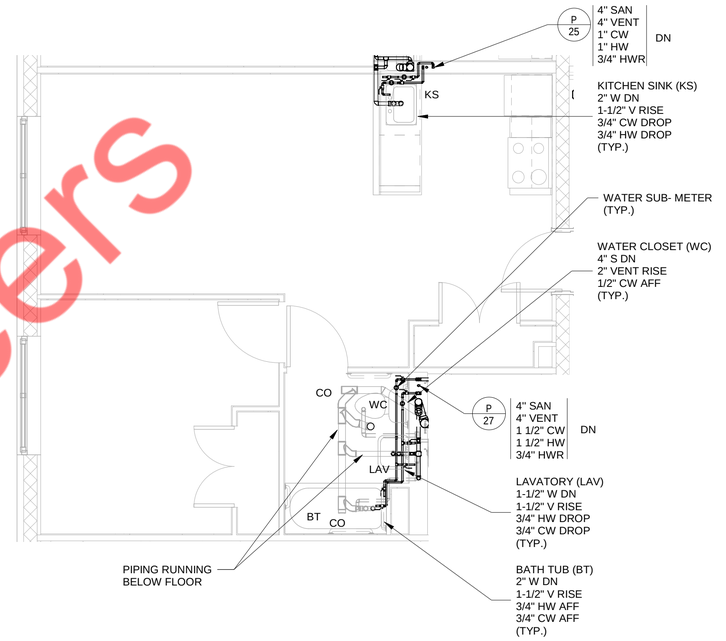
1 UNIT 120, 222, 322 - 1 BEDROOM UNIT
1/4" = 1'-0"

Property of NYC Engineers

GENERAL NOTE:
1. PROVIDE INSULATION FOR WATER PIPING AND VALVES IN ACCORDANCE WITH NYC ENERGY CONSERVATION CODE 2016 SECTION C404.4 AND REFER TABLE C403.2.10.
2. ALL WATER SUB-METER TO BE INSTALLED ABOVE CEILING AS SHOWN ON PART PLANS. REFER DETAILS ON SHEET P-504. PROVIDE ACCESS PANEL.



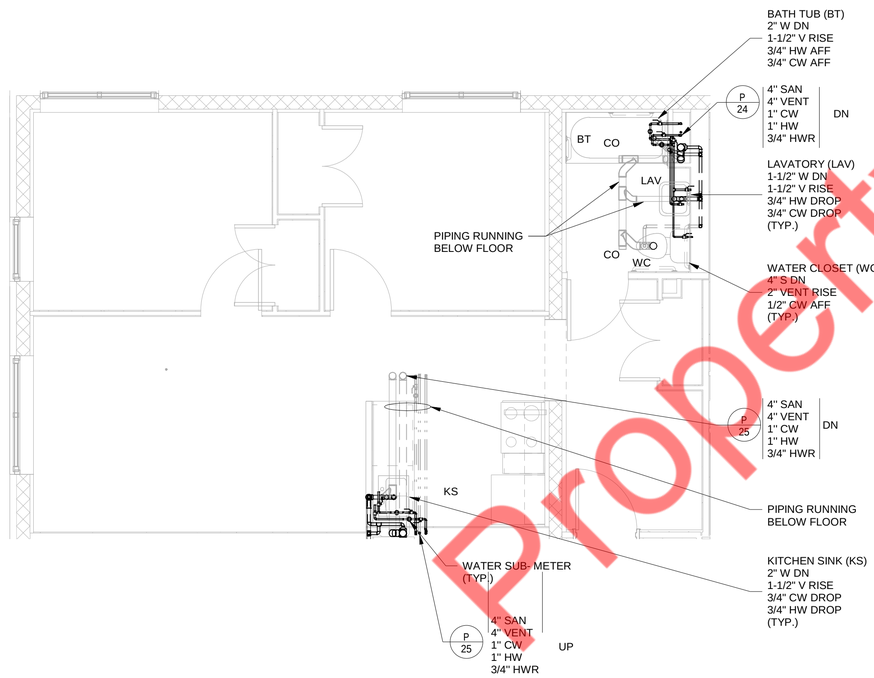


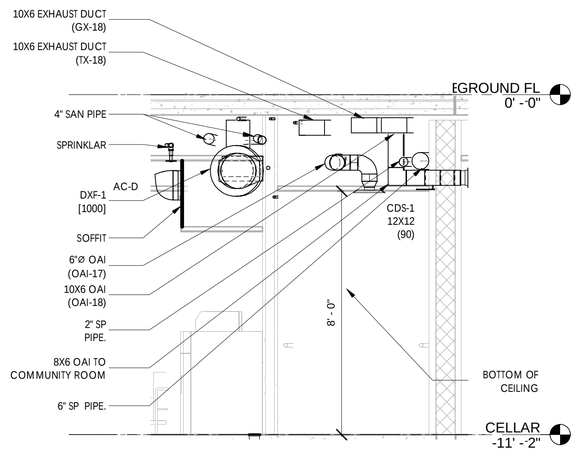


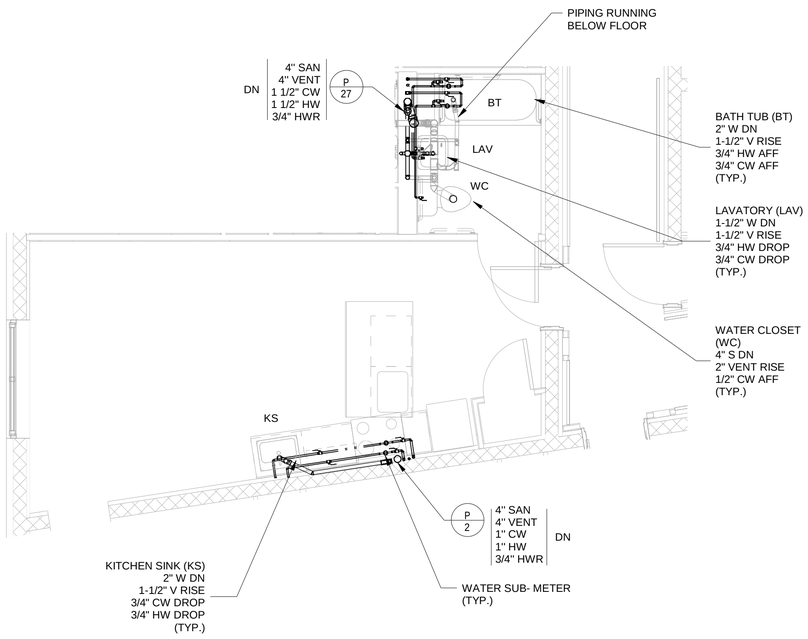
Property of NY Engineers

5 CELLAR FLOOR TRASH ROOM
3/8" = 1'-0"

3 UNIT 411 - 1 BEDROOM UNIT
1/4" = 1'-0"



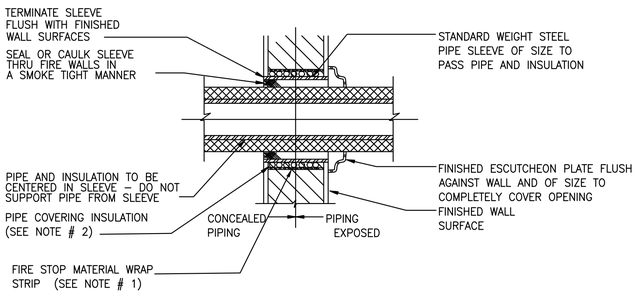




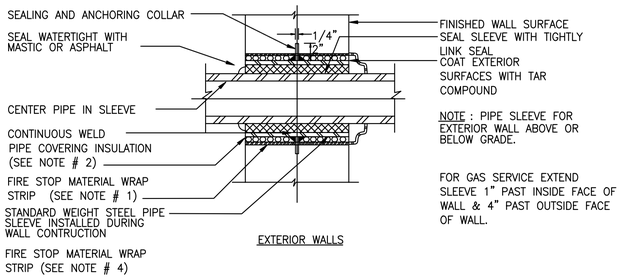
2 UNIT 412 - 2 BEDROOM UNIT (SUPER'S UNIT)
1/4" = 1'-0"

6 CELLAR FLOOR CORRIDOR
3/8" = 1'-0"

1 UNIT 410 - 1 BEDROOM UNIT
1/4" = 1'-0"



INTERIOR WALLS



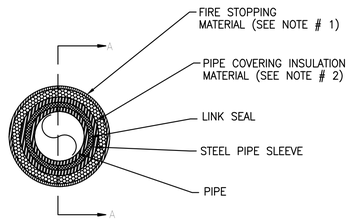
EXTERIOR WALLS

NOTE : PIPE SLEEVE FOR EXTERIOR WALL ABOVE OR BELOW GRADE.

FOR GAS SERVICE EXTEND SLEEVE 1" PAST INSIDE FACE OF WALL & 4" PAST OUTSIDE FACE OF WALL.

PIPE SLEEVE THRU WALL SECTION

NOT TO SCALE

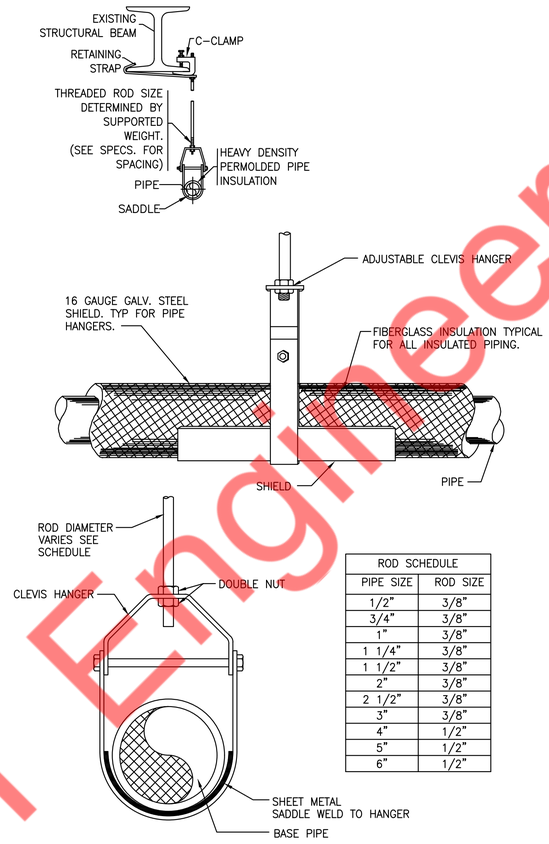


PIPE SLEEVE VIEW

NOT TO SCALE

NOTES:

1. FIRESTOP MATERIAL WRAP STRIP SHALL BE ¼" THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL SUPPLIED IN 2 IN. WIDE STRIPS AND WRAP AROUND THE PIPE AS PER UL MATERIAL LISTED3M COMPANY FS–195+ OR FILL CAVITY WITH CAULK OR SEALANT MIN. ¼" DIA. CONTINUOUS BEAD APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED OF THE WRAP STRIP LAYER APPROX. 3/4" FROM WALL SURFACE. AS PER UL LISTED 3M COMPANY CP25WB+, IC 15WB+, FIRE DAM 150+CAULK.
2. PIPE COVERING INSULATION SHALL BE 2" THICK HOLLOW CYLINDRICAL HEAVY DENSITY GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKETED. AS PER UL CLASSIFICATION AND MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.



ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
1"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

1 P–501 PIPE SLEEVE THRU WALL SECTION

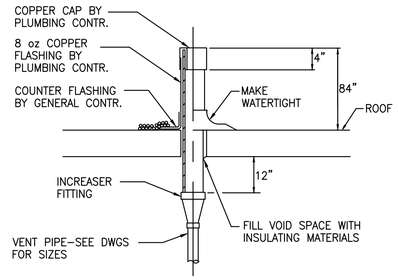
N.T.S

2 P–501 HANGER DETAIL

N.T.S

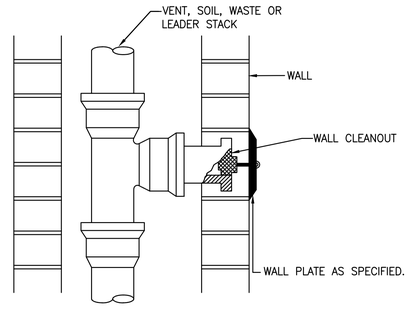
NOTES:

1. MINIMUM SIZE OF VENT EXTENSION THROUGH ROOF TO BE 4".
2. CHANGE OF DIAMETER TO BE MADE AT LEAST 12" BELOW ROOF.
3. VENT PIPE TO EXTEND up to 7'–0" ABOVE ROOF IN ACCESSIBLE WATERTIGHT BY PROPER FLASHING.
4. ALL VENT RISERS SHALL BE OFFSET AS REQUIRED TO CLEAR ROOF STRUCTURE DUCTWORK OR MECH. ROOF TOP UNITS.
5. PLUMBING CONTRACTOR TO COORDINATE WITH OTHER TRADES.
6. ROOFING CONTRACTOR SHALL SUPPLY BOOT FLASHING FOR RUBBER ROOF SYSTEMS.



3 P–501 VENT INCREASER DETAIL

N.T.S



4 P–501 WALL CLEANOUT DETAIL

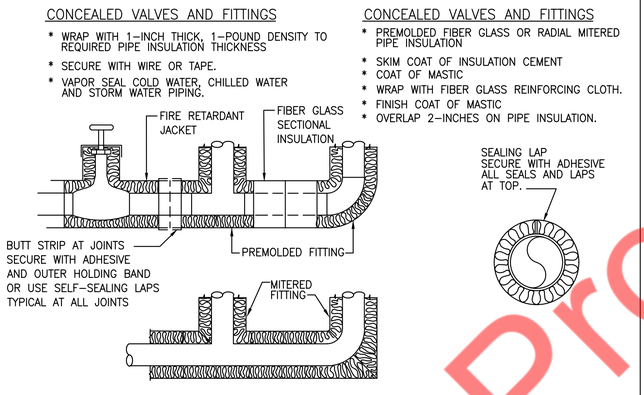
N.T.S

CONCEALED VALVES AND FITTINGS

- WRAP WITH 1–INCH THICK, 1–POUND DENSITY TO REQUIRED PIPE INSULATION THICKNESS
- SECURE WITH WIRE OR TAPE.
- VAPOR SEAL COLD WATER, CHILLED WATER AND STORM WATER PIPING.

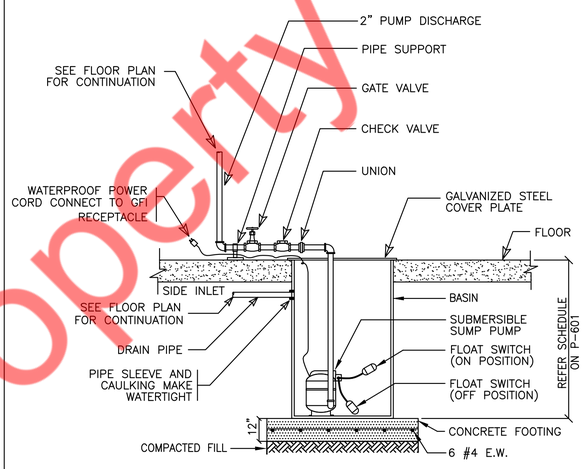
CONCEALED VALVES AND FITTINGS

- PREMOLDED FIBER GLASS OR RADIAL MITERED PIPE INSULATION
- SKIM COAT OF INSULATION CEMENT
- COAT OF MASTIC
- WRAP WITH FIBER GLASS REINFORCING CLOTH.
- FINISH COAT OF MASTIC
- OVERLAP 2–INCHES ON PIPE INSULATION.



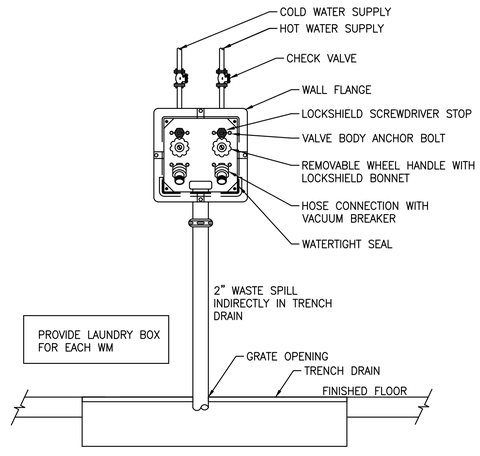
5 P–501 INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS

N.T.S



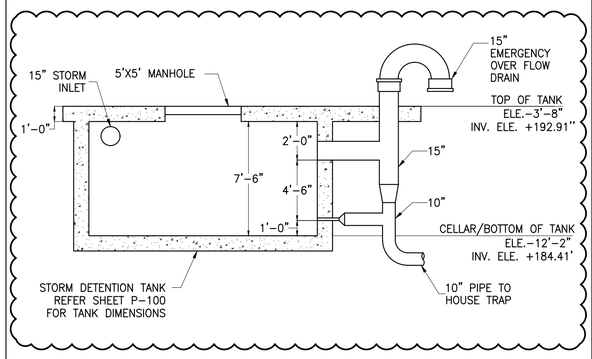
6 P–501 SUBMERSIBLE SUMP PUMP DETAIL (SP–3)

N.T.S



7 P–501 WASHER SUPPLY/ DRAIN BOX DETAIL

N.T.S



NOTE:
1. PROVIDE STRUCTURAL SUPPORT AS NEEDED.
2. REFER APPROVED DEP APPROVED SITE CONNECTION DRAWINGS FOR MORE INFORMATION.

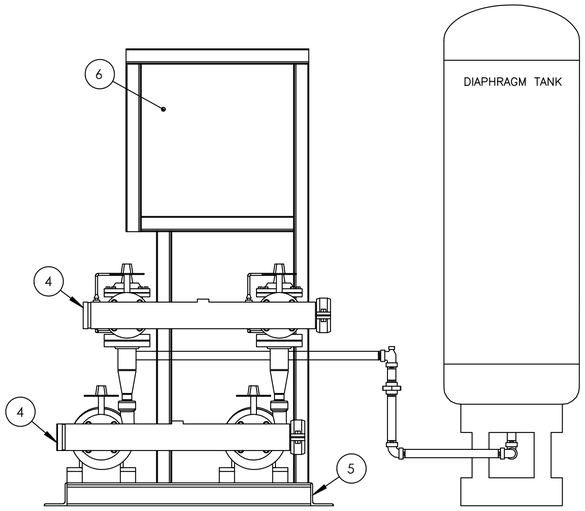
8 P–501 STORM DETENTION TANK DETAIL

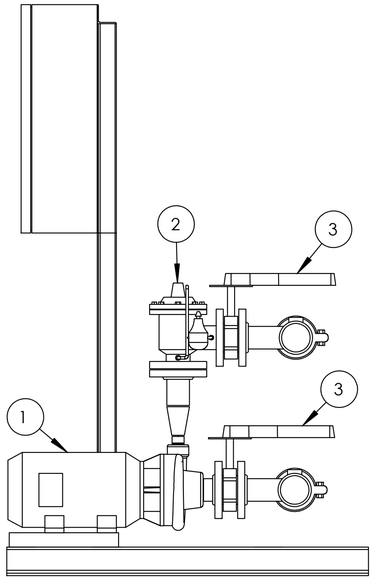
N.T.S

Property of NY Engineers

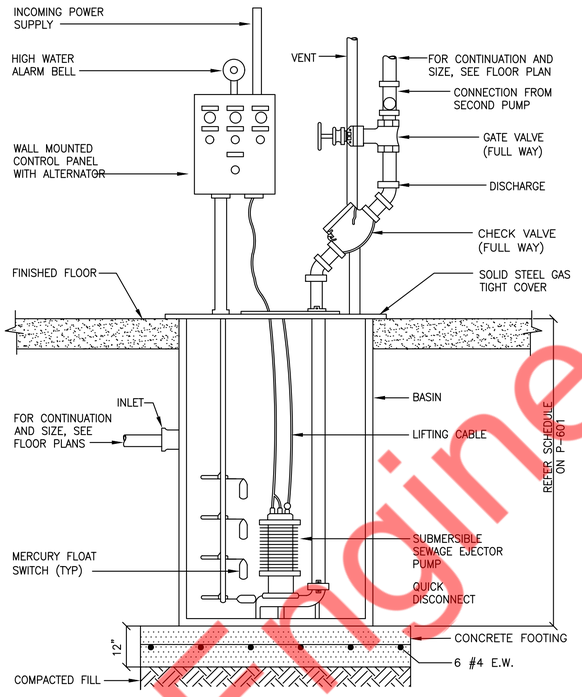
ITEM NO.	DESCRIPTION
1	PUMP MOTOR
2	2" PRV & SYSTEM PIPING
3	BUTTERFLY VALVE 150# LUG 2"
4	3" HEADER GROOVED
5	SYSTEM SKID BASE
6	SYSTEM POWER AND CONTROL PANEL

APPROX. SYSTEM DRY WEIGHT: 850LBS

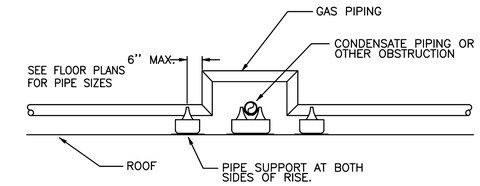




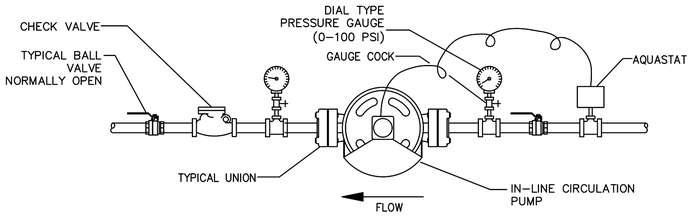
1 P-502 DUPLEX DOMESTIC WATER BOOSTER PUMP DETAIL N.T.S



2 P-502 DUPLEX SEWAGE EJECTOR DETAIL N.T.S



3 P-502 GAS PIPING AT OBSTRUCTION DETAIL N.T.S



4 P-502 INLINE RECIRCULATING PUMP DETAIL N.T.S

KEY NOTES:

1. SUBMERSIBLE EFFLUENT PUMP 1/2 HP, 115 VOLT, 3600 RPM, 2" DISCHARGE CONNECTION

2. CHECK VALVE

3. 115V, SINGLE PHASE (1ø) CONTROL SYSTEM WITH BUILT-IN AUDIBLE AND VISUAL ALARM FOR WHEN PUMP DOES NOT RUN DUE TO OIL IN PIT OR HIGH LIQUID ALARM. PROVIDE SILENCING BUTTON FOR AUDIBLE ALARM BUILT INTO PANEL. PANEL SHALL HAVE ADDITIONAL CONTACT FOR A REMOTE ALARM LOCATION. LIGHTS FOR OIL SPILL, POWER, HIGH LIQUID LEVEL, OVERLOAD, & PUMP RUN.

4. JUNCTION BOX SHALL BE PROVIDED WITH MULTI-PIN CONNECTOR AND CORD OF REQUIRED LENGTHS TO REACH PANEL.

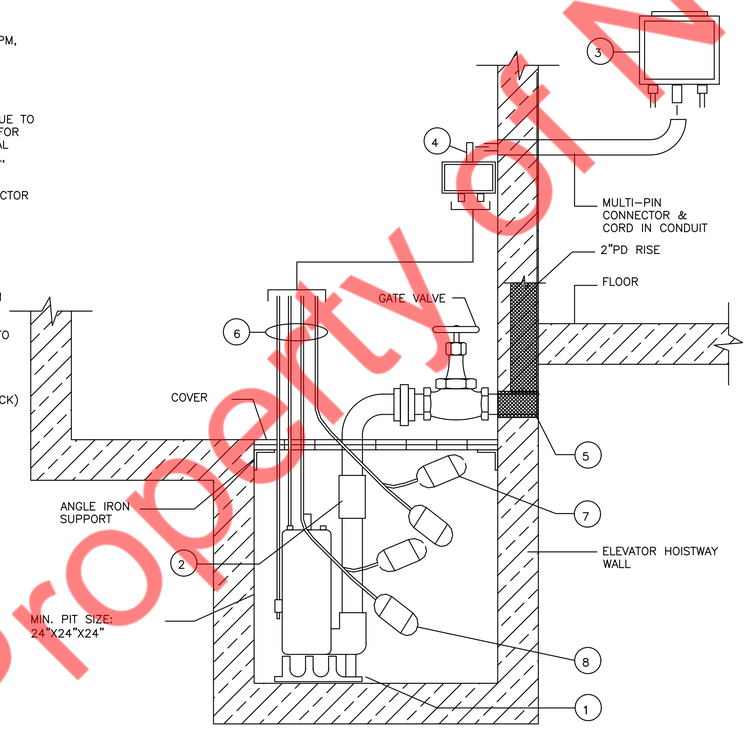
5. ALL BURIED PUMP PRESSURE DISCHARGE PIPING SHALL BE PROTECTED WITH TAPECOAT CORROSION PROTECTION TAPE. IN ADDITION, DISCHARGE PIPING SHALL CONNECT TO THE BUILDING DRAINAGE SYSTEM VIA AN AIR GAP OR AN AIR BREAK.

6. CABLES: POWER CABLE, PROBE CABLE, HIGH- LIQUID ALARM CABLE AND PUMP-ON FLOAT CABLE.

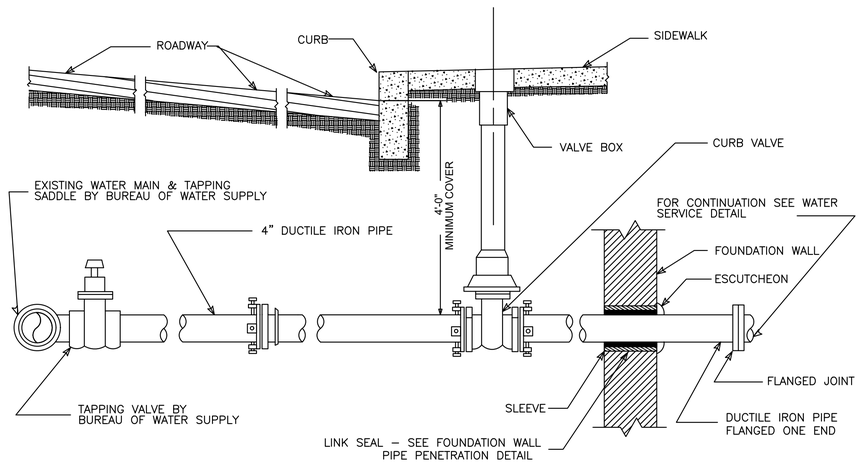
7. HIGH-LIQUID ALARM FLOAT WITH CLAMP DEVICE TO MOUNT TO PUMP DISCHARGE PIPING.

8. PUMP-ON FLOAT

9. PROVIDE A MINIMUM FIVE FEET EXTRA OF EACH CABLE (SLACK) ROLLED CLAMPED TO THE DISCHARGE PIPE TO ALLOW FOR THE REMOVAL OF THE PUMP FROM THE PIT.



5 P-502 ELEVATOR SUMP PUMP DETAIL (SP-1 & SP-2) N.T.S



6 P-502 DOMESTIC WATER SERVICE DETAIL N.T.S

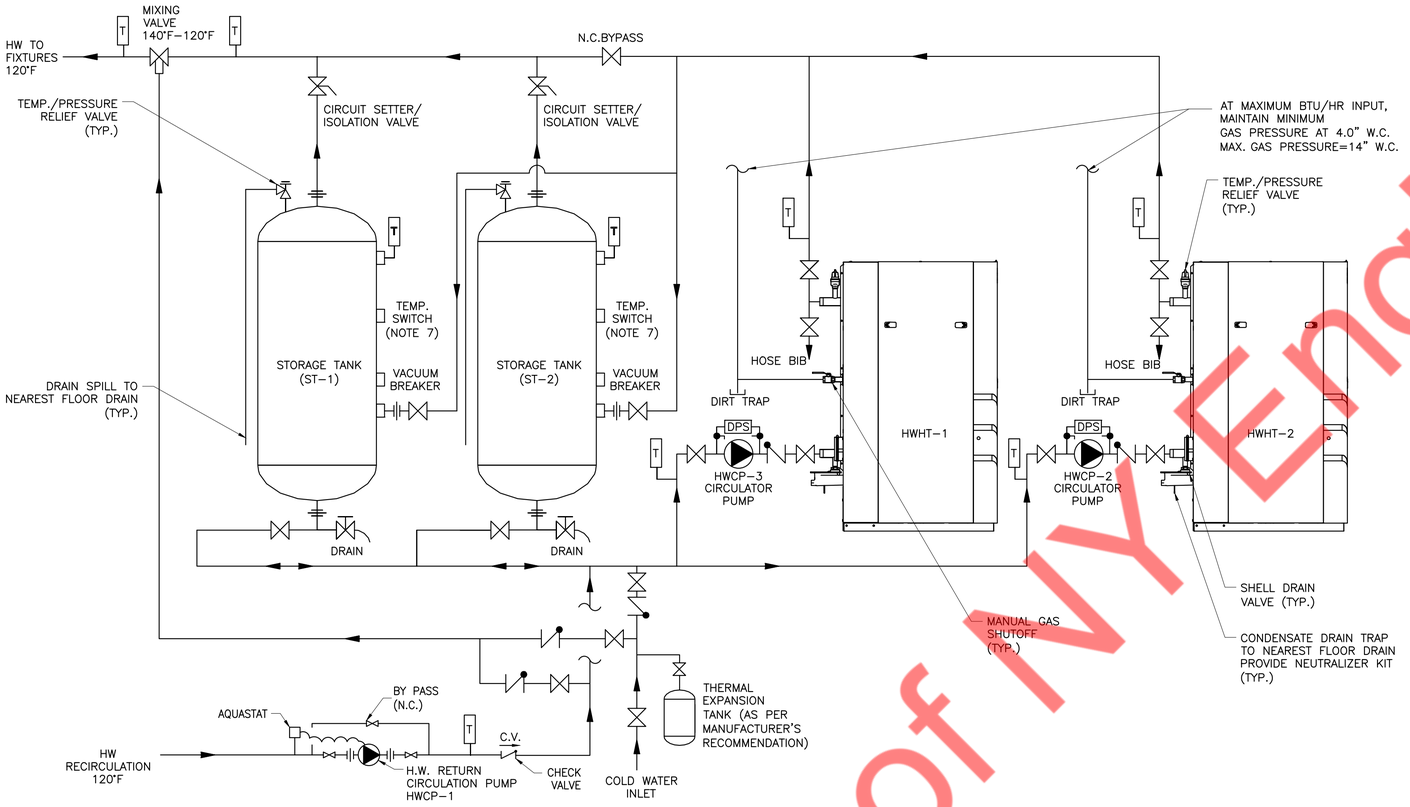
Property of NY Engineers

GENERAL WORKING:

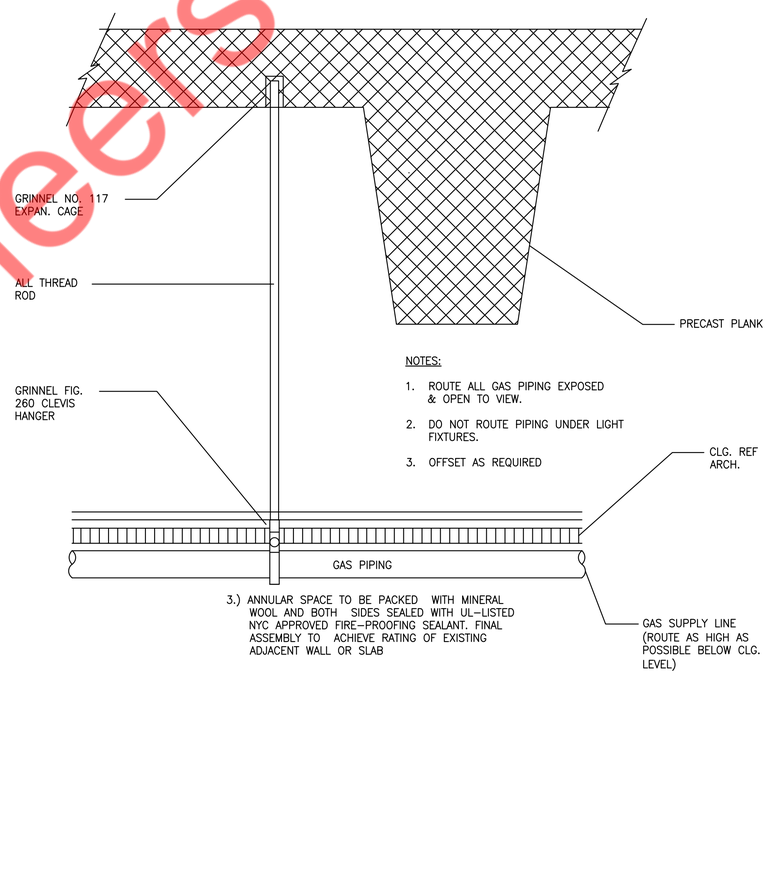
1. AERCO WHM KEEPS LEAD HEATER PUMP RUNNING CONTINUOUSLY. LAG HEATER VALVE PUMP STARTS WHEN LEAD HEATER FIRING RATE IS GREATER THAN 50%
2. HEATERS MODULATE TO MAINTAIN DHW SETPOINT.
3. HEATER INCLUDES ON–BOARD WATER HEATER MANAGEMENT (WHM) FEATURE DESIGNED TO STAGE AND COORDINATE MULTIPLE AERCO INNOVATION WATER HEATERS WHILE MAXIMIZING OPERATIONAL EFFICIENCY.
4. EACH WATER HEATER CONTROLLED BY THE WHM IS EQUIPPED WITH A CIRCULATOR PUMP INSTALLED ON THE COLD WATER INLET.
5. WHM MONITORS THE AIR/FUEL VALVE POSITION (FIRE RATE) OF WATER HEATER THAT HAS OPERATING CIRCULATOR USING THE TEMPERATURE DATA FROM THE TEMPERATURE SENSORS LOCATED AT THE HOT WATER OUTLET AND COLD WATER INLET.
6. WHEN THERE IS MINIMAL OR NO DEMAND FOR HOT WATER, THE LEAD CIRCULATOR WILL BE RUNNING. AS SYSTEM LOAD INCREASES, THE WHM WILL ENABLE THE CIRCULATOR ON THE ADDITIONAL HEATERS.
7. IN ADDITION TO COLLECTING AIR/FUEL VALVE POSITION DATA, THE WHM ALSO MONITORS THE TOTAL ACCUMULATED OPERATING TIME FOR EACH UNIT ON THE SYSTEM AND ATTEMPTS TO BALANCE THE SYSTEM SO THAT ALL UNITS OPERATE FOR APPROXIMATELY THE SAME NUMBER OF HOURS.

GENERAL NOTES:

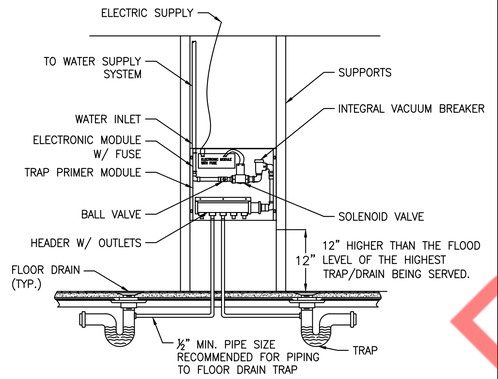
1. HEATER PIPING CONNECTIONS NOT SHOWN INCLUDE T&P RELIEF, GAS PIPING, SHELL DRAIN, AND CONDENSATE DRAIN. SHALL COMPLY WITH MANUFACTURERS PRINTED IOM.
2. CONDENSATE NEUTRALIZING TUBES ARE REQUIRED, ONE PER HEATER.
3. ARRANGE PIPING BETWEEN HEATERS AND STORAGE TANK TO AVOID ELIMINATE AIR POCKETS. USE AUTOMATIC AIR VENTS AT ALL HIGH POINTS THAT CANNOT VENT NATURALLY.
4. WHEN INSTALLING INNOVATION SERIES HEATERS SIDE–BY–SIDE (2 MAX.), REMOVE INNER SIDE PANELS FOR INTERIOR SERVICE ACCESS.
5. PROVIDE 4" CONCRETE PAD FOR WATER HEATERS & STORAGE TANKS.
6. EXTERNAL GAS PRESSURE REGULATOR REQUIRED FOR GAS PRESSURE GREATER THAN 14" W.C.
7. MOUNT TEMPERATURE SWITCH ⅓ UP FROM BOTTOM OF TANK, SWITCH WILL TURN CIRCULATION PUMP ON & OFF.



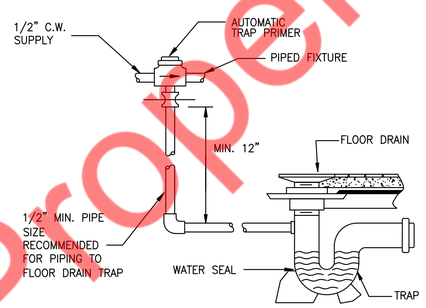
1 P–503 DOMESTIC HOT WATER HEATER DETAIL N.T.S



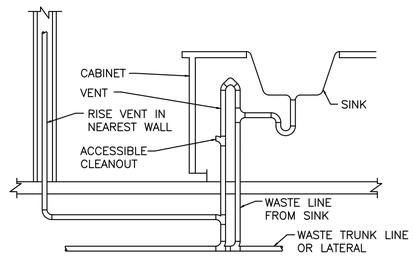
2 P–503 GAS PIPE SUPPORT DETAIL N.T.S



3 P–503 ELECTRONIC TRAP PRIMER DETAIL N.T.S

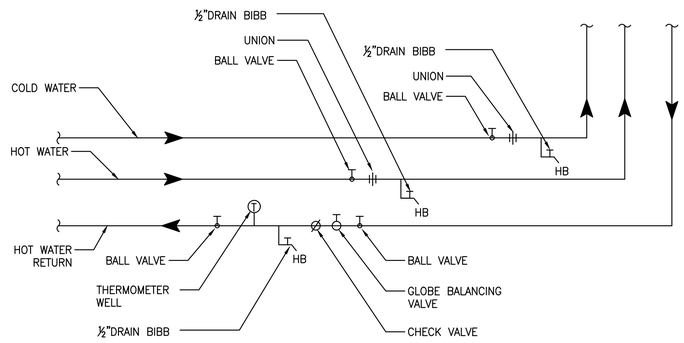


4 P–503 FLOW CONTROL TRAP PRIMER DETAIL N.T.S



5 P–503 TYPICAL ISLAND SINK PLUMBING CONNECTIONS N.T.S

NOTE:
RISER CONTROL VALVING AS SHOWN IS TYPICAL FOR HOT, HOT WATER RETURN & COLD WATER RISERS



6 P–503 DOMESTIC WATER RISER CONTROL VALVE AND HOT WATER RETURN BALANCING VALVE ASSEMBLY DETAIL N.T.S

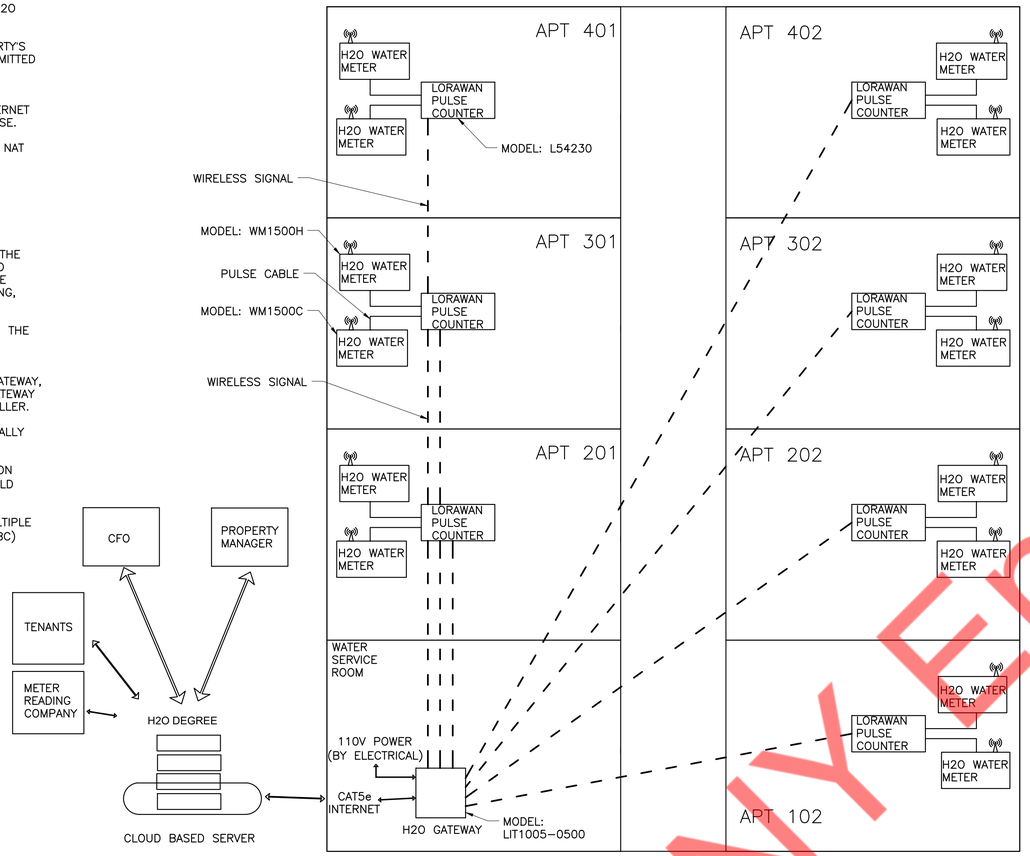
Property of NY Engineers

GENERAL NOTES:

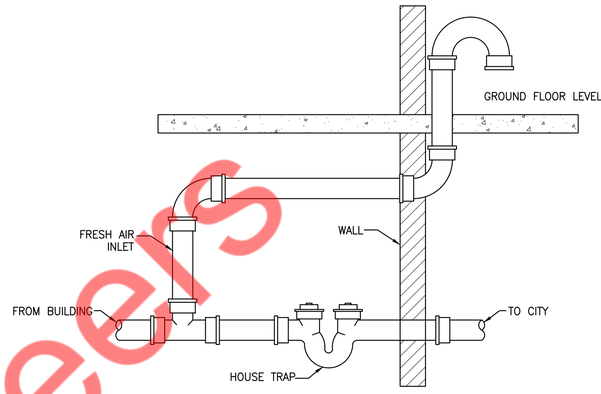
1. THE IT1005 LORAWAN GATEWAY IS THE HEART OF THE H2O DEGREE RADIO NETWORK AT THE PROPERTY. THE GATEWAY IS EQUIPPED WITH AN EMBEDDED CPU TO INTERFACE BETWEEN THE NETWORK COORDINATOR AND THE H2O DEGREE SERVER.
2. THE GATEWAY CAN BE CONNECTED TO THE INTERNET VIA THE PROPERTY'S CAT5E INTERNET CONNECTION. ONCE CONNECTED, THE DATA IS TRANSMITTED TO THE H2O DEGREE SERVER IN THE CLOUD FOR DATA COLLECTION, PROCESSING AND REPORT GENERATION.
3. GATEWAY SOFTWARE CAN EASILY BE UPDATED REMOTELY VIA THE INTERNET CONNECTION AND DOES NOT REQUIRE A DISPLAY, KEYBOARD OR MOUSE.
4. H2O DEGREE GATEWAYS ARE COMPUTERS AND REQUIRE FIREWALL OR NAT ROUTER PROTECTION.
5. PROVIDE SPACER TUBES (WMST075) FOR TESTING & FLUSHING.

GENERAL OPERATION:

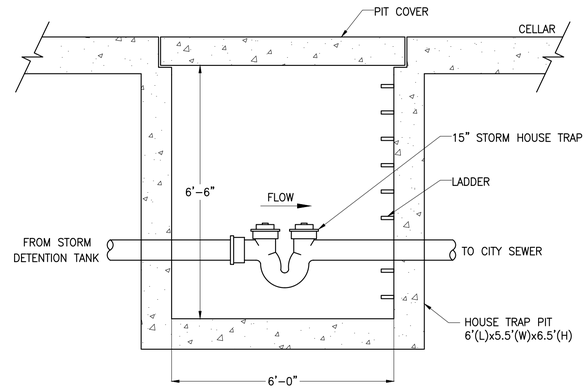
1. WIRELESS SUB METERING AND MONITORING SYSTEM BASIS OF DESIGN:THE DOMESTIC WATER SUB-METERING SYSTEM SHALL BE PROVIDED BY H2O DEGREE. THE METER SHALL BE EQUIPPED WITH A DRY CONTACT PULSE OUTPUT AND COMPLY WITH ALL H2O DEGREE REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO:
   - A. HOURLY OR DAILY WATER METER READINGS SHOULD BE SENT FROM THE WATER METERS IN INDIVIDUAL APARTMENTS WITH THE USE OF THE WIRELESS SUB-METERING SYSTEM.
   - B. WIRELESS COMMUNICATION SHALL OCCUR BETWEEN A RADIO AND GATEWAY, CONNECTED TO A WATER METER AND THE WSMMS CLOUD. THE GATEWAY AND RADIOS SHALL REQUIRE NO ONSITE CONFIGURATION BY INSTALLER.
   - C. THE DATA FROM THE GATEWAY SHOULD BE RETRIEVABLE AUTOMATICALLY VIA AN INTERNET CONNECTION.
   - D. THE SYSTEM MUST UTILIZE BI-DIRECTIONAL WIRELESS COMMUNICATION TECHNOLOGY (I.E. LORAWAN RADIO FREQUENCY BASED) AND SHOULD OPEN LORAWAN STANDARDS.
   - E. THE WIRELESS SMART-METERING EQUIPMENT SHOULD SUPPORT MULTIPLE BILLING COMPANIES (OFTEN CALLED READ, BILL AND COLLECT- RBC)
   - F. DAILY LEAK REPORTS AND AUTOMATED ALERTS SENT TO OWNER.



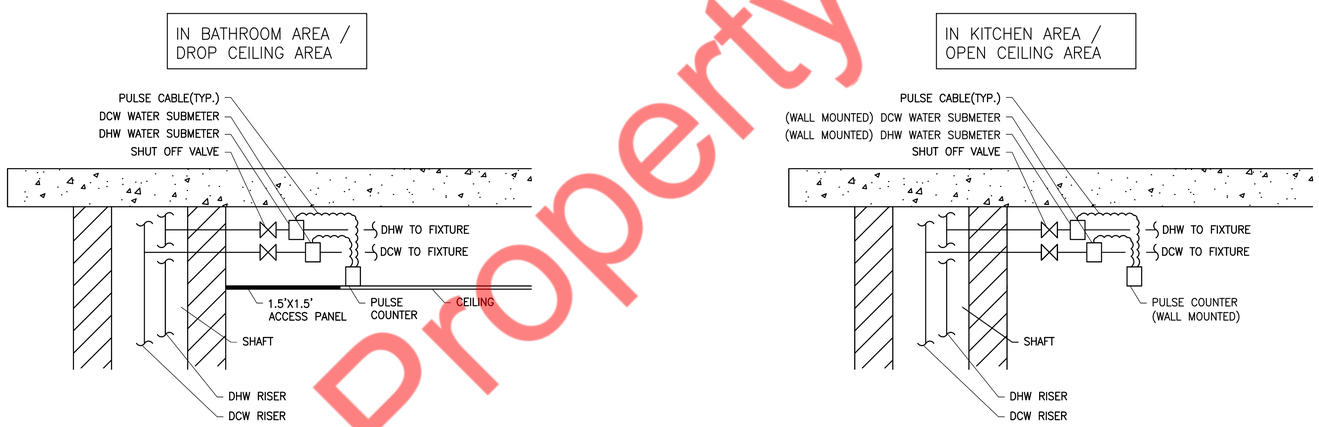
1 P-504 PULSE OUTPUT WATER METER BUILDING CONFIGURATION DIAGRAM N.T.S



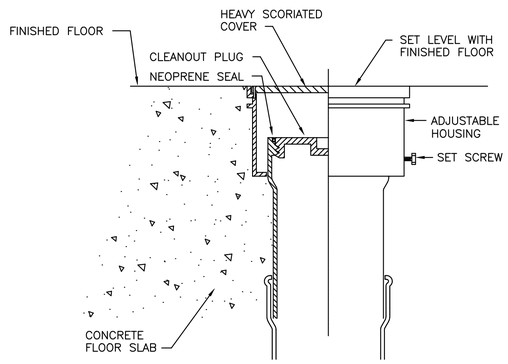
2 P-504 FRESH AIR INTAKE N.T.S



3 P-504 HOUSE TRAP PIT DETAIL N.T.S



4 P-504 WATER SUBMETER INSTALLATION SCHEMATIC N.T.S



5 P-504 FLOOR CLEANOUT DETAIL N.T.S

Property of NY Engineers

PLUMBING FIXTURE SCHEDULE

LEGEND	PLUMBING FIXTURE	CONNECTION SIZE – INCHES						REMARKS
		TRAP	SOIL/WASTE	VENT	COLD WATER	HOT WATER	THERMOSTATIC MIXING VALVE	
WC	FLOOR MOUNTED WATER CLOSET	–	4"	2"	½"	–	–	FLUSH TANK
LAV	UNDERCOUNTER LAVATORY	1½"	1½"	1½"	½"	½"	PROVIDE	P–TRAP
KS	KITCHEN SINK	2"	2"	1½"	¾"	¾"	PROVIDE	P–TRAP
SH	SHOWER	2"	2"	1½"	¾"	¾"	PROVIDE	P–TRAP
BT	BATHTUB	2"	2"	1½"	¾"	¾"	PROVIDE	P–TRAP
WM	WASHING MACHINE	2"	2"	1½"	¾"	¾"	–	I.W. FROM WM SPILLS INTO TRENCH DRAIN
SS	SERVICE SINK	2"	2"	1½"	¾"	¾"	PROVIDE	P–TRAP

NOTE: CONTRACTOR TO COORDINATE WITH ARCHITECTURAL DRAWINGS FOR ALL PLUMBING FIXTURES SPECIFICATIONS AND MOUNTING HEIGHT INSTALLATION.

ELECTRONIC DHW MIXING VALVE SCHEDULE

PRODUCT	MFG & MODEL	POWER	REMARKS
DHW MIXING VALVE	CALEFFI LEGIOMIX SERIES 6000	24VAC– 60 HZ 6 VA	–REFER HOT WATER HEATER DETAILS FOR CONNECTIONS. –NSF CERTIFIED & IN COMPLIANCE WITH ANSI/ASHRAE STANDARD. –PROVIDE DIGITAL CONTROLLER AND REQUIRED ACCESSORIES.

PUMP SCHEDULE

TAG	SERVICE	LOCATION	PERFORMANCE DATA			PUMP CONSTRUCTION DATA	MOTOR DATA					MFGR MODEL	REMARKS
			GPM PER PUMP	TDH PER PUMP (FT)	WATER TEMP. (°F)	PUMP TYPE	MHP PER PUMP	STARTER TYPE	V/PH/HZ	RPM	ROTATION		
SP–1 SP–2	ELEVATOR PIT	CELLAR	50	20	–	SUBMERSIBLE	1/2	FLOAT SWITCH	115/1/60	3600	PER MFG	STANCOR PUMPS SE–50	–SIMPLEX OIL–MINDER SUMP PUMP INSIDE 24"X24"X24" DEEP INCLUDING CONTROLS AND ALARM NEMA I RATED MOTOR
DUPLEX SE–1	SAN	CELLAR	75	25	–	SUBMERSIBLE	1	FLOAT SWITCH	208/3/60	1750	PER MFG	FEDERAL PUMP CORP TYPE VSA–4F–1–4	–DUPLEX SEWAGE EJECTOR IN 60"(DIA) X 78"(H) FIBRE GLASS BASIN (PUMP MAY RUN SIMULTANEOUSLY WHEN REQUIRED)
DUPLEX BP–1	DCW	CELLAR	90	196	68	END SUCTION	7.5	PRESS. SWITCH	208/3/60	3428	PER MFG	GRUNDFOS HYDRO MPC E 2CR15–04	–DUPLEX PUMP PACKAGE WITH 34 GALLONS ASME CODE CONSTRUCTION & NSF APPROVED DIAPHRAGM TANK (AMTROL WX–403–C). –PUMP RUN SIMULTANEOUSLY WHEN REQUIRE. –PROVIDE PRV'S FOR PRESSURE CONTROL. –PROVIDE CONTROL PANEL WITH CONTROL LOGIC IN ACCORDANCE WITH ANSI/ASHRAE STANDARD. –PUMP SHOULD BE UL LISTED & NSF 61 CERTIFIED. –PROVIDE CONCRETE PAD FOR PUMP.
DUPLEX SP–3	STORM	CELLAR	200	30	–	SUBMERSIBLE	1.5	FLOAT SWITCH	208/3/60	1750	PER MFG	FEDERAL PUMP CORP P–3A–1½–4–3B	–DUPLEX SUMP PUMP (SP–3) IN 60"(DIA) X 78"(H) FIBRE GLASS BASIN (PUMP MAY RUN SIMULTANEOUSLY WHEN REQUIRED) –PROVIDE PUMP WITH FLOAT SWITCHES & DUPLEX CONTROL PANEL (NEMA 4) –CAPABLE OF RUNNING DRY WITHOUT DAMAGE.
DUPLEX SP–4	STORM DRAIN	CELLAR	150	35	–	SUBMERSIBLE	1.5	FLOAT SWITCH	208/3/60	1750	PER MFG	FEDERAL PUMP CORP P–3A–1½–4–3B	–DUPLEX SUMP PUMP (SP–4) IN 42"(DIA) X 66"(H) FIBRE GLASS BASIN (PUMP MAY RUN SIMULTANEOUSLY WHEN REQUIRED) –PROVIDE PUMP WITH FLOAT SWITCHES & DUPLEX CONTROL PANEL (NEMA 4) –CAPABLE OF RUNNING DRY WITHOUT DAMAGE.
HWCP–1	HWR	ROOF	10	8	120	INLINE,NORYL	1/12	AQUA STAT	115/1/60	1725	PER MFG	BEN. & GOSSETT SERIES 100	–INLINE ON HW RETURN LINE AT WATER HEATER NEMA 1 RATED MOTOR –PUMP SHOULD BE LEAD FREE

GAS FIRED WATER HEATER SCHEDULE

WATER HEATER NO.	QUANTITY	LOCATION	NATURAL GAS		GAS CONN.	GAS PRESSURE (W.C.)	WATER CONN.	THERMAL EFFICIENCY	STORAGE WATER TEMP. DEG.F.	BASED ON	POWER (V/PH/HZ)	REMARKS
			INPUT (MBH PER HEATER)	RECOVERY GPH @100°F RISE						MFR.& MODEL		
HWHT–1 & 2	2	ROOF	600	696	1"	4"	2"	98%	140	AERCO INNOVATION 600	120/1/60 FLA– 9 AMP	– HOT WATER HEATER SYSTEM WITH TWO HEATERS (AERCO INNOVATION 600) WITH CONDENSATE NEUTRALIZERS & ACCESSORIES, TWO AERCO 300 GALLONS HOT WATER STORAGE TANKS ST–1 & ST–2 DIMENSIONS 46"(DIA)X75"(HEIGHT), ONE EXPANSION TANK (THERM–X–TROL ST–60V), TWO CIRCULATION PUMP HWCP–2 & HWCP–3 (GRUNDFOS UPS32–80FB, 120V/1PH/60HZ, 1 HP, UL LISTED & NSF CERTIFIED). – DIMENSION 28"(LENGTH)x50"(DEPTH)x76"(HIGH) PER HEATER. – PROVIDE CLEARANCES FOR HEATER AS PER MANUFACTURER'S RECOMMENDATION. – PROVIDE HOUSE KEEPING PADS FOR HEATERS AND STORAGE TANKS. – UL, NSF CERTIFIED & IN COMPLIANCE WITH ANSI/ASHRAE STANDARD. – NEUTRALIZER AND ZERO CLEARANCE KIT SHOULD BE INSTALLED. – PROVIDE WATER HEATER MANAGEMENT TO OPTIMIZE HEATER EFFICIENCY,

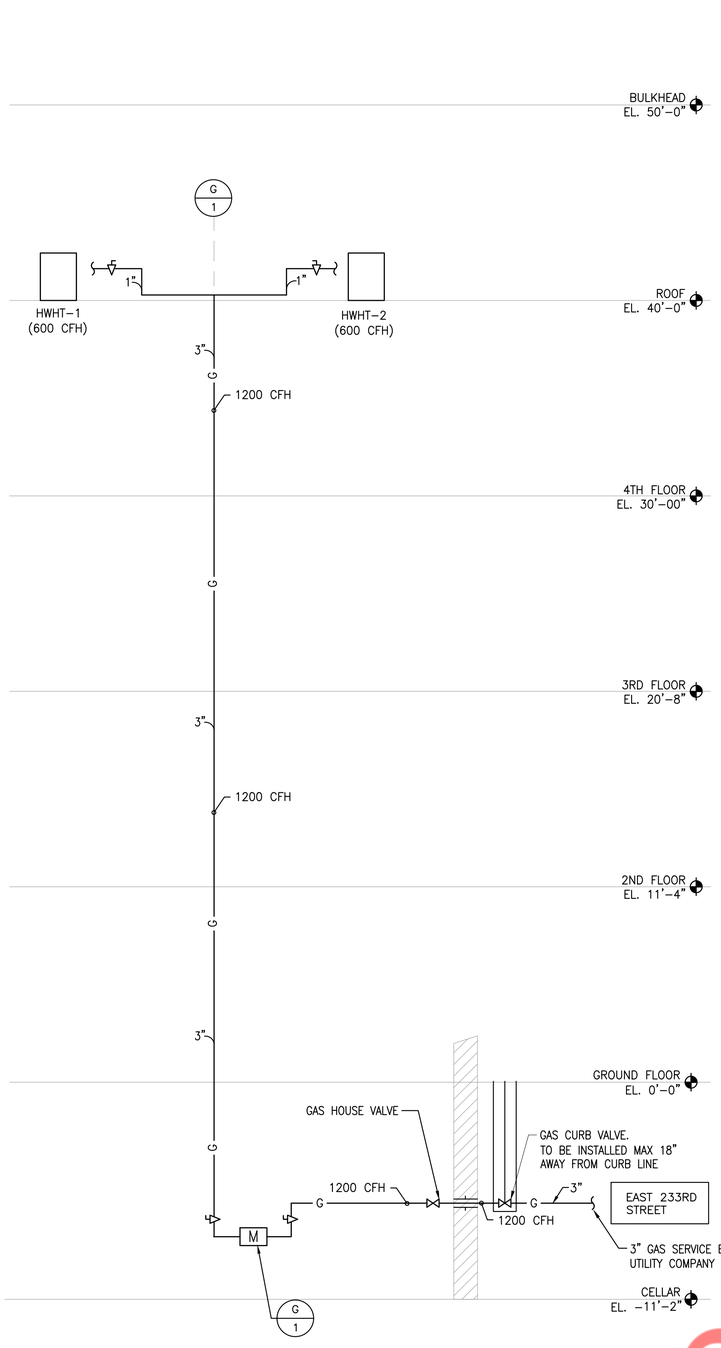
NOTES:
1. HOT WATER TEMPERATURE SET POINT SHALL BE AS PER ASHRAE AND NYC ECC.

DRAIN ACCESSORIES & SCHEDULE

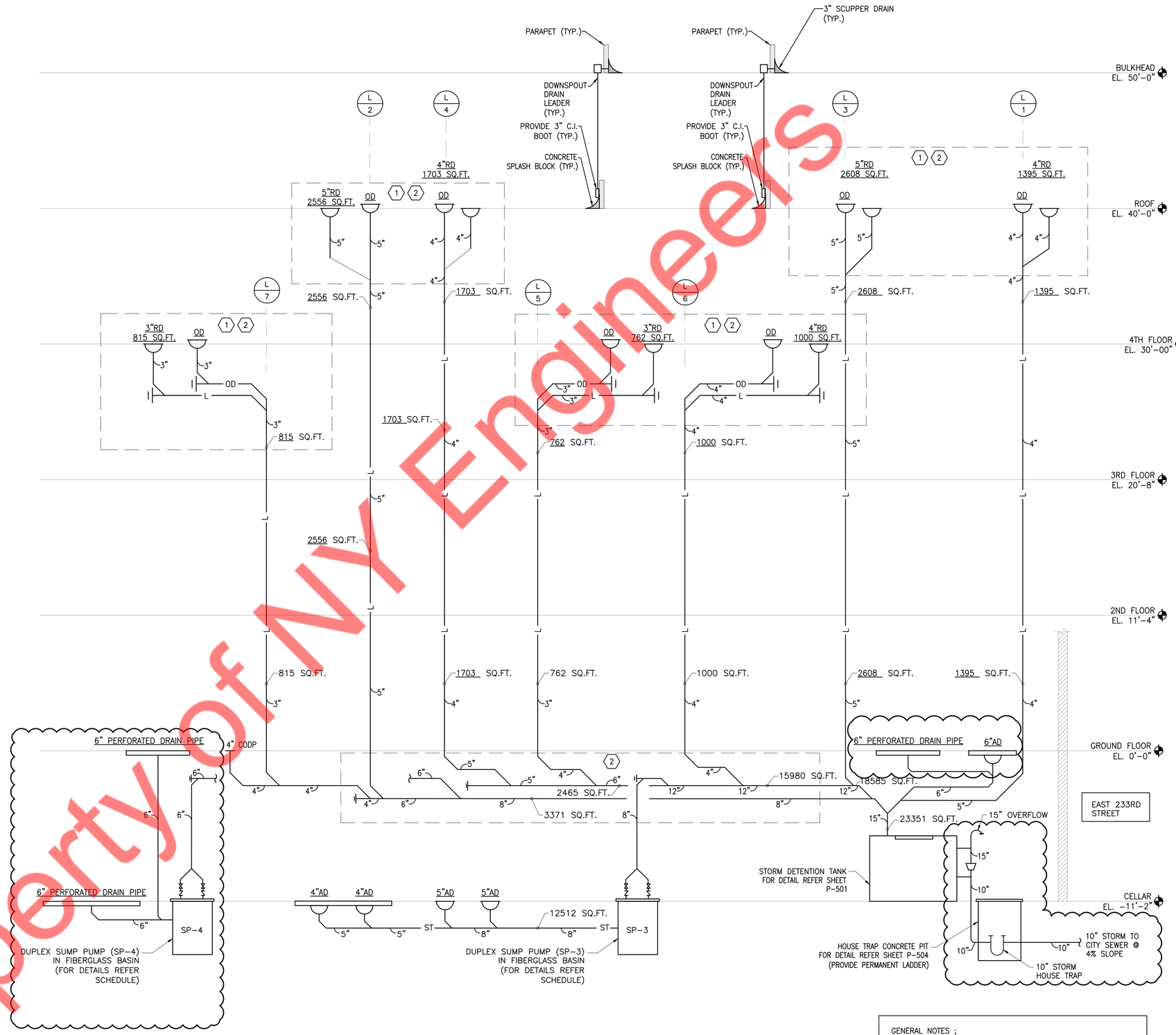
DESIGNATION	REQUIRED	SERIES NO. (ZURN / WADE / SMITH / JOSAM)	BODY: CAST IRON	GALVANIZED	ALL BRONZE	SECONDARY CLAMP	CLAMPING DEVICE	DECK CLAMP	BACK WATER VALVE	SUMP RECIEVER	FLASHING COLLAR	STRAINER: CAST IRON	GALVANIZED	ALL BRONZE	NICKEL BRONZE (ADJUSTABLE)	CHROME PLATED	SEDIMENT BUCKET	SECONDARY STRAINER	POLISHED FINISH	SATIN FINISH	TRACTOR GRATE	ST. STEEL	FUNNEL TOP	FLAT TOP	DOME	RAISED LIP	EXTENSION (WHERE REQUIRED)	LESS GRATE	BRONZE TOP	IRON GRATE	POLYETHYLENE	SOLID HINGED COVER	REMARKS: LOCATION
FD/AD	•	Z–509	•				•										•													•			MECH. ROOMS (GENERAL AREA & CELLAR PARKING), REFUSE ROOM AND FIRST FL. ST DRAINS
RD/OD	•	RD,OD: Z–163	•			•		•				•													•		•						COMBINATION MAIN ROOF AND OVERFLOW DRAIN. WHERE INSTALLED BELOW PAVERS/SOIL USE (–SS) ST.STL. MESH SCREEN OVER DOME.
HD	•	Z566–GT	•															•												•			SET HUB DRAIN FOR SPRINKLER DRAIN RISER/ COND. SPILLS ABOVE FLOOR
N.F.W.H	•	NON FREEZE WALL HYDRANT MODEL ZN–1300																															EXTERIOR WALLS, ROOF
H.B.	•	HOSE BIB–ZURN MODEL 195																															MECHANICAL ROOMS, TRASH ROOMS

NOTES:
1. ALL FLOOR DRAINS IN FINISHED AREAS AND ALL ROOF DRAINS SHALL BE LOCATED AS PER THE ARCHITECTURAL DRAWINGS.
2. ALL FLOOR DRAINS IN MECHANICAL EQUIPMENT, BOILER ROOMS, FAN ROOMS ETC., SHALL BE LOCATED IN COORDINATION WITH THE MECHANICAL CONTRACTOR.
3. THE CONTRACTOR SHALL VERIFY THE COMPATIBILITY OF THE DRAINS WITH THE APPROVED ROOFING AND/OR WATER PROOFING SYSTEMS PRIOR TO SUBMITTING SHOP DRAWINGS.
4. THE TOP OF ALL FLOOR DRAINS SHALL BE FLUSH WITH THE ADJACENT FINISHED FLOOR.
5. PROVIDE ELECTRONIC TRAP PRIMER FOR MECHANICAL/UTILITY ROOM FLOOR DRAINS. PROVIDE FLOW CONTROL TRAP PRIMER FOR BATHROOM FLOOR DRAINS.

Property of NY Engineers



1 GAS RISER DIAGRAM
SCALE: 1/8" = 1'-0"

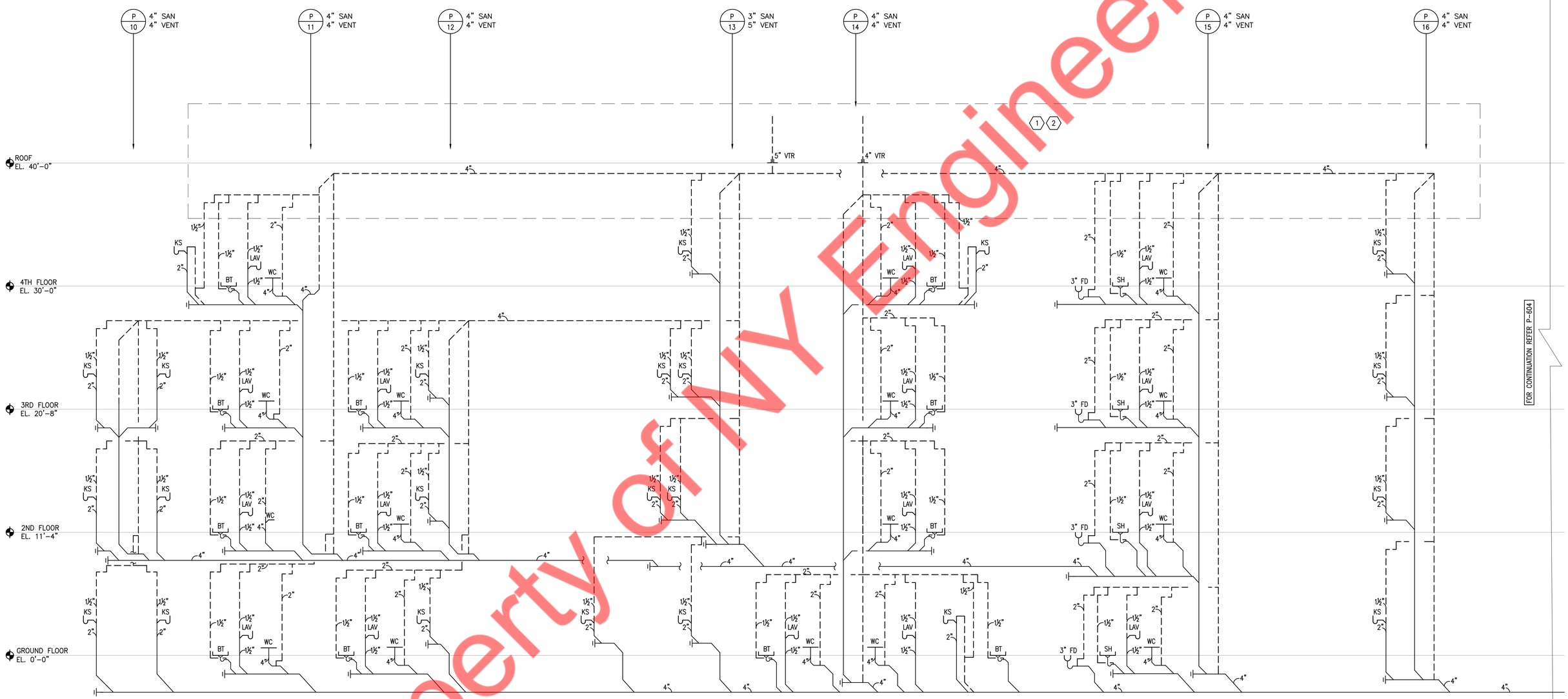


2 STORM RISER DIAGRAM
SCALE: 1/8" = 1'-0"

GENERAL NOTES ;

1. INSULATE ALL VERTICAL PIPES FOR 10' FROM ROOF PENETRATIONS.
2. ALL HORIZONTAL PIPE RUNS BELOW FLOOR TO BE INSULATED.

Property of NY Engineers



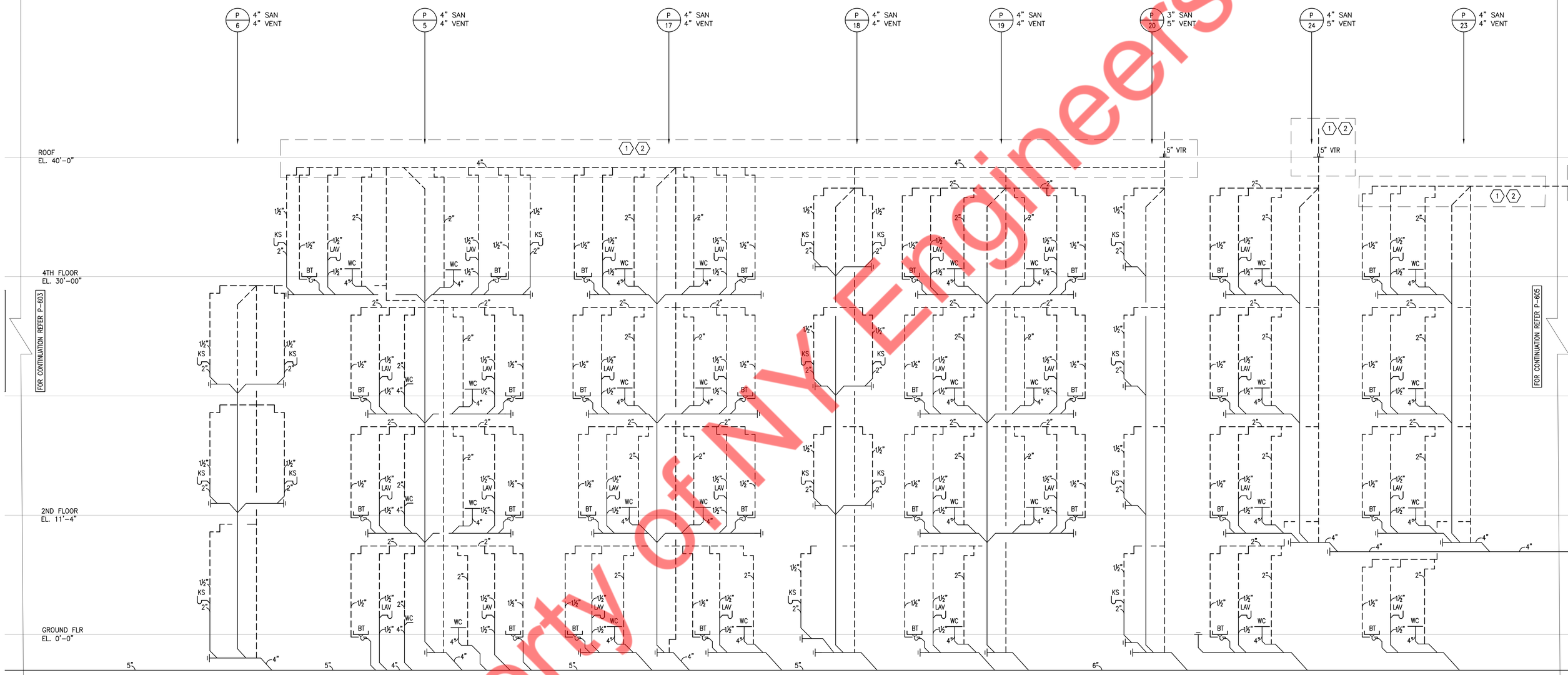
1 PLUMBING SANITARY RISER DIAGRAM
SCALE: 1/8" = 1'-0"

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU· IN./ (H· FT2 ·°F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	<8
40–60	0.21–0.27	75	0.5	0.5	1.0	1.0	1.0

GENERAL NOTES ;

1. INSULATE ALL VERTICAL PIPES FOR 10' FROM ROOF PENETRATIONS.
2. ALL HORIZONTAL PIPE RUNS BELOW FLOOR TO BE INSULATED.

Property of NY Engineers



1 PLUMBING SANITARY RISER DIAGRAM

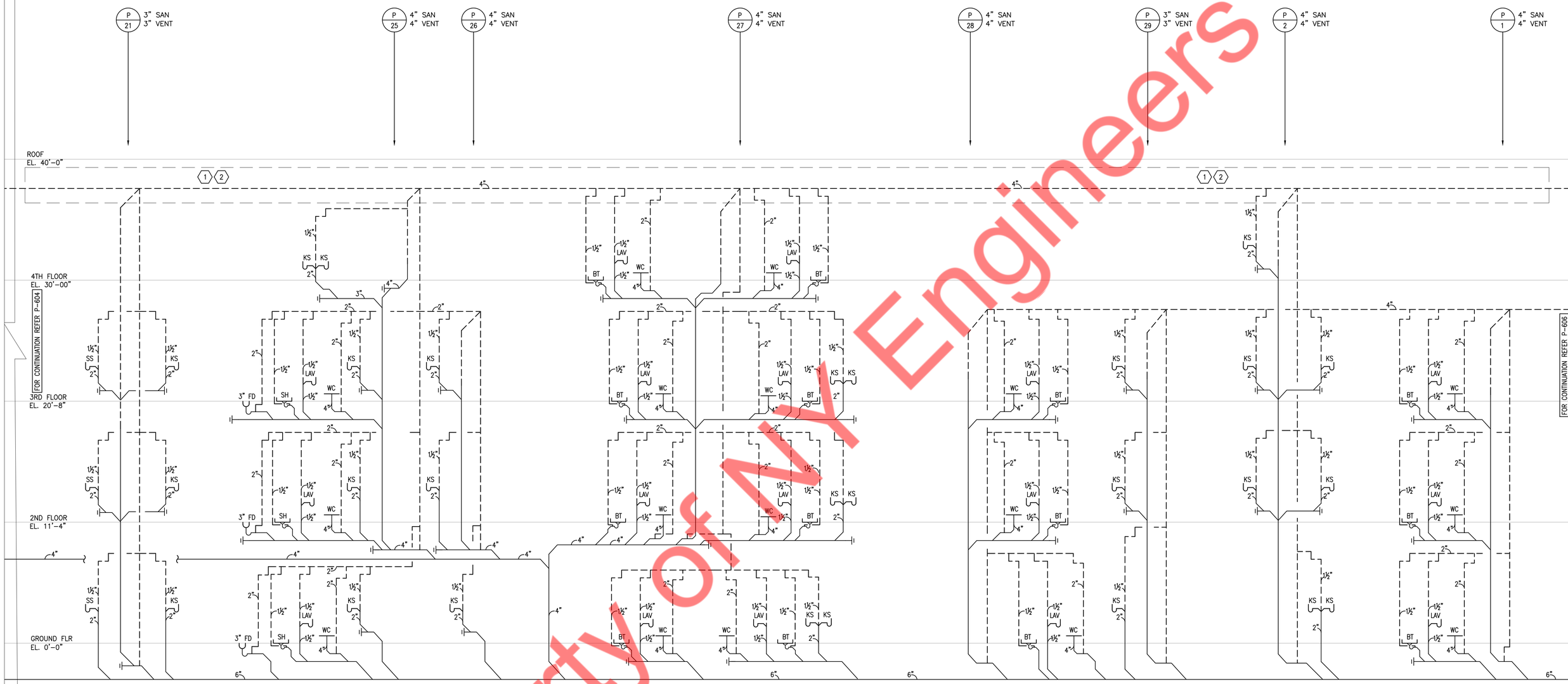
SCALE: 1/8" = 1'-0"

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU· IN./ (H· FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	<8
40–60	0.21–0.27	75	0.5	0.5	1.0	1.0	1.0

GENERAL NOTES ;

1. INSULATE ALL VERTICAL PIPES FOR 10' FROM ROOF PENETRATIONS.
2. ALL HORIZONTAL PIPE RUNS BELOW FLOOR TO BE INSULATED.

Property of NY Engineers



1 PLUMBING SANITARY RISER DIAGRAM
SCALE: 1/8" = 1'-0"

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU· IN./ (H· FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	<8
40–60	0.21–0.27	75	0.5	0.5	1.0	1.0	1.0

GENERAL NOTES ;

1. INSULATE ALL VERTICAL PIPES FOR 10' FROM ROOF PENETRATIONS.
2. ALL HORIZONTAL PIPE RUNS BELOW FLOOR TO BE INSULATED.

Property of NY Engineers

P 3 4" SAN 4" VENT

P 4 4" SAN 4" VENT

P 7 4" SAN 4" VENT

P 8 4" SAN 4" VENT

P 9 4" SAN 4" VENT

ROOF EL. 40'-0"

4TH FLOOR EL. 30'-00"

3RD FLOOR EL. 20'-8"

2ND FLOOR EL. 11'-4"

GROUND FLOOR EL. 0'-0"

CELLAR EL. -11'-2"

FOR CONTINUATION REFER P-605

1 2

BT WC LAV KS FD CODP SS FAI EJ PS

4" ANTI-SPLASH DRAIN

FROM WASHING MACHINE SPILLS TO 4" TRENCH DRAIN

TO VENT STACK P3

4" FUNNEL DRAIN INDIRECT WASTE FROM RPZ DRAINS TO FUNNEL DRAIN WITH 4" AIR GAP

FREESTANDING 4" FAI

8" SANITARY HOUSE TRAP

8"SANITARY BLDG. SEWER REFER SITE CONNECTION DRAWING

EAST 233RD STREET

DUPLEX SE-1 (REFER SCHEDULE FOR MORE INFORMATION)

GENERAL NOTES ;

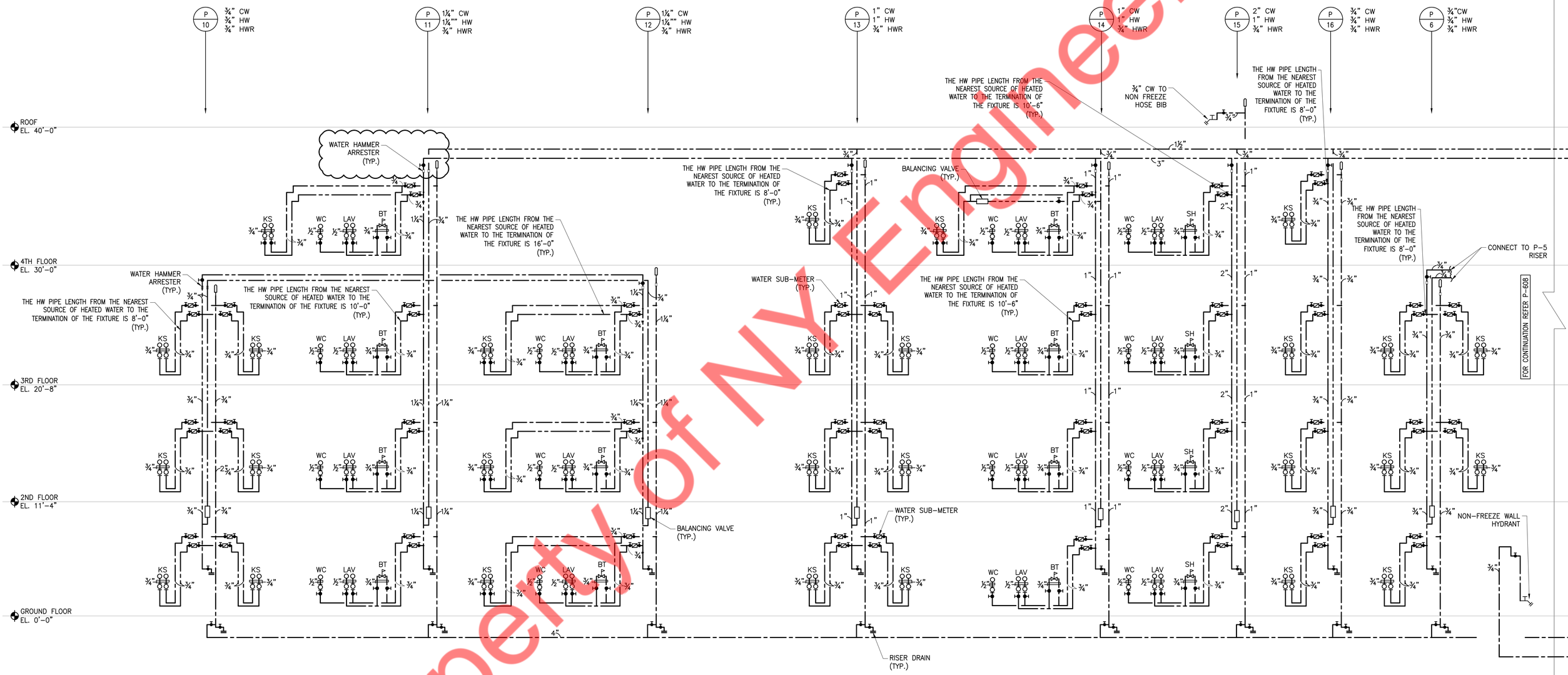
1. INSULATE ALL VERTICAL PIPES FOR 10' FROM ROOF PENETRATIONS.
2. ALL HORIZONTAL PIPE RUNS BELOW FLOOR TO BE INSULATED.

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU·IN./(H·FT2·°F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	<8
40–60	0.21–0.27	75	0.5	0.5	1.0	1.0	1.0

NOTES:
1. PROVIDE ACCESS PANEL FOR ALL CLEANOUTS.
2. REFER APPROVED SITE CONNECTION DRAWINGS FOR SEWER CONNECTION.

1 PLUMBING SANITARY RISER DIAGRAM
SCALE: 1/8" = 1'-0"

Property of NY Engineers



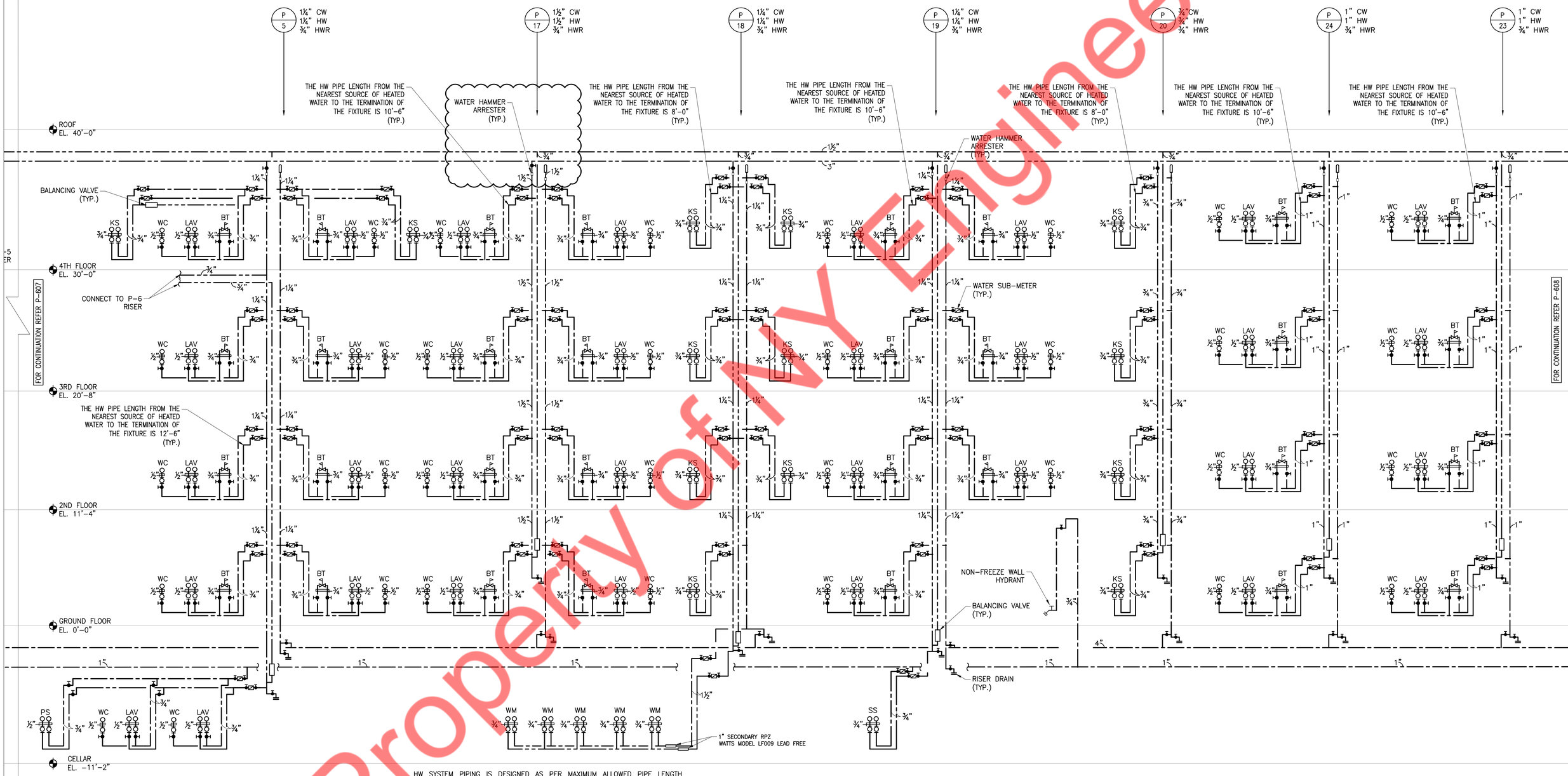
HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER NYC ECC C404.5.1 & NYC PC 607.2 THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MIXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	20'
¾"	0.5'	20'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

1 PLUMBING WATER RISER DIAGRAM

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

Property of NY Engineers



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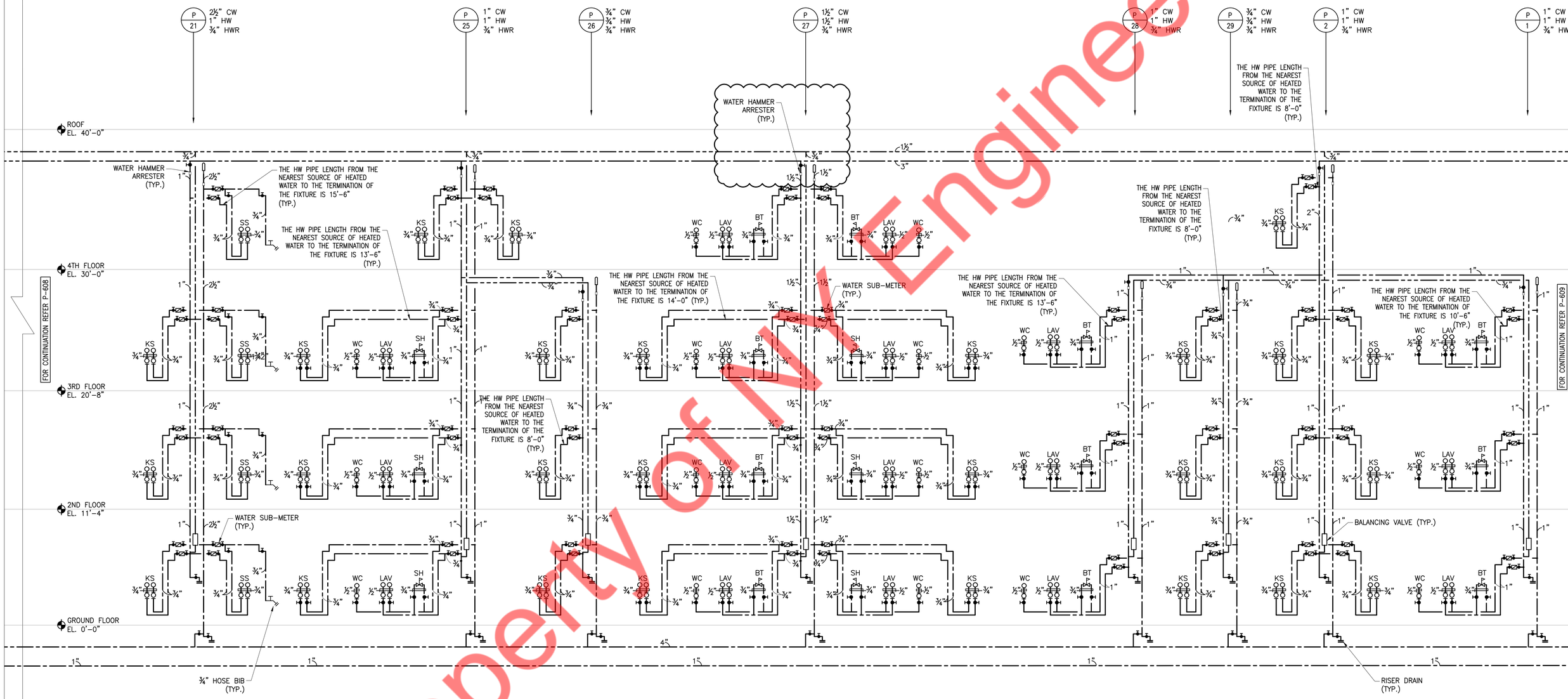
1 PLUMBING WATER RISER DIAGRAM

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

Property of NY Engineers



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2" OR LARGER	0.5'	4'

1 PLUMBING WATER RISER DIAGRAM
SCALE: 1/8" = 1'-0"

Property of NY Engineers

P 3 — 1¼" CW, 1¼"" HW, ¾" HWR

P 4 — 1" CW, 1" HW, ¾' HWR

P 7 — 1" CW, 1" HW, ¾" HWR

P 8 — ¾" CW, ¾" HW, ¾" HWR

P 9 — 1¼" CW, 1¼"" HW, ¾" HWR

P 22 — 3" CW

EXPANSION TANK (ET-1)

STORAGE TANKS (ST-1 & ST-2)

HWCP-1

TANK

TANK

HWHT-1 & HWHT-2

¾" CW TO HOSE BIB

¾" CW TO NON FREEZE HOSE BIB

ROOF EL. 40'-0"

4TH FLOOR EL. 30'-00"

3RD FLOOR EL. 20'-8"

2ND FLOOR EL. 11'-4"

GROUND FLOOR EL. 0'-0"

CELLAR EL. -11'-2"

CONNECT TO P-5 RISER

CONNECT TO P-11 RISER

FOR CONTINUATION REFER P-610

WATER HAMMER ARRESTER (TYP.)

WATER SUB-METER (TYP.)

BALANCING VALVE (TYP.)

THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE IS 13'-6" (TYP.)

THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE IS 8'-0" (TYP.)

THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE IS 14'-6" (TYP.)

THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE IS 8'-0" (TYP.)

WC LAV BT P KS

NON-FREEZE WALL HYDRANT

RISER DRAIN (TYP.)

NON-FREEZE WALL HYDRANT

NON-FREEZE WALL HYDRANT

NON-FREEZE WALL HYDRANT

DUPLEX BP-1

REFER SCHEDULE FOR MORE DETAILS

BY-PASS CONNECTION (SHUT-OFF VALVES NORMALLY CLOSED)

FOR CONTINUATION REFER SPRINKLER DRAWING SP-601

6" FIRE BACKFLOW PREVENTOR DCDA ASSEMBLY

6" HOUSE GATE VALVE W/ TAMPER SWITCH

6" FIRE WATER SERVICE

EAST 233RD STREET

4" DOMESTIC WATER SERVICE

4" HOUSE GATE VALVE

4" MICV

4" DOMESTIC WATER METER

4" DOMESTIC BACKFLOW PREVENTOR (RPZ TYPE LEAD FREE)

TEST TEE CONNECTION W/ VALVE

4" MOCV

HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER NYC ECC C404.5.1 & NYC PC 607.2 THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

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1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

NOTES:
1. PROVIDE ACCESS PANEL FOR ALL WATER SUB-METER & VALVES.
2. REFER DEP APPROVED BFP DRAWINGS FOR BFP INSTALLATION.
3. PROVIDE WATER HAMMER ARRESTER WHERE QUICK CLOSING VALVES ARE USED AS PER NYC PC.

1 PLUMBING WATER RISER DIAGRAM
SCALE: 1/8" = 1'-0"

Property of NY Engineers

GENERAL NOTES:

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.–13R AND ALL LOCAL AUTHORITIES.
2. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
3. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
4. ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE.
5. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING.
6. THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (1) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
7. PIPES SIZES SHOWN ARE BASED ON DESIGN PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
8. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
9. THERE SHALL BE AT LEAST ONE FDNY CERTIFIED FIREGUARD ON DUTY WHEN WORK IS ONGOING AND TEMPORARY LOOP IS IMPAIRED. THE FIREGUARD SHALL PERFORM CONSTANT PATROLS OF THE AREAS WITH IMPAIRED FIRE PROTECTION. ALL FIREGUARDS SHALL BE EQUIPPED WITH AT LEAST ONE APPROVED MEANS FOR NOTIFICATION. PRE–PROGRAMMED TO DIAL THE FIRE DEPARTMENT BOROUGH DISPATCHER'S OFFICE (212–570–4300) TO REPORT ACCURATE AND TIMELY INFORMATION TO THE FIRE DEPARTMENT.
10. G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
11. ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO CARPET AND FURNITURE INSTALLATION. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.
12. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
13. G.C. SHALL COORDINATE ARRANGEMENTS FOR TEMPORARY DISCONNECT AND RECONNECT WITH MANAGEMENT PRIOR TO COMMENCEMENT OF WORK.
14. G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY BUILDING INSPECTOR AND FIRE MARSHALL
15. REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
16. PIPE SIZE TO BE MINIMUM OF ONE INCH (1").
17. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
18. EXISTING PIPING SERVING ADJACENT AREAS NOT IN AREA OF WORK SHALL REMAIN ACTIVE AND WITHOUT DISTURBANCE
19. A FIRE WATCH GUARD WITH A CERTIFICATE OF FITNESS SHALL BE MAINTAINED DURING SHUT DOWNS AND ALL HOURS WHEN OPERATIONS ARE NOT IN PROGRESS OR FDNY FIREGUARDS ARE NOT PRESENT. WATCH SERVICES SHALL BE CONDUCTED BY A COMPETENT PERSON. FDNY CERTIFICATION IS NOT REQUIRED. G.C. SHALL BE RESPONSIBLE FOR THE FIRE WATCH AND ALL PROTECTIVE MEASURES REQUIRED BY MANAGEMENT & FDNY AT HIS EXPENSE.
20. UPON COMPLETION OF ALL SPRINKLER WORK, CONTRACTOR SHALL TEST AND INSPECT ENTIRE SPRINKLER SYSTEM. ENTIRE SYSTEM SHALL BE FULLY OPERATIONAL AND APPROVED IN COMPLIANCE WITH ALL AHJ.
21. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
22. CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO PROVIDE (5) FIVE ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.

SHOP DRAWINGS AND SUBMITTALS

THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:

1. PIPE AND FITTINGS.
2. VALVES.
3. HANGERS AND SUPPORTS.
4. SPRINKLER PIPING LAYOUT
5. TESTS
6. SPRINKLER HEADS
7. HYDRAULIC CALCULATIONS
8. ALL SCHEDULED SPRINKLER EQUIPMENTS

SPRINKLER NOTES:

1. 6.9.2* BATHROOMS.
   SPRINKLERS SHALL NOT BE REQUIRED IN BATHROOMS WHERE THE BATHROOM AREA DOES NOT EXCEED 55 FT^2 (5.1m^2) I
2. 6.9.3 CLOSETS.
   EXCEPT WHERE SPECIFIED IN 6.9.4, SPRINKLERS SHALL NOT BE REQUIRED IN CLOTHES CLOSETS, LINEN CLOSETS, AND PANTRIES WITHIN DWELLING UNITS THAT MEET ALL OF THE FOLLOWING CONDITIONS:
   - THE AREA OF THE SPACE DOES NOT EXCEED 24 FT^2.
   - THE LEAST DIMENSION DOES NOT EXCEED 3 FT.
   - THE WALLS AND CEILINGS ARE SURFACED WITH NONCOMBUSTIBLE OR LIMITED–COMBUSTIBLE MATERIALS AS DEFINED BY NFPA 220, STANDARD ON TYPES OF BUILDING CONSTRUCTION.

BUILDING DEPARTMENT SPRINKLER NOTES

1. THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE 2014 NEW YORK CITY BUILDING CODE APPENDIX Q, SECTION BC Q102 AND SECTION BC903.
2. ONLY APPROVED MATERIALS SHALL BE USED AS PER CHAPTER 6 OF APPENDIX Q, SECTION BCQ102
3. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO SECTION BCQ102.1 SEE 23.1.1.
4. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER APPENDIX Q BCQ102, SEC 8.15.3 AND 6.2.8.
5. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS SEC. 901.5 AND APPENDIX Q, SEC. BCQ102, CH. 16.
6. THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDANCE WITH SECTION 5.2 AND A.5.2 OF APPENDIX Q SECTION BCQ102.
7. WATER SUPPLY TEST PIPES AND GAUGES SHALL BE PROVIDED AS PER SECTION 8.16.1 AND 8.16.4 OF APPENDIX Q, SECTION BCQ102.
8. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER APPENDIX Q SECTION BCQ102, CHAPTERS 6 AND 9.
9. STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER SECTION 6.2.9 APPENDIX Q, SECTION BCQ102 (REQUIRED FOR EACH TEMPERATURE RATING).
10. SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH SECTION 8.16.1 OF APPENDIX Q, SECTION BCQ102.
11. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER SECTION 8 OF APPENDIX Q, SECTION BCQ102.
12. ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
13. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION BC712
14. THERE IS NO HIGH PILED STORAGE AS DEFINED IN SECTION 3–3.12 OF APPENDIX Q, SECTION BC Q102
15. DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE IN AS PER TABLES 9.3.2.5 (a) AND 8.3.2.5 (b).
16. AS PER SECTION BC903.1.2 PROVIDE DEPARTMENT OF WATER SUPPLY LETTER WITH FLOW TEST DATE IF THERE IS A DIRECT CONNECTION TO THE STREET WATER SUPPLY.
17. ALL PIPES PASSING THROUGH FOUNDATION WALLS SHALL BE PROTECTED AS PROVIDED BY SECTION 305.5 OF THE PLUMBING CODE.
18. THIS APPLICATION IS NOT FILED AS A RESULT OF ACTION BY THE FIRE COMMISSIONER AS AUTHORIZED BY BS & A TO MODIFY THE CERTIFICATE OF OCCUPANCY NOR IS SUCH ACTION PENDING.
19. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY SECTION 6.7.4. OF APPENDIX Q, SECTION BCQ102.
20. DRAINAGE SHALL CONFORM TO SECTION 8.15.2 OF APPENDIX Q, SECTION BCQ102.
21. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER SECTION 6.4.6 OF APPENDIX Q, SECTION BCQ102.
22. ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
23. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER 6.7.3 OF APPENDIX Q, SECTION BCQ102.
24. HANGERS SHOULD BE SUPPORTED BY WROUGHT IRON U TYPE OR APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER CHAPTER 9, OF APPENDIX Q, SECTION BCQ102.
25. PROVISIONS SHOULD BE MADE TO FACILITATE FLUSHING SYSTEM PIPING BY PROVIDING FLUSHING CONNECTIONS CONSISTING OF A CAPPED NIPPLE 4" LONG ON END OF A CROSS MAIN AS PER SECTION 8.14.16 OF APPENDIX Q, SECTION BCQ102.
26. SPRINKLER SHALL BE AN APPROVED TYPE AS PER SECTION 8.3 OF APPENDIX Q, SECTION BCQ102.
27. TEMPERATURE RATING SHALL COMPLY WITH SECTION 8.3.2 OF APPENDIX Q, SECTION BCQ102.
28. 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER SECTION 8.5.6. OF APPENDIX Q, SECTION BCQ102.
29. SPACING AND LOCATION OF SPRINKLERS SHALL COMPLY WITH CHAPTER 8 OF APPENDIX Q, SECTION BCQ102.
30. SPRINKLER SYSTEM COMPLIES WITH NFPA 13R–2007 AS MODIFIED BY APPENDIX Q, SECTION BCQ102.
31. SOURCES OF WATER SUPPLY FOR SPRINKLER SYSTEMS AS PER CHAPTER 15 OF APPENDIX Q, SECTION BCQ102.
32. PIPE SCHEDULE SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION 14.5 OF APPENDIX Q, SECTION BCQ102.
33. AUTOMATIC INTERLOCK CUTOFF SWITCH FOR VENTILATION WILL CONFORM TO CHAPTER 6 OF THE MECHANICAL CODE (APPLICABLE ONLY IF THERE IS AN AIR SYSTEM UTILIZING RECIRCULATED AIR AND REQUIRING A THERMOSTATIC DEVICE).
34. HYDRAULICALLY DESIGNED SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 14 OF APPENDIX Q, SECTION BCQ102.
35. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
36. THIS APPLICATION IS MADE ONLY FOR WORK INDICATED ON THE SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
37. SPRINKLER PIPING SHALL BE PAINTED IN ACCORDANCE WITH LOCAL LAW 58/2009.
38. SPRINKLER SHALL BE SELECTED, DESIGN, LOCATED, SPACED AND POSITIONED IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.–13R SECTION 5.1.1, 6.7.7, 6.8 & 6.9.

BULDING DEPARTMENT STANDPIPE NOTES:

1. THE COMPLETE STANDPIPE SYSTEM COMPLY WITH THE FULL REQUIREMENTS OF N.Y.C. BUILDING CODE SEC. 905, APPENDIX Q AND NFPA 14–2007.
2. STANDPIPE SYSTEM COMPONENTS AND HARDWARE SHALL BE IN ACCORDANCE WITH CHAPTER 4 OF NFPA 14–2007 AND APPENDIX Q OF NYC BUILDING CODE.
3. THE LOCATION OF FIRE DEPARTMENT HOSE CONNECTIONS SHALL BE APPROVED BY THE FIRE COMMISSIONER PER SEC 905.1 OF NYC BUILDING CODE.
4. STANDPIPE SYSTEMS IN BUILDINGS USE FOR HIGH–PILED COMBUSTIBLE STORAGE SHALL BE IN ACCORDANCE WITH THE NYC FIRE CODE.
5. INSTALLATION OF STANDPIPE SYSTEMS SHALL COMPLY WITH THE SPECIAL INSPECTION REQUIREMENTS OF CHAPTER 17 OF NYC BUILDING CODE PER SEC 905.1.
6. CONSTRUCTION DOCUMENTS FOR STANDPIPE SYSTEMS SHALL CONTAIN PLANS THAT INCLUDE THE INFORMATION AND DATA LISTED IN SEC. 905.1.1 OF NYC BUILDING CODE.
7. ANY SPACE OR ROOM THAT CONTAINS EQUIPMENT OF SUCH NATURE THAT THE USE OF WATER WOULD BE INEFFECTIVE IN FIGHTING A FIRE THEREIN OR WOULD BE OTHERWISE HAZARDOUS, SHALL HAVE A CONSPICUOUS SIGN ON EACH DOOR OPENING ON SUCH SPACE OR ROOM STATING THE NATURE OF THE USE AND THE WARNING: "IN CASE OF FIRE, USE NO WATER."
8. STANDPIPE SYSTEMS SHALL BE INSTALLED AS PER NYC BC SECTION 905.3.1 & 905.3.5 AND IN THE LOCATIONS INDICATED IN SECTIONS 905.4, 905.6 & MODIFIED NFPA 14, SECTION 7.3 AS PER NYC BC APPENDIX Q
9. STANDPIPE SYSTEMS ARE PERMITTED TO BE COMBINED WITH AUTOMATIC SPRINKLER SYSTEMS. SEC. 905.3 OF NYC BUILDING CODE.
10. THE LOCATION OF CLASS I STANDPIPE HOSE CONNECTION SHALL COMPLY WITH SEC. 905.4 OF NYC BUILDING CODE.
11. WHERE THE MOST REMOTE PORTION OF A FLOOR OR STORY IS MORE THAN 150 FEET FROM A HOSE CONNECTION, ADDITIONAL HOSE CONNECTIONS SHALL BE PROVIDED IN APPROVED LOCATIONS, SEC. 905.4.
12. STANDPIPE OUTLETS MAY BE OMITTED IN PORTIONS OF FIRST FLOORS OR BASEMENTS THAT ARE COMPLETELY SEPARATED FROM THE ENTRANCE HALL OR ENCLOSED STAIRWAYS LEADING TO THE UPPER FLOORS, PROVIDED THAT POTABLE FIRE EXTINGUISHERS ARE INSTALLED, SUBJECT TO THE APPROVAL OF THE FIRE COMMISSIONER, SEC. 905.3.1.
13. WHERE THE ROOF HAS A SLOPE OF LESS THAN 4" VERTICAL AND 12" HORIZONTAL, EACH STANDPIPE SHALL BE PROVIDED WITH A HOSE CONNECTION LOCATED EITHER ON THE ROOF OR AT THE HIGHEST LANDING OF STAIRWAYS WITH STAIR ACCESS TO THE ROOF. AN ADDITIONAL HOSE CONNECTION SHALL BE PROVIDED AT THE TOP OF THE MOST HYDRAULICALLY REMOTE STANDPIPE FOR TESTING PURPOSE AS PER SEC 905.4.
14. PROTECTION OF RISERS AND LATERALS OF CLASS I STANDPIPE SYSTEM SHALL COMPLY WITH SEC. 905.4.1 OF NYC BUILDING CODE.
15. CLASS II STANDPIPE HOSE CONNECTIONS SHALL BE ACCESSIBLE AND LOCATED SO THAT ALL PORTIONS OF THE BUILDING ARE WITHIN 30 FEET OF A NOZZLE ATTACHED TO 125 FEET OF HOSE AS PER SEC 905.5 AS MODIFIED BY APPENDIX Q.
16. IN FULLY SPRINKLERED BUILDINGS HAVING A COMBINED STANDPIPE SYSTEM THAT IS HYDRAULICALLY CALCULATED, THE MINIMUM STANDPIPE SIZE IN BUILDINGS WITH FLOOR HEIGHTS LESS THAN 150 FT. ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS SHALL BE 4 IN. SEC. 7.6.3 OF APPENDIX Q.
17. CLASS III STANDPIPE SYSTEMS SHALL HAVE HOSE CONNECTIONS LOCATED AS REQUIRED FOR CLASS I STANDPIPES IN SEC. 905.4 AND SHALL HAVE CLASS II HOSE CONNECTIONS AS REQUIRED IN SEC. 905.5.
18. CABINETS CONTAINING FIRE–FIGHTING EQUIPMENT SUCH AS STANDPIPES, FIRE HOSES, FIRE EXTINGUISHERS OR FIRE DEPARTMENT VALVES SHALL NOT BE BLOCKED FROM USE OR OBSCURED FROM VIEW AS PER SEC 905.7.
19. STANDPIPE SYSTEMS ARE REQUIRED DURING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS SHALL BE PROVIDED IN ACCORDANCE WITH SEC. 3303.8 OF NYC BUILDING CODE.
20. CLASS II STANDPIPE SYSTEM PROVIDES 1–1/2" (38MM) HOSE STATIONS TO SUPPLY WATER FOR USE PRIMARILY BY THE BUILDING OCCUPANTS OR BY THE FIRE DEPARTMENT DURING INITIAL RESPONSE. CLASS II STANDPIPE SYSTEMS ARE PERMITTED FOR HIGH PILE AND RACK STORAGE OCCUPANCIES ONLY. SEC. 3.3.27.2 OF APPENDIX Q.
21. FITTINGS SHALL BE EXTRA–HEAVY PATTERN WHERE PRESSURES EXCEED 175 PSI (12.1 BAR). SEC. 4.3.3 OF NFPA 14–2007.
22. PROTECTION OF STANDPIPE SYSTEM WHERE A STANDPIPE OR LATERAL PIPE THAT IS NORMALLY FILLED WITH WATER PASSES THROUGH AN AREA SUBJECT TO FREEZING TEMPERATURES IT SHALL BE PROTECTED TO MAINTAIN THE TEMPERATURE OF THE WATER IN THE PIPING BETWEEN 40°F AND 120°F (4.4°C AND 48.9°C). SEC. 6.1.2.3 OF NFPA 14–2007.
23. FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED NOT LESS THAN 18 IN. NOR MORE THAN 36 IN. ABOVE THE LEVEL OF THE ADJOINING GROUND, SIDEWALK OR GRADE SURFACE. SEC. 6.3.6 OF NFPA 14–2007.
24. THE MAXIMUM PRESSURE AT ANY POINT IN THE SYSTEM AT ANY TIME SHALL NOT EXCEED 350 PSI (24.1 BAR). SEC. 7.2 OF NFPA 14–2007.
25. BRANCH LINE SHALL BE SIZED BASED ON THE HYDRAULIC CRITERIA ESTABLISHED IN SEC. 7.8 & 7.10 BUT NOT LESS THAN 2–1/2" (65 MM) SEC. 7.6.4 OF NFPA 14–2007.
26. HYDRAULICALLY DESIGNED STANDPIPE SYSTEMS SHALL BE DESIGNED TO PROVIDE THE WATER FLOW RATE AT A MINIMUM RESIDUAL PRESSURE OF 65 PSI (4.5 BAR) AT THE OUTLET OF THE HYDRAULICALLY MOST REMOTE 2–1/2" (65 MM) & 1–1/2" (38 MM) HOSE CONNECTION. SEC.7.8.1 OF BCQ105, APPENDIX Q OF N.Y.C. BUILDING CODE & SEC.7.8.1.1 OF NBC 14–2007.
27. HOSE CONNECTIONS AND HOSE STATIONS SHALL BE UNOBSTRUCTED AND SHALL BE LOCATED NOT LESS THAN 3 FT. (0.9 M) OR MORE THAN 5 FT. (1.5 M) ABOVE THE FLOOR. SEC. 7.3.1 OF NFPA 14–2007.
28. AT THE TOP OF THE HIGHEST RISER THERE SHALL BE PROVIDED ABOVE THE MAIN ROOF LEVEL A THREE WAY MANIFOLD EQUIPPED WITH THREE 2–1/2"HOSE VALVE WITH HOSE VALVE CAPS. SEC. 7.3.2.2 OF APPENDIX Q.
29. WHERE THE RESIDUAL PRESSURE AT A 1–1/2" (40 MM) OUTLET ON A HOSE CONNECTION EXCEED 100 PSI (6.9 BAR), AN APPROVED PRESSURE RESTRICTED DEVICE SHALL BE PROVIDED. SEC. 7.8.3.1 OF NFPA 14–2007.
30. FOR CLASS I AND CLASS III SYSTEMS THE MINIMUM FLOW RATE FOR THE HYDRAULICALLY MOST REMOTE STANDPIPE SHALL BE 500 GPM (1893 L/MIN) SEC. 7.10.1.1.1 OF NFPA 14–2007.
31. WHERE A HORIZONTAL STANDPIPE ON A CLASS I AND CLASS III SYSTEM SUPPLIES THREE OR MORE HOSE CONNECTIONS ON ANY FLOOR, THE MINIMUM FLOW RATE FOR THE HYDRAULICALLY MOST DEMANDING HORIZONTAL STANDPIPE SHALL BE 750 GPM (2840 L/MIN). SEC. 7.10.1.1.2 OF NFPA 14–2007.
32. THE MINIMUM FLOW RATE FOR ADDITIONAL STANDPIPES SHALL BE 250 GPM PER STANDPIPE WITH THE TOTAL NOT TO EXCEED 1250 GPM OR 1000 GPM FOR BUILDINGS SPRINKLERED THROUGHOUT. SEC. 7.10.1.1.3 OF NFPA 14–2007.
33. CLASS I AND CLASS III STANDPIPES IN BUILDINGS WITH FLOOR HEIGHTS LESS THAN 150 FT. ABOVE GRADE PLANE SHALL BE AT LEAST 4 INCHES IN SIZE. STANDPIPES IN BUILDINGS WITH FLOOR HEIGHTS GREATER THAN 150 FT ABOVE GRADE PLANE SHALL BE NO LESS THAN 6 INCHES IN DIAMETER. SEC. 7.6.1 OF APPENDIX Q.
34. VALVES CONTROLLING WATER SUPPLIES SHALL BE SUPERVISED IN THE OPEN POSITION SO THAT A CHANGE IN THE NORMAL POSITION OF THE VALVE WILL GENERATE A SUPERVISORY SIGNAL AT THE SUPERVISING STATION REQUIRED BY SECTION 903.4. WHERE A FIRE ALARM SYSTEM IS PROVIDED, A SIGNAL SHALL ALSO BE TRANSMITTED TO THE CONTROL UNIT.
35. THE STANDPIPE SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (1) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.

DESIGN CRITERIA FOR HYDRAULIC FLOW CALCULATIONS

HYDRAULIC CALCULATIONS BASED ON DENSITY–AREA METHOD

OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.10 GPM/SQ. FT.
DESIGN AREA OF APPLICATION:	REMOTEST 4 SPRINKLERS
OCCUPANCY:	ORDINARY HAZARD 1
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.
DESIGN AREA OF APPLICATION:	1500 SQ. FT.
OCCUPANCY:	ORDINARY HAZARD 2
MINIMUM DESIGN DENSITY:	0.20 GPM/SQ. FT.
DESIGN AREA OF APPLICATION:	1500 SQ. FT.

NOTE– DESIGN CRITERIA IS BASED ON N.F.P.A.–13R SECTION 6.8

SPACING BETWEEN SPRINKLER HEADS

LIGHT HAZARD: 15' MAX.
ORDINARY HAZARD: 15' MAX.

NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS ½ THE DISTANCE BETWEEN HEADS.

SPRINKLER NOTE:

1. PROVIDE SP HEAD ABOVE AND BELOW DUCT 48" OR WIDER.

PROTECTION AREA OF SPRINKLER HEADS

LIGHT HAZARD (NON–COMBUSTIBLE/HYDRAULIC):	225 SQ. FT.
ORDINARY HAZARD:	130 SQ. FT.

SPRINKLER BOOSTER PUMP SCHEDULE

ID. No.	DESCRIPTION	MANUFACTURER MODEL No.	LOCATION	CURRENT V	PH	HZ	GPM	PSI	TDH(FT)	HP	RPM	REMARKS
SBP	SPRINKLER BOOSTER PUMP	PEERLESS PUMP CO, MODEL # 5PVF11 VERTICAL INLINE PUMP	CELLAR	208	3	60	500	88	203	40	3520	SBP PUMP CONTROLLER BY FTA 1930–DIGITAL SOLID–STATE SOFT START/STOP – UL LISTED, MEA APPROVED
JP	AUTO JOCKEY PUMP	GRUNDFOS MODEL CR3–9 VERTICAL IN–LINE PUMP	CELLAR	208	3	60	10	100	230	1.5	3500	JOCKEY PUMP BY GROUNDFOS MODEL # CR3–9 –JOCKEY XG PUMP CONTROLLER FTA550F BY FIRETROL

SPRINKLER SCHEDULE

SYMBOL	NAME	COVERAGE	AREA	METAL	TEMPERATURE (°F)	K–FACTOR	NPT	MFG	MODEL#	COAT	APPROVALS
●	CONCEALED	STANDARD	LH/OH AREAS WITH CEILING	BRASS	155	5.6	½"	VIKING	VK462	BRASS	UL 199, MEA 89–92–E, VOL.32
○	UPRIGHT	STANDARD	LH/OH OPEN AREAS	BRASS	155	5.6	½"	VIKING	VK300	BRASS,CHROME,WHITE,BLACK,ENT,STAINLESS	UL 199, MEA 89–92–E, VOL.16
◁	STANDARD SIDEWALL	STANDARD	LH/OH AREAS WITH CEILING	BRASS	155,175	5.6	½"	VIKING	VK305	BRASS,CHROME,WHITE,BLACK,ENT	UL 199, MEA 89–92–E, VOL.16
◀(E)	EXTENDED SIDEWALL	EXTENDED	LH AREAS WITH CEILING	BRASS	155	8.0	¾"	VIKING	VK630	BRASS,CHROME,WHITE,BLACK,ENT	UL 199, MEA 89–92–E, VOL.32
⊙	PENDENT CHUTE SPRINKLER HEAD	STANDARD	OH CHUTE	BRASS	175	5.6	½"	VIKING	VK302	BRASS,CHROME,WHITE,BLACK,ENT	UL 199, MEA 89–92–E, VOL.16
◁(ED)	EXTENDED DRY SIDEWALL	EXTENDED	LH/OH OPEN AREAS	BRASS	155	5.6	¾"	VIKING	VK188	BRASS,CHROME,WHITE,BLACK,ENT	UL 199, MEA 89–92–E, VOL.15

NOTE: COORDINATE ALL SPRINKLER COLOR FINISHES WITH ARCHITECT.

SPECIAL INSPECTION NOTES:

1. SPECIAL INSPECTION OF SPRINKLER SYSTEM TO BE PERFORMED IN ACCORDANCE WITH NY CITY BUILDING CODE SECTION BC 1704–23
2. SPECIAL INSPECTION OF STANDPIPE SYSTEM TO BE PERFORMED IN ACCORDANCE WITH NY CITY BUILDING CODE SECTION BC 1704–24
3. FIRE RESISTANT PENETRATION & JOINTS IN ACCORDANCE WITH NY CITY BUILDING CODE BC–1704.27
4. POST INSTALLATION ANCHOR INSPECTION TO BE DONE IN ACCORDANCE WITH NY CITY BUILDING CODE BC–1704.32
5. ENERGY CODE COMPLIANCE INSPECTIONS TO BE DONE IN ACCORDANCE WITH NY CITY BUILDING CODE BC–110.3.5

GENERAL NOTES:

1. 2016 NYCECC COMPLIANCE: NEW YORK CITY CONSERVATION CODE.

   TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, ALL WORK UNDER THIS APPLICATION IS EXEMPT FROM THE NYCECC IN ACCORDANCE WITH ONE OF THE FOLLOWING: FA, FP, SD, SP, FS, EQ, CC, OT/BPP, OT/FPP

GENERAL NOTES:

1. FOR SPRINKLER AND STANDPIPE WORK ONLY.

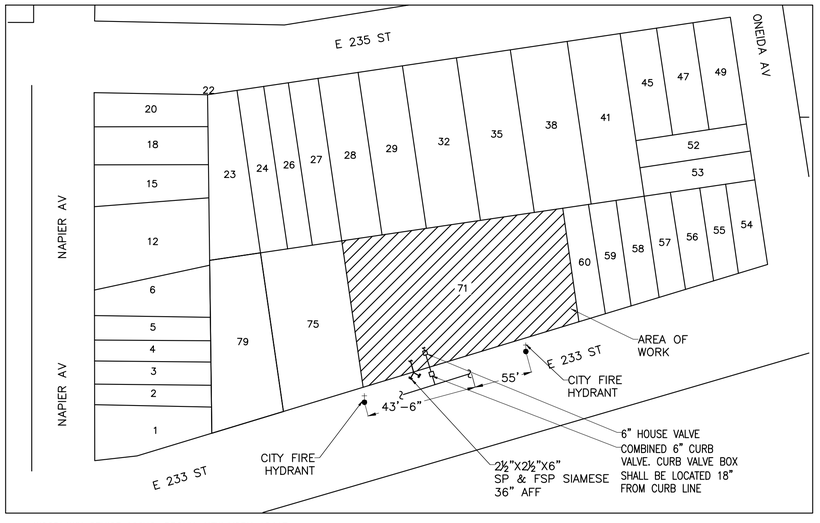
SPRINKLER DRAWING LIST

SP/SD–001.00 SPRINKLER GENERAL NOTES, SYMBOLS, SCHEDULES AND ABBREVIATIONS
SP/SD–002.00 SPRINKLER SPECIFICATIONS
SP/SD–100.00 CELLAR SPRINKLER PLAN
SP/SD–101.00 GROUND FLOOR SPRINKLER PLAN
SP/SD–102.00 2ND FLOOR SPRINKLER PLAN
SP/SD–103.00 3RD FLOOR SPRINKLER PLAN
SP/SD–104.00 4TH FLOOR SPRINKLER PLAN
SP/SD–105.00 ROOF SPRINKLER PLAN
SP/SD–300.00 SPRINKLER UNIT PLANS SHEET (1 OF 4)
SP/SD–301.00 SPRINKLER UNIT PLANS SHEET (2 OF 4)
SP/SD–302.00 SPRINKLER UNIT PLANS SHEET (3 OF 4)
SP/SD–303.00 SPRINKLER UNIT PLANS SHEET (4 OF 4) AND 3D VIEW
SP/SD–501.00 SPRINKLER DETAILS (1 OF 2)
SP/SD–502.00 SPRINKLER DETAILS (2 OF 2)
SP/SD–601.00 SPRINKLER RISER DIAGRAM

SPRINKLER LEGEND

- SP — NEW SPRINKLER PIPING
- DR — NEW DRAIN PIPING
- F — NEW FIRE PIPING
- ● CONCEALED SPRINKLER HEAD
- ◁ SIDEWALL SPRINKLER HEAD
- ◀(E) EXT. SIDEWALL SPRINKLER HEAD
- ◁(ED) EXT. DRY SIDEWALL SPRINKLER HEAD
- ◁(D) DRY SIDEWALL SPRINKLER HEAD
- ○ UPRIGHT SPRINKLER HEAD
- ⊙ PENDENT SPRINKLER HEAD
- PIPE THRU RATED WALL
- (TS) TAMPER SWITCH
- (WFS) WATER FLOW SWITCH
- FCA FLOOR CONTRL VALVE ASSEMBLY
- CHECK VALVE WITH AUTOMATIC BALL DRIP
- SPRINKLER SIAMESE CONNECTION

KEY PLAN



WOODLAWN SENIOR LIVING, BRONX, NEW YORK 10417.

BLOCK:	3365
LOT:	71
ZONE:	R5
MAP:	1C
OCCUPANCY CLASS:	R2
BUILDING HEIGHT :	52'

N

PLOT PLAN
N.T.S.

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SPRINKLER SPECIFICATIONS

PART 1 – GENERAL

1.01 REQUIREMENTS

A. THE SPRINKLER CONTRACTOR SHALL BE A LICENSED, AUTHORIZED INSTALLER OF SPRINKLER SYSTEMS AND SHALL HAVE HAD A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF SPRINKLER SYSTEMS IN THE CITY OF NEW YORK.

B. BEFORE SUBMITTING HIS BID, THE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND SHALL FULLY FAMILIARIZE HIMSELF WITH, AND BECOME FAMILIAR WITH THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

C. UPON REVIEW OF THE DRAWINGS AND SPECIFICATIONS, PRIOR TO SUBMITTING HIS PROPOSAL, THE SPRINKLER CONTRACTOR SHALL INFORM ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE SPRINKLER SYSTEM INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OF MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.

D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.

E. NECESSARY SHUT–DOWNS OF BASE BUILDING SPRINKLER SYSTEM MUST BE COORDINATED WITH BUILDING MANAGEMENT. SHUT–DOWNS OF BASE BUILDING SYSTEMS SHALL TAKE PLACE AFTER OR BEFORE NORMAL BUSINESS HOURS AND SHALL BE CONSIDERED OVERTIME WORK. THE CONTRACTOR MUST GIVE BUILDING MANAGEMENT AND NEW YORK CITY FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT–DOWN OF SPRINKLER, OR OTHER SYSTEMS.

1.02 WORK INCLUDED

A. WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE NEW YORK CITY BUILDING CODE, N.F.P.A. STANDARD 13R, N.Y.C. FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.

2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS.

3. PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH N.Y.C. BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND DATA

A. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:

A. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:

1. PIPE AND FITTINGS.
2. VALVES.
3. HANGERS AND SUPPORTS.
4. SPRINKLER PIPING LAYOUT
5. TESTS
6. SPRINKLER HEADS
7. HYDRAULIC CALCULATIONS
8. ALL SCHEDULED SPRINKLER EQUIPMENTS

1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES

A. THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.

B. ARRANGE FOR INSPECTION AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME.

1.05 INSPECTION AND TESTING

A. THE SPRINKLER SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEW YORK CITY BUILDING CODE FIRE DEPARTMENT INSPECTOR.

B. THE SPRINKLER SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST FOR A PERIOD OF TWO HOURS AT A PRESSURE OF AT LEAST 200 PSIG OR 50 PSI IN EXCESS OF THE MAXIMUM PRESSURE TO BE MAINTAINED WHEN THE MAXIMUM PRESSURE IN THE SYSTEM IS IN EXCESS OF 150 PSI AS PER NFPA.

C. THE BUILDING DEPARTMENT SHALL BE NOTIFIED THAT THE SYSTEM IS READY FOR REINSPECTION AND TESTING. THE BUILDING DEPARTMENT INSPECTOR SHALL WITNESS THE TEST. FINAL APPROVAL OF THE SPRINKLER SYSTEM SHALL BE OBTAINED FROM BUILDING DEPARTMENT, AND FIRE DEPARTMENT.

PART 2 – MATERIALS

2.01 GENERAL

A. THE SPRINKLER SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, HANGERS AND SUPPORTS. ALSO, MISCELLANEOUS WORK ITEMS, SUCH AS, SIGNS AS REQUIRED, VALVE TAGS, ETC., AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR COMPLETE, APPROVED TYPE SYSTEM, READY FOR FUTURE EXTENSION.

B. ALL PIPE, FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC., SHALL CONFORM TO THE NEW YORK CITY BUILDING CODE AND NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. PIPING PENETRATING FIRE RATED PARTITIONS SHALL HAVE OPENING SEALED WITH U.L. APPROVED FIREPROOF SEALANT.

2.02 SPRINKLER PIPING

A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40, THREADED IN ACCORDANCE WITH NFPA–13R. PIPE SHALL BE UL/FM APPROVED.

B. STEEL PIPE SHALL BE BETHLEHEM STEEL CO., ALLIED TUBE, BERGER INDUSTRIES OR APPROVED

C. ALL SPRINKLER FITTINGS AND COUPLINGS SHALL BE THREADED CAST IRON SPRINKLER FITTINGS, DESIGNED AND MANUFACTURED FOR A WATER WORKING PRESSURE OF 175 POUNDS. FITTING SHALL BE UL/FM APPROVED. CONTRACTOR MAY USE VICTAULIC GROOVED COUPLINGS AND FITTINGS ON SCHEDULE 40 PIPE.

2.03 CUTTING AND PATCHING

DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.

2.04 INSERTS, HANGERS, ETC.

A. ALL SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED AND SHALL COMPLY WITH THE STANDARDS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE INSTALLATION OF SPRINKLER SYSTEMS AND AS REQUIRED BY THE NEW YORK CITY BUILDING CODE.

B. HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.

C. SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON–SYSTEM COMPONENTS.

D. SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE WHICH MUST SUPPORT THE ADDED LOAD OF THE WATER–FILLED PIPE PLUS A MINIMUM OF 250 LBS. APPLIED AT THE POINT OF HANGING. CONTRACTOR SHALL SUBMIT DETAIL OF SUPPORT FOR REVIEW AND APPROVAL.

E. SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SHEATHING.

F. WHEN SPRINKLER PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE, NOT FROM THE DUCTWORK.

G. MAXIMUM DISTANCE BETWEEN HANGERS SHALL NOT EXCEED 12 FT. FOR 1 AND 1–1/4" SIZES NOR 15' FOR SIZES 1–1/2" AND LARGER.

H. EXPANSION SHIELDS FOR SUPPORTING PIPES UNDER CONCRETE CONSTRUCTION MAYBE USED IN A HORIZONTAL POSITION IN THE SIDES OF BEAMS. IN CONCRETE HAVING GRAVEL OR CRUSHED STONE AGGREGATE, EXPANSION SHIELDS MAY BE USED IN THE VERTICAL POSITION TO SUPPORT PIPES 4" OR LESS IN DIAMETER.

2.05 ESCUTCHEONS

PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS. ESCUTCHEON SHALL BE HELD IN PLACE BY INTERNAL TENSION OR SET SCREW.

2.06 AS–BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.07 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (135/165 DEG. F) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.

B. SPRINKLER HEADS SHALL BE BY VIKING MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

1. SPRINKLER HEADS IN HUNG CEILINGS WITH CONCEALED PIPING SHALL BE VIKING MODEL VK462
2. SPRINKLER HEADS IN AREAS WITHOUT HUNG CEILINGS SHALL BE VIKING MODEL VK300.
3. SIDEWALL SPRINKLER HEADS SHALL BE VIKING MODEL VK305.
4. EXTENDED SIDEWALL SPRINKLER HEADS SHALL BE VIKING MODEL VK630.
5. PENDENT SPRINKLER HEADS SHALL BE VIKING MODEL VK302.
6. DRY AND EXTENDED DRY SIDEWALL SPRINKLER HEADS SHALL BE VIKING MODEL VK188.
7. PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13R & NYC BC.
8. SPRINKLER EMERGENCY CABINETS SHALL BE VIKING OR APPROVED EQUAL, UL AND FM APPROVED.
9. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.
10. CABINET SHALL CONTAIN A MINIMUM OF 6 SPRINKLER HEADS OF EACH TYPE EMPLOYED.

2.08 PRESSURE GAUGE

A. ASHCROFT SERIES 1079, OR APPROVED OTHER, 4–1/2" DIA–METER, 0–200 P.S.I. RANGE, 20 P.S.I. INTERVALS.

PART 3 – EXECUTION

3.01 GUARANTEE

A. GUARANTEE FOR A PERIOD OF ONE (1) YEAR FORM THE DATE OF ACCEPTANCE BY THE OWNER, ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECTS, WITHOUT COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITH IN THE PERIOD OF THE GUARANTEE.

3.02 INSTALLATION

A. PIPING

1. INSTALL PIPING AS SHOWN ON THE CONTRACT DRAWINGS AND STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS, NEATLY SPACED, WITH RISERS PLUMB AND TRUE.

2. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.

PIPE SHALL BE REMOVED BY REAMING. BEFORE INSTALLING PIPE, THOROUGHLY CLEAN THE INSIDE FREE OF CUTTING AND FOREIGN MATTER. CUT ALL PIPE SQUARE AND SMOOTH AND MAKE UP ALL JOINTS TO REQUIRED LIMITS.

B. PIPE JOINTS

1. THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

GENERAL NOTES:

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.–13R AND ALL LOCAL AUTHORITIES.
2. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
3. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
4. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
5. LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
6. PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA–13R.
7. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/ EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED OF CEILING PRIOR TO INSTALLATION.
8. COMPOSITE DRAWINGS

   CONTRACTOR SHALL BE GIVEN A SEPIA TRANSPARENCIES TO IMPOSE THEIR WORK FOR A COORDINATED ALLOCATION OF SPACE. PROCEDURE SHALL INCLUDE HVAC CONTRACTOR TO INDICATE DUCT WORK, PIPING, STRUCTURAL AND ARCHITECTURAL DETAILS. SEPIAS SHALL BE GIVEN TO PLUMBING, SPRINKLER AND ELECTRICAL TRADES WHO WILL DRAW HIS WORK ON DRAWINGS. HVAC CONTRACTORS SHALL HOLD A COORDINATION MEETING WITH ALL CONTRACTORS TO ELIMINATE INTERFERENCE OR CONFLICTS IN INSTALLING WORK. IF UNABLE TO EACH AGREEMENT ISSUE, ARCHITECT SHALL MAKE BINDING DECISION.
9. CONTRACTOR SHALL COORDINATE SPRINKLER MAIN AND BRANCHES WITH NEW CONSTRUCTION TO AVOID CONFLICTS WITH CEILING HEIGHTS, DUCTWORK, LIGHTING FIXTURES, BEAMS. CONTRACTOR TO ADJUST PIPING ACCORDINGLY TO ACCOMMODATE NEW CONSTRUCTION.

HYDRANT FLOW TEST:

NYC Environmental Protection

7/13/2018

New York Engineers, LLC
135 West 41st Street, 5th Floor
New York, New York 10036
Attn: Nick Natsoulis

Vincent Sapienza, P.E.
Commissioner

Anastasios Georgelis, P.E.
Acting Deputy Commissioner
Bureau of Water & Sewer Operations

59-17 Junction Boulevard
Flushing, NY 11373

To Whom It May Concern:

The hydrant flow test you requested in the vicinity of ***Woodlawn Senior btw. East 233rd Street & Napier Avenue, Bronx*** was performed on ***7/13/2018*** at ***12:40 PM*** with the following results:

The static pressure taken on a 12 inch water main which is fed from two directions on the north side of East 233rd Street 1st hydrant west of Napier Avenue was **40** pounds per square inch. The residual pressure at this point was **39** pounds per square inch when 500 gallons of water per minute were flowing from the north side of East 233rd Street 1st hydrant east of Napier Avenue.

This Department cannot guarantee that this pressure will be maintained in the future because a change may be needed in conformity with good engineering practices.

If you have any questions regarding engineering, and application status, please call (718) 595-7135.

Very truly yours,

Urszula Krajewski, P.E.
Water Distribution Engineer
City Wide Hydraulic Testing Unit

File: FT2018-1423-205531
All hydrant flow test requests are to be addressed to: NYCDEP-BWSO, 59-17 Junction Blvd, 12th Fl., Flushing, NY 11373-5108, Attn: Citywide Hydraulic Flow Test Unit
Enclose payment for $500 payable to NYC Water Board for each test. Indicate the test street, cross streets and borough for each test. All requests are to be made by US or overnight mail, no hand deliveries accepted.

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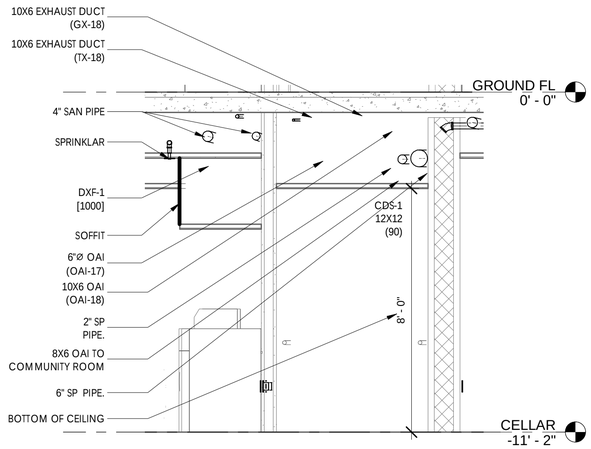
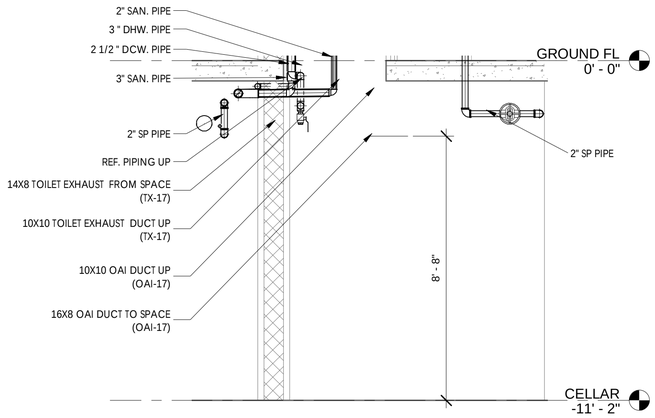
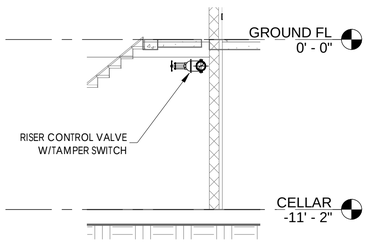


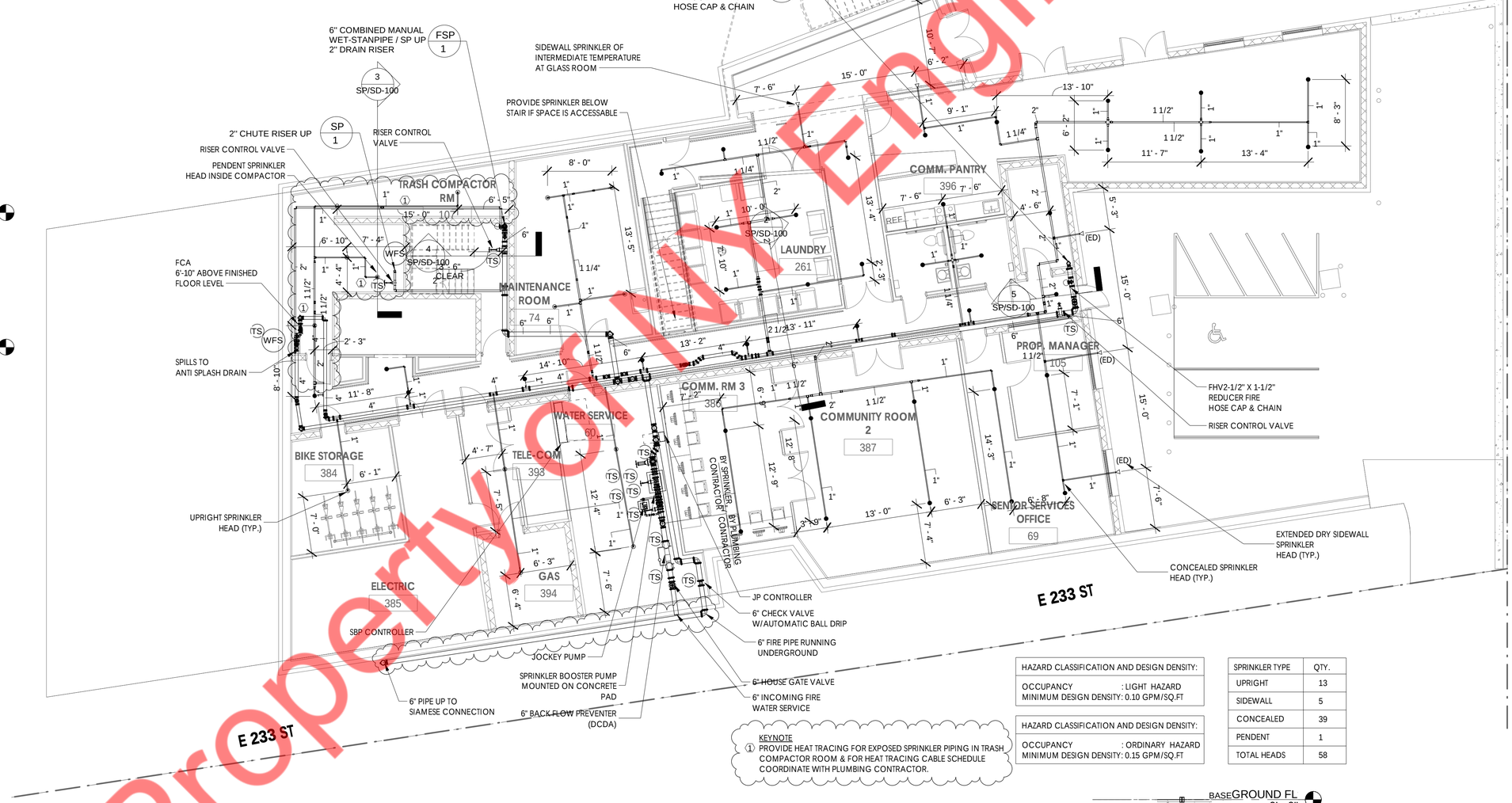
2 CELLAR FLOOR CORRIDOR
3/8" = 1'-0"



3 CELLAR FLOOR TRASH ROOM
3/8" = 1'-0"



4 SECTION-RISER CONTROL VALVE
3/16" = 1'-0"



1 CELLAR SPRINKLER PLAN
1/8" = 1'-0"

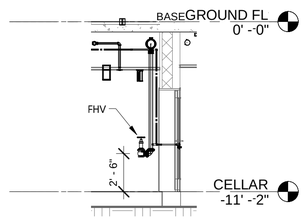
KEYNOTE
① PROVIDE HEAT TRACING FOR EXPOSED SPRINKLER PIPING IN TRASH COMPACTOR ROOM & FOR HEAT TRACING CABLE SCHEDULE COORDINATE WITH PLUMBING CONTRACTOR.

GENERAL NOTE:
1. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
2. FOR SPRINKLER AND STANDPIPE WORK ONLY.
3. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
4. ALL EXPOSED SPRINKLER PIPING IN UNITS TO BE PAINTED WHITE.

HAZARD CLASSIFICATION AND DESIGN DENSITY:	
OCCUPANCY	: LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.10 GPM/SQ.FT

HAZARD CLASSIFICATION AND DESIGN DENSITY:	
OCCUPANCY	: ORDINARY HAZARD
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ.FT

SPRINKLER TYPE	QTY.
UPRIGHT	13
SIDEWALL	5
CONCEALED	39
PENDENT	1
TOTAL HEADS	58



5 SECTION-FIRE HOSE VALVE
3/16" = 1'-0"

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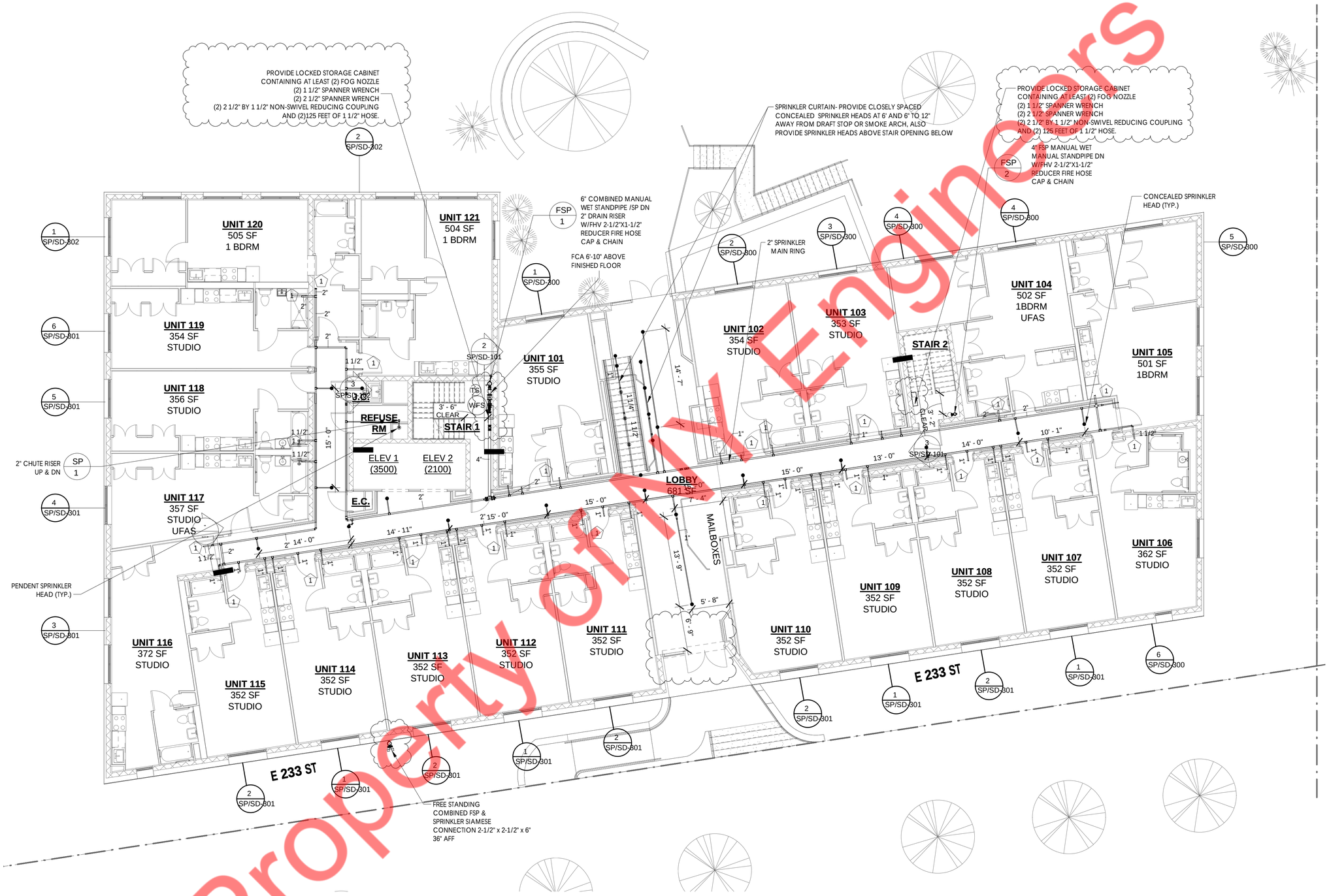

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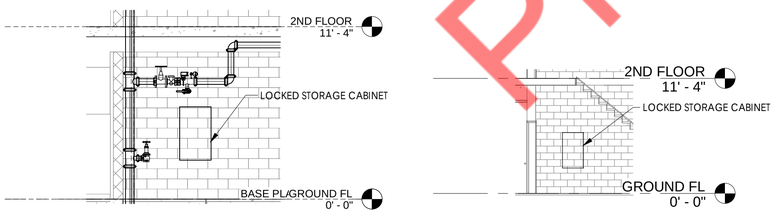

2 SECTION -LOCKED STORAGE CABINET INSIDE STAIR 1
3/16" = 1'-0"

3 SECTION-LOCKED STORAGE CABINET INSIDE STAIR 2
1/8" = 1'-0"

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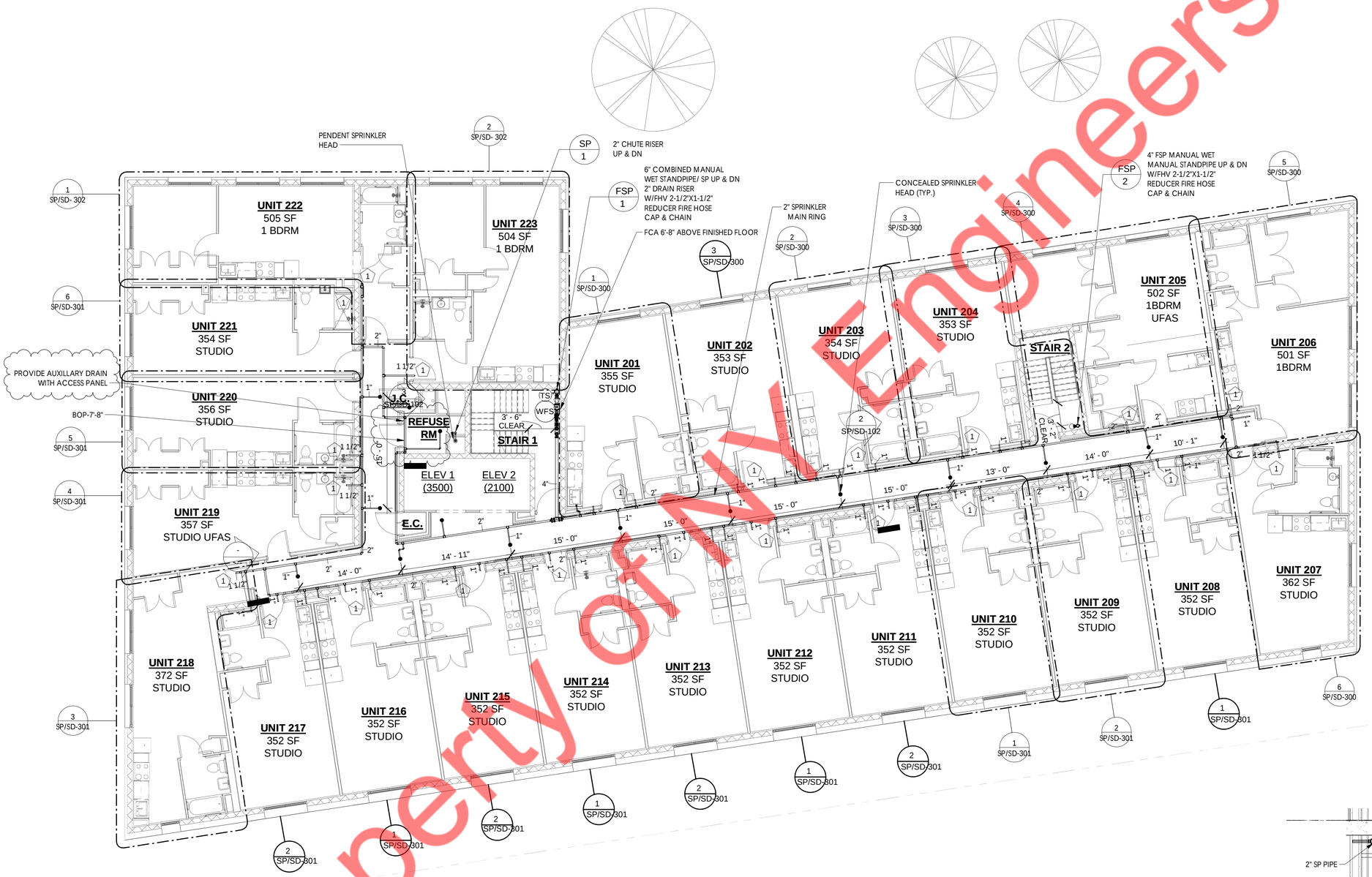
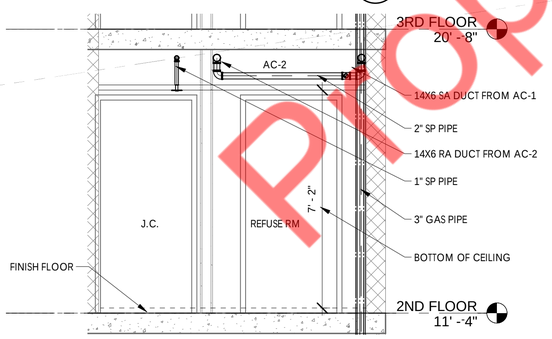
1 GROUND FLOOR SPRINKLER PLAN
1/8" = 1'-0"

HAZARD CLASSIFICATION AND DESIGN DENSITY:	
OCCUPANCY	: LIGHT HAZARD
MINIMUM DESIGN DENSITY: 0.10 GPM/SQ.FT	

KEY NOTE:
1 FOR CONTINUATION REFER PART PLANS

SPRINKLER TYPE	QTY.
UPRIGHT	21
SIDEWALL	54
CONCEALED	33
CHUTE SPRINKLER	01
EXTENDED SIDEWALL	01
TOTAL HEADS	110





3 2ND FLOOR REFUSE RM AC UNIT
3/8" = 1'-0"

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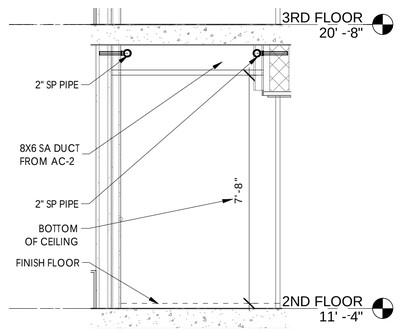
1 2ND FLOOR SPRINKLER PLAN
1/8" = 1'-0"

HAZARD CLASSIFICATION AND DESIGN DENSITY:
OCCUPANCY : LIGHT HAZARD
MINIMUM DESIGN DENSITY: 0.10 GPM/SQ.FT

KEY NOTE:
1 FOR CONTINUATION REFER PART PLANS

SPRINKLER TYPE	QTY.
UPRIGHT	20
SIDEWALL	59
CONCEALED	22
CHUTE SPRINKLER	01
EXTENDED SIDEWALL	01
TOTAL HEADS	103



2 2ND FLOOR CORRIDOR
3/8" = 1'-0"

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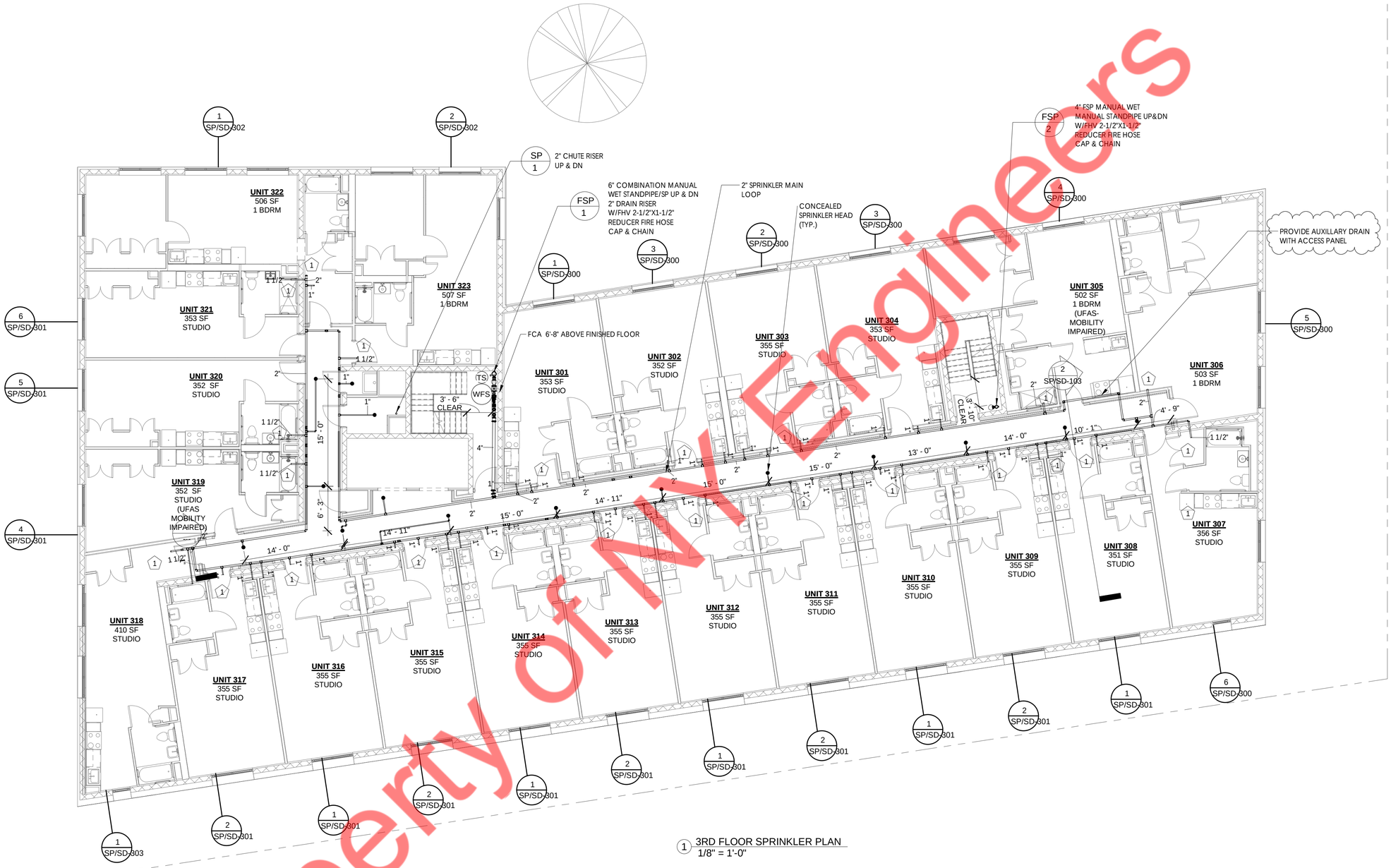

1 3RD FLOOR SPRINKLER PLAN
1/8" = 1'-0"

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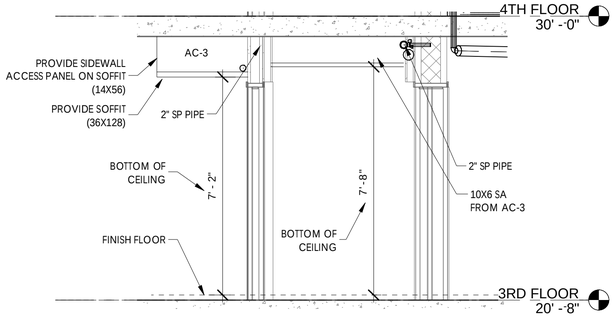
OCCUPANCY : LIGHT HAZARD MINIMUM DESIGN DENSITY: 0.10 GPM/SQ.FT

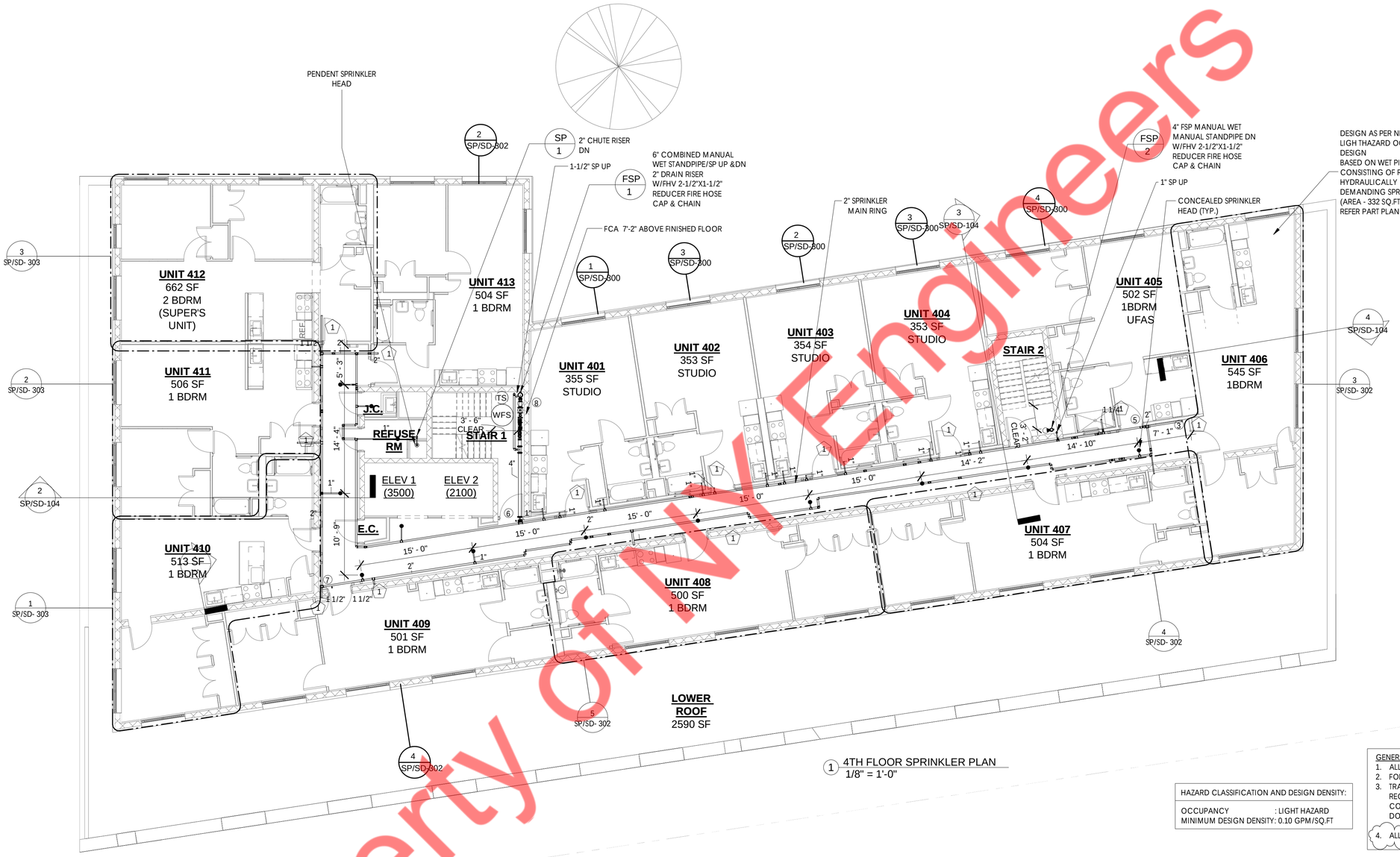
KEY NOTE:
1 FOR CONTINUATION REFER PART PLANS

SPRINKLER TYPE	QTY.
UPRIGHT	20
SIDEWALL	59
CONCEALED	24
EXTENDED SIDEWALL	01
TOTAL HEADS	104



2 3RD FLOOR CORRIDOR
3/8" = 1'-0"

Property of NY Engineers



1 4TH FLOOR SPRINKLER PLAN
1/8" = 1'-0"

HAZARD CLASSIFICATION AND DESIGN DENSITY:
OCCUPANCY : LIGHT HAZARD MINIMUM DESIGN DENSITY: 0.10 GPM/SQ.FT

GENERAL NOTE:
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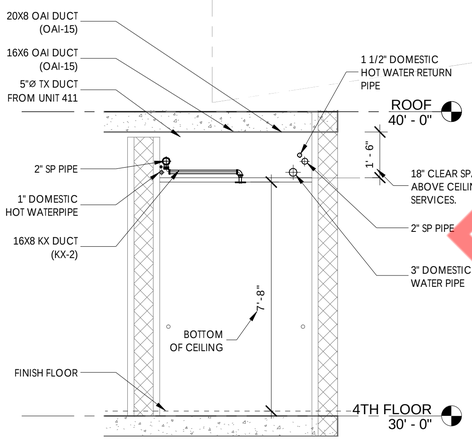
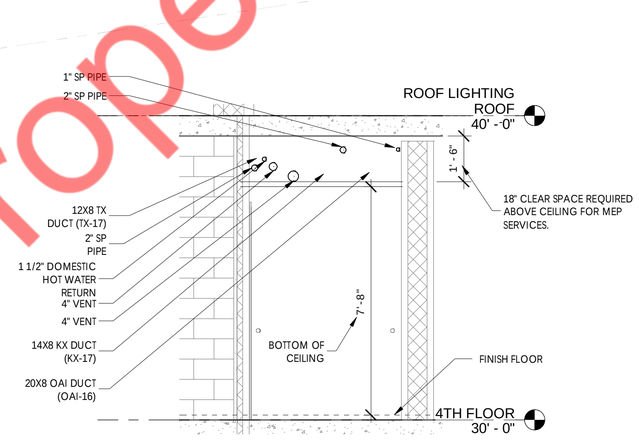
3. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
4. ALL EXPOSED SPRINKLER PIPING IN UNITS TO BE PAINTED WHITE.



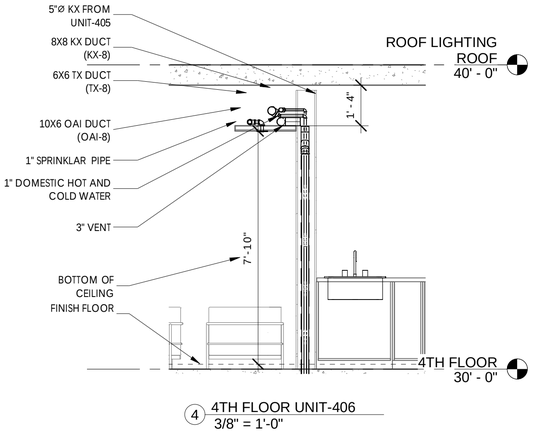
2 4TH FLOOR CORRIDOR-1
3/8" = 1'-0"



3 4TH FLOOR CORRIDOR-2
3/8" = 1'-0"

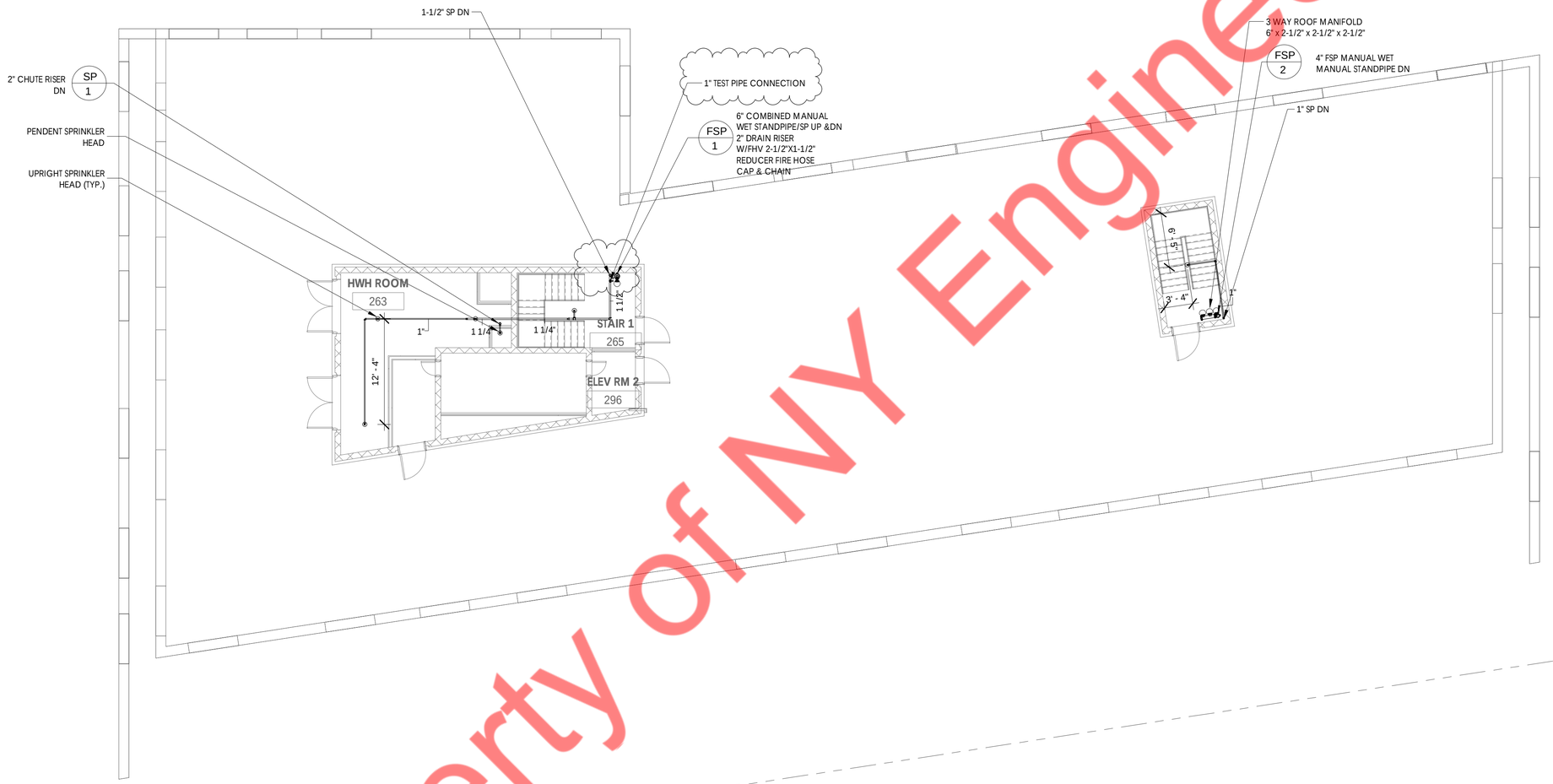
KEY NOTE:
1 FOR CONTINUATION REFER PART PLANS

SPRINKLER TYPE	QTY.
UPRIGHT	12
SIDEWALL	42
CONCEALED	21
CHUTE SPRINKLER	01
EXTENDED SIDEWALL	01
TOTAL HEADS	77



4 4TH FLOOR UNIT-406
3/8" = 1'-0"

Property of NY Engineers



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

GENERAL NOTE:
1. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
2. FOR SPRINKLER AND STANDPIPE WORK ONLY.
3. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
4. ALL EXPOSED SPRINKLER PIPING IN UNITS TO BE PAINTED WHITE.

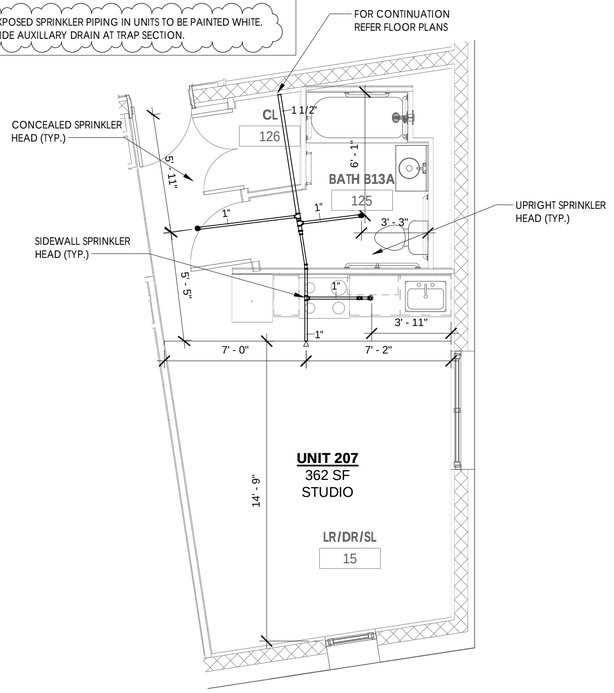
HAZARD CLASSIFICATION AND DESIGN DENSITY:
OCCUPANCY : LIGHT HAZARD MINIMUM DESIGN DENSITY: 0.10 GPM/SQ.FT

HAZARD CLASSIFICATION AND DESIGN DENSITY:
OCCUPANCY : ORDINARY HAZARD MINIMUM DESIGN DENSITY: 0.15 GPM/SQ.FT

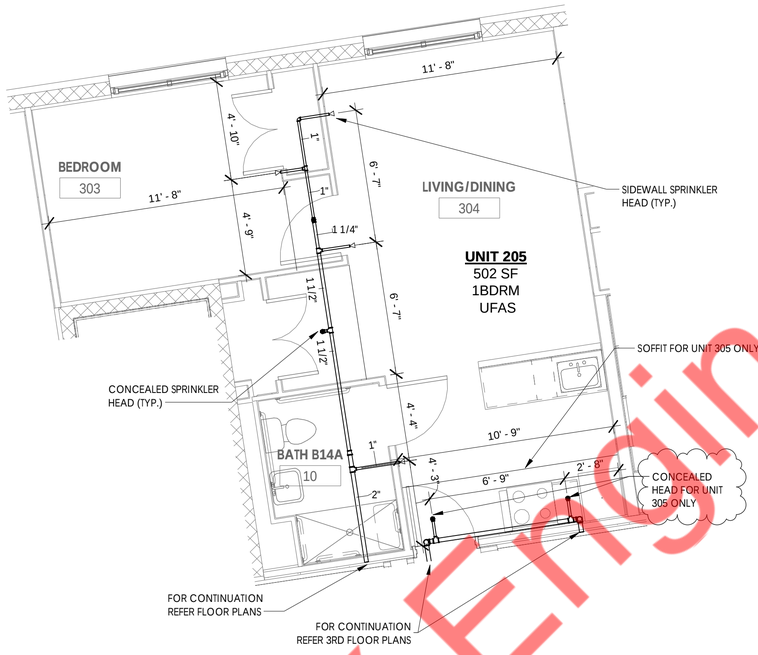
SPRINKLER TYPE	QTY.
UPRIGHT	05
CHUTE SPRINKLER	01
TOTAL HEADS	06

Property of NY Engineers

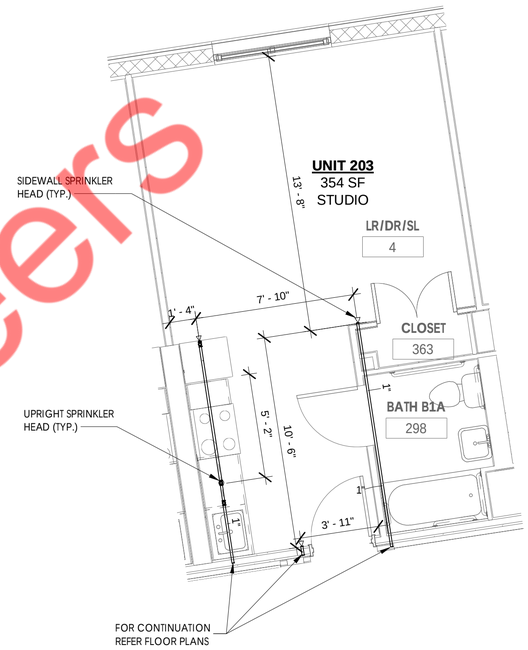
GENERAL NOTE:
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
2. ALL EXPOSED SPRINKLER PIPING IN UNITS TO BE PAINTED WHITE.
3. PROVIDE AUXILLARY DRAIN AT TRAP SECTION.



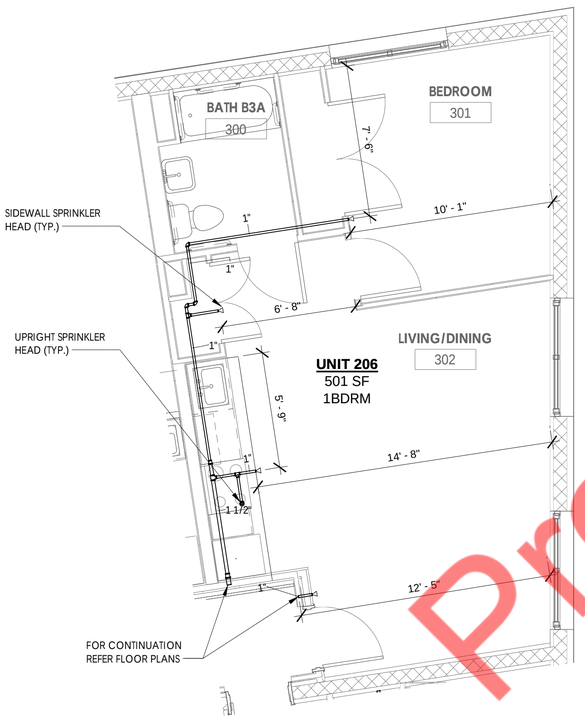
6 UNIT 106, 207, 307 - STUDIO UNIT
1/4" = 1'-0"



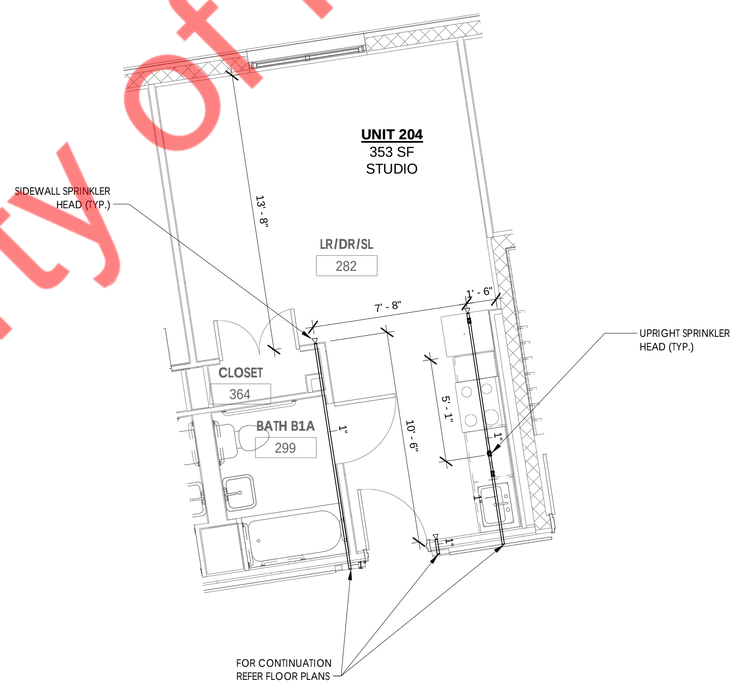
4 UNIT 104, 205, 305, 405 - 1 BEDROOM UNIT
1/4" = 1'-0"



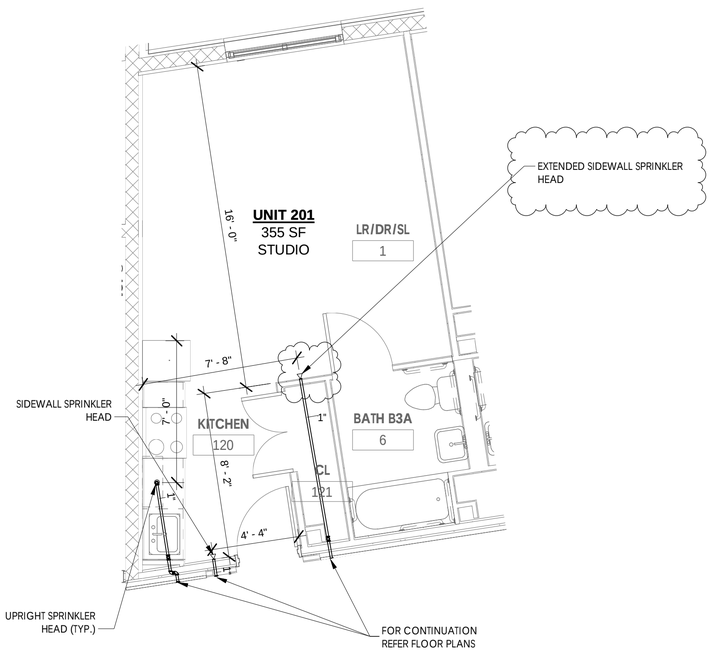
2 UNIT 102, 203, 303, 403 - STUDIO UNIT
1/4" = 1'-0"



5 UNIT 105, 206, 306 -UFAS 1 BEDROOM UNIT
1/4" = 1'-0"



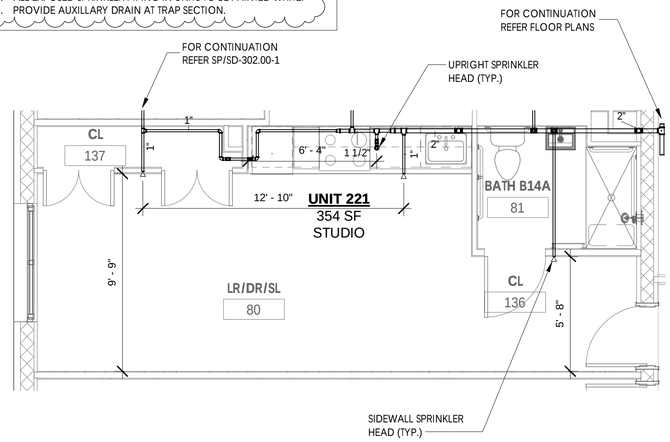
3 UNIT 103,202,204,302,304,402,404 - STUDIO UNIT
1/4" = 1'-0"



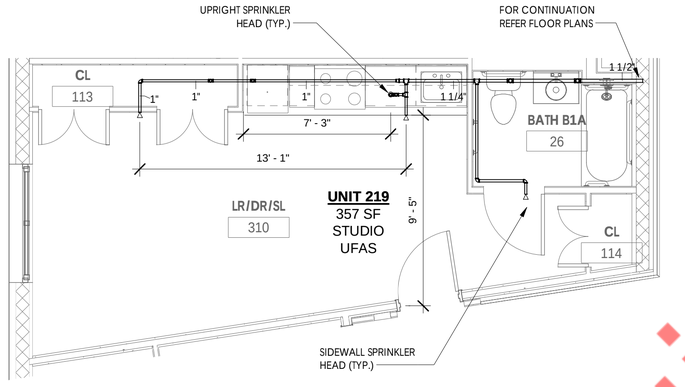
1 UNIT 101, 201, 301, 401 - STUDIO UNIT
1/4" = 1'-0"

Property of NY Engineers

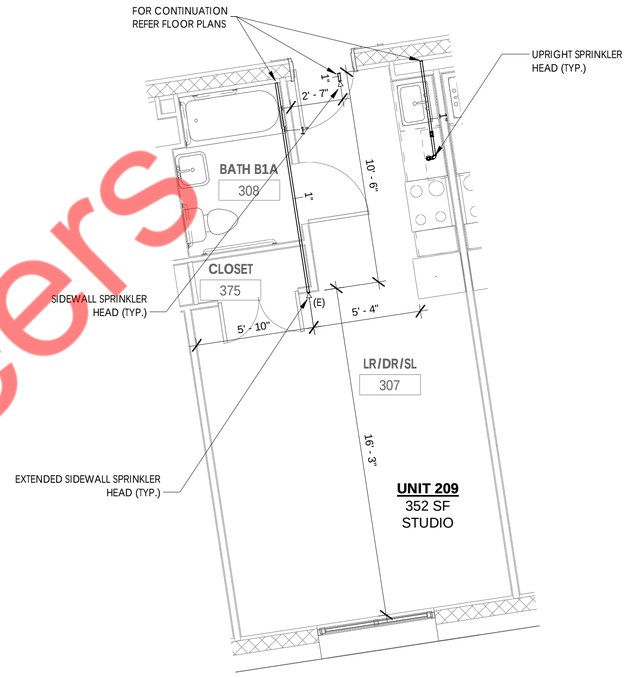
GENERAL NOTE:
1. TRADE CONTRACTORS TO PROVIDE ALL LOCATIONS OF REQUIRED ACCESS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON ACCESS DOOR LOCATIONS AND INSTALL ACCESS DOORS.
2. ALL EXPOSED SPRINKLER PIPING IN UNITS TO BE PAINTED WHITE.
3. PROVIDE AUXILLARY DRAIN AT TRAP SECTION.



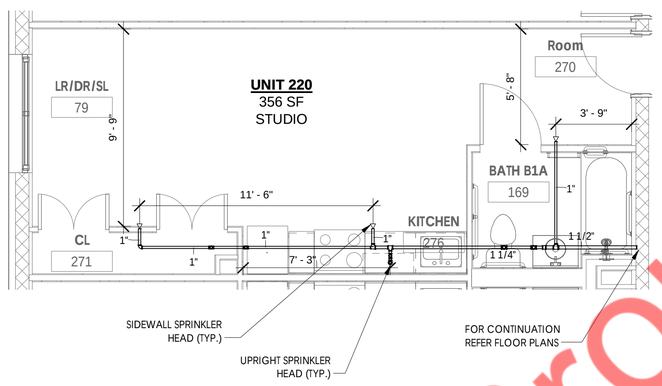
6 UNIT 119, 221, 321 - STUDIO UNIT
1/4" = 1'-0"



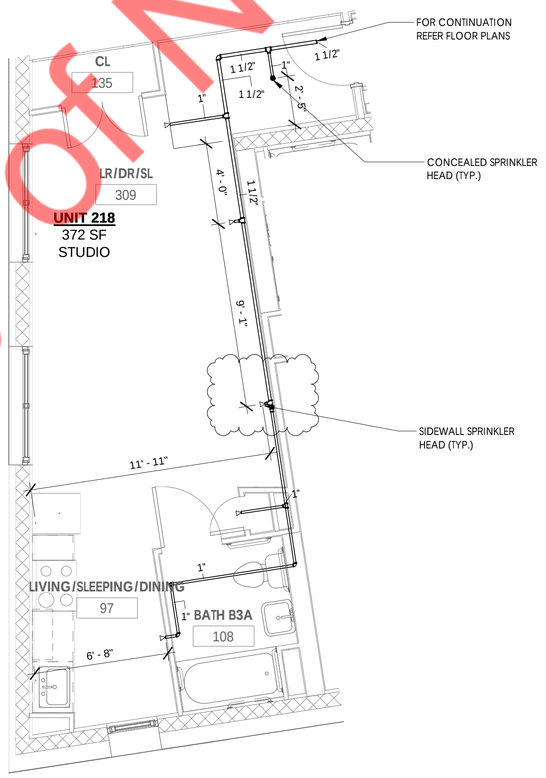
4 UNIT 117, 219, 319 - STUDIO UNIT
1/4" = 1'-0"



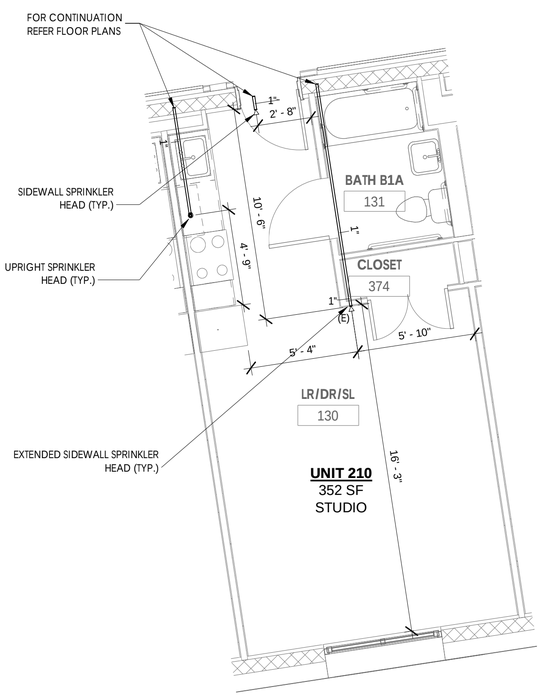
2 UNIT
108,110,111,113,115,209,211,213,215,217,309,311,313,315,317-STUDIO
1/4" = 1'-0"



5 UNIT 118, 220, 320 - STUDIO UNIT
1/4" = 1'-0"



3 UNIT 116, 218, 318 -UFAS STUDIO UNIT
1/4" = 1'-0"



1 UNIT
107,109,112,114,208,210,212,214,216,308,312,314,316
- STUDIO UNIT
1/4" = 1'-0"

Property of NY Engineers

GENERAL NOTE:
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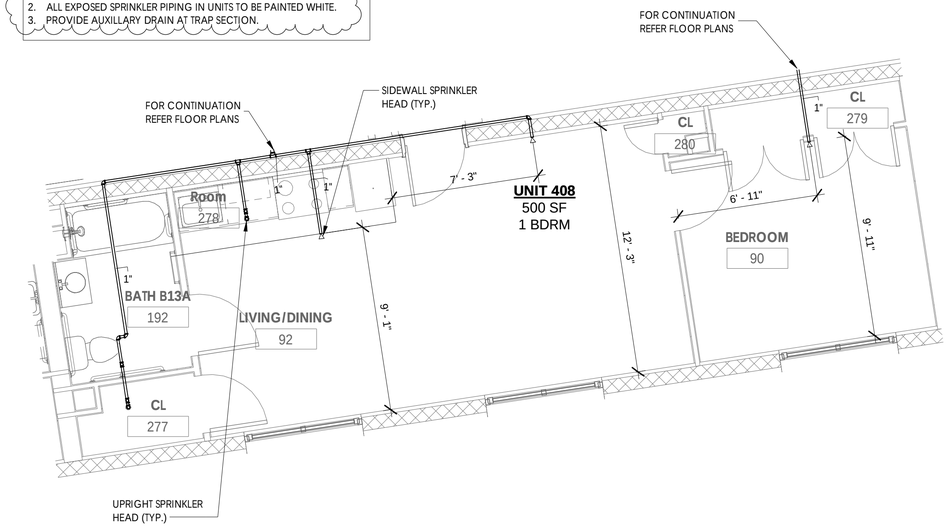
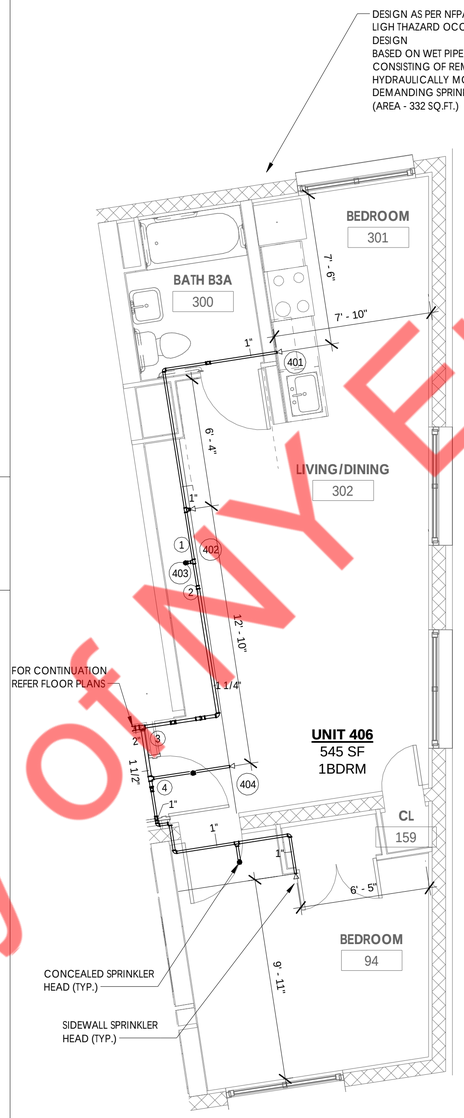
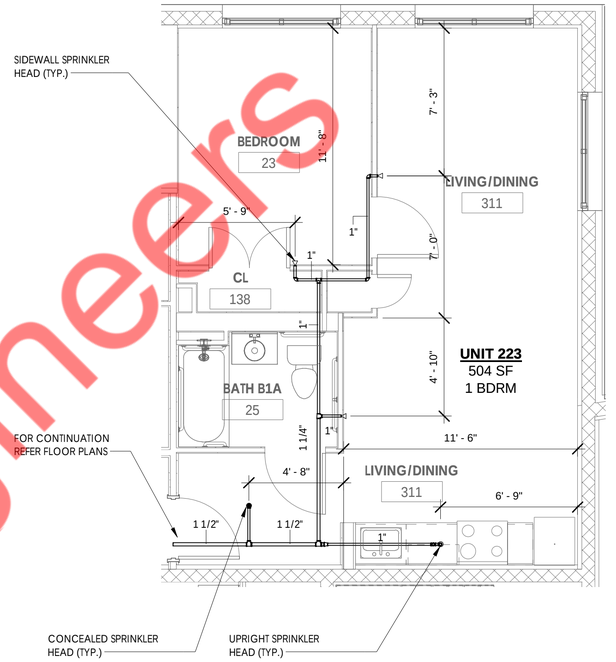
2. ALL EXPOSED SPRINKLER PIPING IN UNITS TO BE PAINTED WHITE.
3. PROVIDE AUXILLARY DRAIN AT TRAP SECTION.



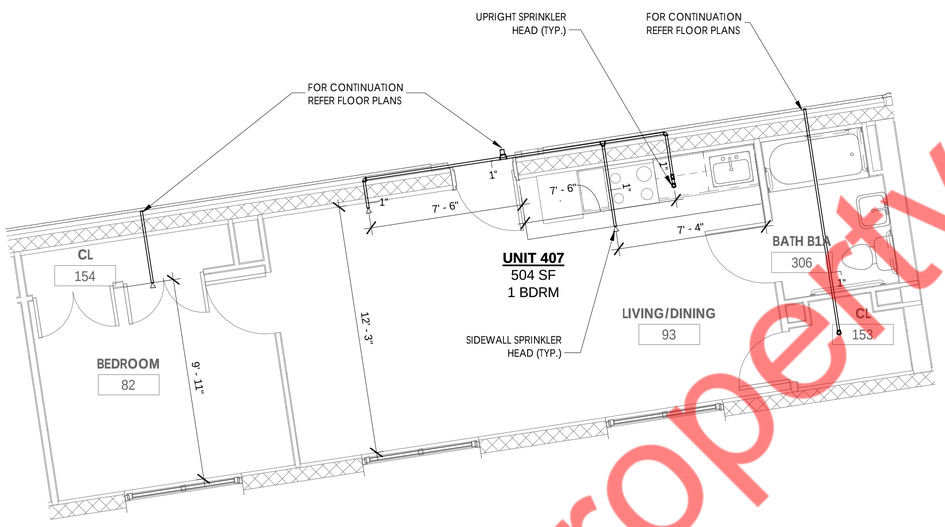
5 UNIT 408 - 1 BEDROOM UNIT
1/4" = 1'-0"



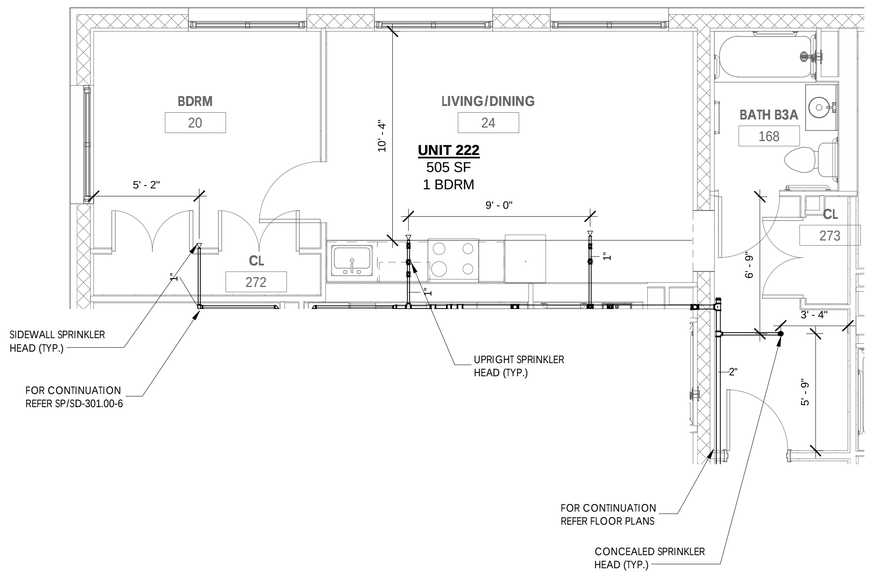
3 UNIT 406 - 1 BEDROOM UNIT
1/4" = 1'-0"



2 UNIT 121, 223, 323, 413 - 1 BEDROOM UNIT
1/4" = 1'-0"



4 UNIT 407, 409 - 1 BEDROOM UNIT
1/4" = 1'-0"



1 UNIT 120, 222, 322 - 1 BEDROOM UNIT
1/4" = 1'-0"

Property of WY Engineers

GENERAL NOTE:
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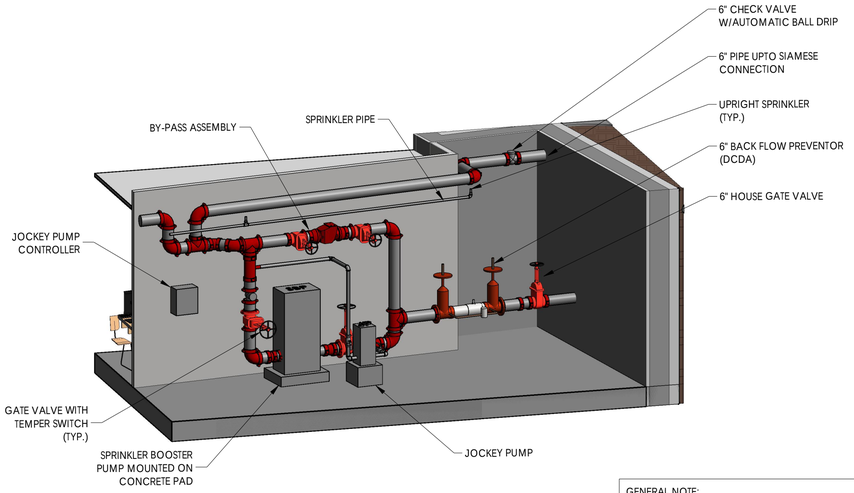
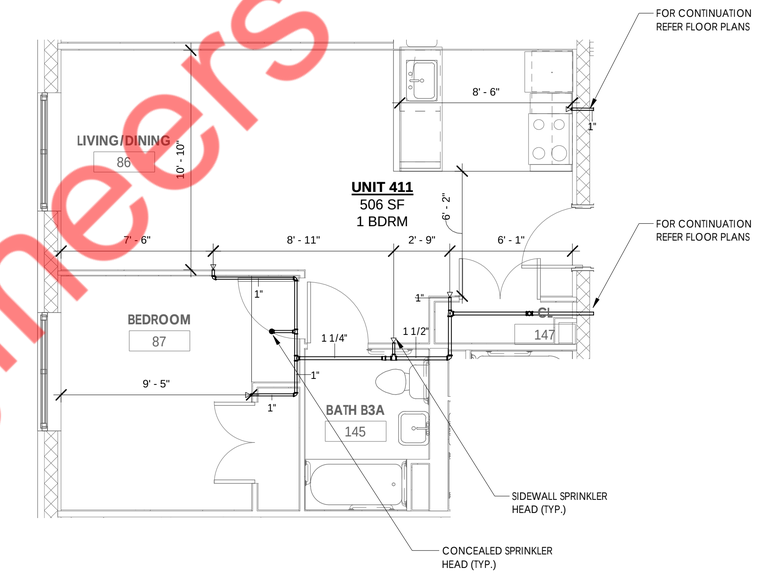
2. ALL EXPOSED SPRINKLER PIPING IN UNITS TO BE PAINTED WHITE.
3. PROVIDE AUXILLARY DRAIN AT TRAP SECTION.

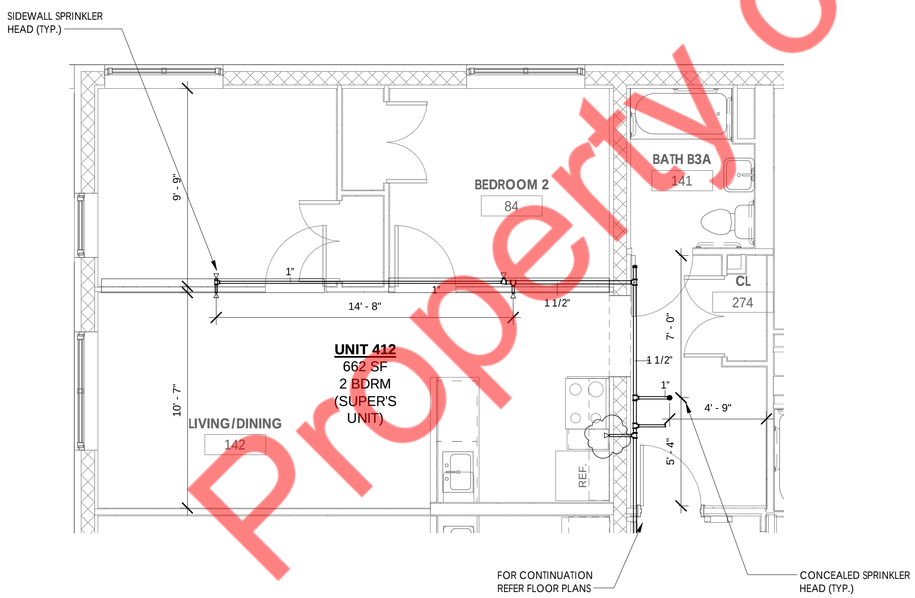


GENERAL NOTE:
1. FOR COMPLETE PUMP INSTALLATION DETAILS REFER SHEET SP-501.00

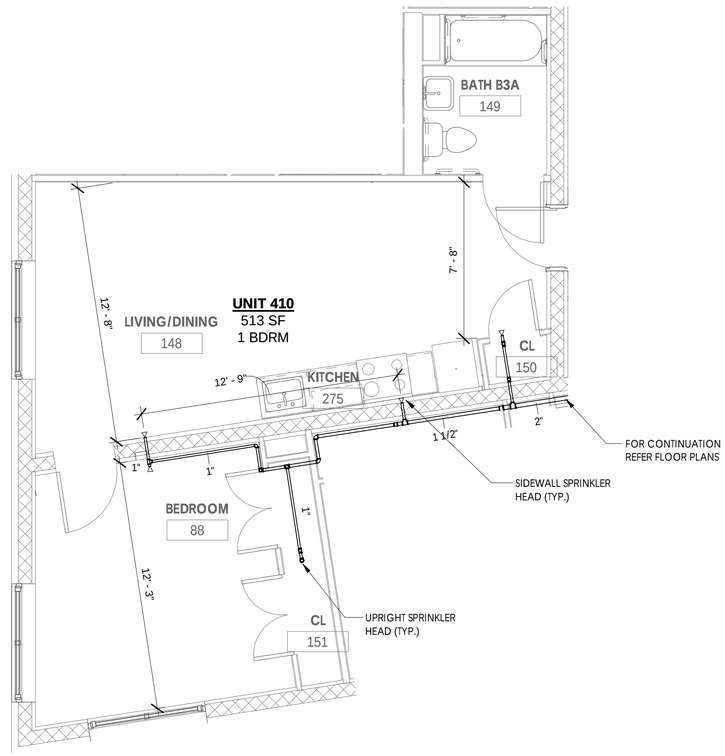
4 WATER SERVICE ROOM PUMP DETAIL



2 UNIT 411 - 1 BEDROOM UNIT
1/4" = 1'-0"

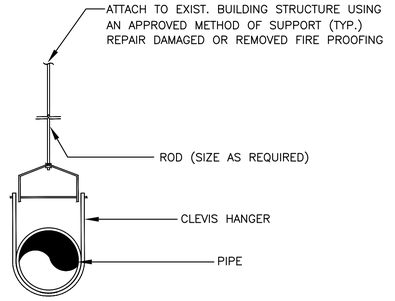


3 UNIT 412 - 2 BEDROOM UNIT (SUPER'S UNIT)
1/4" = 1'-0"

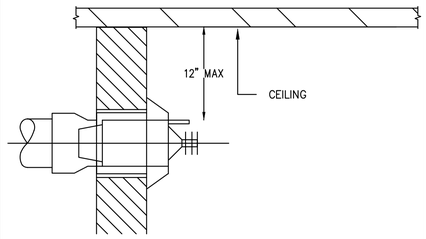


1 UNIT 410 - 1 BEDROOM UNIT
1/4" = 1'-0"

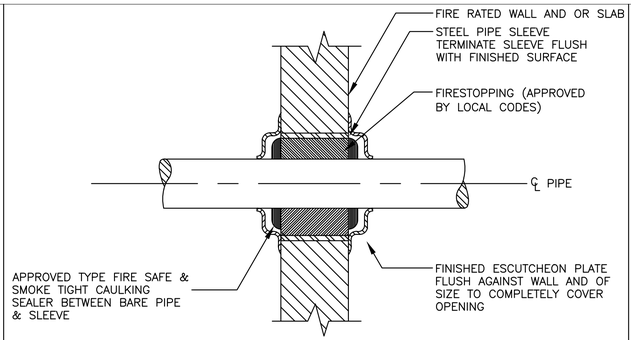
Property of NY Engineers



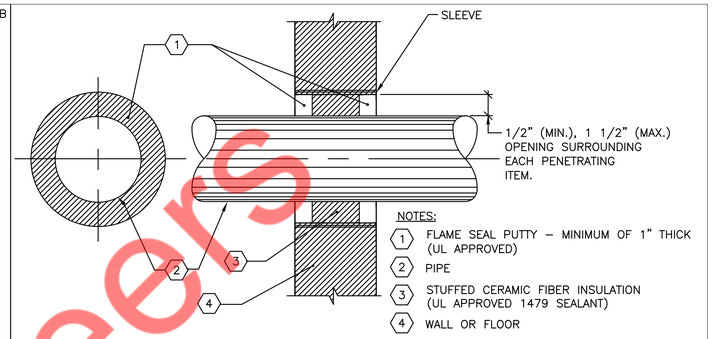
1 SP-501 HANGER DETAILS TYPICAL
N.T.S



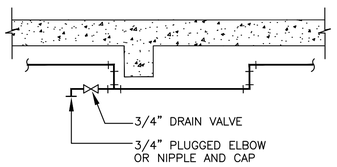
2 SP-501 SIDEWALL SPRINKLER HEAD
N.T.S



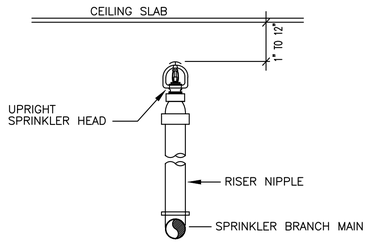
3 SP-501 PIPE THRU RATED WALL TYPICAL DETAIL
N.T.S



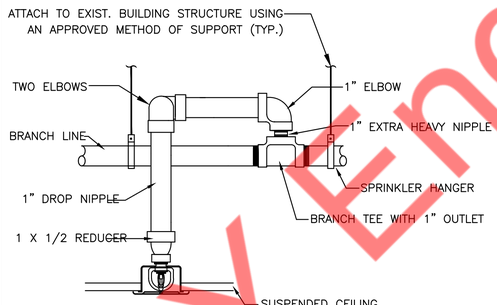
4 SP-501 FIRE STOPPING DETAIL FOR FIRE/SMOKE RATED WALL/FLOOR OPENINGS
N.T.S



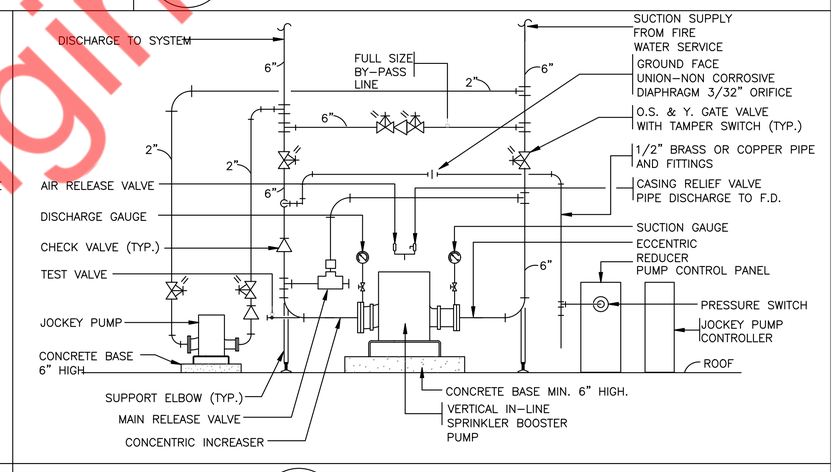
5 SP-501 TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS
N.T.S



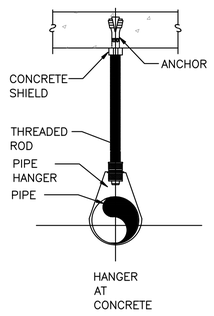
6 SP-501 SPRINKLER HEAD DETAIL UPRIGHT
N.T.S

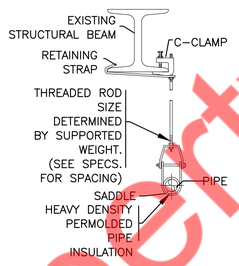


7 SP-501 SPRINKLER HEAD IN SUSPENDED CEILING DETAIL
N.T.S



8 SP-501 SPRINKLER BOOSTER PUMP PIPING SCHEMATIC
N.T.S



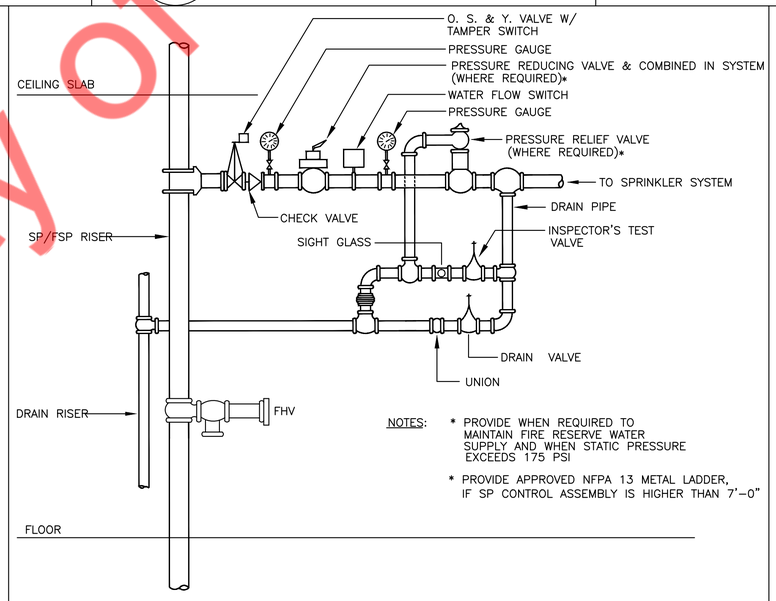


HANGER DETAIL
NOT TO SCALE

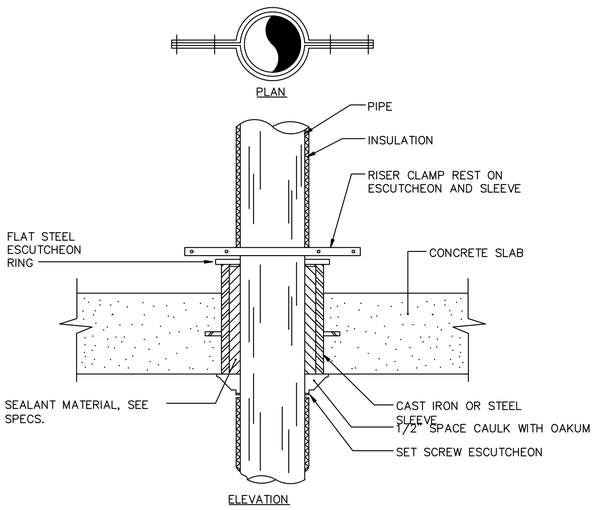
ROD SCHEDULE

PIPE SIZE	ROD SIZE	SPACING	PIPE SIZE	ROD SIZE	SPACING	PIPE SIZE	ROD SIZE	SPACING
1"	3/8"	5'-8'	2 1/2"	1/2"	10'-12'	6"	3/4"	12'-15'
1 1/4"	3/8"	6'-10'	3"	1/2"	10'-12'			
1 1/2"	3/8"	8'-10'	4"	5/8"	12'-15'			
2"	3/8"	10'-12'	5"	5/8"	12'-15'			

9 SP-501 TYPICAL HANGER DETAIL AND ROD SCHEDULE
N.T.S

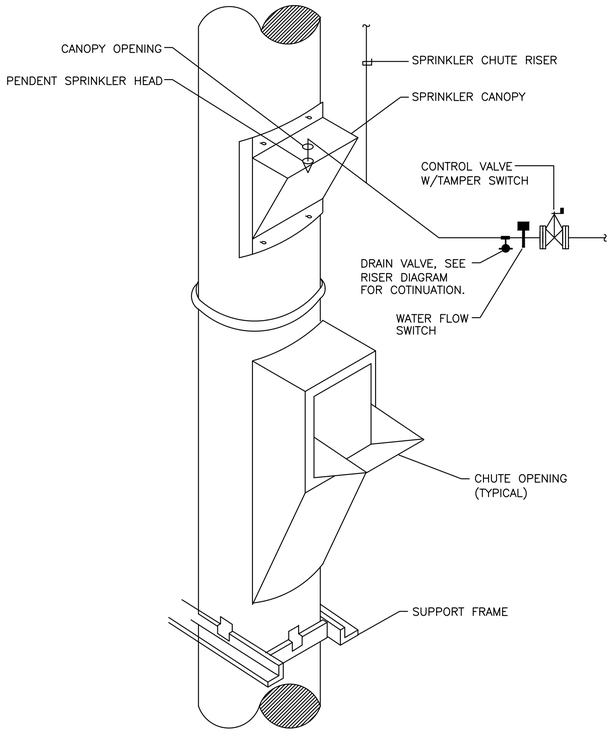


10 SP-501 TYPICAL HANGER DETAIL AND ROD SCHEDULE
N.T.S

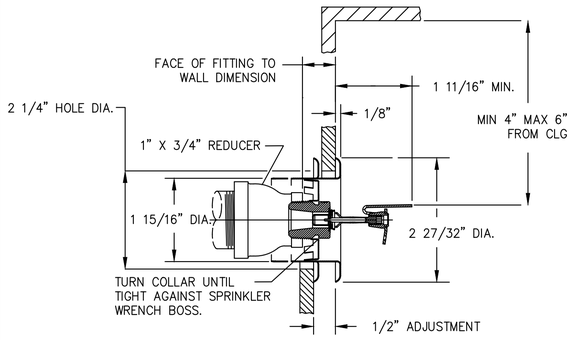


11 SP-501 SPRINKLER RISER CLAMP DETAIL
N.T.S

Property of NY Engineers



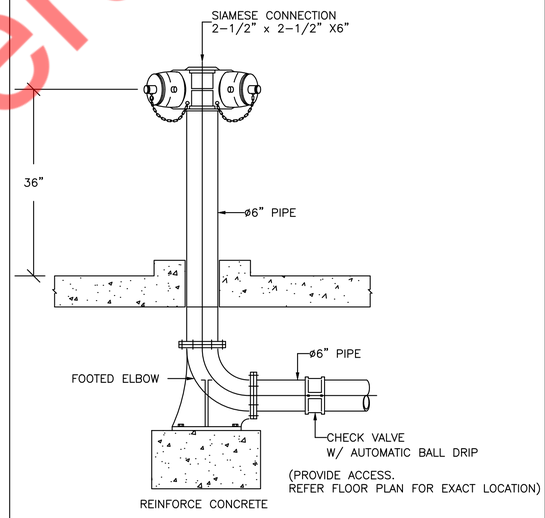
1 SP-502 CHUTE SPRINKLER SYSTEM
N.T.S



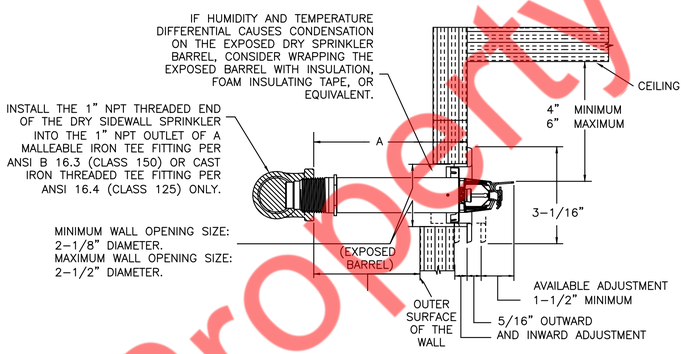
HORIZONTAL SIDEWALL
2 SP-502 EXTENDED COVERAGE SPRINKLER HEAD
N.T.S

COVERAGE AREA SCHEDULE FOR EXTENDED SIDEWALL SPRINKLER (MODEL-VK 630

MAX. INSTALLED COVERAGE AREA (WIDTH X LENGTH)	DEFLECTOR TO CEILING DIMENSION	MIN. REQUIRED FLOW RATE	MIN. REQUIRED PRESSURE
FT. X FT.	INCHES	GPM	PSI
14 X 24	4 – 6	34	18.1
14 X 24	6 – 12	36	20.3
14 X 26	4 – 6	38	22.6
14 X 26	6 – 12	46	33.1
16 X 16	4 – 12	26	10.6
16 X 18	4 – 12	29	13.1
16 X 20	4 – 12	32	16.0
16 X 22	4 – 12	36	20.3
16 X 24	4 – 12	39	23.8
18 X 18	4 – 12	33	17.0
18 X 20	4 – 12	36	20.3
18 X 22	4 – 12	40	25.0



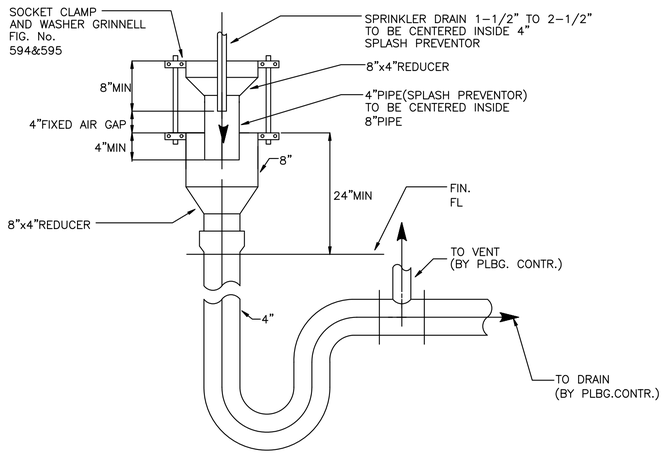
3 SP-502 SIAMESE CONNECTION
N.T.S



FOR "A" DIMENSION:
1. DETERMINE THE DISTANCE FROM THE FACE OF THE TEE TO THE FACE OF THE FINISHED WALL.
2. ROUND TO THE NEAREST 1/4" BETWEEN 3–1/4" AND 47–1/2".

AMBIENT TEMPERATURE OF PROTECTED AREA* AT THE DISCHARGE END OF THE SPRINKLER	EXPOSED BARREL AMBIENT TEMPERATURE 40°F/4°C |50°F/10°C|60°F/16°C EXPOSED MINIMUM BARREL LENGTH** FACE OF THE TEE TO THE OUTER SURFACE OF THE WALL		
	INCHES.	INCHES.	INCHES.
40°F (4°C)	0	0	0
30°F (–1°C)	0	0	0
20°F (–7°C)	4	0	0
10°F (–12°C)	8	1	0
0°F (–18°C)	12	3	0
–10°F (–23°C)	14	4	1
–20°F (–29°C)	14	6	3
–30°F (–34°C)	16	8	4
–40°F (–40°C)	18	8	4
–50°F (–46°C)	20	10	6
–60°F (–51°C)	20	10	6

4 SP-502 DRY SIDEWALL SPRINKLER INSTALLATION DETAILS
N.T.S



5 SP-502 ANTI–SPLASH STANDPIPE DRAIN DETAIL
N.T.S

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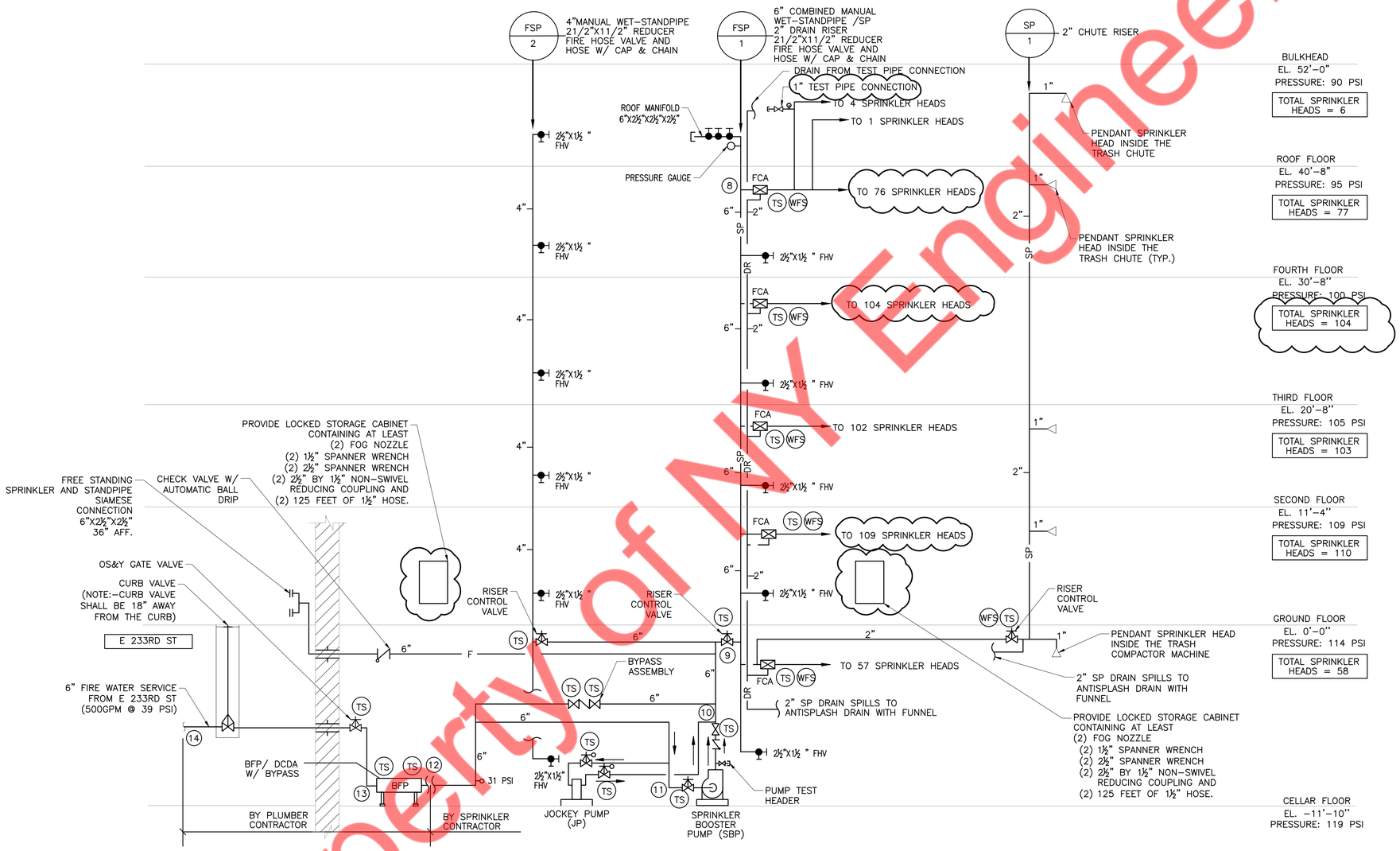

NOTES:
1. COORDINATE ALL CHUTE SPRINKLER HEAD LOCATION AND INSTALLATION WITH CHUTE CONTRACTOR.

1 SPRINKLER RISER DIAGRAM
SCALE:NTS

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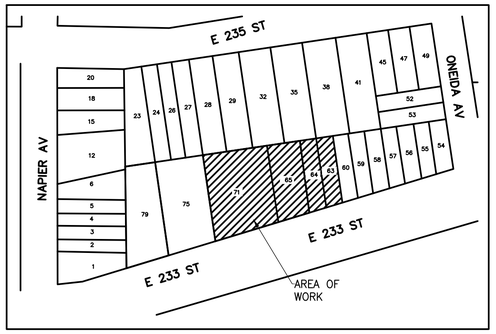
BUILDING DATA

PROJECT DESCRIPTION		BUILDING OCCUPANCY				BUILDING DESCRIPTION						FIRE ALARM SYSTEM FEATURES	
X	NEW BUILDING		ASSEMBLY GROUP A (A1,A2,A3,A4 AND A5)	X	RESIDENTIAL GROUP R (R2)	6	TOTAL NUMBER OF LEVELS		ATRIUM		STAIR PRESSURIZATION		NON-VOICE EVACUATION
	FIRE ALARM SYSTEM UPGRADE		BUSINESS GROUP B		STORAGE GROUP S (S1 AND S2)	5	ABOVE GROUND LEVELS	GRND	FIRE DEPARTMENT ACCESS		POST FIRE SMOKE PURGE		VOICE EVACUATION
	LIFE SAFETY SYSTEM UPGRADE		EDUCATIONAL GROUP E		UTILITY AND MISCELLANEOUS GROUP U	1	BELOW GROUND LEVELS	X	FULLY SPRINKLERED		GENERATOR		PARTIAL/SELECTIVE EVACUATION
	RENOVATION		FACTORY INDUSTRIAL GROUP F (F1 AND F2)		OTHER:	2	NUMBER OF ELEVATORS		PARTIALLY SPRINKLERED	X	SPRINKLER BOOSTER PUMP	X	GENERAL EVACUATION
	EMERGENCY REPAIR		HIGH-HAZARD GROUP H (H1,H2,H3,H4 AND H5)			2	NUMBER OF EGRESS STAIRS	5,19,954	BUILDING AREA (SF)		NON-SPRINKLERED		DIGITAL ALARM COMMUNICATOR
	TENANT ADDITION		INSTITUTIONAL GROUP I (I1,I2 AND I3)			X	LOW RISE BUILDING	40'	BUILDING HEIGHT		PRE-ACTION SPRINKLER		PRE-SIGNAL SYSTEM
	OTHER:		MERCANTILE GROUP M				HIGH RISE BUILDING				OTHER:		FIRE FIGHTER'S TELEPHONE SYSTEM

TYPE OF DESIGN

INSTALLATION OF AUTOMATIC SMOKE/HEAT/CO DETECTION AND SPRINKLER ALARM SYSTEM.

KEY PLAN:



WOODLAWN SENIOR 69-85 EAST 233RD ST, BRONX, NY 10470
BLOCK: 3365
LOT: 63,64,65 & 71
ZONE: R5
MAP: 1C

FIRE ALARM SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
(S)	CEILING MOUNTED AREA SMOKE DETECTOR	F	FIRE ALARM MANUAL PULL STATION, WALL MOUNTED (48" AFF)
(S)ELV	CEILING MOUNTED ELEVATOR LOBBY SMOKE DETECTOR	TS	TAMPER SWITCH
(D)	DUCT MOUNTED SMOKE DETECTOR	WF	WATER FLOW SWITCH
(H)	CEILING MOUNTED HEAT DETECTOR	MM	MONITOR MODULE
FACP	FIRE ALARM CONTROL PANEL	F	STROBE LIGHT DEVICE, WALL MOUNTED (80" AFF)
FDS	FUSED DISCONNECT SWITCH, REFER TO RISER DIAGRAM FOR FURTHER INFORMATION.	FSD	FIRE SMOKE DAMPER, REFER TO MECH. PLANS FOR FURTHER INFORMATION.
PR	SPRINKLER BOOSTER PUMP RUNNING	R	FIRE ALARM RELAY
PH	SPRINKLER BOOSTER PUMP PHASE REVERSAL	CM	ADDRESSABLE CONTROL MODULE
PT	SPRINKLER BOOSTER PUMP TROUBLE	——	SOLID THICK LINE INDICATES NEW DEVICE OR WIRING
SV	SMOKE VENT	CO	CARBON MONOXIDE DETECTOR
PULL BOX	PULL BOX OF 12"Wx18"Hx6"D		MOTOR CONTROLLER
H	WALL MOUNTED HORN/STROBE COMBINATION DEVICE (80" AFF)		

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
C	CONDUIT
ELV	ELEVATOR LOBBY
EMT	ELECTRIC METALLIC TUBING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDS	FUSED DISCONNECT SWITCH
G	GROUND
HC	HUNG CEILING
N	NEW
NTS	NOT TO SCALE
R	REMOVE
RGS	RIGID GALVANIZED STEEL
UON	UNLESS OTHERWISE NOTED
W	WIRE

FIRE ALARM DRAWING LIST

FA-001.00 FIRE ALARM NOTES, BUILDING DATA, SYMBOL LIST, DRAWING LIST & I/O MATRIX
FA-002.00 FIRE ALARM DETAILS
FA-003.00 FIRE ALARM RISER DIAGRAM
FA-100.00 CELLAR FIRE ALARM PLAN
FA-101.00 GROUND FLOOR FIRE ALARM PLAN
FA-102.00 2ND FLOOR FIRE ALARM PLAN
FA-103.00 3RD FLOOR FIRE ALARM PLAN
FA-104.00 4TH FLOOR FIRE ALARM PLAN
FA-105.00 ROOF FIRE ALARM PLAN

SYSTEM OUTPUTS / INDICATING/CONTROLLED DEVICES / SYSTEM INPUTS INITIATING DEVICES		CONTROL UNIT ANNUNCIATION					NOTIFICATION										REQUIRED FIRE SAFETY CONTROL					
		ACTIVATE COMMON ALARM SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	SOUND INTERNAL BUZZER AT FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	TEXT MESSAGE DISPLAY DEVICE TYPE & LOCATION OF THE ACTIVATING DEVICES ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.	DISPLAY/PRINT THE TEXT MESSAGE VIA THE SYSTEM PRINTER.	ACTIVATE EVACUATION SIGNAL THROUGH HORNS AND FLASH THE STROBES IN UFAS UNIT	TRANSMIT "MANUAL" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY	TRANSMIT "SMOKE/HEAT" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "CO" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "WATERFLOW" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "SUPERVISORY" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "TROUBLE" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "FIRE PUMP RUN" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "FIRE PUMP FAIL" ALARM SIGNAL TO FIRE DEPARTMENT VIA APPROVED CENTRAL STATION MONITORING COMPANY.	INITIATE THE AUTOMATIC FIRE MODE CONDITIONS FOR FAN (AC UNIT)OPERATION. PROCEED AC UNIT SHUTDOWN SEQUENCE.	INITIATE THE AUTOMATIC FIRE MODE CONDITIONS FOR FIRE SMOKE DAMPER OPERATION. PROCEED FIRE SMOKE DAMPER SHUTDOWN SEQUENCE.	RECALL ELEVATORS TO GROUND FLOOR.	RELEASE/OPEN ASSOCIATED SMOKE VENTS (AREA DETECTOR ONLY)	RELEASE FIRE STAIR SMOKE VENT	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
1	MANUAL PULL STATION	●			●	●	●	●	●													1
2	WATERFLOW SWITCH	●			●	●	●	●				●					●	●	●			2
3	DUCT SMOKE DETECTOR	●			●	●	●	●		●							●	●				3
4	AREA SMOKE DETECTOR	●			●	●	●	●		●							●	●		●	●	4
5	HEAT DETECTOR	●			●	●	●	●		●							●	●				5
6	CO DETECTOR		●		●	●		●			●						●	●				6
7	ELEVATOR MACHINE ROOM SMOKE DETECTOR	●	●		●	●	●	●		●			●				●	●	●			7
8	ELEVATOR LOBBY DETECTOR(S)/TOP OF ELEVATOR SHAFT DETECTORS	●	●		●	●	●	●		●							●	●	●			8
9	SPRINKLER CONTROL VALVE/TAMPER SWITCH		●		●	●	●						●									9
10	"POWER FAILURE" CONTACT IN SPRINKLER BOOSTER PUMP CONTROLLER				●	●	●						●			●						10
11	"PUMP RUNNING" CONTACT IN SPRINKLER PUMP CONTROLLER		●		●	●	●						●		●							11
12	TOP OF STAIR DETECTORS	●	●		●	●	●			●							●	●			●	12
13	FIRE ALARM AC POWER FAILURE			●	●	●	●							●								13
14	FIRE ALARM SYSTEM LOW BATTERY			●	●	●	●							●								14
15	OPEN CIRCUIT			●	●	●	●							●								15
16	GROUND CIRCUIT			●	●	●	●							●								16
17	NOTIFICATION APPLIANCE CIRCUIT SHORT			●	●	●	●															

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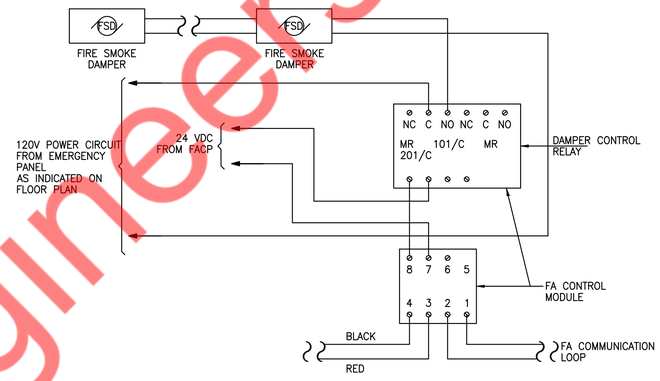
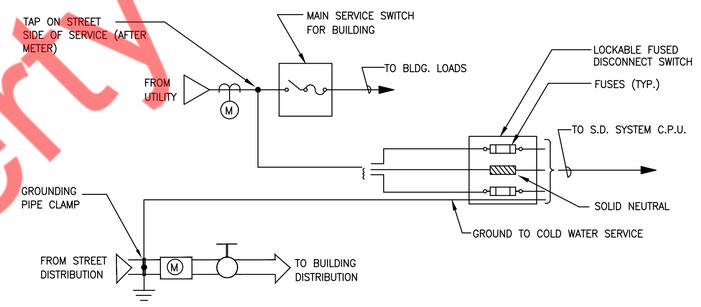


2 FA-002 N.T.S

TYPICAL BLOCK WIRING DIAGRAM FOR FIRE/SMOKE DAMPER CONTROL

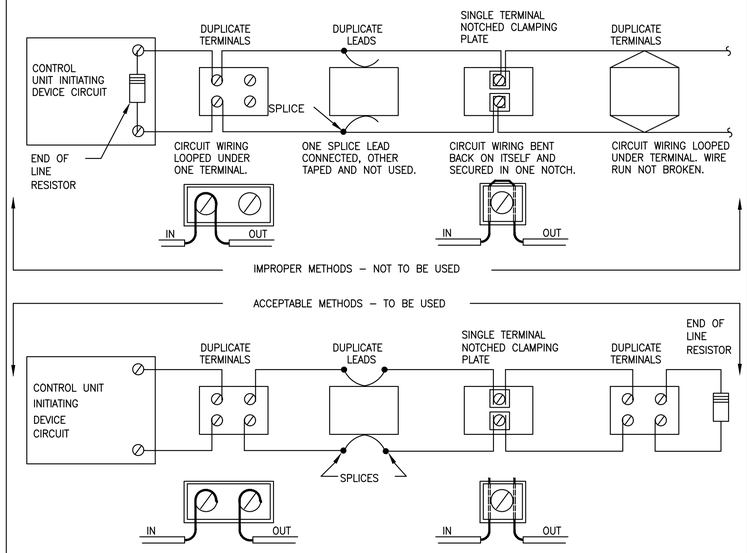


NOTES:

1. ALL CONDUCTORS (INCLUDING SERVICE TAP) MUST BE IN RIGID CONDUIT.
2. PROVIDE ENGRAVED LABELS FOR ALL EQUIPMENT.

3 FA-002 N.T.S

FIRE ALARM CONTROL PANEL ELECTRICAL SERVICE DETAILS



1 FA-002 N.T.S

WIRING TERMINATION METHID

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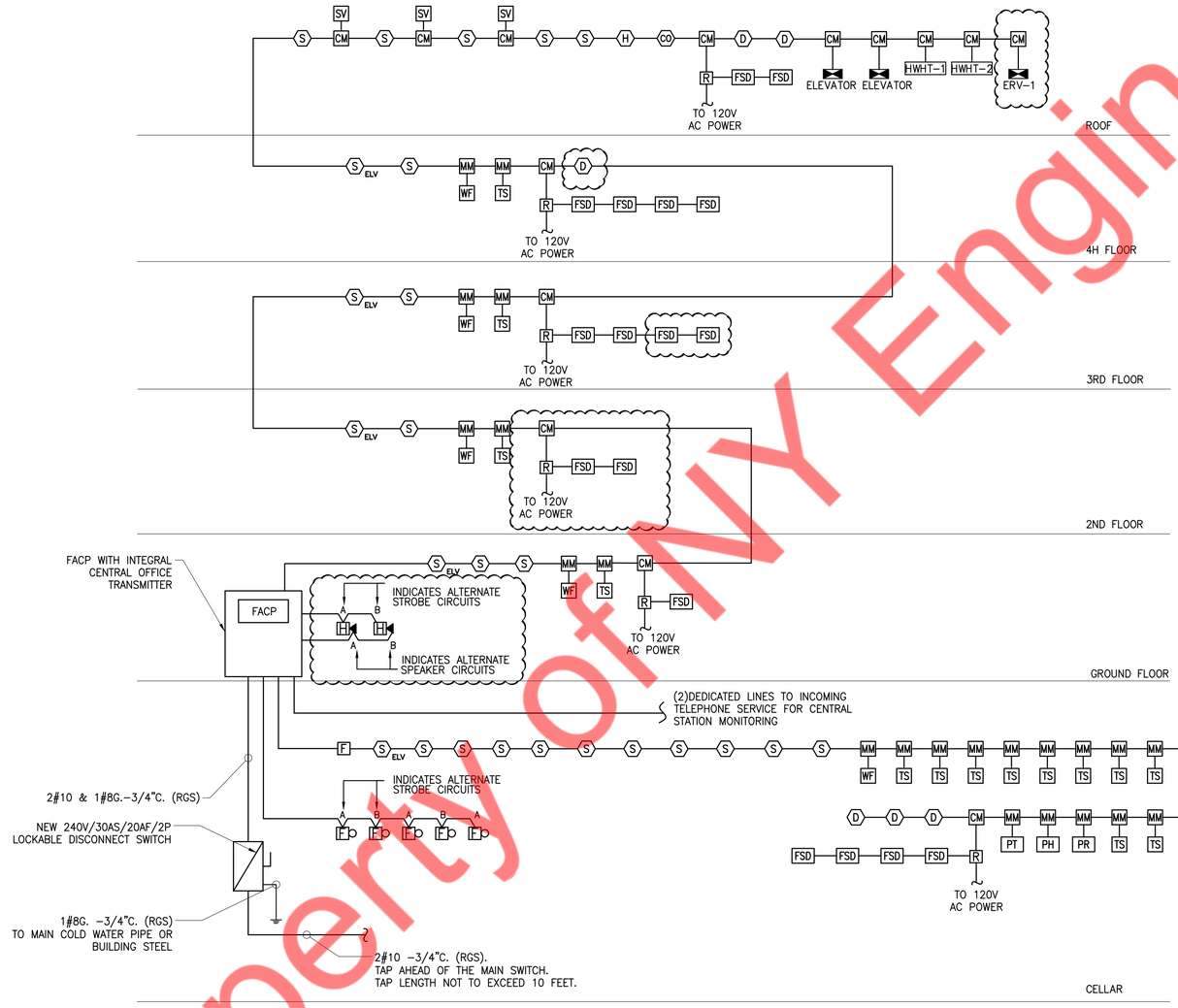

FIRE ALARM RISER DIAGRAM

N.T.S.

FIRE ALARM RISER NOTES:

1. ALL COMPONENTS REQUIRED TO MAKE SYSTEM WORKABLE SHALL BE INCLUDED IN BID PRICE.
2. EACH FA RELAY SHALL HAVE MINIMUM OF THREE SETS OF 2 CONTACT 10A RATED @ 120V (TYPICAL).
3. ALL DUCT SMOKE DETECTORS INSTALLED IN HUNG CEILING AREA AND IN OUT OF SIGHT AREA SHALL HAVE REMOTELY INSTALLED STATUS INDICATOR LAMPS. COORDINATE EXACT LOCATION WITH ARCHITECT AND GENERAL CONTRACTOR.
4. FOR WALL MOUNTED F.A. DEVICES PROVIDE 3/4" CONDUIT TERMINATED IN NEAREST ACCESSIBLE CEILING.
5. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT WHERE REQUIRED BY NYC ELECTRICAL CODE 760.131.
6. THIS RISER DIAGRAM IS A SCHEMATIC REPRESENTATION OF THE FIRE ALARM SYSTEM. REFER TO FLOOR PLANS FOR EXACT QUANTITY OF DEVICES.
7. ALL FIRE ALARM CONDUITS SHALL BE MINIMUM ¾".
8. ALL FIRE ALARM CIRCUITS SHALL BE WIRED NFPA STYLE 4/Y/B (CLASS B) WITH THE EXCEPTION OF THE NETWORK CIRCUIT WHICH SHALL BE NFPA STYLE 7 (CLASS A WITH ISOLATION). DUAL CLASS B NETWORKING IS NOT STYLE 7 AND WILL NOT BE APPROVED.

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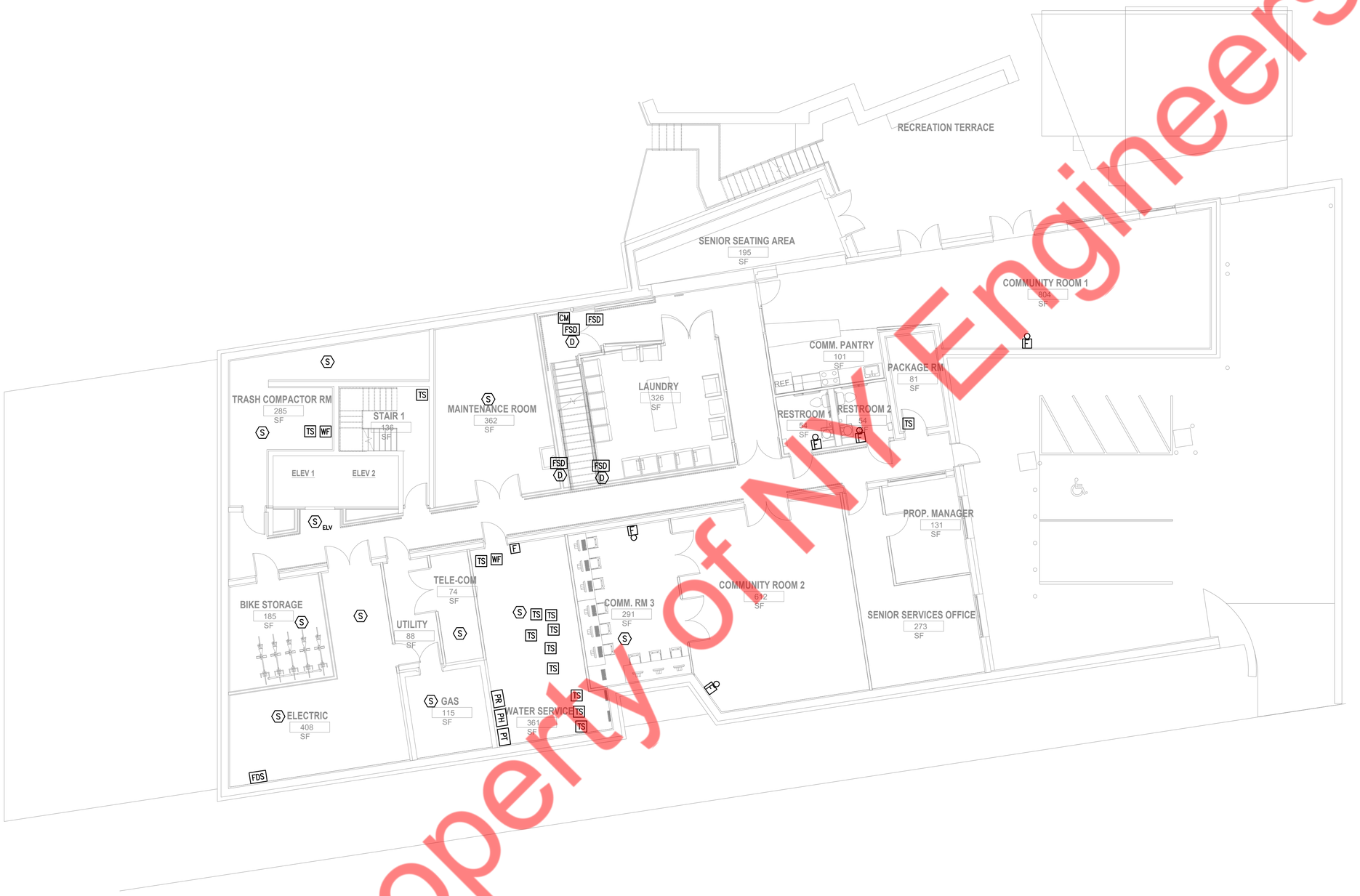

1 CELLAR FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. REFER TO DWG. FA–001.00 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS. FA–002.00 FOR FIRE ALARM NOTES AND FA–004.00 FIRE ALARM RISER DIAGRAM.
2. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN–FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
3. ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF FACP WITH THE ARCHITECT/OWNER.

Property of NY Engineers

1 GROUND FLOOR FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. REFER TO DWG. FA–001.00 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS. FA–002.00 FOR FIRE ALARM NOTES AND FA–004.00 FIRE ALARM RISER DIAGRAM.
2. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN–FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
3. ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF FACP WITH THE ARCHITECT/OWNER.

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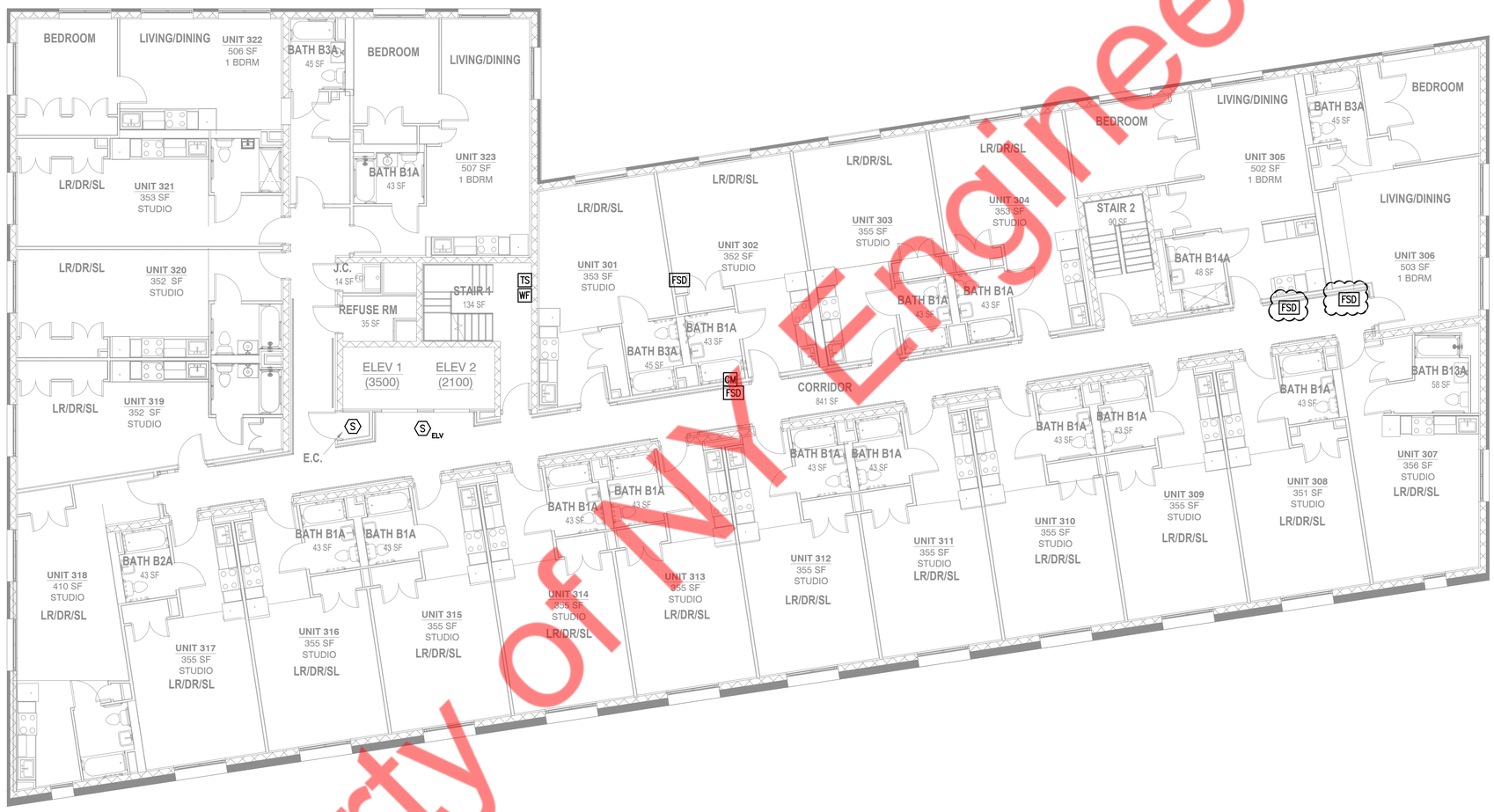
1 2ND FLOOR FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

Property of WV Engineers

DRAWING NOTES:

1. REFER TO DWG. FA–001.00 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS. FA–002.00 FOR FIRE ALARM NOTES AND FA–004.00 FIRE ALARM RISER DIAGRAM.
2. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN–FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
3. ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF FACP WITH THE ARCHITECT/OWNER.



1 3RD FLOOR FIRE ALARM PLAN

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

Property of NY Engineers

DRAWING NOTES:

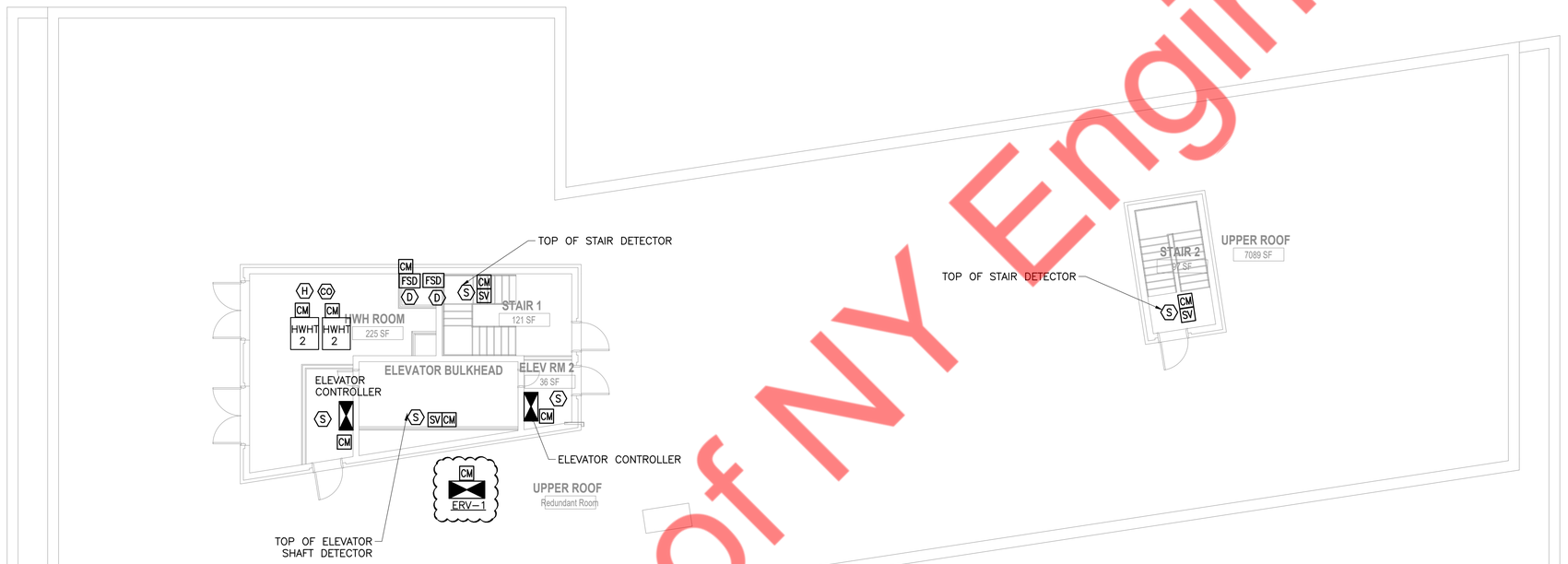
1. REFER TO DWG. FA–001.00 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS. FA–002.00 FOR FIRE ALARM NOTES AND FA–004.00 FIRE ALARM RISER DIAGRAM.
2. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN–FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
3. ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF FACP WITH THE ARCHITECT/OWNER.

1 4TH FLOOR FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

Property of NYE Engineers

DRAWING NOTES:

1. REFER TO DWG. FA–001.00 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS. FA–002.00 FOR FIRE ALARM NOTES AND FA–004.00 FIRE ALARM RISER DIAGRAM.
2. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN–FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
3. ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF FACP WITH THE ARCHITECT/OWNER.



1 ROOF FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. REFER TO DWG. FA-001.00 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS. FA-002.00 FOR FIRE ALARM NOTES AND FA-004.00 FIRE ALARM RISER DIAGRAM.
2. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
3. ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF FACP WITH THE ARCHITECT/OWNER.

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