MECHANICAL SYMBOLS LIST

AC-1 TXF-1	EQUIPMENT SYMBOL
XX / X	RISER SYMBOL
AIR DEVICES	
	CEILING DIFFUSER SUPPLY
	CEILING DIFFUSER RETURN
DUCT ACCESSORIES	
VD VD	VOLUME DAMPER W/ ACCESS DOOR
CONTROLS AND SENSORS	
T	THERMOSTAT
DUCTWORK	
	AIR DUCT W/ 1.5" ACOUSTICAL LINING
	FLEXIBLE DUCT
FC FC	FLEXIBLE CONNECTION
24X12	RECTANGULAR DUCT (WIDTH X DEPTH)
Ø12	ROUND DUCT (DIAMETER)
	ROUND DUCT CROSS SECTION
	SUPPLY AIR RECTANGULAR DUCT CROSS SECTION
	RETURN AIR RECTANGULAR DUCT CROSS SECTION
	POINT OF NEW CONNECTION

APPLICABLE CODES

- 2024 INTERNATIONAL BUILDING CODE (IBC 2024).
- 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC 2024).
- 2024 INTERNATIONAL MECHANICAL CODE (IMC 2024).
- 2023 NATIONAL ELECTRIC CODE (NEC 2023) .
- 2024 INTERNATIONAL PLUMBING CODE (IPC2024).

SCOPE OF WORK

1. PROVIDE NEW WSHP, AIR TERMINALS, AND DUCTWORK AS REQUIRED TO SERVE THE NEW TENANT LAYOUT. PROVIDE NEW EXHAUST FAN AND CONNECT TO THE EXISTING EXHAUST DUCTWORK AS REQUIRED TO COMPLY WITH MALL REQUIREMENTS.
2. 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.
3. 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.
4. 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.

ENERGY CODE COMPLIANCE

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH AMENDMENTS TO THE 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC).

MECHANICAL ABBREVIATIONS

AHU	AIR HANDLING UNIT
BD	BACK DRAFT DAMPER
BTUH	BRITISH THERMAL UNIT PER HOUR
CFM	CUBIC FEET PER MINUTE
CDS	CEILING DIFFUSER SUPPLY
DB	DRY BULB TEMPERATURE
DN	DOWN
E	EXISTING
EFF	EFFICIENCY
EF	EXHAUST FAN
OAI	OUTSIDE AIR INTAKE
FPM	FEET PER MINUTE
FT	FEET
IN	INCHES
LF	LINEAR FEET
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
N	NEW
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED OR NOISE CRITERIA
NO	NORMALLY OPEN
RTU	ROOF TOP UNIT
WMS	WIRE MESH SCREEN
SG	SUPPLY GRILLE

MECHANICAL DRAWING LIST

M001	MECHANICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES
M002	MECHANICAL SPECIFICATIONS (01 OF 02)
M003	MECHANICAL SPECIFICATIONS (02 OF 02)
M100	MECHANICAL FLOOR PLAN
M200	MECHANICAL DETAILS (01 OF 02)
M201	MECHANICAL DETAILS (02 OF 02)
M300	MECHANICAL SCHEDULE

NASHVILLE, TN BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE 2024 INTERNATIONAL BUILDING CODE AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
2. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2024 INTERNATIONAL MECHANICAL CODE (IMC2024), CHAPTER 4.
2. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
3. 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.
4. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
5. 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.
7. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF 2024 INTERNATIONAL MECHANICAL CODE (IMC 2024), CHAPTER 4 AND CHAPTER 5:
   A. MECHANICAL VENTILATION - SECTION 403.
8. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. STANDARDS OF HEATING - INTERNATIONAL MECHANICAL CODE (IMC 2024).
   B. DUCT CONSTRUCTION AND INSTALLATION - SECTION 603 OF INTERNATIONAL MECHANICAL CODE (IMC 2024).
   C. AIR INTAKES, EXHAUSTS AND RELIEF - SECTION 401 OF INTERNATIONAL MECHANICAL CODE (IMC 2024).
   D. AIR FILTERS -SECTION 605 OF INTERNATIONAL MECHANICAL CODE (IMC 2024).
9. VENTILATION SYSTEMS SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATE AS SHOWN IN VENTILATION REQUIREMENT TABLE. THIS SYSTEM SHALL BE BALANCED BY APPROVED METHOD. CONTRACTOR TO SUBMIT THE AIR - BALANCE REPORT TO INSPECTOR.
10. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
11. 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.
12. HVAC DUCTS AND PLENUMS INSULATED IN ACCORDANCE WITH 2024 INTERNATIONAL ENERGY CONSERVATION CODE SECTION 403.13 AND CONSTRUCTED IN ACCORDANCE WITH SECTION 403.13. VERIFICATION MAY NEED TO OCCUR DURING FOUNDATION INSPECTION.

GENERAL NOTES

1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING MPD 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. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
8. 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.
9. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
10. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
11. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
12. 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.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
14. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE MPD AND ENGINEER BEFORE WORK COMMENCES.
15. ALL MATERIAL AND EQUIPMENT TO BE NEW, UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
16. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING DUCTWORK, PIPING (SIZES, CLEARANCES, ETC) AND CONDITIONS.
17. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
18. 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.
19. 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.

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.
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. LOCATE ALL TEMPERATURE, 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.
12. 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.
13. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
14. 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.
15. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
16. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
17. 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.
18. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
19. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
20. 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.
21. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
22. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
23. 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. CONTRACTOR TO CHECK AND CORRECT ANY AND ALL DEFICIENCIES IN EXISTING DUCTS. 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. RE-INSULATE ALL DUCTWORK AND PIPING IN WHICH INSULATION HAS BEEN REMOVED OR DAMAGED WITH INSULATION EQUAL TO THE EXISTING INSULATION.
6. CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS AND RETURN AIR REGISTERS WHERE INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND REGISTERS WITH REFLECTED CEILING PLAN.
7. 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.
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 DISHWASHER, KITCHEN, AND LAUNDRY EXHAUSTS SHALL BE OF UN-VANED SMOOTH RADIUS CONSTRUCTION WITH A RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE SUCT. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.
11. COORDINATE DIFFUSER, REGISTER, AND GRILLE 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 FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.
14. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO ROOF TOP 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, SMOKE DAMPERS, VOLUME DAMPERS, COILS, 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. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.
22. EXTERIOR LOUVERS ARE INDICATED FOR SIZE, GENERAL LOCATION AND PERFORMANCE ONLY. DETAILED LOUVER DESCRIPTIONS ARE PROVIDED IN THE ARCHITECTURAL SPECIFICATIONS.
23. 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

INSULATION SCHEDULE

MINIMUM INSULATION REQUIREMENTS AS PER 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC):

	SUPPLY	RETURN
UNCONDITIONED SPACES WITHIN BUILDING:	R-6	R-6
INDIRECTLY CONDITIONED SPACES:	R-8	R-8
OUTSIDE OF BUILDING:	R-8	R-8

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THIRDLOVE

MECHANICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES

M001

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. 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. 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

A. 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

SECTION 230518 - ESCUTCHEONS FOR HVAC PIPING

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. ONE-PIECE, CAST-BRASS TYPE: WITH POLISHED, CHROME-PLATED AND ROUGH-BRASS FINISH AND SETSCREW FASTENER.

B. ONE-PIECE, DEEP-PATTERN TYPE: DEEP-DRAWN, BOX-SHAPED BRASS, WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.

C. ONE-PIECE, STAMPED-STEEL TYPE: WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.

2.2 FLOOR PLATES

A. ONE-PIECE FLOOR PLATES: CAST-IRON FLANGE WITH HOLES FOR FASTENERS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FINISHED FLOORS.

B. INSTALL ESCUTCHEONS WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY COVERS OPENING.

1. ESCUTCHEONS FOR NEW PIPING:
   a. PIPING WITH FITTING OR SLEEVE PROTRUDING FROM WALL: ONE-PIECE, DEEP-PATTERN TYPE.
   b. INSULATED PIPING: ONE-PIECE, STAMPED-STEEL TYPE.
   c. BARE PIPING AT WALL AND FLOOR PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.
   d. BARE PIPING AT CEILING PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.

3.2 FIELD QUALITY CONTROL

A. REPLACE BROKEN AND DAMAGED ESCUTCHEONS AND FLOOR PLATES USING NEW MATERIALS.

END OF SECTION 230518

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
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

1.1 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 WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.
4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE.
5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
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

1.2 FIELD QUALITY CONTROL

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

PART-2 PRODUCTS

1.1 VIBRATION ISOLATORS & SEISMIC-RESTRAINT 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. HILTI, INC.
5. ISOLATION TECHNOLOGY, INC.
6. KINETICS NOISE CONTROL.
7. LOOS & CO.; CABLEWARE DIVISION.
8. MASON INDUSTRIES.
9. TOLCO INCORPORATED; A BRAND OF NIBCO INC.
10. UNISTRUT; TYCO INTERNATIONAL, LTD.

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 SYSTEMS.
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 EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

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

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

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

E. 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.

F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS S3ECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

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

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

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

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

END OF SECTION 230593

SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

1.1 PRODUCTS

A. DIFFUSERS, REGISTERS 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

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 AND BRACING
22	UP TO 12	S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FOOT CENTERS
22	13 TO 24	1"X1"X1/8" ANGLES ON 4 FOOT CENTERS
20	25 TO 35	1"X1"X1/8" ANGLES ON 2 FOOT CENTERS

D. PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:

1. UPSTREAM OF EACH REHEAT COIL AND VAV BOX.
2. DOWNSTREAM OF EACH REHEAT COIL AND VAV BOX.

E. 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.

F. 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. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.

C. SHEET METAL MATERIALS:

1. GALVANIZED SHEET STEEL.
2. STAINLESS-STEEL SHEETS.
3. ALUMINUM SHEETS.
4. FACTORY-APPLIED ANTI-MICROBIAL COATING.

D. DUCT LINER:

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

E. 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. COILS AND RELATED COMPONENTS.
5. RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
6. SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
7. 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

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THIRDLOVE

MECHANICAL SPECIFICATIONS
(01 OF 02)

M002

PIPING INSULATION

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

INSULATION SCHEDULE - PIPING

SERVICE	SIZE THICKNESS	R-VALUE	MATERIAL FINISH
HYDRONIC PIPING	1"	R-9	P-6
CONDENSER DRAIN PIPING	0.5"	R-6	P-6

B. PIPING, VALVES AND FITTINGS TO BE INSULATED:

1) LOW TEMPERATURE PIPING SYSTEMS - 0 TO 55 DEG F INCLUDING:
   a. CHILLED WATER SUPPLY AND RETURN.
   b. CONDENSER WATER SUPPLY AND RETURN.
   c. CONDENSATE DRAIN PIPING.

2) LOW TEMPERATURE PIPING SYSTEMS - 0 TO 55 DEG F INCLUDING:
   a. GLYCOL WATER SUPPLY AND RETURN.

3) PROTECTIVE COVERINGS SHALL BE INSTALLED ON AREAS OF INSULATION THAT ARE EXPOSED TO WEATHER OR SUBJECT TO MECHANICAL DAMAGE. THE PROTECTIVE COVERING SHALL BE:

   a. ARMA-CHEK SILVER" MULTI-LAYER LAMINATE OF ALUMINUM, COATED WITH A UV PROTECTIVE FILM AND BACKED WITH A FLEXIBLE PVC FILM. THE MATERIAL SHOULD BE ADHERED WITH ARMAFLEX 520 ADHESIVE OR EQUIVALENT, AND ALL JOINS AND SEAMS SECURED WITH "ARMA-CHEK SILVER TAPE". INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS.

   OR

   b. HIGH DENSITY RUBBER CLADDING OF THE "ARMA-CHECK R" TYPE BONDED USING AN APPROPRIATE FULL CONTACT ADHESIVE WITH A MINIMUM 50 MM OVERLAP AT ALL BUTT JOINTS AND LONGITUDINAL SEAMS. A WEATHER-PROOF MASTIC SEALANT SHALL BE APPLIED OVER ALL SEAMS AND JOINTS. ALL MATERIAL SHALL BE OVERLAPPED AND STAGGERED IN SUCH A WAY AS TO ENSURE A WATERSHED IS ALWAYS PROVIDED. INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS. ALL EXCESS ADHESIVE VISIBLE ON THE SURFACE OF THE COMPLETED ASSEMBLY SHALL BE REMOVED USING AN APPROPRIATE CLEANING MATERIAL.

   OR

   c. METAL CLADDING, COMPRISED OF COATED SHEET METAL, WITH ALL EXTERNAL JOINTS AND FIXING MADE WEATHER-PROOF WITH SILICONE SEALANT.

C. MATERIAL:

1) TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.24 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.

2) TYPE P-3: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTING, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO EPOLUX HAMFAB MOLDED FITTINGS.

3) TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.

4) 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.

D. FINISH:

1) TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.

2) TYPE F-2: WHITE VAPOR BARRIER COATING WITH 10X10 OR 20X20 MESH WHITE GLASS, POLYESTER OR NYLON CLOTH REINFORCING MEMBRANE, MINIMUM 31 MIL DRY FILM THICKNESS, SIMILAR TO FOSTER TITE-FIT, UL LABEL.

3) TYPE F-4: ALUMINUM JACKETING WITH MINIMUM 0.016 IN. WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.

4) TYPE F-6: WHITE FINISHING AND INSULATING CEMENT APPLIED OVER HEXAGONAL WIRE MESH. CEMENT SIMILAR TO KEENE SUPERSLICK.

E. 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.

PIPING - GENERAL REQUIREMENTS

A. COMPLETE WITH: PIPE, FITTINGS, VALVES, STRAINERS, MOTORIZED VALVE OPERATORS, STRAINERS, HANGERS, SUPPORTS, GUIDE, SLEEVES, AND ACCESSORIES.

B. ALL ITEMS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING CODES AND STANDARDS:

1) AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).

2) AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

3) AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).

4) MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY (MSS).

C. ALL PRESSURIZED PIPING TO BE TESTED HYDROSTATICALLY TO 300 PSI OR 150% OF OPERATING PRESSURE, WHICHEVER IS GREATER, BUT NEVER EXCEED TEST PRESSURE ANSI B16.1 BASIS. TEST DURATION TO BE 2 HOURS WITH NO PRESSURE CHANGE CORRECTED FOR TEMPERATURE CHANGE. REPAIR OR REPLACE LEAKS OR DEFECTS WITHOUT ADDITIONAL COST.

D. PROVIDE DIELECTRIC FITTINGS WHERE DISSIMILAR METALS ARE TO BE JOINED.

E. PIPE SUPPORTS:

1) PROVIDE ADEQUATE SUPPORT FOR PIPE AND CONTENTS TO PREVENT SAGGING, VIBRATION, OR SWAYING AND ALLOW FOR EXPANSION AND CONTRACTION. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE STRUCTURE CANNOT SUPPORT POINT LOADS.

2) HORIZONTAL PIPING TO BE SUPPORTED BY FORGED STEEL ADJUSTABLE CLEVIS TYPE HANGER. MAXIMUM SPACING AS FOLLOWS:

   a. STEEL 1 IN. AND SMALLER: 7 FT.

   b. STEEL 1-1/4 IN. AND LARGER: 10 FT.

   d. COPPER 3 IN. AND SMALLER: 7 FT.

   e. ADDITIONAL SUPPORTS AT CHANGES IN DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

F. LOW TEMPERATURE WATER SYSTEMS, BELOW 100 PSIG, -20 TO 200 DEG F OPERATING TEMPERATURES (INCLUDES CONDENSER WATER, CHILLED WATER AND LOW TEMPERATURE HOT WATER FROM 100 TO 200 DEG F).

1) PIPE: ANNEALED-TEMPER COPPER TUBING, ASTM B-88, TYPE K, WITH BRAZED JOINTS.

2) ALT. (ONLY IF ALLOWED BY BUILDING) PIPE: STEEL IN ACCORDANCE WITH ASTM A53 OR A120, WITH SCHEDULE 40 WALL THICKNESSES TO 10 IN.

   a. RUNOUTS TO EQUIPMENT AND COILS: COPPER, TYPE L, HARD DRAWN IN ACCORDANCE WITH ASTM B88.

3) FITTINGS:

   a. COPPER TYPE K: WROUGHT COPPER, SILVER BRAZED, ASME B16.22.

   b. 2 IN. AND SMALLER: 125 LB WSP CAST IRON THREADED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.4., CAST IRON FLANGED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.1.

   c. 2-1/2 IN. AND LARGER WELDED: BUTT WELD FITTINGS SAME WEIGHT AS PIPING AND IN ACCORDANCE WITH ANSI B16.9.

   d. COPPER TYPE L: WROUGHT COPPER, SOLDERED 95/5 ANTIMONY, ASME B16.22.

4) VALVES:

   a. BALL VALVES:

   BRONZE, TWO PIECES BODY CONSTRUCTION, 600 PSIG WOG/ 150 WSP, STAINLESS STEEL BALL AND STEM, FULL PORT, MILWAUKEE BA-400S THREADED ENDS, BA-450S SOLDERED ENDS, OR EQUAL.

   b. GATE VALVES:

   2 IN. AND SMALLER: BRONZE THREADED ENDS, SOLID WEDGE, INSIDE SCREW, TRAVELING STEM UNION BONNET. 300 LB WSP: JENKINS FIG. 47U, OR EQUAL.

   2-1/2 IN. AND LARGER: IRON BODY, BRONZE MOUNTED, SOLID WEDGE OS&Y RISING SPINDLE FLANGED. 300 LB WSP. JENKINS FIG. 651-C, OR EQUAL.

   b. GLOBE VALVES:

1) 2 IN. AND SMALLER: BRONZE, REGRIND-RENEW, 500 BRINELL STAINLESS STEEL PLUG DISC AND 425 BRINELL SEAT RING, UNION BONNET. 300 LB WSP JENKINS FIG. 546P, OR EQUAL.

2) 2-1/2 IN. AND LARGER: REGRIND-RENEW, IRON BODY, LEVEL BRONZE DISC AND SEAT RING OS&Y FLANGED, 300 LB WSP JENKINS FIG. 613C, OR EQUAL.

   c. Y-TYPE STRAINERS:

1) PROVIDE SCREWED ENDS TO 2 IN. AND FLANGED 2-1/2 IN. AND LARGE WITH BODY AS FOLLOWS: TO 300 PSIG: 300 LB WSP CLASS, CAST IRON.

2) SCREENS TO BE 316 STAINLESS STEEL.

3) PROVIDE SCREWED WITH FACED CAP, STRAIGHT THREAD AND GASKET, SIMILAR TO MUELLER STEAM SPECIALTY MUESSCO NO. 11. PROVIDE FLANGED WITH BOLTED COVER SIMILAR TO MUELLER STEAM SPECIALTY MUESSCO NO. 751 OR NO. 752.

4) PROVIDE 1/2 IN. DRAIN VALVE WITH CAPPED HOSE CONNECTION AT ALL LOW POINTS. PROVIDE 3/4 IN. GATE VALVE TO DRAIN SYSTEMS IN EQUIPMENT ROOMS.

5) PROVIDE MANUAL AIR VENTS LINE SIZE AIR CHAMBER WITH 1/2 IN. GLOBE VALVE AT ALL HIGH POINTS AND WHERE FLOW DIRECTION CHANGES FROM HORIZONTAL TO DOWNWARD.

6) PITCH WATER PIPING EXCEPT AS NOTED:

   a. UP TO 1 IN.: 1 IN. IN 40 FT.

   b. 1-1/2 IN. AND LARGER: 1 IN. IN 100 FT.

G. LOW PRESSURE STEAM (LESS THAN 15 PSIG):

1) PIPE:

   a. 2 INCHES THROUGH 10": BLACK STEEL ASTM A53 SCHEDULE 40, TYPE E OR S GRADE B.

2) FITTINGS:

   a. 2 IN. AND SMALLER: 125 LB WSP CAST IRON THREADED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.4., CAST IRON FLANGED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.1.

   b. 2.5 IN THROUGH 10": BLACK STEEL, SCHEDULE 40, BUTT WELDED, 125 LBS, ANSI/ASME B16.9.

3) JOINTS:

   a. 2 IN AND SMALLER: THREADED, ANSI/ASME B1.20.1.

   b. 2.5 IN THROUGH 10 IN: WELDED JOINTS, ANSI/AWS D1.1 AND ANSI/ASME SECTION 9.

H. LOW PRESSURE STEAM CONDENSATE (LESS THAN 15 PSIG):

1) PIPE:

   a. 2 INCHES THROUGH 10": BLACK STEEL ASTM A53 SCHEDULE 80, TYPE E OR S GRADE B.

2) FITTINGS:

   a. 2 IN. AND SMALLER: 125 LB WSP CAST IRON THREADED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.4., CAST IRON FLANGED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.1.

   b. 2.5 IN THROUGH 10": BLACK STEEL, SCHEDULE 80, BUTT WELDED, 125 LBS, ANSI/ASME B16.9.

3) JOINTS:

   a. 2 IN AND SMALLER: THREADED, ANSI/ASME B1.20.1.

   b. 2.5 IN THROUGH 10 IN: WELDED JOINTS, ANSI/AWS D1.1 AND ANSI/ASME SECTION 9.

I. HIGH PRESSURE STEAM (ABOVE 15 PSIG):

1) REFER TO CON-EDISON SPECIFICATIONS SUPPLIED IN A SEPARATE PACKAGE.

J. REFRIGERANT PIPING:

1) PIPE:

   a. TYPE L ACR COPPER TUBING, ASTM B280, HARD DRAWN..

2) FITTINGS:

   a. WROUGHT COPPER SOLDER JOINT FITTINGS, ANSI/ASME B16.22.

3) JOINTS:

   a. CLASSIFICATION BAG-1 (SILVER) AWS A5.8 BRAZED SILVER ALLOY BRAZING. BRAZING SHALL BE CONDUCTED USING A NON-ACID BRAZING FLUX.

K. FUEL OIL PIPING.

1) PIPE: STEEL IN ACCORDANCE WITH ASTM A53 OR A120, WITH SCHEDULE 40 WALL.

2) FITTINGS:

   a. 2 IN. AND SMALLER: 300 LB WSP CAST IRON WELDED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.4., CAST IRON FLANGED FITTINGS SHALL BE IN ACCORDANCE WITH ANSI B16.1.

   b. 2-1/2 IN. AND LARGER WELDED: BUTT WELD FITTINGS SAME WEIGHT AS PIPING AND IN ACCORDANCE WITH ANSI B16.9.

L. DOUBLE CONTAINMENT PIPING FOR FUEL OIL PIPING.

1) PIPE: STEEL IN ACCORDANCE WITH ASTM A53 OR A120, WITH SCHEDULE 40 WALL.

2) JOINTS:

   a. 2 IN. AND SMALLER: 300 LB WSP CAST IRON WELDED IN ACCORDANCE WITH ANSI B16.4.

   b. 2-1/2 IN. AND LARGER WELDED: BUTT WELDED JOINTS SAME WEIGHT AS PIPING AND IN ACCORDANCE WITH ANSI B16.9.

M. CONDENSATE DRAIN PIPING

1) PIPE: ASTM B88, HARD DRAWN COPPER TUBING TYPE "L".

2) FITTINGS: SOLDERED JOINT FITTINGS, 95/5 SOLDER.

3) PITCH, EXCEPT AS NOTED:

   a. 1 IN. IN 4 FT PREFERRED.

   b. 1 IN. IN 8 FT MINIMUM.

4) SWING CHECK VALVES: AT CONDENSATE PUMP DISCHARGE. 300 LB WOG, BRONZE BODY SOLDER ENDS, REGRIND BRONZE DISC TO BE USED WITH COPPER TUBING. JENKINS FIG. 1222.

C403.4.1 THERMOSTATIC CONTROLS

THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING THERMAL ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:
1. THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ±45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15240 MM).
2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

C403.4.1.1 HEAT PUMP SUPPLEMENTARY HEAT
HEAT PUMPS HAVING SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL HAVE CONTROLS THAT LIMIT SUPPLEMENTAL HEAT OPERATION TO ONLY THOSE TIMES WHEN ONE OF THE FOLLOWING APPLIES:
1. THE VAPOR COMPRESSION CYCLE CANNOT PROVIDE THE NECESSARY HEATING ENERGY TO SATISFY THE THERMOSTAT SETTING.
2. THE HEAT PUMP IS OPERATING IN DEFROST MODE.
3. THE VAPOR COMPRESSION CYCLE MALFUNCTIONS.
4. THE THERMOSTAT MALFUNCTIONS.

C403.4.1.2 DEADBAND
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL:
1. HAVE SEPARATE SETPOINTS FOR HEATING AND COOLING, EACH INDIVIDUALLY ADJUSTABLE.
2. BE CAPABLE OF AND INITIALLY CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND BETWEEN THE TWO SETPOINTS OF NOT LESS THAN 5°F (3°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
3. HAVE A MINIMUM DEADBAND OF NOT LESS THAN 1°F (0.56°C) WHEN SETPOINTS ARE ADJUSTED.

EXCEPTIONS:
1. THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
2. OCCUPANCIES OR APPLICATIONS WHERE APPLICABLE CODES OR ACCREDITATION STANDARDS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL SHALL BE PERMITTED TO BE INITIALLY CONFIGURED TO NOT LESS THAN 1°F (0.56°C) DEADBAND.

C403.4.1.3 SETPOINT ADJUSTMENT AND DISPLAY
WHERE THERMOSTATIC CONTROL SETPOINTS ARE CAPABLE OF BEING ADJUSTED BY OCCUPANTS OR HVAC SYSTEM OPERATORS, THE ADJUSTMENT SHALL BE INDEPENDENT FOR THE HEATING SETPOINT AND THE COOLING SETPOINT; WHEN ONE SETPOINT IS CHANGED, THE OTHER SHALL NOT CHANGE EXCEPT AS NEEDED TO MAINTAIN THE MINIMUM DEADBAND REQUIRED BY SECTION C403.4.1.2. FOR THERMOSTATIC CONTROLS THAT DISPLAY SETPOINTS, BOTH THE HEATING AND COOLING SETPOINTS SHALL BE DISPLAYED SIMULTANEOUSLY, OR THE SETPOINT OF THE CURRENTLY ACTIVE MODE (HEATING OR COOLING) SHALL BE DISPLAYED ALONG WITH AN INDICATION OF THAT MODE.

C403.4.1.4 SETPOINT OVERLAP RESTRICTION
WHERE HEATING AND COOLING TO A ZONE ARE CONTROLLED BY SEPARATE ZONE THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONE, MECHANICAL OR SOFTWARE MEANS SHALL BE PROVIDED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT, MINUS THE DEADBAND REQUIRED BY SECTION C403.4.1.2.

C403.4.2 OFF-HOUR CONTROLS
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.
EXCEPTIONS:
1. ZONES THAT WILL BE OPERATED CONTINUOUSLY.
2. ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

C403.4.2.1 THERMOSTATIC SETBACK
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

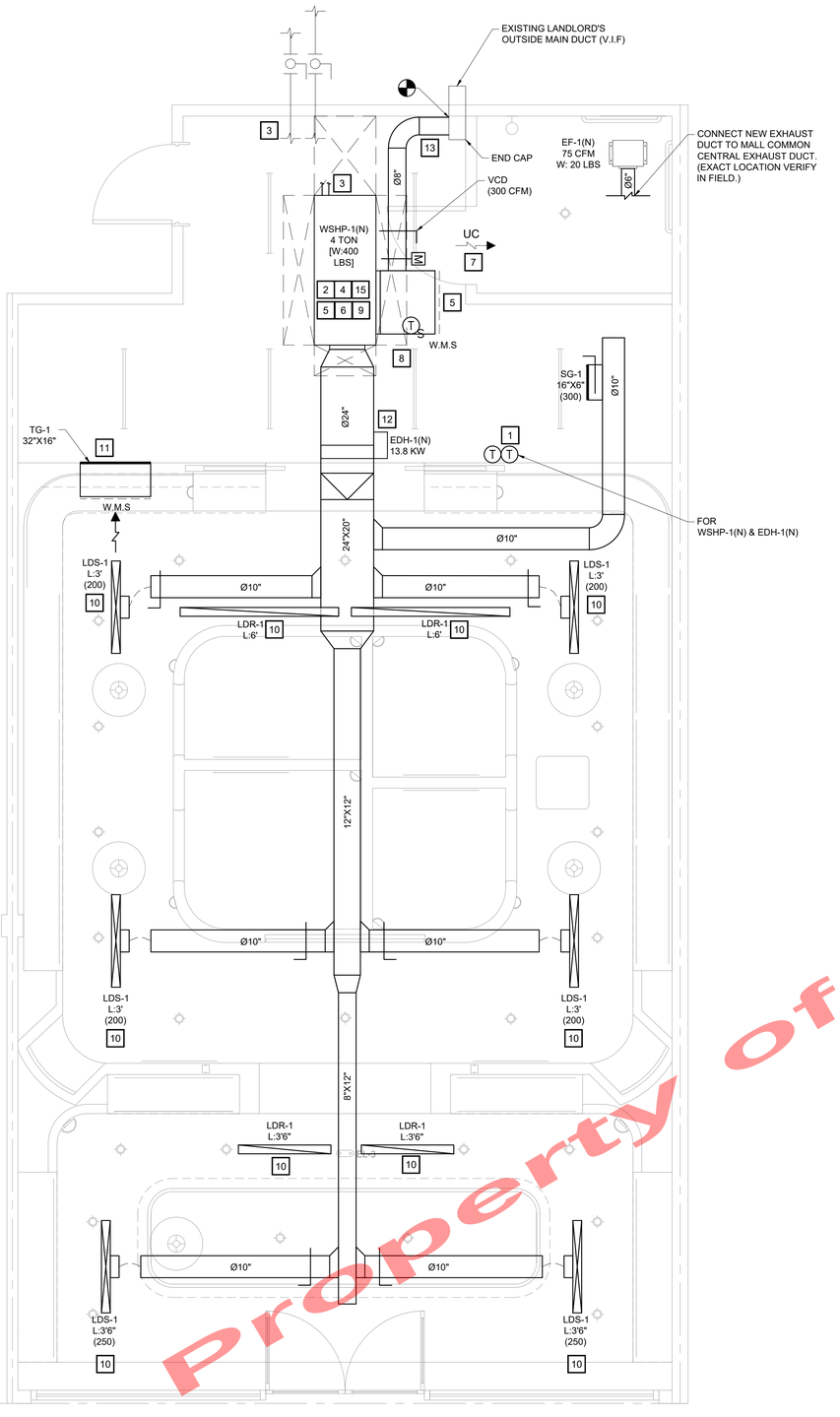
C403.4.2.3 OPTIMUM START AND STOP
OPTIMUM START AND STOP CONTROLS SHALL BE PROVIDED FOR EACH HEATING AND COOLING SYSTEM WITH DIRECT CONTROL OF INDIVIDUAL ZONES. THE OPTIMUM START CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HEATING AND COOLING SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY. THE OPTIMUM STOP CONTROLS SHALL BE CONFIGURED TO REDUCE THE HEATING AND COOLING SYSTEM'S HEATING TEMPERATURE SETPOINT AND INCREASE THE COOLING TEMPERATURE SETPOINT BY NOT LESS THAN 2°F (1.11°C) BEFORE SCHEDULED UNOCCUPIED PERIODS BASED ON THE THERMAL LAG AND ACCEPTABLE DRIFT IN SPACE TEMPERATURE THAT IS WITHIN COMFORT LIMITS.
EXCEPTION: DWELLING UNITS AND SLEEPING UNITS ARE NOT REQUIRED TO HAVE OPTIMUM START CONTROLS.

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THIRDLOVE

MECHANICAL SPECIFICATIONS
(02 OF 02)

M003



LEGEND:

NEW

EXISTING

SEQUENCE OF OPERATION : (WSHP WITH 7-DAY PROGRAMMABLE THERMOSTAT)

WATER SOURCE HEAT PUMPS SHALL BE ENERGIZED AND DE-ENERGIZED BY INDIVIDUAL UNIT CONTROLLERS. THE SEQUENCE OF OPERATION IS BASED ON A TENANT-PROVIDED OCCUPIED/UNOCCUPIED SCHEDULE AND SETPOINTS.

OCCUPIED MODE:

DURING SCHEDULED OCCUPIED PERIODS (AS PROGRAMMED IN THE 7-DAY THERMOSTAT), THE WSHP OPERATES TO MAINTAIN THE SPACE TEMPERATURE SETPOINTS.

COOLING OPERATION IS PROVIDED BY THE WSHP TO MAINTAIN THE COOLING SPACE TEMPERATURE SETPOINT OF 75°F (ADJUSTABLE).

HEATING (BOILERLESS) IS PROVIDED BY THE ELECTRIC DUCT HEATER, STAGED AS REQUIRED TO MAINTAIN THE HEATING SETPOINT OF 70°F (ADJUSTABLE).

UNOCCUPIED MODE:

UNIT CONTROLLER SHALL CYCLE THE REFRIGERATION CIRCUITS OR ELECTRIC RESISTANCE HEATING AND SUPPLY AIR FAN TO MAINTAIN UNOCCUPIED COOLING TEMPERATURE SETPOINT OF 85°F OR HEATING TEMPERATURE SETPOINT OF 55°F.

GENERAL NOTES:

1. ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION.
2. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
3. ALL ITEMS TO BE RE-USED OR RELOCATED SHALL BE CLEANED, REPAIRED, AND RESTORED TO LIKE NEW CONDITION PRIOR TO RE-USE.
4. TAKE NECESSARY PRECAUTIONS TO PREVENT DUST AND DIRT MIGRATING TO OCCUPIED AREAS OF THE BUILDING. THIS INCLUDES BLANKING OFF ANY RETURN AIR GRILLES/DUCTS IN THE WORK AREA. PROVIDE TEMPORARY EXHAUST FANS, DUCTED DIRECTLY TO OUTDOORS, TO MAINTAIN NEGATIVE PRESSURE WITHIN THE WORK AREA.
5. KEEP ALL ADJOINING AREAS ADJACENT TO THE WORK AREAS CLEAN AND FREE OF DEBRIS.
6. ALL DEMOLISHED MATERIALS SHALL BE REMOVED AND DISPOSED OF OFF SITE.
7. REPAIR/REPLACE EXISTING EQUIPMENT/MATERIALS NOT SCHEDULED OR NOTED TO BE DEMOLISHED BUT BECOME DAMAGED DURING THE PROGRESS OF THE WORK. MAKE ANY AND ALL SUCH REPAIRS, REPLACEMENTS, MODIFICATIONS TO RESTORE THE DAMAGED ITEMS TO THEIR ORIGINAL CONDITIONS AT THE TIME OF DAMAGE, TO THE SATISFACTION OF AND AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL BALANCE EACH AIR TERMINAL AS SHOWN ON FLOOR PLAN.
9. NEW DUCTWORK SHOWN ON PLAN IS SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR DUCTWORK ROUTING. OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
10. EXISTING CONDITIONS AND LOCATIONS OF EQUIPMENT AND DUCT WORK SHALL BE FIELD VERIFIED PRIOR TO COMMENCING WORK.
11. REPAIR OR REPLACE EXISTING DAMAGED INSULATION FOR DUCTWORK, PROVIDE SAME R-VALUE AS EXISTING INSULATION.
12. COORDINATE CUTTING, PATCHING OF EXISTING WALLS, CEILINGS, AND FLOORS AFFECTED BY MECHANICAL DEMOLITION WITH G.C.
13. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED BEFORE FABRICATION OF DUCTWORK, PIPING, ETC.
14. ALL DUCT SIZES SHOWN ON MECHANICAL FLOOR PLANS ARE CLEAR INSIDE. INTERNAL AND EXTERNAL INSULATION THICKNESS OF DUCTS SHALL BE CONSIDERED SEPARATELY.
15. PROVIDE OPPOSED BLADE VOLUME DAMPERS AT FACE OF ALL CEILING SUPPLY DIFFUSERS, RETURN, AND EXHAUST GRILLES.
16. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
17. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C. AND OWNER.
18. COORDINATE ALL EQUIPMENT WITH STRUCTURAL.
19. PROVIDE FIRE OR FIRE/SMOKE DAMPERS WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATING OF THE WALLS.
20. ALL DUCTWORK SHALL BE SHEET METAL. FLEX DUCT MAY ONLY BE USED IN RUNS OF 5'-0" OR LESS.
21. CONTRACTOR SHALL NOTIFY ARCHITECT / ENGINEER IMMEDIATELY OF ANY DISCREPANCY BETWEEN DRAWINGS AND FIELD CONDITIONS.
22. CONTRACTOR SHALL NOTIFY ARCHITECT / ENGINEER IMMEDIATELY OF ANY DISCREPANCY OR CONFLICTS SHOWN ON MEP DRAWINGS.

KEYED NOTES:

1. LOCATION OF DIGITAL THERMOSTAT CONTROL. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
2. 1" CONDENSATE DRAIN SHALL BE PROVIDED AND SHALL BE CONVEYED FROM THE DRAIN PAN OUTLET TO AN APPROVED PLACE OF DISPOSAL. PROVIDE HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN 1/8 UNIT VERTICAL IN 12 UNITS HORIZONTAL. CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS SO AS TO CAUSE A NUISANCE.
3. CONNECT NEW WSHP TO THE LANDLORD-PROVIDED CONDENSER WATER SUPPLY AND RETURN PIPING. PROVIDE ALL REQUIRED PIPING, FITTINGS, SHUT-OFF VALVES, BALANCING VALVES, FLEXIBLE CONNECTORS, STRAINERS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. FIELD VERIFY THE SIZE AND LOCATION OF THE EXISTING CONDENSER WATER TAPS WITH THE LANDLORD PRIOR TO INSTALLATION.
4. PROVIDE SHUT-OFF VALVES AT THE NEW CONDENSER WATER SUPPLY AND RETURN CONNECTIONS TO THE EXISTING PIPING. PROVIDE ACCESS PANELS WHERE VALVES ARE LOCATED ABOVE INACCESSIBLE CEILINGS.
5. EXTEND RETURN AIR DUCT FROM WSHP WITH SAME SIZE OPENING AND WIRE MESH SCREEN, AS SHOWN.
6. PROVIDE AUXILIARY DRAIN PAN WITH WATER LEAKAGE SENSOR AND ALARM TO SHUT DOWN THE UNIT. 1" DEEP, MINIMUM 3" BEYOND FOOTPRINT OF UNIT. PROVIDE CONDENSATE DRAIN LIFT PUMP AS/IF REQUIRED.
7. PROVIDE 1" DOOR UNDER CUT FOR AIR TRANSFER.
8. PROVIDE REMOTE TEMP./HUMIDITY SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.
9. INSTALL WSHP UNITS AS RECOMMENDED BY THE MANUFACTURERS. INSTALLATION SUPPORT TO BE COORDINATED WITH THE ARCHITECT/LL ENGINEER AND PRIOR TO BASE BID.
10. PROVIDE LINEAR SLOT SUPPLY DIFFUSER WITH MATCHING MANUFACTURER-SUPPLIED PLENUM BOX AND MATCHING LINEAR SLOT RETURN GRILLE (NO PLENUM BOX UNLESS NOTED OTHERWISE). INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
11. PROVIDE TRANSFER GRILLE CONNECTED TO DUCT ABOVE CEILING AS SHOWN ON PLAN. EXTEND DUCT INTO THE CEILING SPACE AND TERMINATE WITH A FULL SIZE WIRE MESH SCREEN.
12. INSTALL ELECTRIC DUCT HEATER AS SHOWN ON PLAN AS PER MANUFACTURER RECOMMENDATION. CONTROLS AND OPERATIONS OF EDH TO BE INTEGRATED WITH RESPECTIVE WSHP UNITS.
13. CONNECT NEW OUTSIDE AIR DUCT TO LANDLORD-PROVIDED OUTSIDE AIR MAIN DUCT. FIELD-VERIFY EXACT LOCATION. PROVIDE OFFSETS, TRANSITIONS, AND FITTINGS AS REQUIRED FOR PROPER CONNECTION.
14. CONTRACTOR SHALL FIELD VERIFY THE EXISTING HYDRONIC PIPING AND CONTROL ARRANGEMENT PRIOR TO INSTALLATION OF THE NEW WSHP. VERIFY WHETHER THE EXISTING SYSTEM UTILIZES A 2-WAY OR 3-WAY CONTROL VALVE AND COORDINATE THE NEW WSHP CONTROLS ACCORDINGLY. NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING.

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1 SCALE: 3/8" = 1'-0"

MECHANICAL FLOOR PLAN

THIRDLOVE

MECHANICAL FLOOR PLAN

M100

THIRDLOVE

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

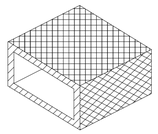


FIG. A

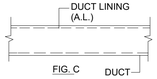


FIG. C

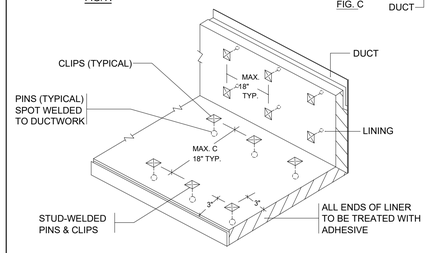
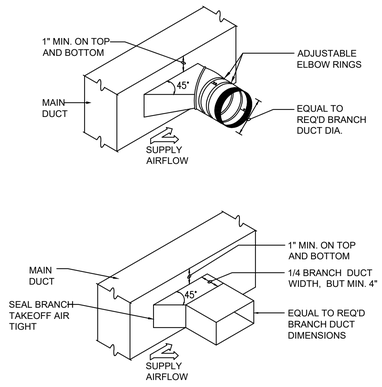
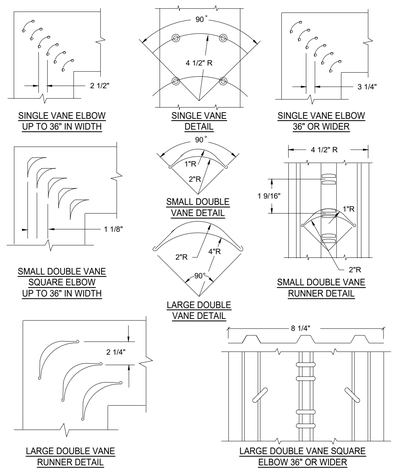


FIG. B

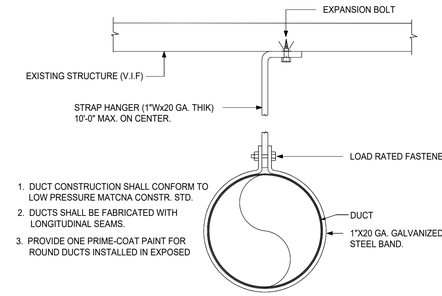
1 | SCALE N.T.S. | ACOUSTIAL TREATMENT DUCT LINING



2 | SCALE N.T.S. | BRANCH TAKE-OFF FITTING DETAIL

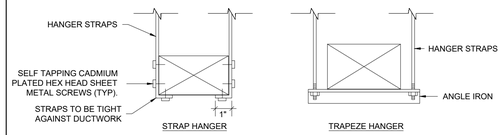


3 | SCALE N.T.S. | LOW VELOCITY DUCTWORK ELBOWS



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

4 | SCALE N.T.S. | ROUND DUCT HANGING DETAILS



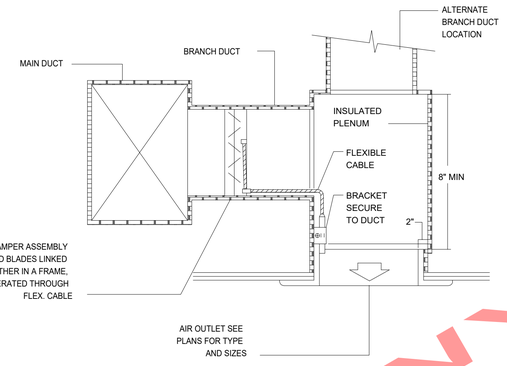
NOTE:
NO POP RIVETS ALLOWED, USE SELF-TAPPING SHEETMETAL SCREWS ONLY.

HANGER SIZES*

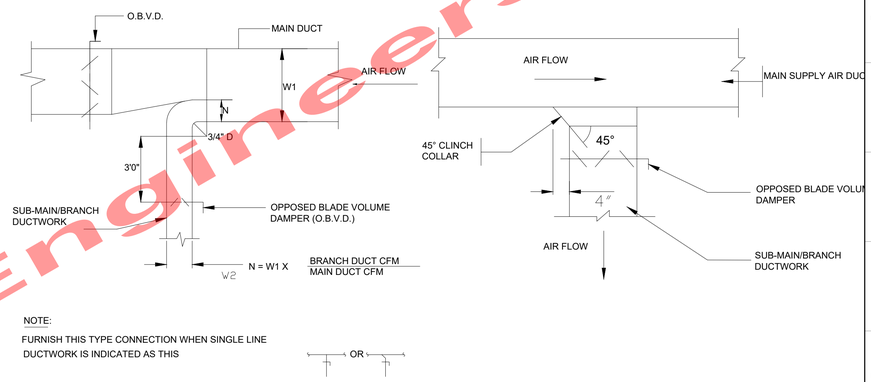
MAX. SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x18" GAUGE STRAP	NONE REQUIRED	10'-0"
36"	1/4" ROD	1-1/2"x1-1/2"x1/8"	8'-0"
48"	1/4" ROD	2"x2"x1/8"	8'-0"
60"	5/16" ROD	2"x2"x1/8"	8'-0"
84"	3/8" ROD	2"x2"x1/8"	8'-0"

* FOR RECTANGULAR DUCTS

5 | SCALE N.T.S. | DUCT HANGING DETAILS

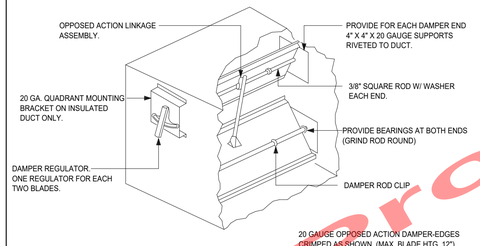


6 | SCALE N.T.S. | STANDARD LINEAR DIFFUSER DETAIL



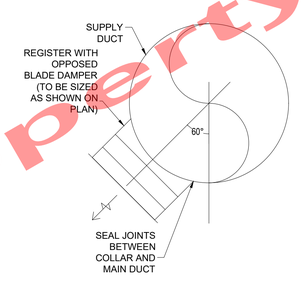
NOTE:
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS

7 | SCALE N.T.S. | SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION

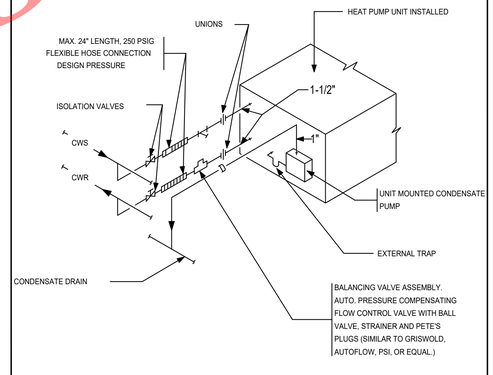


NOTE : 1. FOR DUCTS OVER 29" WIDE AND/OR OVER 12" HIGH.

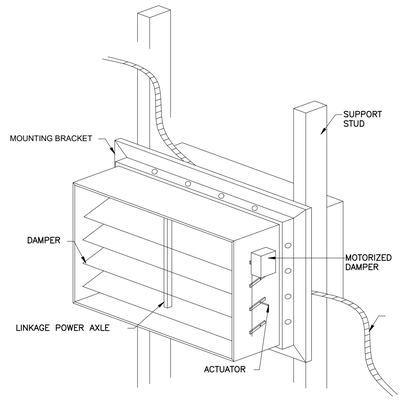
8 | SCALE N.T.S. | LOW PRESSURE BALANCING DAMPER



9 | SCALE N.T.S. | ANGLED GRILLE DETAILS



10 | SCALE N.T.S. | WATER SOURCE HEAT PUMP PIPING DETAILS

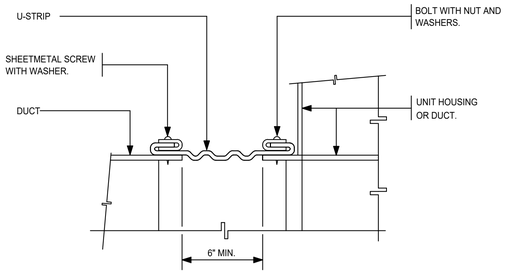


11 | SCALE N.T.S. | MOTORIZED DAMPER DETAILS

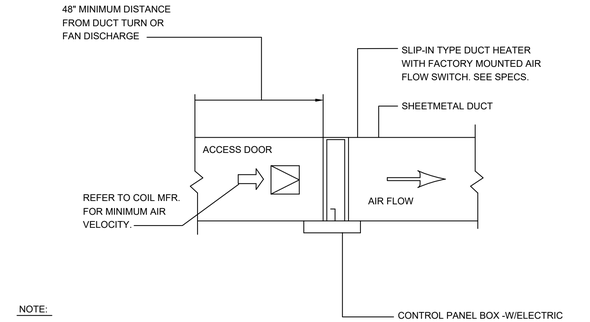
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MECHANICAL DETAILS (01 OF 02)

M200



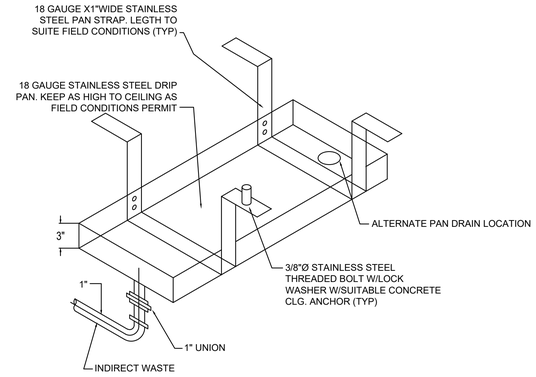
1	SCALE N.T.S.	FLEXIBLE CONNECTION (DUCT-EQUIPMENT)



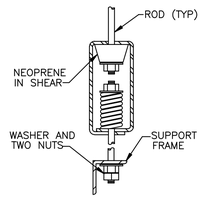
NOTE:

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.

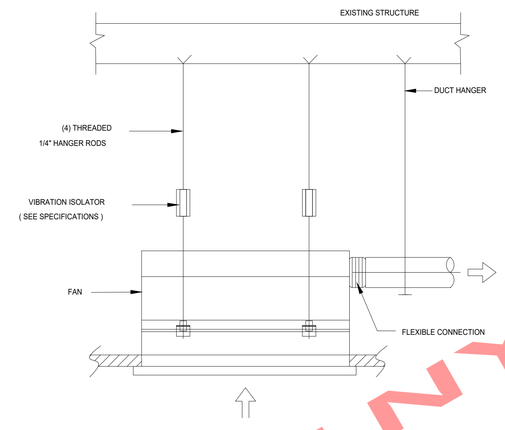
2	SCALE N.T.S.	ELECTRICAL DUCT HEATER



3	SCALE N.T.S.	DRIP PAN DETAIL



4	SCALE N.T.S.	VIBRATION ISOLATOR



4	SCALE N.T.S.	CEILING FAN HANGING SUPPORT DETAIL

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WATER SOURCE HEAT PUMP UNIT SCHEDULE

UNIT ID	MANUFACTURER	EFFICIENCY (EER)	MODEL	AREA SERVED	NOMINAL TONS	SUPPLY FAN			COOLING							ELECTRICAL			REFRIGERANT	APPROX.WEIGHT LBS
						TOTAL	OUTSIDE	ESP	TOTAL	SENSIBLE	AMBIENT	ENTERING	EWT	LWT	RATED	VOLTS/PH/Hz	MCA(A)	MOCP(A)		
						CFM	AIR CFM	IN OF WC	MBH	MBH	DB (°F)	DB / WB(°F)	(°F)	(°F)	GPM					
WSHP-1(N)	TRANE	15.9	GEHK0484	SEE PLAN	4	1600	300	0.7	48.8	39.03	94.5	78.91/65.53	88	103.24	8	460/3/60	12	15	R-454B	400

REMARKS :

1) PROVIDE 2" MERV 8 FILTER AT RETURN OF WSHP.
2) SUPPLY CFM BASED ON HIGH CFM.
3) PROVIDE MOUNTING BRACKET AND ALL ASSOCIATED ACCESSORIES.
4) UNIT TO BE INSTALLED WITH SECONDARY DRAIN PAN AS WELL AS WATER BUG SENSOR TO SHUT DOWN CORRESPONDING EQUIPMENT AND TO NOTIFY THE OPERATOR/OWNER IN EVENT OF WATER LEAKAGE.
5) UNIT RETURN AND DISCHARGE CONFIGURATION SHALL BE AS PER APPROVED DUCTTING LAYOUT ONLY. ANY DISCREPACNCIES FOUND, CONTRACTOR TO INFORM ARCHITECT/EOR IMMEDIATELY.
6) EXISTING WATER PIPING SHALL BE PROPERLY FLUSHED PRIOR TO CONNECTING NEW WSHP.
7) ALL WSHP TO BE INSTALLED WITH VIBRATION ISOLATOR (RESILENTLY SUPPORTED) TO MINIMIZE SOUND AND VIBRATION TO SPACE.
8) CONTRACTOR TO ENSURE UNIT IS RECEIVING CONDENSER WATER AS PER AMOUNT MENTIONED IN THE TABLE ABOVE. CONTRACTOR TO CONSIDER ALL THE WATER-SIDE PRESSURE DROPS IN UNIT. IF THERE IS NO ENOUGH GPM AVAILABLE FROM THE MAIN INCOMING WATER LINES, INFORM ENGINEER IMMEDIATELY (BEFORE BID). IF EXISTING WATER LINES DO NOT HAVE ENOUGH STATIC, INFORM TO ENGINEER.
9) PROVIDE UNIT MOUNTED DISCONNECT SWITCH AND SINGLE POINT CONNECTION.
10) HEAT PUMPS UNIT MUST BE FULLY ACCESSIBLE FOR SERVICE.
11) PROVIDE STRAINERS FOR CONDENSER WATER AT EACH WSHP.
12) LOCK-OUT HEAT PUMP HEATING MODE-UNIT IS TO BE COOLING ONLY. INTERLOCK T-STAT CONTROL FOR DUCT HEATER HEAT CONTROL.
13) MECHANICAL CONTRACTOR TO COORDINATE WITH STRUCTURAL ENGINEERS/CONTRACTOR FOR STRUCTURAL SUPPORT & INSTALLATION OF WSHP UNITS.

VENTILATION CALCULATION AS PER 2024 INTERNATIONAL MECHANICAL CODE (IMC 2024)

SL NO	ROOM NAME	AREA	OCCUPANCY AS PER 2024 IMC /1000SQ.FT.	OCCUPANY AS 2024 IMC	FINAL OCCUPANCY	CFM/SQ.FT	CFM/PERSON	CALCULATED OA CFM	REQUIRED OA WITH 0.8 EFFECTIVENESS	PROVIDED OA CFM	PROVIDED EXHAUST CFM
1	DISPLAY FLOOR	307	15	5	5	0.12	7.5	75	94	95	-
2	PARLOR & DRESSING ROOM	563	15	9	9	0.12	7.5	136	170	170	-
3	BACK OF HOUSE	225	0	0	0	0.12	0	27	34	35	-
4	TOILET	50	-	-	-	-	-	-	-	-	75
TOTAL		1145	-	-	14	-	-	238	298	300	75

BUILDING AIR BALANCE

UNIT	SUPPLY AIR	OUTSIDE AIR	RETURN AIR	EXHAUST AIR
WSHP-1(N)	1600	300	1300	-
EF-1(N)	-	-	-	75 CFM
TOTAL:	1600 CFM	300 CFM	1300 CFM	75 CFM
BUILDING PRESSURE:		**225 CFM**		**POSITIVE**

NOTE: CONTRACTOR SHALL FIELD VERIFY THE OUTSIDE AIR SUPPLIED TO THE TENANT SPACE BY THE EXISTING LANDLORD OA SYSTEM.

FAN SCHEDULE

TAG	MANUFACTURER	MODEL	FAN PERFORMANCE			ELECTRICAL DATA						WEIGHT LBS	INTERLOCK
			CFM	ESP	FAN RPM	FLA	MCA	MOP	VOLTS	PHASE	HZ		
EF-1(N)	GREENHECK	SP-B110	75	0.5	950	1.15	1.4	15	115	1	60	20	LIGHT SWITCH

NOTES:

1. PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT.
2. COORDINATE EXACT POWER REQUIREMENT WITH ELECTRICAL CONTRACTOR.
3. FOR EF-1(N) PROVIDE VIBRATION ISOLATORS. FAN SHALL BE MOUNTED W/SUPPORT FRAMING BY OTHERS. PROVIDE FLEXIBLE CONNECTION AT DUCT CONNECTION TO FAN.
4. ALL DIRECT DRIVE FANS TO HAVE ECM MOTORS.
5. PROVIDE FAN WITH A BACKDRAFT DAMPER, AND SPEED CONTROLLER FOR BALANCING PURPOSE.

AIR TERMINAL SCHEDULE

TAG	MANUFACTURER	MODEL	TYPE	CFM RANGE	NECK SIZE	NOMINAL FACE SIZE
SG-1	TITUS	S300FL	SUPPLY GRILLE	0-300	-	16"X6"

NOTES:

1) REFER ARCHITECTURAL DRAWINGS FOR CEILING TYPE.
2) COORDINATE COLOR/FINISH WITH ARCHITECT.
3) PROVIDE OPPOSED BLADE DAMPER/VOLUME DAMPER AT EACH AIR TERMINAL FOR AIR BALANCING. PROVIDE CABE OPERATED DAMPER IN INACCESSIBLE CEILINGS.
4) MAXIMUM NOISE CRITERION RATING < 25 DBA.

EDH SCHEDULE

ELECTRIC DUCT HEATER SCHEDULE								BASIS OF DESIGN: GREENHECK		
UNIT TAG	LOCATION	DUCT HEATER DIMENSIONS	ELECTRICAL					MODEL	HEATER TYPE	REMARKS
		DUCT SIZE	kW	V	PH		HZ			
EDH-1 (N)	SEE PLAN	DIA. 24"	13.8	460	3		60	IDHE	DIRECT	INTERLOCK WITH DUCT MOUNTED THERMOSTAT

NOTES:

1. INSTALL ELECTRIC DUCT HEATER AS PER MANUFACTURER'S RECOMMENDATION.
2. PROVIDE REMOTE T-STAT AND WIRE TO DUCT HEATER.
3. PROVIDE SCR CONTROLLER, DISCONNECT SWITCH, VAPOR BARRIER, DUST TIGHT BOX, AUTOMATIC THERMAL CUTOUT, AIR FLOW SWITCH & FAN INTERLOCK SWITCH.

LINEAR DIFFUSERS SCHEDULE

SUPPLY AND RETURN AIR LINEAR DIFFUSERS(LDS-1 & LDR-1)
TITUS, MODEL OR EQUIVALENT FL-20-HT, 2.0" SLOT, 1 SLOT, MAXIMUM 75 CFM/LF, NC-25.
TRIM, TAPE AND SPACKLE BY G.C. COORDINATE FINISH AND BORDER TYPE WITH ARCHITECT.
PLENUM BOXES:
LDS-1 (SUPPLY): HVAC CONTRACTOR TO PROVIDE CUSTOM PLENUM BOX OR MATCHING PREFABRICATED TITUS PLENUM BOX WITH 8" INLET AND 1/2" A.L. HVAC CONTRACTOR SHALL COORDINATE WITH LIGHTING TROUGH CONSTRUCTION FOR PLENUM BOX CONNECTIONS.
LDR-1 (RETURN): NO PLENUM BOX REQUIRED UNLESS NOTED OTHERWISE. RETURN AIR GRILLE SHALL BE OPEN TO THE CEILING RETURN AIR PLENUM FOR NON-DUCTED FREE RETURN AIR APPLICATIONS.

NOTES:

1) VERIFY EXACT LENGTH OF LINEAR DIFFUSER WITH LATEST ARCHITECTURAL AND HVAC DRAWINGS.
2) PROVIDE CORD OPERATED BALANCING DAMPER FOR INACCESSIBLE CEILINGS.
3) PROVIDE SUPPLY AIR PLENUM BOXES WITH INTERNAL PRESSURE VANES.
4)RETURN AIR GRILLES (LDR-1) SHALL BE INSTALLED TO ALLOW UNOBSTRUCTED AIRFLOW INTO THE CEILING RETURN AIR PLENUM.
4)CONTRACTOR SHALL VERIFY THAT THE CEILING PLENUM IS APPROVED FOR USE AS A RETURN AIR PLENUM PRIOR TO INSTALLATION.
6) COORDINATE FINAL LOCATIONS OF ALL LINEAR DIFFUSERS AND RETURN AIR GRILLES WITH ARCHITECTURAL, STRUCTURAL, LIGHTING, FIRE PROTECTION, AND OTHER CEILING-MOUNTED ELEMENTS.

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THIRDLOVE

MECHANICAL SCHEDULE
M300

SPRINKLER GENERAL NOTES

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2022 AND ALL LOCAL AUTHORITIES.
2. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
3. ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE IF CEILING IS PROVIDED.
4. 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.
5. THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (2) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
6. 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.
7. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
8. G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
9. 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.
10. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
11. G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY BUILDING INSPECTOR AND FIRE MARSHALL IN CONJUNCTION WITH CHANGES TO EXISTING SPRINKLER SYSTEM.
12. REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
13. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
14. 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.
15. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
16. 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.
17. FOR SPRINKLER WORK DONE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2022, HYDROSTATIC TESTS IN ACCORDANCE WITH REFERENCE STANDARD NFPA 13-2022, AS MODIFIED FOR NASHVILLE, TENNESSEE ARE NECESSARY.
18. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
19. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
20. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
21. PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA.
22. 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.
23. 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.

SPRINKLER DRAWING LIST

SP001 SPRINKLER SYMBOLS, ABBREVIATIONS & SPECIFICATIONS

SP100 SPRINKLER PLAN

SP200 SPRINKLER DETAILS

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.

PROTECTION AREA OF SPRINKLER HEADS

LIGHT HAZARD : 225 SQ. FT.
ORDINARY HAZARD : 130 SQ. FT.

GENERAL NOTES:
1. FOR SPRINKLER WORK ONLY.
2. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.

DESIGN CRITERIA SUMMARY

PROJECT DESIGNED BY HYDRAULIC CALCULATION AND NFPA13.

BUILDING DEPARTMENT SPRINKLER NOTES

1. THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE TENNESSEE BUILDING CODE 2024 (IBC 2024), SECTION 903.
2. ONLY APPROVED MATERIALS SHALL BE USED AS PER TENNESSEE BUILDING CODE 2024, SECTION 104.9.
3. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO TENNESSEE BUILDING CODE 2024, SECTION 903.3.5.
4. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER NFPA 13-2022 CHAPTER 6 SECTION 6.4.2.
5. THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDANCE WITH TENNESSEE BUILDING CODE 2024, SECTION 903.2.
6. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER WITH TENNESSEE BUILDING CODE 2024, SECTION 903.
7. STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER NFPA 13-2022 SECTION 16.2.7 (REQUIRED FOR EACH TEMPERATURE RATING).
8. SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH TENNESSEE BUILDING CODE 2024, SECTION 907.
9. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER TENNESSEE BUILDING CODE 2024, SECTION 903.3.
10. ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
11. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION TENNESSEE BUILDING CODE 2024, SECTION 714.
12. THERE IS NO HIGH PILED STORAGE AS DEFINED IN TENNESSEE BUILDING CODE 2024, SECTION 3201.
13. DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE AS PER NFPA 13-2022 SECTION 9.4.2.5.
14. 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.
15. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY NFPA 13-2022 , SECTION 7.6.
16. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER NFPA 13-2022 SECTION 16.8.5
17. ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
18. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER NFPA-13-2022 SECTION 16.9.1.
19. 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 NFPA-13-2022 SECTION 17.
20. TEMPERATURE RATING SHALL COMPLY WITH NFPA-13-2022 SECTION 9.4.2.
21. 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER NFPA-13-2022 SECTION 9.5.6
22. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
23. 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.
24. WET SPRINKLER SYSTEM SUBJECTED TO FREEZING SHOULD COMPLY WITH NFPA 13-2022 SEC. 8.6.
25. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS PER TENNESSEE BUILDING CODE 2024, SECTION 904.4.

SPRINKLER LEGENDS AND ABBREVIATIONS

●(N)	NEW CONCEALED PENDENT SPRINKLER HEAD
⦿(N)	NEW UPRIGHT SPRINKLER HEAD

HAZARD CLASSIFICATION AND DESIGN DENSITY

OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.10 GPM/SQ. FT.
OCCUPANCY:	ORDINARY HAZARD
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.

SCOPE OF WORK

1. FOR AUTOMATIC SPRINKLER WORK. THE SPRINKLER SYSTEM IS DESIGNED AS PER NFPA 13.
2. SCOPE IS FOR GROUND FLOOR THIRDLOVE FITOUT SPACE.

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 CODE.

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 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 CITY BUILDING CODE, N.F.P.A. STANDARD 13-2022, NASHVILLE FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.
2. PROVIDE COMPLETE NEW SPRINKLER SYSTEM CONNECTING TO EXISTING SPRINKLER SYSTEM ALARM CHECK VALVE ASSEMBLY.
3. 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.
4. PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH NASHVILLE, TENNESSEE BUILDING CODE OR LOCAL AHJ. BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND SUBMITTALS

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

A. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA 13-2022, AND TENNESSEE BUILDING CODE 2024.

B. ADD APPROPRIATE HOSE ALLOWANCE.

C. THE SPRINKLER CONTRACTOR SHALL OBTAIN THE LATEST FIRE PUMP TEST AT THE SITE TO VERIFY THE AVAILABLE WATER SUPPLY.

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 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 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 IN ACCORDANCE WITH NFPA 13. PIPE SHALL BE UL/FM APPROVED.

B. STEEL PIPE SHALL BE BETHLEHEM STEEL CO., ALLIED TUBE, BERGER INDUSTRIES OR APPROVED.

C. AS PER NFPA 13, PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN SECTION 16.3.

D. AS PER NFPA 13, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.4.1. FITTING SHALL BE UL/FM APPROVED. CONTRACTOR.

E. NONMETALLIC PIPES & FITTINGS USED IN MULTIPURPOSE PIPING SYSTEMS NOT EQUIPPED WITH A FIRE DEPARTMENT CONNECTION SHALL BE DESIGNED TO WITHSTAND A WORKING PRESSURE OF NOT LESS THAN 130PSI AT 120°F.

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 CUTTING AND PATCHING

1. 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. FOR REPLACEMENT OF THE WORK REMOVED, MATCH EXISTING IN NATURE, CONSTRUCTION AND FINISH.
3. MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH COVERED BY THE WORK. REMOVE ALL SURPLUS MATERIALS, TOOLS ETC. AND LEAVE PREMISES CLEAN.

2.05 FIRE STOPPING

INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED DIRECTIONS AND PER FIRE TESTED DESIGNS THAT HAVE BEEN ACCEPTED BY THE APPROPRIATE CODE AUTHORITY HAVING JURISDICTION.

2.06 PHASING

PHASING SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR. SPRINKLER INSTALLATION SHALL BE PHASED IN A MANNER WHICH WILL ALLOW FULL OCCUPANCY OF THE EXISTING FACILITY WHILE THE INSTALLATION IS IN PROGRESS.

2.06 ALTERNATES/SUBSTITUTIONS

CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY CONTRACTOR PROPOSED SUBSTITUTIONS OF THE MATERIALS OR METHODS OF INSTALLATION FROM THAT SPECIFIED. THESE ALTERATIONS SHALL BE LISTED ON THE PROPOSAL AS CONTRACTOR ALTERNATIVE.

2.07 LEAK DAMAGE

THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY LOSS OR DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, IT'S CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT, BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC. OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 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 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.

2.09 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.

2.10 AS-BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (155 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 TYCO SPRINKLER CO., INC. MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

1. SPRINKLER HEADS IN FINISHED CEILINGS WITH CONCEALED PIPING SHALL BE SAME AS EXISTING SPRINKLER MODEL.
2. CONCEALED SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3531.
3. UPRIGHT SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3121.
4. PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13.
5. SPRINKLER EMERGENCY CABINETS SHALL BE OF TYCO SPRINKLER CO., INC. OR APPROVED EQUAL, UL AND FM APPROVED.
6. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.
7. CABINET SHALL CONTAIN A MINIMUM OF 6 SPRINKLER HEADS OF EACH TYPE EMPLOYED.

2.12 PRESSURE GAUGE

A. ASHCROFT SERIES 1079, OR APPROVED OTHER, 4-1/2" DIAMETER, 0-300 P.S.I. RANGE, 5 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

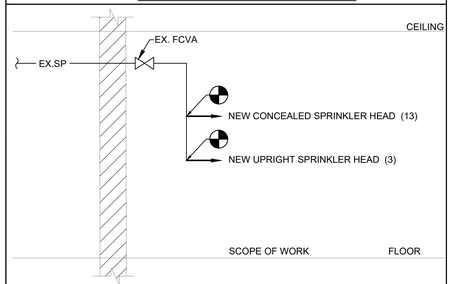
A. PIPING

3. 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.
4. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.
5. PIPE SHALL BE REMOVED BY REAMING.
6. 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.

SPRINKLER RISER DIAGRAM



SPRINKLER SCHEDULE

SYMBOL	NAME	COVERAGE	AREA	METAL	TEMPERATURE (°F)	RESPONSE	K-FACTOR	NPT	MFG	MODEL#	APPROVALS
●(N)	CONCEALED PENDENT	STANDARD	LH/OH CEILING	BRASS	155	QUICK	5.6	½"	TYCO	SERIES RFII TY3531	FM APPROVED
⦿(N)	UPRIGHT	STANDARD	LH/OH CEILING	BRASS	155	QUICK	5.6	½"	TYCO	SERIES FRL TY3121	FM APPROVED

NOTE: 1. COORDINATE ALL SPRINKLER COLOR FINISHES WITH ARCHITECT.

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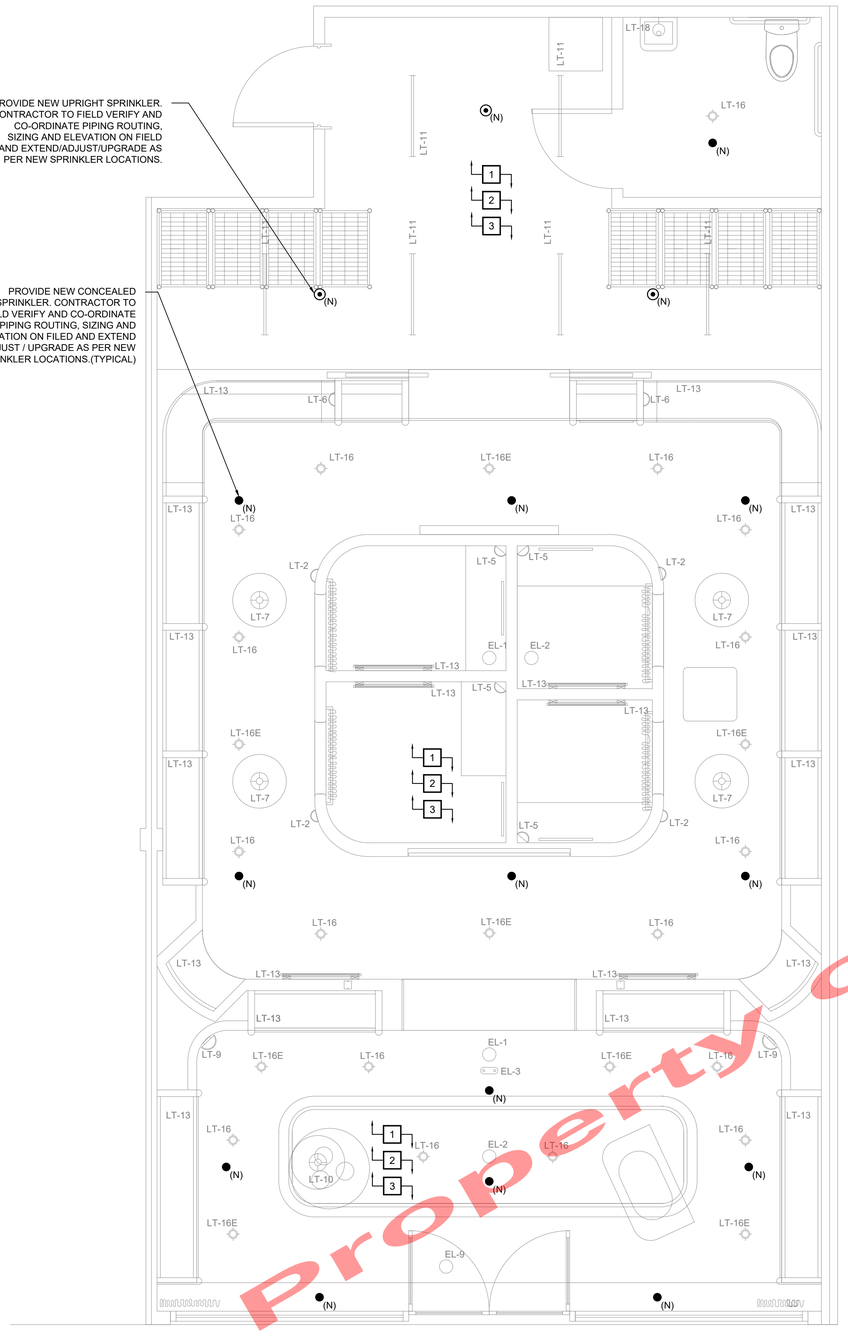
1 SPRINKLER NOTES, SYMBOLS AND SPECIFICATIONS
N.T.S

THIRDLOVE

SPRINKLER SYMBOLS, ABBREVIATIONS & SPECIFICATIONS

SP001

THIRDLOVE



GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY TO INSTALL ALL SPRINKLER HEADS TO BE MAX. 12" FROM CEILING.
2. ALL NEW SPRINKLER HEADS LOCATION TO BE COORDINATED WITH LIGHTING AND DIFFUSERS TO AVOID CONFLICT.
3. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED OTHER TRADES.
4. ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS OR DETAILS, OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF THIS CONTRACT.
5. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, SPRINKLER DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWING INDICATE SIZE, CONNECTION POINTS, AND ROUTED OF PIPES. IT IS NOT INTENDED, HOWEVER, THAT ALL OFFSETS, RISES AND DROPS ARE SHOWN. PROVIDE PIPING AS REQUIRED TO FIT STRUCTURE, AVOID OBSTRUCTIONS, AND RETAIN CLEARANCES, HEADROOM OPENINGS AND PASSAGEWAYS.
   ALL PENDANT SPRINKLERS MUST BE SPACED AS FOLLOWS -

   MAXIMUM 7.5' FROM WALL
   MAXIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 15'.
   MINIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 6'.
6. COVERAGE AREA PER SPRINKLER SHALL BE MAX. 225 SQ.FT FOR LIGHT HAZARD AND 130 SQ.FT. FOR ORDINARY HAZARD.
7. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
8. AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
9. FOR SPRINKLER WORK ONLY.
10. ALL BRANCH TAKE-OFF FOR EACH SPRINKLER TO BE MIN. 1".
11. CONTRACTOR SHALL COORDINATE WITH THE BASE BUILDING ENGINEER TO VERIFY THE MINIMUM DESIGN CRITERIA APPLICABLE TO THE BUILDING.

KEYED NOTES:

1. CONTRACTOR TO PROVIDE NEW SPRINKLER PIPING AS PER SPRINKLER HEAD LOCATION SHOWN ON THE PLAN. CONTRACTOR TO MAKE SURE SPRINKLER PIPE SIZING AS PER NFPA 13.
2. CONTRACTOR SHALL ENSURE THERE ARE NO COMBUSTIBLE MATERIALS IN THE ABOVE CEILING SPACE TO PREVENT THE NEED FOR SPRINKLERS IN THAT AREA AS PER NFPA 13.
3. CONTRACTOR TO FIELD VERIFY EXISTING SPRINKLER PIPING AVAILABILITY. CONNECT RELOCATED SPRINKLERS WITH THE EXISTING SPRINKLER PIPES. CONTRACTOR SHALL VERIFY IN THE FIELD CONDITION OF EXISTING SPRINKLERS AND PIPES AND PROVIDE NEW IF REQUIRED FOR THE NEW LOCATION OF SPRINKLERS.

CONTRACTOR'S NOTE:

THE SPRINKLER SUBCONTRACTOR IS REQUIRED TO VISIT THE SITE DURING BIDDING AND VERIFY LOCATION(S) OF WHERE SPRINKLER PIPING/EQUIPMENT IS INDICATED TO BE PLACED, THEIR ROUTE(S) AND POSSIBLE INTERSECTION(S) WITH OTHER EQUIPMENT / WORK / STRUCTURE (I.E. STEEL BEAMS, ETC.) TO BE INSTALLED AND/OR "EXISTING TO REMAIN". THIS SUBCONTRACTOR IS TO VERIFY HEIGHTS "TO BE INSTALLED" TO MAINTAIN DESIGNED CEILING HEIGHTS AND HEAD ROOM. ANY DISCREPANCIES BETWEEN DESIGNED AND ACTUAL TO BE TOLD TO THE GENERAL CONTRACTOR AND INDICATED ON THE BID FORM.

HAZARD CLASSIFICATION AND DESIGN DENSITY

OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.10 GPM/SQ. FT.
OCCUPANCY:	ORDINARY HAZARD
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.

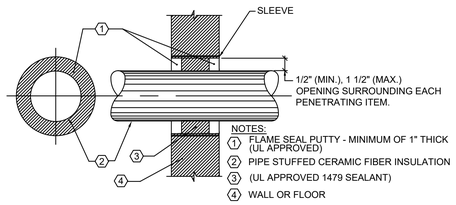
SPRINKLER HEAD COUNT

NEW CONCEALED SPRINKLER HEAD	13
NEW UPRIGHT SPRINKLER HEAD	03
TOTAL SPRINKLER	16

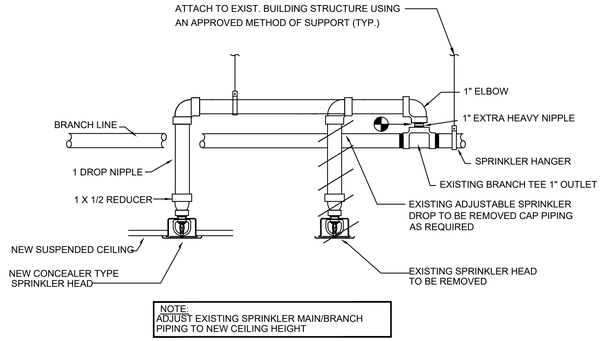
1 SPRINKLER PLAN
SCALE: 3/8"=1'-0"

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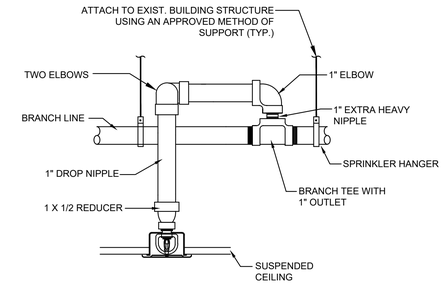
SPRINKLER PLAN
SP100



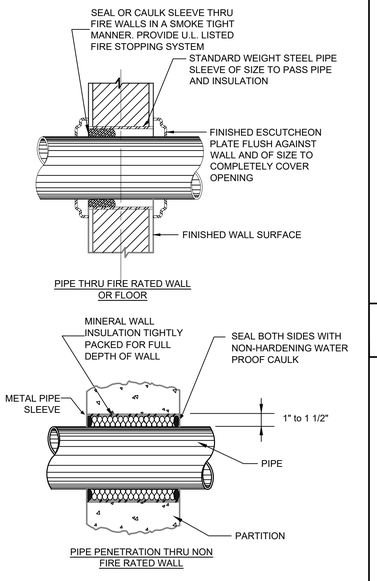
1	SCALE	FIRE STOPPING DETAIL FOR FIRE/ SMOKE RATED WALL/FLOOR OPENINGS
	N.T.S.	



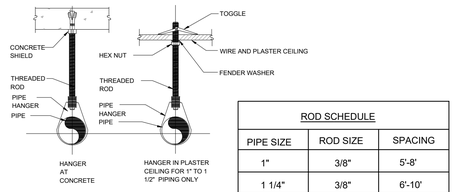
2	SCALE	SPRINKLER HEAD RELOCATION IN SUSPENDED CEILING DETAIL
	N.T.S.	



3	SCALE	NEW CONCEALED PENDENT SPRINKLER HEAD DETAIL
	N.T.S.	



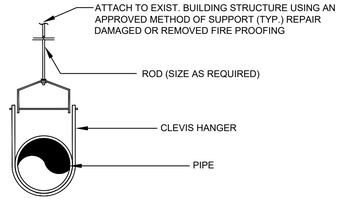
4	SCALE	PIPE SLEEVE THRU WALL SECTION
	N.T.S.	



ROD SCHEDULE

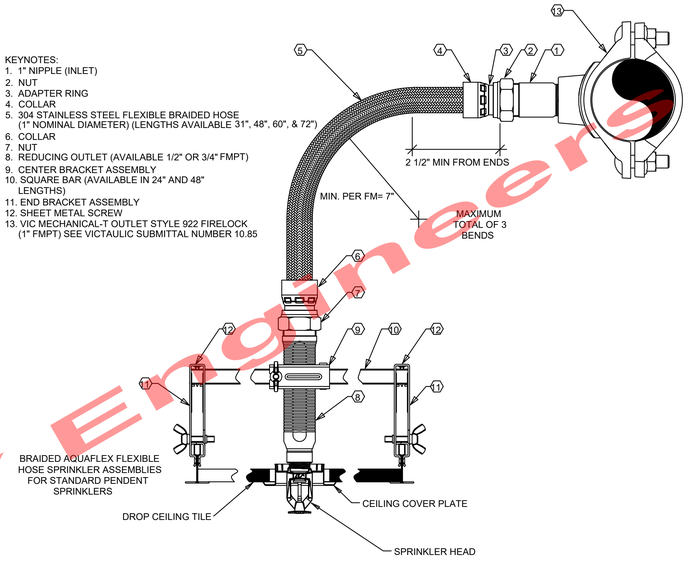
PIPE SIZE	ROD SIZE	SPACING
1"	3/8"	5'-8'
1 1/4"	3/8"	6'-10'
1 1/2"	3/8"	8'-10'
2"	3/8"	10'-12'

5	SCALE	TYPICAL HANGER DETAIL AND ROD SCHEDULE
	N.T.S.	

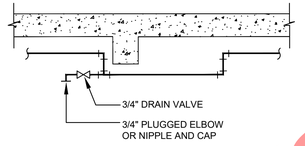


6	SCALE	HANGER DETAILS TYPICAL
	N.T.S.	

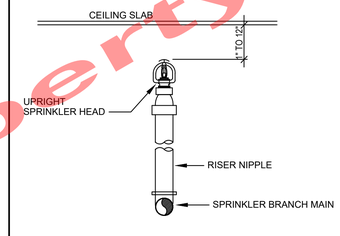
KEYNOTES:
1. 1" NIPPLE (INLET)
2. NUT
3. ADAPTER RING
4. COLLAR
5. 304 STAINLESS STEEL FLEXIBLE BRAIDED HOSE (1" NOMINAL DIAMETER) (LENGTHS AVAILABLE 31", 48", 60", & 72")
6. COLLAR
7. NUT
8. REDUCING OUTLET (AVAILABLE 1/2" OR 3/4" FMPT)
9. CENTER BRACKET ASSEMBLY
10. SQUARE BAR (AVAILABLE IN 24" AND 48" LENGTHS)
11. END BRACKET ASSEMBLY
12. SHEET METAL SCREW
13. VIC MECHANICAL-T OUTLET STYLE 922 FIRELOCK (1" FMPT) SEE VICTAULIC SUBMITTAL NUMBER 10.85



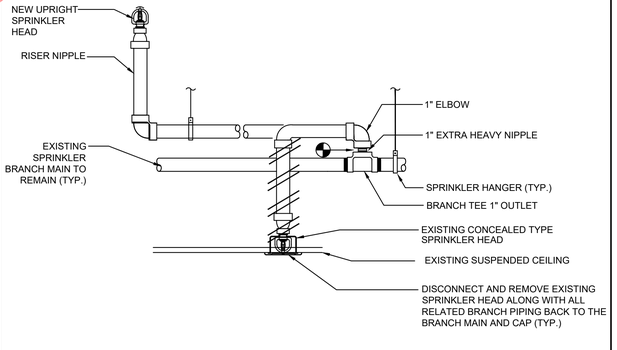
7	SCALE	FLEXIBLE HOSE SPRINKLER ASSEMBLY DETAIL
	N.T.S.	



8	SCALE	TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS
	N.T.S.	



9	SCALE	UPRIGHT SPRINKLER HEAD DETAIL
	N.T.S.	



10	SCALE	CONCEALED HEAD TO UPRIGHT HEAD RELOCATION DETAIL
	N.T.S.	

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SPRINKLER DETAILS

SP200

ELECTRICAL SYMBOLS LIST

SYMBOL	DESCRIPTION
	POWER AND TELECOMMUNICATION
	CIRCUIT HOMERUN TO PANEL
	SINGLE RECEPTACLE OUTLET - WALL MOUNTED
	DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
AC	ABOVE COUNTER DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
	G.F.C.I. DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
AC	ABOVE COUNTER G.F.C.I. DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
IG	ISOLATED GROUND DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
	WALL MOUNTED QUAD RECEPTACLE OUTLET
	SPECIAL PURPOSE RECEPTACLE - WALL MOUNTED (SEE EQUIPMENT SCHEDULE OR NOTES)
	125 / 250V NEMA RECEPTACLE - WALL MOUNTED (SEE EQUIPMENT SCHEDULE OR NOTES)
	DUPLEX RECEPTACLE - FLOOR MOUNTED
	QUAD RECEPTACLE - FLOOR MOUNTED
	DUPLEX RECEPTACLE - CEILING MOUNTED
J J	JUNCTION BOX
	FLOOR BOX DEVICES / POKE-THRU DEVICES WITH POWER AND TELE/DATA PER PLANS (SEE DRAWINGS FOR MODEL)
	TELEPHONE / DATA COMBINATION OUTLET - WALL MOUNTED
	TELEPHONE OUTLET - WALL MOUNTED
	DATA OUTLET - WALL MOUNTED
	PANELBOARD WALL/RECESSED MOUNTED (277/480 VOLT, 120/208Y VOLT AS NOTED ON PLANS)
	TRANSFORMER (RATING AND CONFIGURATIONS AS NOTED ON PLANS)
	DISCONNECT SWITCH (FRAME/POLES/FUSE-IF REQUIRED)
M	MOTOR LOAD
S_M	MOTOR RATED TOGGLE SWITCH
	LIGHTING & CONTROLS
	LIGHT FIXTURE HALF SHADED FIXTURE OR"EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY (REFER LIGHTING FIXTURE SCHEDULE ON LIGHTING PLAN)
	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S) (REFER LIGHTING FIXTURE SCHEDULE ON LIGHTING PLAN)
$\$_{\#}$	LIGHTING SWITCH U.O.N. "A" DENOTES LIGHTING FIXTURE CONTROLLED - WALL MOUNTED (48" AFF) UNO '#' 'BLANK' - S.P.S.T. SWITCH '3' - THREE WAY SWITCH '4' - FOUR WAY SWITCH 'D' - DIMMER SWITCH 'T' - TIMER SWITCH 'OV' - OVERRIDE SWITCH
$\$_{OS}$	MOTION DETECTOR SWITCH W/ MANUAL OVERRIDE WALL MOUNTED.
OS	MOTION DETECTOR - CEILING MOUNTED
TC	TIME CLOCK
C	LIGHTING CONTACTORS

NOTES:

1. NOT ALL SYMBOLS MAY APPEAR ON DRAWINGS.
2. COORDINATE EXACT LOCATION AND SPECIFIC MOUNTING HEIGHT OF OUTLETS WITH ARCHITECT.
3. MOUNTING HEIGHTS SHALL BE 18" AFF FOR THE OUTLETS, 42" AFF FOR THE LIGHTING SWITCHES OR AS INDICATED IN THE LEGEND UNLESS, OTHERWISE NOTED ON THE PLANS.

ELECTRICAL DEMOLITION NOTES:

A. PRIOR TO SUBMITTING A PROPOSAL, THE ELECTRICAL CONTRACTOR SHALL VISIT AND CAREFULLY INVESTIGATE THE EXISTING AREAS AFFECTED BY THIS WORK IN ORDER TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. THE CONTRACTOR SHALL BASE HIS BID ACCORDINGLY. SUBMISSION OF PROPOSAL WILL BE CONSTRUED AS CONFIRMATION THAT A THOROUGH EXAMINATION OF THE SITE HAS BEEN MADE BY THE CONTRACTOR. LATER CLAIMS FOR UNFORESEEN EXTRA LABOR, EQUIPMENT OR MATERIALS WILL NOT BE ACCEPTED IF SAID CLAIM(S) COULD HAVE BEEN FORESEEN DURING THE SITE INVESTIGATION.

B. CONTRACTOR'S WORK SHALL COMPLY WITH ALL SAFETY RELATED WORK PRACTICES DETAILED IN THE LATEST EDITION OF NFPA 70E.

C. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL ELECTRICAL FACILITIES RENDERED INACTIVE OR OBSOLETE BY THE SCOPE OF THE ARCHITECTURAL, MECHANICAL AND PLUMBING DEMOLITION WORK. THE CONTRACTOR IS ALERTED THAT SUCH ELECTRICAL FACILITIES MAY NOT BE EXPLICITLY SHOWN ON THE ELECTRICAL DEMOLITION DRAWINGS. THE CONTRACTOR SHALL VISIT THE SITE, REFER TO THE ARCHITECTURAL, MECHANICAL,ELECTRICAL AND PLUMBING DRAWINGS, AND COORDINATE WITH THE GENERAL, MECHANICAL, AND PLUMBING CONTRACTOR(S), AND INCLUDE ALL ELECTRICAL DEMOLITION WORK INCLUDING,HOWEVER NOT NECESSARILY LIMITED TO, THE COMPLETE REMOVAL OF ALL ELECTRICAL AND CONTROL WIRES, CONDUIT,JUNCTION BOXES, ENCLOSURE AND RACEWAY SUPPORT SYSTEMS, DISCONNECT SWITCHES, CIRCUIT BREAKERS ETC. INTENDED FOR REMOVAL AS REQUIRED TO COMPLETE THE WORK.

D. THE INTENT OF THE DEMOLITION WORK REQUIREMENTS INCLUDE ALL LABOR AND EQUIPMENT REQUIRED TO ATTAIN THE FINAL CONDITIONS AS SHOWN ON THE ARCHITECTURAL, MECHANICAL, TEMPERATURE CONTROL, AND PLUMBING, STRUCTURAL, ELECTRICAL NEW WORK PLANS. THE CONTRACTOR SHALL REVIEW ALL OTHER TRADE DRAWINGS, AND COORDINATE WILL ALL OTHER TRADE CONTRACTORS, AND BASE HIS BID ACCORDINGLY.

E. REFER TO THE ARCHITECTURAL DEMOLITION PLANS FOR SCOPE RELATED TO THE LAYOUT OF WALLS, CEILINGS, ETC... TO BE REMOVED.

F. COORDINATE ALL POWER SHUT-DOWNS AND FIRE ALARM SYSTEM MODIFICATIONS, WHERE APPLICABLE, WITH THE ONSITE FACILITIES MANAGEMENT TEAM.

G. REMOVE ALL EXISTING DEVICES (RECEPTACLES, DATA OUTLETS, FIRE ALARM DEVICES, SWITCHES, EMPTY JUNCTION BOXES, ETC...) ASSOCIATED WITH ANY WALLS OR OTHER PARTITIONS IDENTIFIED TO BE REMOVED. REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE IN THE APPROPRIATE PANEL SCHEDULES.

H. REMOVE ALL EXISTING DEVICES (RECEPTACLES, DATA OUTLETS, FIRE ALARM DEVICES, SWITCHES, EMPTY JUNCTION BOXES, ETC...) ON EXISTING TO REMAIN WALLS, BOTH INTERIOR AND PERIMETER, UNLESS SPECIFICALLY SHOWN AS EXISTING TO REMAIN ON SHEETS ELSEWHERE IN THIS SET. REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE" IN THE APPROPRIATE PANEL SCHEDULES.

I. NO BLANK COVERPLATES SHALL BE ALLOWED. REFER TO ARCHITECTURAL SET FOR DETAILS CONCERNING PATCHING OF EXISTING OPENINGS BASED ON THE PARTITION TYPE IT CURRENTLY RESIDES.

J. REMOVE ALL EXISTING LIGHT FIXTURES AND EXIT SIGNS FROM THE SCOPE OF WORK AREA UNLESS SPECIFICALLY IDENTIFIED AS 'EXISTING TO REMAIN' (E) OR 'EXISTING TO BE RELOCATED (R). REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEWLY SPARED BREAKERS AS "SPARE" IN THE APPROPRIATE PANEL SCHEDULES.

K. FOR ANY MECHANICAL EQUIPMENT BEING REMOVED, REMOVE ALL WIRING, CONDUIT, AND ASSOCIATED DISCONNECTS BACK TO ITS SOURCE. COORDINATE EXACT UNITS BEING REMOVED WITH DIVISION 22 & 23. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE IN THE APPROPRIATE PANEL SCHEDULES.

L. REFER TO THE FIRE ALARM FLOOR PLANS FOR EXACT FIRE ALARMS DEVICES TO EITHER BE REMOVED, RELOCATED, OR LEFT IN PLACE.

M. REMOVE ALL ABANDONED EMPTY CONDUIT AND JUNCTION BOXES FROM THE CEILING SPACE.

N. ANY EXISTING FLOOR BOX, ABANDONED CONDUIT PENETRATION, ETC... THROUGH THE SLAB WITHIN THE SCOPE OF WORK AREA NOT SPECIFICALLY IDENTIFIED TO REMAIN SHALL BE REMOVED AND THE FLOOR PATCHED TO A LIKE NEW CONDITION.

O. COORDINATE WITH THE TENANT AND/OR LANDLORD EXACTLY WHICH DEVICES AND EQUIPMENT ARE REQUIRED TO BE TURNED OVER TO THE OWNER ONCE REMOVED.

P. PROVIDE ADEQUATE PROTECTION OF ANY EXISTING TO REMAIN DEVICE OR FIXTURE SUCH THAT IT IS NOT DAMAGED DURING THE CONSTRUCTION PROCESS.

ABBREVIATION:

A	AMPERE	MCA	MINIMUM CIRCUIT AMPS
AC	ABOVE COUNTER	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
AFG	ABOVE FINISHED GRADE	MCCB	MOLDED CASE CIRCUIT BREAKER
AHJ	AUTHORITY HAVING JURISDICTION	MCP	MOTOR CIRCUIT PROTECTOR
AFC	AVAILABLE FAULT CURRENT	MDP	MAIN DISTRIBUTION PANEL
AIC	AMPERE INTERRUPTING CAPACITY	MFS	MAXIMUM FUSE SIZE
ATS	AUTOMATIC TRANSFER SWITCH	MLO	MAIN LUG ONLY
BC	BELOW CEILING	MOCP	MAXIMUM OVERCURRENT PROTECTION
BLDG	BUILDING	MTD	MOUNTED
BRKR	BREAKER	MTS	MANUAL TRANSFER SWITCH
C	CONDUIT (PROVIDE PULL STRING IN ALL EMPTY CONDUIT)	N	NEW
		N.C.	NORMALLY CLOSED
CL	CURRENT LIMITER	N.O.	NORMALLY OPEN
CKT	CIRCUIT	NTS	NOT TO SCALE
CLG	CEILING.	OCPD	OVERCURRENT PROTECTION DEVICE
CT	CURRENT TRANSFORMER	OH	OVERHEAD
CU	COPPER	P	POLE
CTR	CENTER	PH	PHASE
E	EXISTING	PNL	PANEL
EA	EACH	PWR	POWER
EC	ELECTRICAL CONTRACTOR	R	RELOCATED
EGC	EQUIPMENT GROUNDING CONDUCTOR	REC	RECEPTACLE
EOL	ELECTRONIC OVERLOAD	RM	ROOM
FBO	FURNISHED BY OTHERS	SW	SWITCH
FDR	FEEDER	SWBR	SWITCHBOARD
FLA	FULL LOAD AMPS	SWGR	SWITCHGEAR
FPMR	FUSE PER MANUFACTURER'S RECOMMENDATION	TBB	TELECOM BACKBOARD
		TELE	TELEPHONE
GEC	GROUNDING ELECTRODE CONDUCTOR	TYP	TYPICAL
GFI	GROUND FAULT INTERRUPTER	UG	UNDERGROUND
GND	GROUND	UNO	UNLESS NOTED OTHERWISE
GRS	GALVANIZED RIGID STEEL	UPS	UNINTERRUPTIBLE POWER SUPPLY
HOA	HAND-OFF-AUTO	V	VOLT
IG	ISOLATED GROUND	VIF	VERIFY IN FIELD
JB	JUNCTION BOX	W/	WITH
KVA	KILOVOLT-AMPERE	W	WIRE
KW	KILOWATT	WP	WEATHER PROOF
L.S.I.G.	LONG, SHORT, INSTANTANEOUS, GROUND FAULT TRIP	XFMR	TRANSFORMER
		N.I.C.	NOT IN CONSTRUCTION
LTG	LIGHTING		

GENERAL ELECTRICAL NOTES:

A. ALL WORK THIS DIVISION SHALL COMPLY WITH ALL LOCAL BUILDING CODES, LAWS, REGULATIONS, ORDINANCES, AND THE REQUIREMENTS OF THE 2024 INTERNATIONAL BUILDING CODE.

B. ALL WORK SHALL COMPLY WITH BASE BUILDING SPECIFICATIONS. OBTAIN A COPY OF SPECIFICATIONS FROM BUILDING MANAGER IF NECESSARY.

C. THE CONTRACTOR SHALL KEEP A RECORD OF THE CHANGES WHICH ARE IN CONFLICT WITH THESE DRAWINGS AND SPECIFICATIONS. AT THE COMPLETION OF HIS WORK HE SHALL SUBMIT "AS BUILT PRINTS TO THE OWNER.

D. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING AND DETAIL. ALL WORK SHALL BE INSTALLED SO THAT JUNCTION BOXES AND COMPONENTS WILL BE ACCESSIBLE FOR SERVICE.

E. ALL SYSTEMS, EQUIPMENT, COMPONENTS, WORK, ETC. PROVIDED UNDER THIS DIVISION SHALL BE COVERED BY A ONE YEAR GUARANTEE STARTING AT THE TIME OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. ANY DEFECTS IN THE WORK, SYSTEMS, EQUIPMENT, OR COMPONENTS FOUND DURING THIS YEAR SHALL BE CORRECTED AT NO CHARGE. THE GUARANTEE SHALL INCLUDE PROVIDING ALL NECESSARY CUTTING, PATCHWORK, REPAINTING, ETC. TO MAKE THE WORK COMPLETE AND NEW.

F. ALL CONDUIT MUST BE CONCEALED IN THE WALLS OR ABOVE THE CEILING UNLESS OTHERWISE NOTED. MINIMUM CONDUIT SIZE IS 1/2".

G. ALL CONDUCTORS SHALL BE COPPER WITH TYPE "THW" OR "THHN" INSULATION AND THE MINIMUM WIRE SIZE SHALL BE #12 A.W.G. WITH A 167 DEGREE TEMPERATURE RATING.

H. ALL WORK MUST BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER ACCORDING TO GENERALLY ACCEPTED PRINCIPALS OF FIRST CLASS WORKMANSHIP.

I. FASTEN ALL RECESSED LIGHTING FIXTURES TO STRUCTURE OR GRID PER N.E.C. 410.36.

J. RECESSED INCANDESCENT FIXTURES SHALL BE SUPPORTED IN COMPLIANCE WITH N.E.C. 410.36.

K. ALL PENETRATIONS THRU RATED WALLS, FLOORS AND CEILINGS SHALL BE FIRE STOPPED PER N.E.C. 300.21.

L. PROVIDE ALL GROUNDING AND BONDING AS REQUIRED BY N.E.C.

M. DEVICE MOUNTING HEIGHTS ARE TO BE MEASURED TO THE DEVICE CENTERLINE.

N. ALL SWITCHES FOR FANS, LIGHTS, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL SHARE A MULTI-GANG COVER PLATE AS REQUIRED.

O. ALL CONDUIT SHALL BE 1/2" EMT WITH 2#12,1#12G AWG CONDUCTORS UNLESS OTHERWISE NOTED.

P. PROVIDE #12AWG GND. FOR ALL MECHANICAL EQUIPMENT UNLESS SHOWN OTHERWISE. ALL EQUIPMENT SHALL BE GROUNDED AT THE PANEL WHICH FEEDS THE EQUIPMENT.

Q. COORDINATE RECEPTACLE NEMA TYPE AND VOLTAGE WITH COPIERS AND EQUIPMENT.

R. PROVIDE A NEW DIRECTORY FOR ALL PANELS. CORRECTLY LABEL ALL CIRCUITS, SPARES AND SPACES IN ACCORDANCE WITH N.E.C. 408.4(A).

S. PROVIDE A SEPARATE GREEN, INSULATED, #12AWG EQUIPMENT GROUNDING CONDUCTOR ROUTED WITH THE BRANCH CIRCUIT HOMERUN CONDUCTORS.

T. WHERE WORK BY THE GENERAL CONTRACTOR (WALL REMOVAL, NEW OR RELOCATED WALL OPENING, ETC.) RESULTS IN THE REMOVAL, RELOCATION OF REFEEDING OF ELECTRICAL DEVICES OR LIGHTING FIXTURES, THE ELEC. CONTRACTOR SHALL DISCONNECT OR RECONNECT AS REQUIRED ALL ACTIVE DEVICES REMAINING ON THAT CIRCUIT SYSTEM.

U. DEVICE BOXES IN RATED WALLS SHALL MEET STANDARD BUILDING CODE SECTION 706.4.

V. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE LABEL LISTED BY A APPROVED THIRD PARTY TESTING AGENCY.

W. DEDICATED RECEPTACLES TO RECEIVE VISUAL DESIGNATION.

X. OUTLET BOX SHALL NOT BE MOUNTED BACK TO BACK.

Y. BLANK FACEPLATES ARE NOT ALLOWED, U.N.O.. ANY EXISTING OUTLET OR TELE/DATA LOCATION NOT USED OR SHOWN WITHIN THE SCOPE OF WORK IN THESE PLANS SHOULD BE REMOVED, PATCHED, AND REPAIRED.

Z. MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS PER N.E.C. 210.4(B).

AA. MULTIWIRE BRANCH CIRCUITS SUPPLYING POWER TO PERMANENTLY CONNECTED FREESTANDING PARTITIONS SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANEL BOARD WHERE THE BRANCH CIRCUIT ORIGINATES PER N.E.C. 605.8.

AB. ARC-FLASH HAZARD WARNING SHALL BE PROVIDED ON ALL EQUIPMENT IN AFFECTED ELECTRICAL ROOMS PER N.E.C. 110.16.

AC. PROVIDE PLASTIC NAMEPLATE ON ALL PANELS (NEW AND EXISTING) INDICATING PANEL NAME AND SOURCE PER N.E.C 408.4(B).

AD. ALL WIRING TERMINATIONS ARE ASSUMED TO BE 75DEG C RATED, UNLESS NOTED OTHERWISE. ALL WIRING UNDER 100A IS BASED ON A 60DEG C TERMINATION.

APPLICABLE CODES:

ALL WORK SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS AND DRAWINGS, AND SHALL SATISFY ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS OF ALL GOVERNING BODIES INVOLVED. APPLICABLE CODES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

1. BUILDING: 2024 INTERNATIONAL BUILDING CODE.
2. ELECTRICAL: 2023 NATIONAL ELECTRICAL CODE.
3. ENERGY: 2024 INTERNATIONAL ENERGY CONSERVATION CODE.

STOP AND READ:

THE CONTRACTOR AND SUB-CONTRACTORS **SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED**.

ELECTRICAL DRAWING LIST

E001	ELECTRICAL SYMBOLS LIST, ABBREVIATIONS & GENERAL NOTES
E002	ELECTRICAL SPECIFICATIONS
E004	ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULE
E100	LIGHTING PLAN
E200	ELECTRICAL POWER PLAN

Property of NY Engineers

THIRDLOVE

ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES

E001

THIRDLOVE

A. SCOPE OF WORK

1. FURNISH ALL LABOR AND MATERIAL TO COMPLETE ALL ELECTRICAL WORK SHOWN ON THE DRAWINGS
2. THE LISTING OF ARTICLE OR MATERIAL, OPERATION OR METHOD, REQUIRES THAT THE CONTRACTOR SHALL PROVIDE AND INSTALL, UNLESS NOTED TO BE SUPPLIED BY OTHERS, EACH ITEM LISTED OF QUALITY OR SUBJECT TO QUALIFICATION NOTED. EACH OPERATION SHALL BE PERFORMED ACCORDING TO STANDARD PRACTICE, MANUFACTURER'S INSTRUCTIONS AND CONDITIONS STATED, PROVIDING, THEREFORE, ALL NECESSARY LABOR, EQUIPMENT AND INCIDENTALS.
3. THE ELECTRICAL CONTRACTOR SHALL SCHEDULE HIS WORK TO CONFORM TO THE PROGRESS OF THE OTHER TRADES AND CONTRACTORS EMPLOYED ON THIS PROJECT. THE PRINCIPAL ITEMS OF WORK INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
   a. PROVIDE ELECTRICAL SERVICE INCLUDING CONDUITS, CABLES, TERMINATIONS, METERING EQUIPMENT, ETC. IN ACCORDANCE WITH UTILITY REQUIREMENTS AND DRAWINGS
   b. PROVIDE LIGHTING FIXTURE AS SHOWN ON DRAWINGS. THIS SHALL INCLUDE ALL ASSOCIATED LAMPS, BOXES, SWITCHES, CONTRACTORS, AND BRANCH CIRCUIT WIRING AND MATERIALS REQUIRED FOR A COMPLETE INSTALLATION.
   c. PROVIDE DEVICES (RECEPTACLES, SWITCHES, ETC.) AS SHOWN ON DRAWINGS. THIS SHALL INCLUDE ALL ASSOCIATED BRANCH CIRCUIT WIRING AND MATERIAL REQUIRED FOR A COMPLETE INSTALLATION.
   d. POWER FEEDERS TO HVAC EQUIPMENT INCLUDING RTU'S, EXHAUST FANS, INCLUDING DISCONNECT SWITCHES, CONTROL DEVICES, STARTERS FOR MOTORS NOT PROVIDED BY OTHERS. (CONSULT HVAC CONTRACTOR FOR PHASE AND VOLTAGE OF EQUIPMENT AND ACTUAL NAMEPLATE RATINGS FOR FEEDER MINIMUM CONDUCTOR AMPACITIES (MCA) AND MAXIMUM OVERCURRENT PROTECTION DEVICES (MOCPD) INFORMATION PRIOR TO INSTALLATION AND PRIOR TO PURCHASING ELECTRICAL EQUIPMENT.
   e. PROVIDE POWER DISTRIBUTION EQUIPMENT (PANELBOARDS, DISCONNECT SWITCH3S, CONTRACTORS, MOTOR STARTERS, ENCLOSED CIRCUIT BREAKERS, ETC.) AS SHOWN ON DRAWINGS OR AS REQUIRED FOR THIS PROJECT. THIS SHALL INCLUDE ALL WIRING AND ASSOCIATED MATERIAL REQUIRED FOR A COMPLETE INSTALLATION.
   f. PROVIDE FIRE ALARM SYSTEM ONLY IF REQUIRED BY FIRE MARSHALL OR LOCAL CODES. (E.C. MUST VERIFY REQUIREMENTS PRIOR TO BIDDING)
   g. PROVIDE TESTING OF ALL ELECTRICAL EQUIPMENT.
   h. PROVIDE TIMERS, PHOTOCELLS, AND CONTRACTORS FOR CONTROL OF EXTERIOR LIGHTING AND HVAC EQUIPMENT.
   i. PROVIDE BACKBOXES, PULLSTATIONS, AND CONDUIT TO ABOVE ACCESSIBLE CEILING FOR ALL VOICE AND COMMUNICATIONS OUTLETS.
   j. PROVIDE CONDUIT, JUNCTION BOXES, 115 VOLT FEEDERS, BACKBOXES, ETC. AS REQUIRED FOR SECURITY SYSTEM CAMERAS, ELECTRICAL DOOR STRIKES, ALARMS, REQUEST TO EXIT, MOTION SENSORS, CARD READERS, KEYPADS AND MAIN SECURITY PANEL AS PER DRAWINGS OR AS DIRECTED BY OWNER OR ARCHITECT. VERIFY EXTENT OF WORK PRIOR TO SUBMITTING BIDS.
   k. PROVIDE EMERGENCY LIGHTING, BATTERY UNITES, REMOTE HEADS, EXIT LIGHTS AND ALL ASSOCIATED WIRING, CONDUIT, JUNCTION BOXES, CONNECTIONS, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION.

B. INSTALLATION

1. THIS CONTRACTOR SHALL VISIT THE JOB SITE TO DETERMINE PRESENT CONDITIONS AND VERIFY EXACT LOCATION OF EQUIPMENT AND LOCAL REGULATIONS PRIOR TO SUBMITTING BID.
2. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AN PATCHING OF EXISTING WALLS CEILINGS AND FLOOR SLABS NECESSARY FOR THE COMPLETION OF HIS WORK.
3. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL WORK AND MATERIAL SHOWN SHALL BE PERFORMED, FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
4. THE COMPLETE INSTALLATION SHALL BE DONE IN STRICT ACCORDANCE WITH ALL APPLICABLE NATIONAL, STATE AND CITY CODES, RULES, REGULATIONS AND ORDINANCE. ALSO MAKE APPLICATION FOR AN ND PAY ALL FEES IN CONNECTION WITH ANY PERMITS, TESTS AND INSPECTIONS THAT MAY BE REQUIRED.
5. GUARANTEE ALL WORKMANSHIP, MATERIAL AND PERFORMANCE FOR PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE.
6. THE EXACT MOUNTING LOCATIONS OF APPARATUS, DEVICES, EQUIPMENT AND CONDUITS SHALL BE ASCERTAINED FROM OWNER OR THEIR REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY, SHOULD THE CONTRACTOR FAIL TO ASCERTAIN SUCH LOCATIONS, THE WORK SHALL BE CHANGED AT THIS OWN EXPENSE WHEN SO ORDERED BY OWNER, THE OWNER RESERVES THE RIGHT TO MAKE MINOR CHANGES IN THE LOCATION OF CABLE, CONDUIT AND EQUIPMENT INSTALLED BY THIS CONTRACTOR UP TO THE TIME OF INSTALLATION, WITHOUT ADDITIONAL COST.
7. ALL CONDUCTORS SHALL BE COPPER, THHN INSULATION UNLESS OTHERWISE NOTED. ALL WIRING SHALL BE IN EMT OR MC CABLE RUN CONCEALED IN FINISHED AREAS AND NOT SUBJECT TO PHYSICAL DAMAGE. RUN EMT IN UNFINISHED CEILING AREAS.
8. RUN ALL CONDUIT CONCEALED IN BLOCK WALLS AND RECESS ALL DEVICES IN BIRCH WALLS TO THE EXTENT POSSIBLE AND/OR PRACTICAL.

C. DRAWINGS AND SPECIFICATIONS

1. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS OF EQUIPMENT AND PIPING. DIMENSIONS GIVEN ON THE PLANS SHALL BE VERIFIED IN THE FIELD. DRAWINGS MAY NOT BE SCALED TO OBTAIN EXACT DIMENSIONS.
2. THE EXACT LOCATIONS OF APPARATUS, FIXTURES, EQUIPMENT AND CONDUITS SHALL BE ASCERTAINED FROM THE OWNER OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY, SHOULD THE CONTRACTOR FAIL TO ASCERTAIN SUCH LOCATIONS, THE WORK SHALL BE CHANGED AT HIS OWN EXPENSE WHEN SO ORDERED BY THE OWNER.
3. THIS CONTRACTOR SHALL FURNISH SUCH LABOR AND MATERIALS AS HERE-IN-AFTER SPECIFIED AND AS REQUIRED TO COMPLETE ALL ELECTRICAL CONNECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS FOR ALL MECHANICAL AND PLUMBING EQUIPMENT AND OWNER'S EQUIPMENT AS SHOWN AND/OR SPECIFIED.

D. VISITING TO THE SITE

1. THE CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING HIS WORK, AND THE SUBMISSION OF HIS PROPOSAL SHALL BE CONSTRUED AS INDICATING SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM LACK OF SUCH KNOWLEDGE OF EXISTING CONDITIONS.

E. MATERIALS AND WORKMANSHIP

1. ALL WORK SHALL BE INSTALLED IN PRACTICAL AND WORKMANLIKE MANNER BY COMPETENT WORKMEN, SKILLED IN THEIR BRANCH OF THE TRADE.
2. UNLESS SPECIFICALLY SPECIFIED OR INDICATED ONT HE DRAWINGS TO THE CONTRARY, ALL MATERIALS SHALL BE NEW AND FREE FROM DEFECTS, AND SHALL BE THE BEST OF THEIR SEVERAL KINDS.
3. ALL MATERIALS SHALL MEET OR EXCEED STANDARDS SPECIFIED BY UL, NEMA, ANSI AND IEEE WHEREVER SUCH STANDARDS HAVE BEEN ESTABLISHED.
4. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND EXCESS MATERIALS ASSOCIATED WITH HIS WORK AND LEAVE THE WORK AREA CLEAN AT THE END OF EACH WORK DAY.
5. ALL ELECTRICAL EQUIPMENT AND MATERIAL SHALL BEAR THE UNDERWRITER'S LABORATORIES LABEL.

F. DEFINITIONS

1. "INSTALL" SHALL MEAN TO PLACE, FIX IN POSITION, SECURE, ANCHOR, ETC. INCLUDING NECESSARY APPURTENANCES AND LABOR SO THAT THE EQUIPMENT OR INSTALLATION WILL FUNCTION AS SPECIFIED AND INTENDED.
2. "FURNISH" SHALL MEAN TO PURCHASE AND SUPPLY EQUIPMENT OR COMPONENTS,
3. "PROVIDE" SHALL MEAN TO "FURNISH AND INSTALL".
4. "OR APPROVED EQUIVALENT" AND "OR EQUIVALENT" SHALL MEAN EQUIVALENT IN TYPE, DESIGN, QUALITY, ETC. AS DETERMINED BY THE OWNER AND APPROVED BY THE ENGINEER.

G. CODES, PERMITS, AND INSPECTIONS

1. INSTALL ALL WORK IN FULL ACCORDANCE WITH CODES, RULES, AND REGULATIONS OF MUNICIPAL, CITY, COUNTY, STATE AND PUBLIC UTILITY AND ALL OTHER AUTHORITIES HAVING JURISDICTION OVER THE PREMISES. THIS SHALL INCLUDE ALL DEPARTMENT OF INDUSTRIAL RELATIONS, OSHA AND THE REQUIREMENTS OF THE TENNESSEE ELECTRICAL CODES, AS INTERPRETED BY THE LOCAL INSPECTION DIVISION. ALL THESE CODES, RULES AND REGULATIONS ARE HEREBY INCORPORATED INTO THIS SPECIFICATION.
2. COMPLY WITH SPECIFICATION REQUIREMENTS WHICH ARE IN EXCESS OF CODE REQUIREMENTS AND NOT IN CONFLICT WITH SAME.
3. THE CONTRACTOR SHALL SECURE ALL PERMITS AND CERTIFICATED OR INSPECTION INCIDENTAL TO HIS WORK, REQUIRED BY THE FOREGOING AUTHORITIES. ALL SUCH CERTIFICATES SHALL BE DELIVERED TO THE OWNER IN DUPLICATE, BEFORE FINAL PAYMENT ON CONTRACT WILL BE ALLOWED. THE CONTRACTOR SHALL PAY ALL FEES, CHARGES AND OTHER EXPENSES IN CONNECTION THEREWITH.

H. LABELING AND NAMEPLATES

1. PERMANENTLY LABEL PANELBOARDS, TIME SWITCHES, CONTRACTORS AND SAFETY SWITCHES INDICATING EQUIPMENT OR PANELS AND AREAS WHICH THEY SERVE. LABEL ALL PULL AND JUNCTION BOXES SERVING MECHANICAL EQUIPMENT.
2. LIGHTING AND APPLIANCE PANELS SHALL BE LABELED AS SHOWN ON DRAWINGS.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL IDENTIFICATION FOR PULL OR JUNCTION BOXES FURNISHED BY HIM.
4. IDENTIFY AS TO USE ON FACE OF EQUIPMENT BY MEANS OF LAMINATED BLACK AND WHITE PHENOLIC LABEL WITH 1/2" LETTERS ENGRAVED THROUGH BLACK TO WHITE.

I. TESTS AND VOLTAGE RECORD

1. ELECTRICAL CONTRACTOR SHALL TEST ALL WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS. WHEN THE INSULATION RESISTANCE TEST SHALL INDICATE THE POSSIBILITY OF FAULTY INSULATION, THE CONTRACTOR SHALL LOCATED THE POINTS OF SUCH FAULT INSULATION AND HE SHALL PULL OUT THE CONDUCTOR AT FAULT, REPLACE SAME WITH NEW, AND DEMONSTRATE, BY FURTHER TEST THE ELIMINATION OF SUCH FAULT.
2. RECORD FEEDER LOAD CURRENTS AND LINE VOLTAGES MEASURED AT EACH PANELBOARD. ADJUST SINGLE PHASE LOAD CONNECTIONS TO BALANCE FEEDER LOADS WITH 10%. PROVIDE THE OWNER WITH A COMPLETE COPY OF ALL LOAD AND VOLTAGE RECORDS.

J. BRANCH CIRCUIT WIRING

1. PROVIDE A SYSTEM OF PANELS, CONDUITS, FITTING, BOXES, SUPPORTS AND ALL OTHER MISCELLANEOUS MATERIALS REQUIRED FOR EQUIPMENT INDICATED ON PLANS, COMPLETE AND READY FOR OPERATION BY THE OWNER.
2. HOME RUNS FROM 20A OUTLETS 125 FT. OR OVER AT 277 VOLTS, OR 60 FT. OR OVER AT 120 VOLTS SHALL BE #10.0 WIRE.
3. ALL FIXTURE AND BRANCH CIRCUIT WIRING CONNECTIONS OR SPLICES SHALL BE MADE IN JUNCTION AND OUTLET BOXES WITH U.L. LISTED PRESSURE TYPE CONNECTORS AND LISTED FOR 600 VOLTS (1,000 VOLTS WHEN ENCLOSED IN FIXTURE). IDEAL INDUSTRIES WING NUTS AND/OR WIRE NUTS OR APPROVED EQUIVALENT MAY BE USED FOR JOINTS IN WIRE OF #8 GAUGE OR LESS.

K. CONDUCTORS

1. SIZES OF CONDUCTORS FOR FEEDERS ARE GIVEN ON THE DRAWINGS, AND NO WIRE SMALLER THAN #12 GAUGE SHALL BE USED FOR BRANCH LIGHTING OR POWER CIRCUITS. ALL WIRING SHALL HAVE THE U.L. LABEL, AND BE OF 98% CONDUCTIVITY COPPER, ALUMINUM WIRE OR ALUMINUM CABLE IS NOT ACCEPTABLE UNLESS SPECIFICALLY SHOWN ON DRAWINGS.
2. THE GAUGE OF ALL WIRE SHALL BE IN ACCORDANCE WITH B & S STANDARD.
3. ALL WIRE AND CABLE FOR BRANCH LIGHTING OR SMALL POWER CIRCUITS SHALL HAVE "NEC: TYPE "THHN" 600 VOLT INSULATION,
4. WIRE AND CABLE ABOVE #8 GAUGE SHALL BE STRANDED TYPE "THHN" INSULATED 600 VOLTS.

L. CONDUIT AND CABLES

1. ALL CONDUIT SHALL BE RIGID, THREADED, METAL CONDUIT OR ELECTRICAL METALLIC TUBING (EMT) UNLESS OTHERWISE SPECIFICALLY STATED HEREIN.
2. CONDUIT AND EMT SHALL BE DELIVERED TO THE BUILDING IN 10 FOOT LENGTHS AND EACH LENGTH SHALL HAVE THE APPROVED UNDERWRITER'S LABORATORIES LABEL.
3. CONDUIT SHALL BE RUN CONCEALED IN ALL FINISHED AREAS OF THE BUILDING AND MAY BE RUN EXPOSED IN UNFINISHED AREAS AT CEILING OF JOIST LEVEL. RUN CONCEALED IN BLOCK WALLS THE EXTENT THAT IS PRACTICAL.
4. EMT CONNECTORS AND COUPLERS SHALL BE RAIN TIGHT COMPRESSION TYPE (OR SET-SCREW WHERE ACCEPTABLE TO OWNER AND LOCAL CODES) MADE OF STEEL AS MANUFACTURED BY THOMAS & BETTS, STEEL CITY OF APPLETON, BENDS AND OFFSETS SHALL BE MADE WITH A HICKEY OR POWER BENDER WITHOUT KINKING OR DESTROYING THE SMOOTH BORE OF THE CONDUIT. PARALLELED CONDUITS SHALL RUN STRAIGHT AND TRUE WITH OFFSETS UNIFORM AND SYMMETRICAL, CONDUIT TERMINALS AT BOXES AND CABINETS SHALL BE RIGIDLY SECURED WITH LOCKNUTS AND BUSHINGS AS REQUIRED BY THE TENNESSEE ELECTRICAL CODE. INSULATED BUSHINGS SHALL BE USED ON ALL CONDUIT 1-1/4" TRADE SIZE AND LARGER.
5. CONDUIT SHALL BE SECURELY FASTENED IN PLACE AT NO MORE THAN 10 FT. CENTERS, AND HANGER, SUPPORTS, OR FASTENINGS SHALL BE PROVIDED AT EACH CONDUIT ELBOW AND AT THE END OF EACH STRAIGHT RUN TERMINATING AT A BOX OR CABINET. CONDUIT SHALL NOT BE SUSPENDED FROM THE CEILING OR CEILING SUSPENSION WIRES.
6. HORIZONTAL AND VERTICAL CONDUIT RUNS SHALL BE SUPPORTED BY ONE-HOLE MALLEABLE STRAPS, OR THEIR APPROVED METAL DEVICE WITH SUITABLE BOLTS, OR BEAM CLAMPS FOR MOUNTING TO BUILDING STRUCTURE OR SPECIAL BRACKETS, CONDUIT SHALL BE SUPPORTED FROM STRUCTURAL STEEL OR JOIST AND INDEPENDENT OF OTHER PIPING. DO NOT SUPPORT CONDUIT FROM METAL ROOF DECK, OR ANY OTHER SUPPORT DEVICE OF ANOTHER TRADE.
7. NON-METALLIC SHEATHED CABLE (ROMEX) OR AC CABLE SHALL NOT BE USED. TYPE MC CABLE MAY BE USED ONLY WHEN CONCEALED IN FINISHED WALLS OR ABOVE CEILING AND WHEN NOT SUBJECT TO PHYSICAL DAMAGE UNLESS ITS USE IS NOT APPROVED ABBEY OWNER OR LOCAL CODES.
8. ONLY SHORT RUNS OF FLEXIBLE METAL CONDUIT NOT OVER 30" IN LENGTH SHALL BE USED FOR TERMINAL CONNECTIONS TO MOTORS AND OTHER VIBRATING EQUIPMENT, AND ALSO FOR ELECTRICAL EQUIPMENT WHERE IT IS NOT PRACTICAL TO MAKE FINAL CONNECTION WITH RIGID CONDUIT. FLEXIBLE CONDUIT EXPOSED TO WEATHER SHALL BE "SEALTITE" OR EQUIVALENT.
9. CONDUIT SYSTEM SHALL CONFORM TO ALL THE REQUIREMENTS OF THE TENNESSEE ELECTRICAL CODE AND LOCAL CODES.

M. GROUNDING

1. THIS CONTRACTOR SHALL PROVIDE, INSTALL AND CONNECT A COMPLETE SYSTEM OF GROUNDING FOR ALL EQUIPMENT AND STRUCTURES A GOOD MECHANICAL AND ELECTRICAL CONNECTION SHALL BE MADE WITH APPROVED GROUNDING CONNECTORS.
2. ELECTRICAL SYSTEM AND EQUIPMENT GROUNDS SHALL COMPLY WITH ALL LOCAL, STATE AND TENNESSEE CODES AND REGULATIONS.
3. PANELS, CONDUIT SYSTEMS MOTOR FRAMES, LIGHTING FIXTURES AND OTHER EQUIPMENT THAT ARE PART OF OF THIS INSTALLATION SHALL BE SECURELY GROUNDED BOTH MECHANICALLY AND ELECTRICALLY IN ACCORDANCE WITH ALL CODES.
4. MAIN GROUNDING SYSTEM (WHEN APPLICABLE) SHALL BE SIZED TO CONFORM WITH TABLE 250-66 OF TENNESSEE ELECTRIC CODE. PROVED CONDUIT TO PROTECT GROUND WIRE FROM DAMAGE TO ANY AREA 6 FEET ABOVE FLOOR

N. LIGHTING/APPLIANCE PANELBOARDS AND DISTRIBUTION PANELS

1. DISTRIBUTION PANELS SHALL BE SQUARE "D" CO., TYPE "ILINE" OR APPROVED EQUIVALENT G.E., SIEMENS, OR CUTLER HAMMER.
2. 480/277V PANELS SHALL BE SQUARE "D" CO. TYPE "NF" OR APPROVED EQUIVALENT BY G.E., SIEMENS, OR CUTLER HAMMER. BREAKERS SHALL BE BOLTED TO BUS TYPE, QUICK-MAKE, BREAK-BREAKERS, AND CAPABLE OF INTERCHANGING ONE, TWO OR THREE POLE UNITS. MULTIPLE UNITS SHALL BE COMMON TRIP. PROVIDE SPARE BREAKERS IN EACH PANEL AS SHOWN. ALL BUSSING SHALL BE 98% CONDUCTIVITY COPPER, ALUMINUM BUS, ALUMINUM CONDUCTORS OR ALUMINUM LUGS ARE NOT ACCEPTABLE.
3. 208/120V PANELS SHALL BE SQUARE "D" CO. TYPE "NQOD" OR APPROVED EQUIVALENT BY G.E., SIEMENS, OR CUTLER HAMMER WITH TYPE "QOB" BOLT-ON BRANCH BREAKERS ONLY.
4. SHORT CIRCUIT RATINGS OF NEW PANELS SHALL BE AS NOTED ON DRAWINGS, OR AS OTHERWISE DIRECTED BY LOCAL UTILITY COMPANY. UL TESTED AND CERTIFIED SERIES RATINGS ARE ACCEPTABLE WITH WRITTEN DOCUMENTATION SHOWING SERIES RATINGS BUT ONLY IF ACCEPTABLE TO OWNER OR LOCAL CODES.

O. GENERAL FOR ALL PANELS

1. METAL FRAMED CARDHOLDERS WITH TYPEWRITTEN CIRCUIT DIRECTORY MUST BE PROVIDED FOR EACH PANEL. DIRECTORY SHALL BE CLEAR AND DESIGNATION SHALL MATCH IDENTIFICATION ON EQUIPMENT. PANELBOARDS (POWER PANELS AND LIGHTING PANELS) SHALL BE WITH IDENTIFICATION LABELED ON SWITCH AND/OR PANEL DOOR. PROVIDE ENGRAVED LAMINATED PHENOLIC NAMEPLATE WITH 1/2" LETTERS.
2. ALL PANELS SAFETY SWITCHES, STARTERS AND IN GENERAL, ALL EQUIPMENT REQUIRING LUGS SHALL BE EQUIPPED WITH SOLDERLESS TYPE U.L. APPROVED LUGS.
3. PROVIDE ALL NECESSARY UNISTRUT, CHANNEL, BACKING AND SUPPORTS TO MOUNT PANELBOARDS SECURELY IN PLACE.
4. SCREW FASTENED HANDLE LOCK-ON DEVICES ARE REQUIRED ON CIRCUIT BREAKERS PROTECTING SERVICES TO THE FOLLOWING EQUIPMENT:
   a. EMERGENCY, EXIT, SECURITY AND NIGHT LIGHTS.
   b. HEATING AND COOLING CONTROL CIRCUITS.
   c. ALL TIME SWITCHES.

P. TOGGLE SWITCHES AND RECEPTACLES

1. SINGLE POLE 1221 AND THREE(3) WAY #1223- SWITCHES SHALL BE RATED 20 AMPERE, 277/120 VOLTS, COLOR TO BE BID AS WHITE (FINAL SELECTION BY ARCHITECT) HUBBELL OR EQUIVALENT. SWITCHES SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR TO CENTERLINE.
2. DUPLEX RECEPTACLES SHALL BE AS SPECIFIED ON DRAWINGS.

Q. DISCONNECT SWITCHES

1. AN APPROVED HORSEPOWER RATED, HEAVY DUTY, DISCONNECT SWITCH SHALL BE PROVIDED WITHIN SIGHT OF EACH MOTOR AND EACH HEATING UNIT. PROVIDE FUSED SWITCHES WHERE BRANCH CIRCUIT FUSES ARE NOT SIZED FOR OVERLOAD PROTECTION.
2. SWITCHES ON THE ROOF SHALL BE WEATHERPROOF MOUNTED ON UNISTRUT.
3. SWITCHES SHALL BE LABELED ON THEIR COVER IDENTIFYING THE EQUIPMENT TO BE PROTECTED.

R. MOTORS AND WIRING

1. FURNISH AND INSTALL DISCONNECT SWITCHES (EXCEPT WHERE SPECIFICALLY SPECIFIED BY OTHERS) AND RUN POWER CIRCUITS FROM THE POWER PANEL THROUGH DISCONNECT SWITCHES & CONTROL DEVICES TO MOTOR TERMINALS.
2. PROVIDE ALL STARTERS, CONTROLS AND PUSH BUTTON STATIONS ETC. NOT SUPPLIED BY MECHANICAL OR OTHER CONTRACTORS REQUIRED FOR THE PROPER AND INTENDED OPERATION OF MOTORS AND OR MOTORIZED EQUIPMENT SUPPLIED BY OTHERS.
   a. THE ABOVE ELECTRICAL EQUIPMENT SHALL BE MOUNTED SECURELY TO WALL OR FRAMES AND THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL NECESSARY BRACKETS, STRUCTURAL PIECES, EXPANSION BOLTS AND OTHER ACCESSORIES REQUIRED.
   b. WOODEN PLUGS SHALL NOT BE PERMITTED FOR ANCHORING.
   c. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER LUBRICATION OF ALL MOTORS.
3. REFER ALSO TO MECHANICAL SPECIFICATIONS FOR WORK BY MECHANICAL CONTRACTOR WHICH MAY RESULT IN ADDITIONAL WORK FOR THIS ELECTRICAL CONTRACTOR.
4. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL POWER WIRING AN CONNECTIONS TO ALL HVAC EQUIPMENT.
5. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING AND CONNECTIONS TO ALL HVAC EQUIPMENT NOT PROVIDED BY OTHERS.
6. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL CONTROL EQUIPMENT (STARTERS, CONTRACTORS ETC.) NOT SUPPLIED BY HVAC CONTRACTOR BUT REQUIRED FOR THE INTENDED OPERATION OF HVAC EQUIPMENT
7. THE ELECTRICAL CONTRACTOR SHALL PROVIDE DISCONNECT SWITCHES FOR ALL HVAC EQUIPMENT NOT SUPPLIED BY OTHERS.
8. REFER TO MECHANICAL SPECIFICATION AND DRAWINGS FOR ADDITIONAL ELECTRICAL WORK AND COORDINATION.

S. FUSES

1. REPLACE ALL FUSES BLOWN DURING CONSTRUCTION AND TESTING AN PROVIDE A COMPLETE ST OF FUSES IN ALL FUSE HOLDERS, SWITCHES, PANELS AND ALL OTHER DEVICES REQUIRING FUSES.
2. FUSES SHALL BE CURRENT LIMITING, DUAL ELEMENT TIME DELAY TYPE PROVIDE OWNER WITH ONE SET OF SPARE FUSES FOR EACH FUSED SWITCH.

T. GUARANTEE

1. IN ADDITION TO WARRANTIES OF EQUIPMENT BY MANUFACTURER OF SAME, THIS CONTRACTOR SHALL ALSO GUARANTEE EQUIPMENT PROVIDED BY HIM AND SHALL BEHELD FOR A PERIOD OF ONE (1) YEAR TO MAKE GOOD ANY DEFECTS IN MATERIALS AND WORKMANSHIP OCCURRING DURING THIS PERIOD, AT HIS SOLE EXPENSE. THE ONE (1) YEAR PERIOD SHALL START FROM DATE OF FINAL ACCEPTANCE BY OWNER.

U. FIELD DRAWING

1. KEEP ONE (1) SET OF WORKING DRAWINGS AND SHIP DRAWINGS AT THE JOB SITE FOR SOLE PURPOSE OF RECORDING ALL CHANGES MADE DURING CONSTRUCTION, AFTER COMPLETION OF THE WORK AND BEFORE REQUESTING FINAL PAYMENT, THE ABOVE MENTIONED DRAWINGS SHALL BE DELIVERED TO THE OWNER.

V. SUBSTITUTION

1. WHENEVER ALTERNATE MATERIALS ARE SPECIFIED, IT IS WITH THE UNDERSTANDING THAT ANY ONE OF THE MATERIALS IS ACCEPTABLE TO THE OWNER. MATERIALS AND EQUIPMENT OTHER THAN THOSE SPECIFIED ARE NOT TO BE ASSUMED TO BE SATISFACTORY SUBSTITUTES WITHOUT PRIOR APPROVAL OF THE OWNER.

W. SHOP DRAWINGS

1. ONLY MANDATORY SHOP DRAWINGS AS LIMITED.OUTLINE HEREIN SHALL BE SUBMITTED.
2. NO WORK SHALL BE INSTALLED UNTIL THE MANDATORY SHOP DRAWINGS HAVE BEEN APPROVED BY THE ARCHTITECT/ENGINEER,. THE ARCHITECT/ENGINEER SHALL REVIEW SUBJECT SHOP DRAWINGS BEFORE A COPY IS SUBMITTED TO THE OWNER FOR RECORD PURPOSES.
3. ONLY MATERIAL AND EQUIPMENT MANUFACTURERS OF PRODUCTS OR SYSTEMS LISTED BELOW SHALL FURNISH MANDATORY SHOP DRAWINGS FOR APPROVAL BY THE ARCHITECT/ENGINEER PRIOR TO CONTRACTORS PURCHASING EQUIPMENT, SHIP DRAWINGS ARE TO CONTAIN THE FOLLOWING:
   MANUFACTURER'S NAME, MATERIAL DESCRIPTION, SIZES AND DIMENSIONS AND OTHER PERTINENT INFORMATION TO CONFIRM AS MINIMUM STANDARD FOR EQUIPMENT LISTED IN THE SCHEDULES ON THE DRAWINGS AND OR IN THE SPECIFICATIONS.
4. SUBMIT A COPY OF SEVEN (7) COPIES OF ALL REQUIRED ELECTRICAL SHOP DRAWINGS.
5. THE FOLLOWING SHOP DRAWING SUBMITTALS ARE A MANDATORY REQUIREMENT OF THE OWNER, IF THE FOLLOWING EQUIPMENT IS TO BE INSTALLED:
   * STEP DOWN TRANSFORMERS (480-120/208V) WHEN APPLICABLE
   * WIRING DEVICES (INCLUDING WEATHERPROOF RECEPTACLES)
   * LIGHTING FIXTURES & EMERGENCY LIGHTING FIXTURES
   * DISCONNECT SWITCHES
   * POWER/LIGHTING PANELS
   * MOTOR STARTERS
   * FIRE ALARM DEVICES

X. ALARM AND DETECTION SYSTEMS (BY VENDOR)

1. PROVIDE NECESSARY CONDUIT AND POWER FOR ALARM AND DETECTION SYSTEMS. THIS SHALL INCLUDE THE FOLLOWING:
   - DEDICATED 20 AMP / 120 VOLT CIRCUIT (S).
   - 3/4" CONDUIT (EMPTY) TO EACH TO DOOR CONTACT, SOUND DETECTION SILENT DURESS ALARM, FILM CAMERA, SUSPICION BUTTON, ETC. (REFER TO ARCHITECTURAL DOOR SCHEDULE)
   - COORDINATE ALL LOCATIONS OF ALARM AND DETECTION SYSTEM WITH OWNER. THESE ITEMS ARE NOT SHOWN ON ELECTRICAL DRAWINGS.

Y. COMMUNICATION SYSTEMS

1. WORK INCLUDES: EMPTY CONDUIT WITH NYLON PULLWIRES AND BOXES FOR UTILITY TELEPHONE WIRING.
2. WORK BY COMMUNICATIONS CONTRACTOR:
   - ALL WIRING FOR TELEPHONE INSTRUMENTS
   - ALL TELEPHONE INSTRUMENTS

HOME RUNS AND BRANCH WIRING FOR 120 VOLT 16 AMP CIRCUITS SHALL BE AS FOLLOWS TO ACCOUNT FOR VOLTAGE DROP:

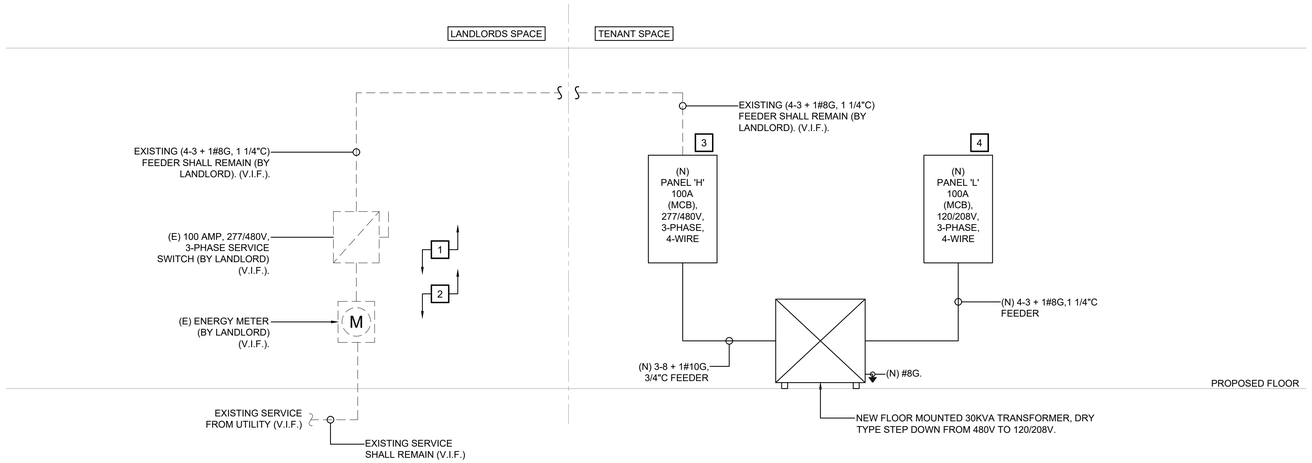
LENGTH	HOME RUN WIRE SIZE	CIRCUIT WIRE SIZE
1' TO 65'	12	12
66' TO 104'	10	12
105' TO 156'	8	12
157' TO 263'	6	12
264' TO 419'	4	12

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ELECTRICAL SPECIFICATIONS

E002

LEGEND:
NEW
EXISTING



ELECTRICAL PANEL SCHEDULE

PANELBOARD		H	VOLTAGE	277 / 480 V		PHASE	3		WIRE	4									
PANEL TYPE		MCB	MAINS	100A		BUS RATING	125A		AIC RATING	V.I.F.									
NEMA TYPE ENCLOSURE		1	MOUNTING	SURFACE		OPTIONS			NOTE	NEW PANEL									
CKT. NO.	EQT TAG	CKT TAG	DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION	CKT TAG	EQT TAG	CKT. NO.
1							3,325	A	4,600							2
3		(N)	WSHP-1 (N)	3	12	15	3,325	B	4,600	30	10	3	EDH-1 (N)	(N)		4
5							3,325	C	4,600							6
7			SPARE	1		20		A		20		1	SPARE			8
9			SPARE	1		20		B		20		1	SPARE			10
11			SPARE	1		20		C		20		1	SPARE			12
13			SPARE	1		20		A	3,992							14
15			SPARE	1		20		B	4,929	50	6	3	TO (N) XMFR	(N)		16
17			SPARE	1		20		C	4,640							18

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 11,917 WATTS
B= 12,854 WATTS
C= 12,565 WATTS

TOTAL CONNECTED LOAD	37,337	WATTS	45 AMPS
TOTAL DEMAND LOAD	38,873	WATTS	47 AMPS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

ELECTRICAL PANEL SCHEDULE

PANELBOARD		L	VOLTAGE	120 / 208 V		PHASE	3		WIRE	4									
PANEL TYPE		MCB	MAINS	100A		BUS RATING	125A		AIC RATING	V.I.F.									
NEMA TYPE ENCLOSURE		1	MOUNTING	SURFACE		OPTIONS			NOTE	NEW PANEL									
CKT. NO.	EQT TAG	CKT TAG	DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION	CKT TAG	EQT TAG	CKT. NO.
1	C1	(N)	STOREFRONT SIGN	1	12	20	1,200	A	220	20	12	1	PENDANT LIGHTS FOH	(N)	C2/a	2
3	C1	(N)	INTERIOR SIGN	1	12	20	1,200	B	48	20	12	1	SCONCE LIGHTS FOH	(N)	C2/b	4
5		(N)	SHOW WINDOW RECEPTACLE	1	12	20	1,080	C	380	20	12	1	RESTROOM & BOH LIGHTS	(N)		6
7		(N)	SHOW WINDOW RECEPTACLE	1	12	20	1,080	A	240	20	12	1	CAN LIGHTING FOH	(N)	C2/d	8
9		(N)	PANEL RECEPTACLE	1	12	20	180	B	341	20	12	1	STRIP LIGHTS FOH	(N)	C2/c	10
11		(N)	LED PANEL RECEPTACLE	1	12	20	180	C	540	20	12	1	BOH AND RESTROOM RECEPTACLE	(N)		12
13		(N)	INVERTER	1	12	20	152	A	900	20	12	1	SALES RECEPTACLE	(N)		14
15		(N)	POS RECEPTACLE	1	12	20	360	B	720	20	12	1	SALES RECEPTACLE	(N)		16
17		(N)	NEW TIME CLOCK	1	12	20	200	C	180	20	12	1	HVAC RECEPTACLE	(N)		18
19			SPARE	1		20		A	200	20	12	1	NAC PANEL	(N)		20
21		(N)	NEW WATER HEATER (IWH-1)	2	10	30	2,080	B		20		1	SPARE			22
23							2,080	C		20		1	SPARE			24
25			SPARE	1		20		A		20		1	SPARE			26
27			SPARE	1		20		B		20		1	SPARE			28
29			SPARE	1		20		C		20		1	SPARE			30

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 3,992 WATTS
B= 4,929 WATTS
C= 4,640 WATTS

TOTAL CONNECTED LOAD	13,561	WATTS	38 AMPS
TOTAL DEMAND LOAD	15,096	WATTS	42 AMPS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

ELECTRICAL LOAD SUMMARY

DESCRIPTION	NEC CONNECTED kW	VOLT	PHASE	NEC DEMAND FACTOR	NEC DEMAND kW
LIGHTING- 120V	1.6	120	1	1.25	2.0
INTERIOR SIGN	1.2	120	1	1.25	1.5
RECEPTACLES	3.3	120	1	>10kW=10+[0.5*(kW-10)]	3.3
STOREFRONT SIGN	1.2	120	1	1.25	1.5
S/W OUTLETS	2.2	120	1	1.25	2.7
HVAC	23.8	480	1	1.00	23.8
HOT WATER HEATER	4.2	208	1	1.00	4.2
TOTALS	37.3				38.9

NOTES:
* USE GREATER VALUE OF THE TWO CATEGORIES.
** 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.
*** N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW) MINUS ACTUAL SHOW WINDOW LIGHTING kVA.

N.E.C. DEMAND kVA x 1,000 / SYSTEM VOLTAGE x 1.732 = MINIMUM FEEDER AMPERAGE

38.9 x 1000 = 38,873
480 x 1.732 = 831

46.8 AMPS USE (EXISTING) 100AMP SERVICE/FEEDER

GENERAL NOTES:

1. PROPER CLEARANCE MUST BE MAINTAINED ABOUT ELECTRICAL EQUIPMENT PER N.E.C. FIELD VERIFY EXACT MOUNTING SPACE AVAILABLE IN ELECTRICAL ROOM/AREA PRIOR TO INSTALLATION OF ELECTRICAL EQUIPMENT.
2. MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM. ALL CONNECTIONS/DISCONNECTIONS TO LANDLORDS/UTILITIES SERVICE EQUIPMENT SHALL BE AS DIRECTED BY LANDLORDS/UTILITIES SITE REPRESENTATIVE. TENANT GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TERMINATION/DETERMINATION EXPENSES.
3. SYSTEM SHALL BE GROUNDED TO THE MAIN BUILDING'S GROUNDING SYSTEM.
4. DISCONNECT SWITCHES AND PANELS SHALL BE INSTALLED ON PLYWOOD BACKBOARDS.
5. TENANT CONTRACTOR MUST VERIFY ELECTRICAL SERVICE, SUB-FEED WIRING AND PANELS PRIOR TO START OF TENANT'S ELECTRICAL WORK. TENANT GENERAL CONTRACTOR SHALL MAKE APPLICATION TO THE LOCAL UTILITY FOR CONTINUED METERED ELECTRIC SERVICE IN THE TENANT'S NAME. TENANT GENERAL CONTRACTOR SHALL CONFIRM ALL LOCAL UTILITY GUIDELINES AND REQUIREMENTS PRIOR TO BID, SHALL INCLUDE THE COSTS OF THESE REQUIREMENTS IN THE BID, AND SHALL COMPLY WITH THEM DURING CONSTRUCTION. AVAILABLE FAULT CURRENT AT SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER NATIONAL ELECTRICAL CODE (NEC) OF ARTICLE 110.24.
6. CONTRACTOR SHALL COORDINATE SHORT CIRCUIT RATING (Isc) WITH UTILITY & AHJ, PRIOR TO COMMENCING ANY WORK, TYPICAL FOR ALL ELECTRICAL EQUIPMENT.
7. CONTRACTOR SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
8. CONTRACTOR SHALL COORDINATE WITH BASE BUILDING FOR THE EXACT LOCATION OF THE EXISTING SWITCH GEAR AND EXACT POWER DISTRIBUTION.
9. CONTRACTOR SHALL VERIFY OPERABLE CONDITION INFIELD OF ALL EXISTING TO REMAIN ELECTRICAL DEVICES/EQUIPMENTS AND REPLACE WITH NEW IF FOUND INOPERABLE.
10. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. ALL CONDUIT ROUTING AND OFFSETS, DROPS AND RISES OF RUNS ARE NOT SHOWN ON THE PLANS AND ARE SHOWN DIAGRAMMATICALLY IN THE RISERS. 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.

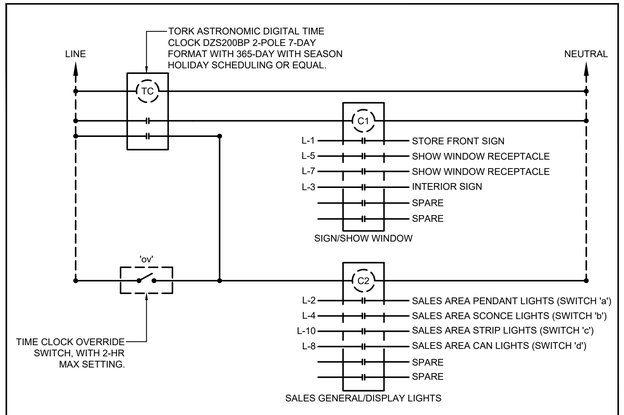
RISER AND PANEL SCHEDULE KEYED NOTES:

1. EXISTING SERVICE FOR THE PROJECT SPACE SHALL REMAIN. E.C. SHALL FIELD VERIFY THE EXACT LOCATION, RATING, VOLTAGE, PHASE, ELECTRICAL DISTRIBUTION & OPERABLE CONDITION IN FIELD PRIOR TO COMMENCING WORK. PROVIDE NEW IF FOUND INOPERABLE. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES. BASE BID ACCORDINGLY.
2. EXISTING METER AND SERVICE DISCONNECT SWITCH FOR PROJECT SHALL REMAIN. E.C. SHALL FIELD VERIFY THE EXACT LOCATION, RATING, VOLTAGE, PHASE & OPERABLE CONDITION IN FIELD PRIOR TO COMMENCING WORK. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
3. NEW 100A (MCB), 277/480V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "H" FOR THE PROJECT SPACE. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF NEW ELECTRICAL PANEL H" IN FIELD.
4. NEW 100A (MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "L" FOR THE PROJECT SPACE. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF NEW ELECTRICAL PANEL "L" IN FIELD.

VERIFY THE FOLLOWING PRIOR TO BID/ PRICING:

- EXISTING CONDUIT AND FEEDERS SIZE BETWEEN TENANT SPACE AND LANDLORD SWITCHBOARD.
- EXISTING MAIN SERVICE DISCONNECT RATING.
- EXISTING METER.

IF THE EXISTING SERVICE DISCONNECT AND FEEDERS ARE RATED FOR LESS THAN THE RATING SHOWN ON THIS RISER, NOTIFY THE PROJECT MANAGER AND ENGINEER IMMEDIATELY PRIOR TO SUBMITTING BID/ PRICING PACKAGE SO DRAWINGS CAN BE REVISED AND UPDATED ACCORDINGLY.



TIME CLOCK SCHEDULE:

CONTRACTOR TO SET TIME CLOCK SETTINGS AND VERIFY WITH OWNER:

1. LIGHTING SHALL BE "ON" DAILY FROM 8:00AM TO 11:00PM.
2. DURING SET "OFF" TIME LIGHTING TO BE CONTROLLED BY A 2-HR MANUAL OVERRIDE SWITCH.

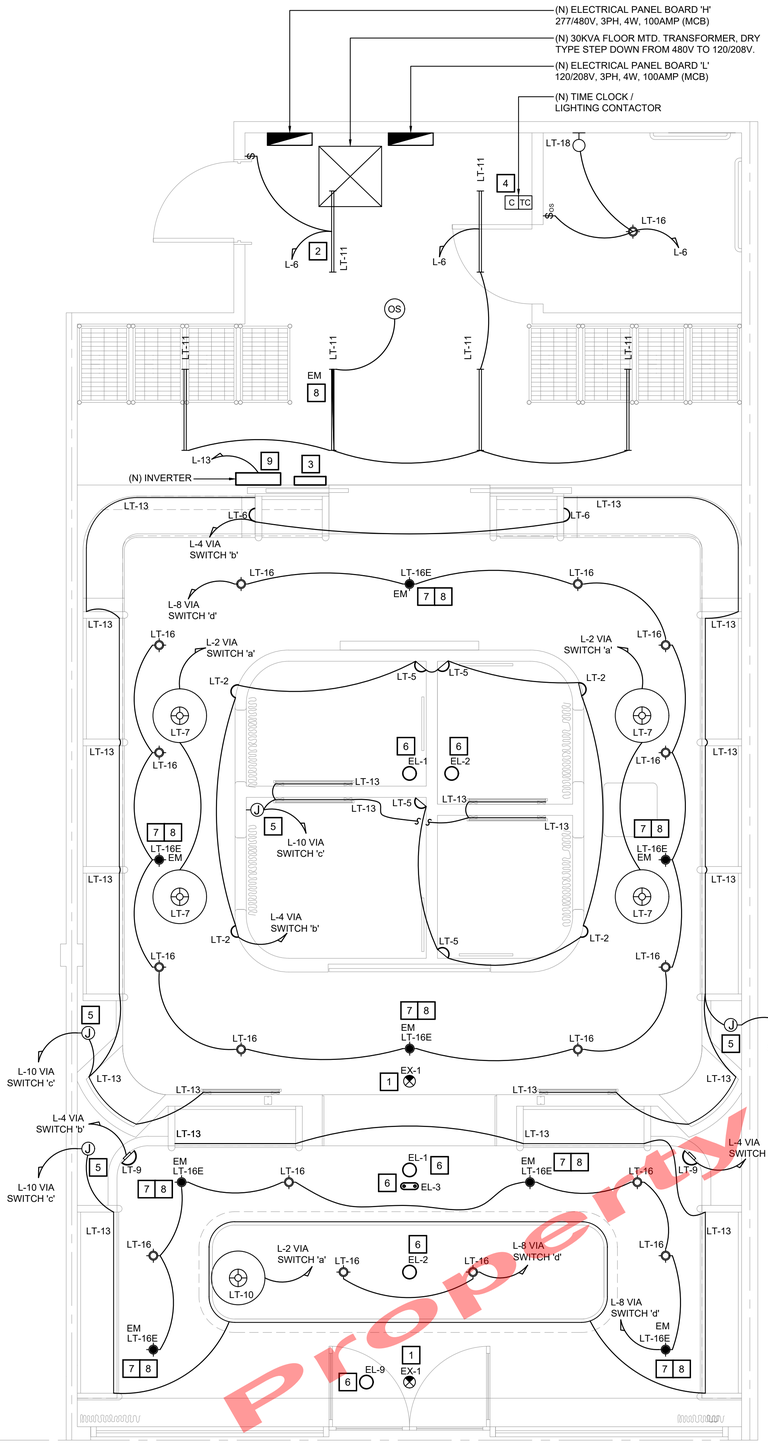
1 | SCALE N.T.S. | TIME CLOCK AND LIGHTING CONTACTOR DETAILS

Property of NY Engineered

THIRDLOVE

ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULE

E004



LEGEND:

———	NEW
– – – – –	EXISTING

GENERAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE OR LOCAL CODE AND/OR OTHER AUTHORITIES HAVING JURISDICTION.
2. THE CONTRACTOR SHALL VISIT THE PROJECT SITE, REVIEW EXISTING CONDITIONS AGAINST THE PLANS, AND FAMILIARIZE HIMSELF WITH THE WORK PRIOR TO BIDDING AND START OF WORK.
3. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION AND QUANTITY OF LIGHTING FIXTURES.
4. EMERGENCY AND EXIT LIGHTS SHALL BE INSTALLED AND CIRCUITED PER LATEST NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES. ALL EMERGENCY AND EXIT FIXTURES SHALL HAVE A MINIMUM 90-MINUTE BATTERY BACK-UP.
5. ELECTRICAL CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS AS REQUIRED FOR A FULLY COMPLETE AND OPERABLE SYSTEM.
6. ALL EQUIPMENT SHALL HAVE UL OR CSA LABELS.
7. G.C. IS RESPONSIBLE FOR ALL FINAL CONNECTION S, TERMINATIONS, AND COORDINATION IN ALL MILLWORK FIXTURES.
8. ELECTRICAL CONTRACTOR'S BID SHALL INCLUDE INSTALLATION OF ALL LIGHT FIXTURES AND ASSOCIATED LAMPS. SOME FIXTURES REQUIRE ASSEMBLY, E.C. IS RESPONSIBLE TO ENSURE THE ADJUSTABILITY OF ALL DIRECTIONAL FIXTURES AFTER INSTALLATION AND SHALL AIM FIXTURES PER DIRECTION FROM OWNER. IF THE CEILING SYSTEMS ARE FIRE RATED, E.C. SHALL CLOSELY COORDINATE RECESSED FIXTURE REQUIREMENT WITH OWNER AND SUPPLIER TO MAINTAIN THE FIRE RATING OF THE CEILING.
9. G.C. SHALL PROVIDE TIME CLOCK PROGRAMMING TRAINING SESSION FOR THE STORE MANAGER AND AT LEAST ONE OTHER EMPLOYEE PRIOR TO PROJECT CLOSEOUT.
10. ALL FIXTURES INSTALLED OUTDOORS SHALL BE RATED FOR DAMP/WET LOCATIONS AS REQUIRED. THE CONTRACTOR SHALL COORDINATE DAMP/WET LOCATION RATING PER NEC ARTICLE 410.10 (A). ALL INSTALLATIONS SHALL CONFORM TO NEC ARTICLE 410, ALL SUB ARTICLES. ALL FLUORESCENT FIXTURES THAT UTILIZE DOUBLE ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL BE CODE COMPLIANT WITH N.E.C. 410.130(G)
11. THE ELECTRICAL LIGHTING INSTALLATIONS SHALL CONFORM TO ALL STATE AND LOCAL SEISMIC AND CODE REQUIREMENTS REGARDING LIGHT FIXTURE SUPPORT. ALL ELECTRICAL METALLIC TUBING (EMT), RIGID NON-METALLIC CONDUITS, "SEAL TIGHT" TYPE CONDUITS AND ALL OTHER CONDUITS THAT DO NOT CONTAIN A CODE SIZED GROUND WIRE SHALL HAVE A CODE SIZED BOND WIRE INSTALLED WITH THE CIRCUIT CONDUCTORS.
12. IF STORE IS AN OPEN DECK THEN ALL CAMERA AND SHOPPERTRAX LINES RUN THROUGH CONDUIT SO CAMERA/ SHOPPERTRAX CAN BE SECURED AT THE PROPER HEIGHT.

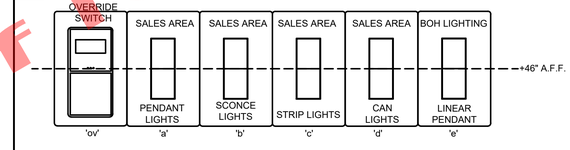
LIGHTING PLAN KEYED NOTES:

1. FIXTURE SHALL BE PROVIDED WITH INTEGRAL 90-MINUTE MINIMUM BATTERY BACKUP. WIRE ALL EMERGENCY AND EXIT LIGHT TO LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS.
2. LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIANCE AS PER NEC 110.26(D).
3. NEW MASTER DIMMER SWITCH BANK LOCATION. SEE DETAIL IN THIS SHEET FOR ADDITIONAL INFORMATION. VERIFY/CONFIRM LOCATION WITH OWNER PRIOR TO INSTALLATION AND ROUGH-IN.
4. PROVIDE NEW TIME CLOCK AND LIGHTING CONTACTOR AS REQUIRED. REFER TO THE 'TIME CLOCK AND LIGHTING CONTACTOR DETAILS' ON TO SHEET E004. BASE BID ACCORDINGLY.
5. JUNCTION BOX FOR LED STRIP LIGHTS. CONTRACTOR TO COORDINATE WITH THE LIGHTING VENDOR FOR EXACT CONNECTION REQUIREMENTS AND DETAILS, PROVIDE RECEPTACLES AS REQUIRED. BASE BID ACCORDINGLY.
6. LOW VOLTAGE DEVICES (i.e., SPEAKERS, WIFI & TRAFFIC COUNTER) ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE THE FINAL LOCATION AND QUANTITY WITH THE ARCHITECT/OWNER AND THE EXACT ELECTRICAL REQUIREMENTS WITH THE SYSTEM VENDOR PRIOR TO THE ROUGH PER THE SITE CONDITIONS.
7. CONTRACTOR SHALL COORDINATE WITH FIXTURE MANUFACTURER AND CONFIRM WHETHER INTEGRAL BATTERY BACKUP IS PROVIDED FOR ALL DESIGNATED EMERGENCY LIGHT FIXTURES; IF NOT, CONNECT FIXTURES TO A DEDICATED EMERGENCY CIRCUIT FED FROM A CENTRAL INVERTER SYSTEM CAPABLE OF PROVIDING A MINIMUM OF 90 MINUTES OF EMERGENCY POWER.
8. SWITCHABLE EMERGENCY LIGHT FIXTURE. CONNECT TO UNSWITCHED HOT LEG OF CIRCUIT FOR NORMAL OPERATION. IN CASE OF POWER LOSS, FIXTURES EMERGENCY BATTERY/INVERTER WILL ENERGIZE THE FIXTURE. CONTRACTOR TO PROVIDE A COMPLETE AND FUNCTIONING LIGHTING CONTROL SYSTEM PER MANUFACTURES RECOMMENDATION.
9. PROVIDE NEW INVERTER FOR EMERGENCY LIGHTING. ALL LIGHT FIXTURES WITHOUT INTEGRAL BATTERY BACKUP SHALL BE CONNECTED TO THE INVERTER. THE INVERTER SHALL BE SIZED BASED ON THE CONNECTED EMERGENCY LOAD AND REQUIRED BACKUP DURATION. CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT/OWNER/MANUFACTURER FOR EXACT LOCATION AND REQUIREMENTS. BASE BID ACCORDINGLY.

INVERTER LOAD:

FIXTURE	QUANTITY	WATTAGE	TOTAL
LT-16	8	10	80
LT-11	1	72	72
			152W

DIMMABLE LIGHTING SWITCHBANK:



'a,b,c,d,e' - SINGLE POLE SWITCHES FOR CONTROL OF SALES LIGHTING.

'ov' - 2-HR OVERRIDE BYPASS SWITCH. ADJUST TO ON/OFF SCHEDULE DIRECTED BY TENANT REPRESENTATIVE.

OS - CEILING MOUNTED OCCUPANCY SENSOR

$^{D}_{OS}$ - WALL MOUNTED OCCUPANCY SENSOR WITH DIMMING CAPABILITIES (WATTSTOPPER PW-211 OR EQUAL) AT+46" A.F.F. SENSOR "ON" SETTING TO BE SET TO AUTOMATIC IN FIELD.

$_{OS}$ - WALL MOUNTED OCCUPANCY SENSOR (WATTSTOPPER PW-201 OR EQUAL) AT+46" A.F.F. SENSOR "ON" SETTING TO BE SET TO AUTOMATIC IN FIELD.

PH - CEILING MOUNTED PHOTO SENSOR FOR TOPLIT DAYLIGHT RESPONSIVE CONTROL.

^{3} - WALL MOUNTED MANUAL 3-WAY TOGGLE SWITCH.

LIGHT FIXTURE SCHEDULE:

SYMBOL	TAG	MANUF.	DESCRIPTION	MODEL	COLOR TEMP	VOLTAGE	WATTAGE	REMARKS
	LT-1	SUPERIOR LIGHTING	TRACK HEADS	TBD	WHITE	120V	10W	
	LT-2	LIGHT ANNEX	SCONCE LIGHTS	WL-01.1	-	120V	5W	
	LT-4	MAXIMASTYLE	RECESSED LIGHTS	MRL-6145R38		120V	2.8W/FT	
	LT-5	A19	SCONCE LIGHTS	TBD	-	120V	4W	
	LT-6	ETSY	SCONCE LIGHTS	TBD	-	120V	4W	
	LT-7	LIGHT ANNEX	PENDANT LIGHTS	CL-01	-	120V	40W	
	LT-9	SOHOHOME	SCONCE LIGHTS	TBD	-	120V	4W	
	LT-10	FLORIAN SCHULZ	CHANDELIER	ONOS 55	-	120V	60W	
	LT-11	FINELITE	LINEAR PENDANT LIGHTS	HP-2 DIRECT	-	120V	72W	
	LT-13	BEESL LIGHTING	STRIP LIGHT	TBD	-	120V	2.9W/FT	
	LT-14	TBD	RECESSED CAN LIGHTS	TBD		120V	10W	
	LT-18	TBD	TBD	TBD	-	120V	TBD	
	LT-16	LIGHTOLOGY	CAN LIGHTS	WAC1205980	WHITE	120V	15W	
	EX-1	TBD	EXIT SIGNS	TBD	-	120V	>5W	

LIGHTING FIXTURE SCHEDULE NOTES:

1. COORDINATE FINAL FIXTURE MAKE, WATTAGE AND MODEL WITH ARCHITECT/OWNER. SIMILAR AS MENTIONED OR APPROVED EQUAL.
2. ALL ILLUMINATED EXIT SIGN TO HAVE A MAX WATTAGE OF 5 PER SIDE.
3. ALL EMERGENCY LIGHT MARKED AS "EM" ARE WITH MINIMUM 90 MINUTE OF BATTERY BACK UP.

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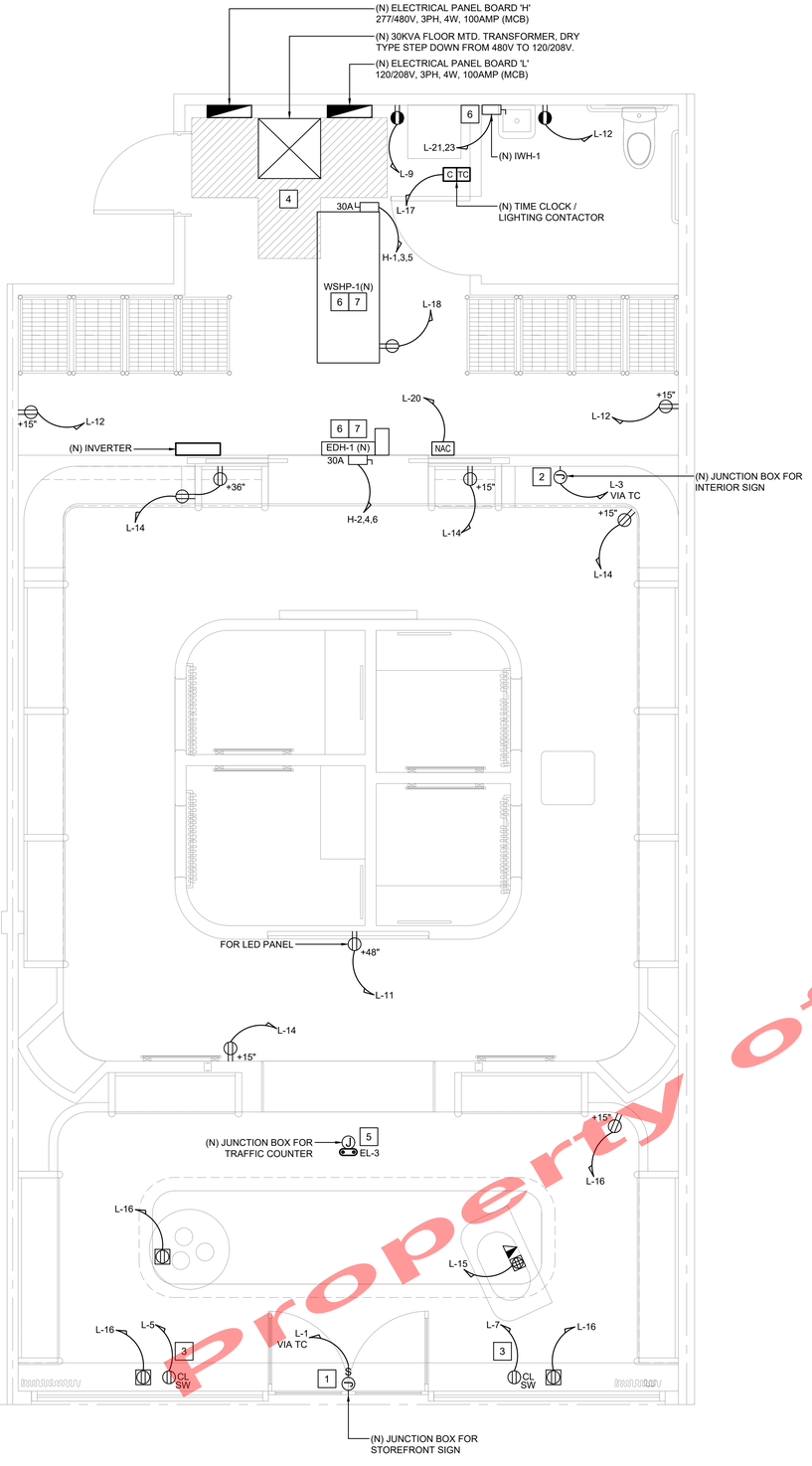
THIRDLOVE

1 SCALE: 3/8" = 1'-0"

LIGHTING PLAN

LIGHTING PLAN

E100



LEGEND:

NEW

EXISTING

GENERAL NOTES:

1. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR PRIOR TO INSTALLATION.
2. 'E' DENOTES EXISTING DEVICE TO REMAIN. 'R' DENOTES EXISTING DEVICE TO BE RELOCATED.
3. VERIFY PROPER FUNCTIONALITY OF ALL EXISTING AND RELOCATED ELECTRICAL DEVICES, INCLUDING THEIR COVERPLATES. PROVIDE REPLACEMENTS AS REQUIRED IF ANY ARE NOT OPERATING AS INTENDED OR HAVE ABOVE NORMAL WEAR OR DEFECTS.
4. ALL ACCESS CONTROLLED EGRESS DOORS SHALL BE PROVIDED PER 2024 INTERNATIONAL BUILDING CODE. (WHERE APPLICABLE) TO ALLOW FREE EGRESS AT ALL TIMES. DELAYED EGRESS SHALL NOT BE MORE THAN 15 SECONDS. REFER TO ARCHITECTURAL AND SECURITY DRAWINGS FOR COMPLIANCE WITH THIS CODE SECTION.
5. ALL ABANDONED AND UNUSED JUNCTION BOXES, BOXES WITH BLANK COVER PLATES, AND DATA OUTLET LOCATIONS NOT SHOWN ON THIS PLAN ARE TO BE DEMO'D. PATCH ANY EXISTING TO REMAIN WALLS TO A LIKE NEW CONDITION. ANY RECEPTACLE, WITHIN THE SCOPE OF WORK AREA, NOT SHOWN TO REMAIN SHALL BE REMOVED. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO ITS SOURCE.
6. DEDICATED OUTLETS SHALL BE 20A RATED, U.N.O.
7. COORDINATE ALL SAW CUTTING LOCATIONS THROUGH SLAB WITH THE ARCHITECT AND LANDLORD PRIOR TO CUTTING. FOR ANY SLAB WITH POST-TENSION CABLING A SCAN SHALL BE PROVIDED TO LOCATE ANY OBSTRUCTIONS.
8. RECEPTACLES SHALL BE INSTALLED PER ANSI A117.1.
9. LABEL ALL OUTLETS AND JUNCTION BOXES WITH THE CORRESPONDING CIRCUIT DESIGNATION. LABEL TO BE TYPEWRITTEN; BLACK LETTERS ON WHITE BACKGROUND.
10. CIRCUIT HOMERUN DESIGNATIONS ARE NOTED FOR DESIGN INTENT ONLY BASED ON FIELD OBSERVATIONS OF EXISTING PANEL SCHEDULES, WHERE AVAILABLE. CONTRACTOR TO CONFIRM ALL SPARE CIRCUIT BREAKERS AND THOSE MADE AVAILABLE DUE TO DEMOLITION.
11. PROVIDE PULL STRINGS FOR ALL EMPTY CONDUIT. EACH NON-TERMINATED CONDUIT END SHALL BE PROVIDED WITH A BUSHING.
12. ALL RECEPTACLES WITHIN 6'-0" OF ANY WATER SOURCE SHALL BE 'GFCI' TYPE.
13. G.C. TO COORDINATE ALL LOW VOLTAGE LOCATIONS AND REQUIREMENTS WITH TENANT & TENANT LV SUBCONTRACTOR.
14. REFER TO DWG. E001 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. REFER TO DWG. E002 FOR ELECTRICAL SPECIFICATION. REFER DWG. E004 FOR ELECTRICAL RISER DIAGRAM.
15. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE TENANT.
16. OUTLETS' LOCATION SHOWN IN THE DRAAWING ARE DIAGRAMMATIC, FOR ACTUAL LOCATION AND MOUNTING HEIGHT REFER ARCHITECTURAL PLAN.
17. CONTRACTOR SHALL COORDINATE EXACT RECEPTACLE TYPE FOR EQUIPMENT WITH EQUIPMENT VENDOR/MANUFACTURER.
18. ALL GFCI RECEPTACLES SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION OR A DEAD FRONT GFI DEVICE INSTALLED IN A READILY ACCESSIBLE LOCATION. OR A GFCI CIRCUIT BREAKER SHALL USED TO FEED THE CIRCUIT.

POWER PLAN KEYED NOTES:

1. PROVIDE JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO BUILDING-MOUNTED SIGNAGE. VERIFY EXACT LOCATION AND CONNECT TO SIGN PER MANUFACTURER'S INSTRUCTION. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING/SIGNAGE. CONTRACTOR TO FIELD VERIFY THE EXISTING SIGN CONNECTION AND BRANCH BREAKER OPERABLE CONDITION. REUSE IF POSSIBLE; OTHERWISE PROVIDE NEW AS SHOWN ON PLAN.
2. PROVIDE JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO INTERIOR SIGNAGE. VERIFY EXACT LOCATION AND CONNECT TO SIGN PER MANUFACTURER'S INSTRUCTION. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING/SIGNAGE.
3. PROVIDE A NEW SHOW WINDOW RECEPTACLE ABOVE THE WINDOW ON THE WALL OR CEILING AS REQUIRED TO MEET NEC 210.62 SHOW WINDOW REQUIREMENTS. COORDINATE THE EXACT LOCATION WITH THE ARCHITECT. CONTRACTOR TO FIELD VERIFY THE EXISTING SHOW WINDOW RECEPTACLE AVAILABILITY & OPERABLE CONDITION. REUSE IF POSSIBLE; OTHERWISE PROVIDE NEW AS SHOWN ON PLAN.
4. ELECTRICAL CONTRACTOR SHALL VERIFY THE LOCATION OF ELECTRICAL PANELS IN COMPLIANCE WITH NEC ARTICLE 110.26(A) AND (B). ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THAT THE PANELS ARE UNOBSTRUCTED, AND THE AREA WHERE THE PANELS ARE PLACED SHALL NOT BE USED AS A STORAGE SPACE.
5. JUNCTION BOX FOR TRAFFIC COUNTER. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT FOR THE EXACT LOCATION, MOUNTING HEIGHT, AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. BASE BID ACCORDINGLY.
6. ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZES. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE AT THE COMMENCEMENT OF WORK.
7. CONTRACTOR TO VERIFY IN THE FIELD ANY RECEPTACLE IS PRESENT WITHIN 25FT OF HVAC UNITS. IF YES, EXISTING RECEPTACLES TO REMAIN. WIRE TO NEW AVAILABLE CIRCUIT AS SHOWN IF NEEDED. VERIFY EXACT LOCATION. ELSE PROVIDE NEW WEATHER-PROOF, GFI, 120V, 20A RECEPTACLE WITHIN 25FT OF THE HVAC UNITS AS SHOWN. BASE BID ACCORDINGLY.

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SCALE: 3/8" = 1'-0"

ELECTRICAL POWER PLAN

THIRDLOVE

ELECTRICAL POWER PLAN

E200

BUILDING DATA

PROJECT DESCRIPTION		BUILDING OCCUPANCY				BUILDING DESCRIPTION						FIRE ALARM SYSTEM FEATURES	
	NEW BUILDING		ASSEMBLY GROUP A (A2)		RESIDENTIAL GROUP R (R1,R2 AND R3)	-	TOTAL NUMBER OF LEVELS		ATRIUM		STAIR PRESSURIZATION		NON-VOICE EVACUATION
	FIRE ALARM SYSTEM UPGRADE	X	BUSINESS GROUP B		STORAGE GROUP S (S1 AND S2)	-	ABOVE GROUND LEVELS	-	FIRE DEPARTMENT ACCESS		POST FIRE SMOKE PURGE		VOICE EVACUATION
	LIFE SAFETY SYSTEM UPGRADE		EDUCATIONAL GROUP E		UTILITY AND MISCELLANEOUS GROUP U	-	BELOW GROUND LEVELS	-	FULLY SPRINKLERED		GENERATOR		PARTIAL/SELECTIVE EVACUATION
X	RENOVATION		FACTORY INDUSTRIAL GROUP F (F1 AND F2)		OTHER:	-	NUMBER OF ELEVATOR BANKS		PARTIALLY SPRINKLERED		FIRE PUMP	X	GENERAL EVACUATION
	EMERGENCY REPAIR		HIGH-HAZARD GROUP H (H1,H2,H3,H4 AND H5)			-	NUMBER OF EGRESS STAIRS		NON-SPRINKLERED		OTHER:		DIGITAL ALARM COMMUNICATOR
	TENANT ADDITION		INSTITUTIONAL GROUP I (I1,I2 AND I3)						PRE-ACTION SPRINKLER		OTHER:		PRE-SIGNAL SYSTEM
	OTHER:		MERCANTILE GROUP M										FIRE FIGHTER'S TELEPHONE SYSTEM

FIRE ALARM I/O MATRIX

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 HORN AND FLASH THE STROBES ON ALARM.	TRANSMIT "MANUAL" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "SMOKE" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "WATERFLOW" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "SUPERVISORY" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	TRANSMIT "TROUBLE" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.	DEACTIVATE TENANT MUSIC SYSTEM	INITIATE THE AUTOMATIC FIRE MODE CONDITIONS FOR FAN (AC UNIT) OPERATION. PROCEED AC UNIT SHUTDOWN SEQUENCE	RELEASE ALL ELECTRICALLY HELD OPEN FIRE & SMOKE DOORS.	RELEASE ALL ELECTRIC STRIKES ON STAIRWAY RE-ENTRY DOORS & ALL OTHER DOORS IN BUILDING IN THE EVENT OF EGRESS TO THE EXIT STAIRWAYS.	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	MANUAL PULL STATION	●			●	●	●	●	●							●	●	1
2	WATERFLOW SWITCH	●			●	●	●	●			●				●	●	●	2
3	AREA SMOKE DETECTOR	●			●	●	●	●		●					●	●	●	3
4	SPRINKLER CONTROL VALVE/TAMPER SWITCH		●		●	●	●					●						4
5	FIRE ALARM AC POWER FAILURE			●	●	●	●						●	●				5
6	FIRE ALARM SYSTEM LOW BATTERY			●	●	●	●						●	●				6
7	OPEN CIRCUIT			●	●	●	●						●	●				7
8	GROUND CIRCUIT			●	●	●	●						●	●				8
9	NOTIFICATION APPLIANCE CIRCUIT SHORT			●	●	●	●						●	●				9
10	MUSIC/ SOUND SYSTEM													●				10

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	HC	HUNG CEILING
C	CONDUIT	HC	HUNG CEILING
DGP	DATA GATHERING PANEL	NE	NEW TO REPLACE EXISTING
E	EXISTING	NTS	NOT TO SCALE
EL	EXISTING TO BE LOWERED	R	REMOVE
ELV	ELEVATOR LOBBY	RCU	REMOTE COMPUTER UNIT
EMT	ELECTRIC METALLIC TUBING	RE	RELOCATED EXISTING
ER	EXISTING TO BE RELOCATED	RGS	RIGID GALVANIZED STEEL
FA	FIRE ALARM	RP	RELOCATED POSITION
FCS	FIRE COMMAND STATION	UON	UNLESS OTHERWISE NOTED
FDS	FUSED DISCONNECT SWITCH	W	WIRE
G	GROUND		

TYPE OF DESIGN:

INSTALLATION OF MANUAL, AUTOMATIC SMOKE/HEAT DETECTION AND SPRINKLER ALARM SYSTEM. NO CHANGE IN USE OCCUPANCY OR EGRESS.

FIRE ALARM SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	STROBE LIGHT DEVICE, WALL MOUNTED (80" AFF)	F	FIRE ALARM MANUAL PULL STATION, WALL MOUNTED (48" AFF)
F	WALL MOUNTED HORN/STROBE COMBINATION DEVICE (80" AFF)	TS	TAMPER SWITCH
S	CEILING MOUNTED AREA SMOKE DETECTOR	WF	WATER FLOW SWITCH
FACP	FIRE ALARM CONTROL PANEL	——	SOLID THICK LINE INDICATES NEW DEVICE OR WIRING
FAAP	FIRE ALARM ANNUNCIATOR PANEL	- - -	DOTTED LINE INDICATES EXISTING DEVICE OR WIRING
D	DUCT MOUNTED SMOKE DETECTOR	CM	CONTROL MODULE
MM	MONITOR MODULE	NAC	NOTIFICATION APPLIANCE CIRCUIT PANEL
F	CEILING MOUNTED HORN/STROBE COMBO. DEVICE	SS	SOUND SYSTEM/MUSIC SYSTEM (SPEAKER)

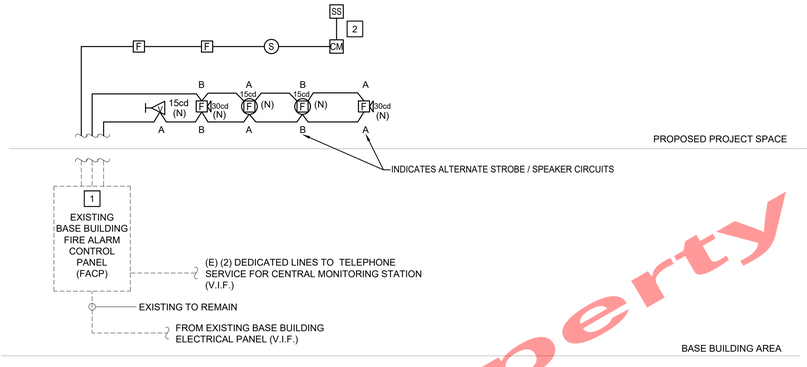
APPLICABLE CODES

01	2024 INTERNATIONAL BUILDING CODE
02	2024 INTERNATIONAL ENERGY CONSERVATION CODE
03	2023 NATIONAL ELECTRICAL CODE
04	NASHVILLE AND DAVIDSON COUNTY FIRE ALARM CODE 2022 (NFPA 72, 2022)

DRAWINGS LIST

FA001	FIRE ALARM NOTES, BUILDING DATA, SYMBOL LIST, ABBREVIATIONS, PLOT PLAN, I/O MATRIX & RISER DIAGRAM
FA100	FIRE ALARM PLAN

FIRE ALARM SYSTEM RISER DIAGRAM



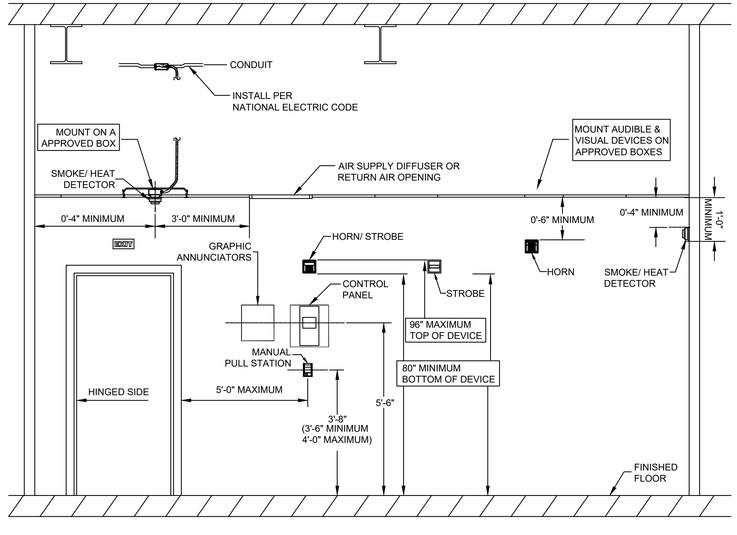
FIRE ALARM RISER NOTES:

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 ELECTRICAL CODE .
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 3/4".
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.

KEYED WORK NOTES:

1. EXISTING FIRE ALARM PANEL SHALL REMAIN. CONTRACTOR SHALL FIELD VERIFY OPERABLE CONDITION AND EXACT LOCATION OF EXISTING FIRE ALARM CONTROL PANEL. REUSE IF POSSIBLE OTHERWISE PROVIDE NEW AS REQUIRED. BASE BID ACCORDINGLY.
2. PROVIDE CONTROL MODULE TO SHUTDOWN SOUND SYSTEM (SPEAKER). COORDINATE WITH SOUND OR AUDIO CONTRACTOR. BASE BID ACCORDINGLY.

FIRE ALARM DEVICES TYPICAL MOUNTING HEIGHT:



FIRE ALARM NOTES:

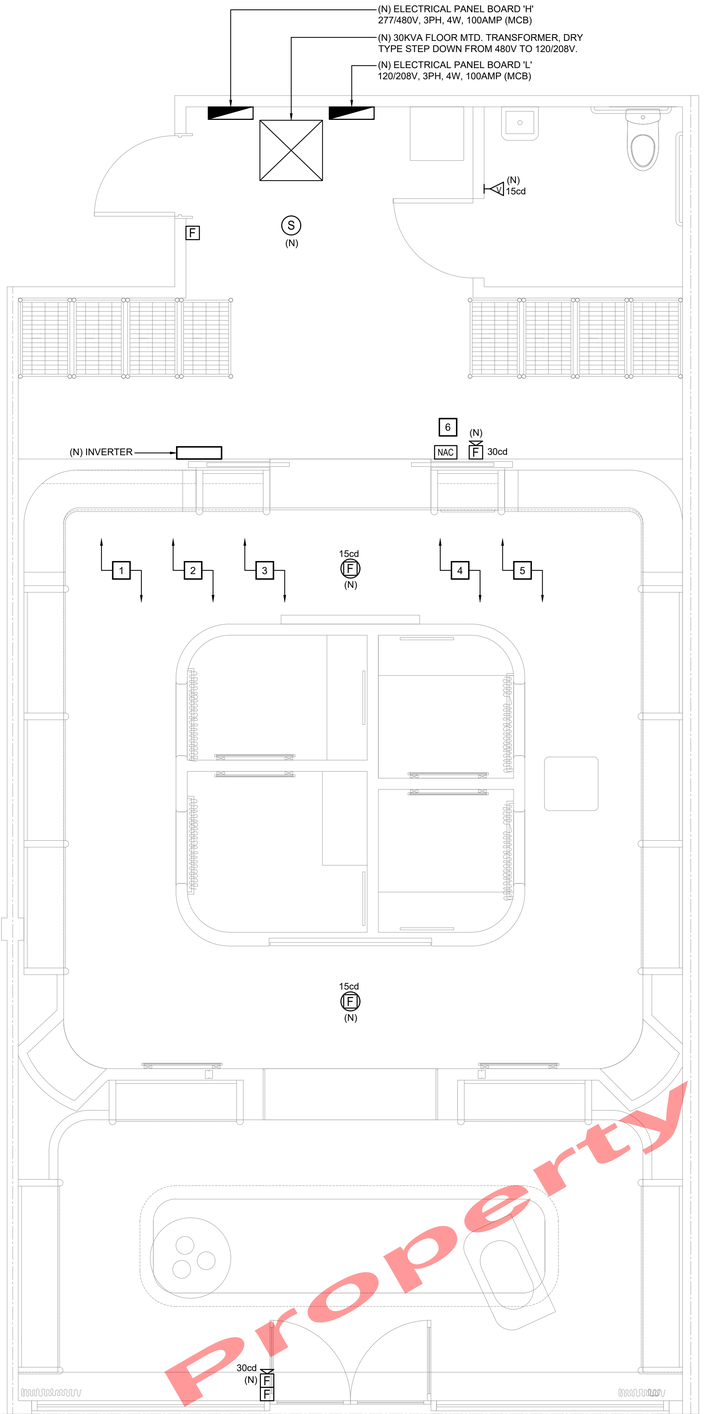
1. ALL EQUIPMENT AND WIRING INDICATED ON THESE PLANS IS NEW (U.O.N.).
2. PROVIDE WIRING AS REQUIRED BETWEEN ALL DEVICES AND EQUIPMENT AS REQUIRED TO PERFORM FIRE ALARM SYSTEM FUNCTIONS.
3. WIRING FOR FIRE ALARM DEVICES IN FINISHED SPACES WITHOUT HUNG CEILING SHALL BE INSTALLED IN EMT CONDUIT.
4. ALL STROBES AND HORN/STROBES SHALL BE FLUSH WALL MOUNTED FINISH BY ARCHITECT, APPROVED FOR USE IN NYC.
5. 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.
6. FOR WALL MOUNTED F.A. DEVICES PROVIDE 3/4" CONDUIT TERMINATED IN NEAREST ACCESSIBLE CEILING.
7. WIRING FOR FIRE ALARM DEVICES IN UNFINISHED SPACES SHALL BE INSTALLED IN RGS CONDUIT UP TO 8'-0" AFF AND THEN IN EMT CONDUIT ABOVE 8'-0" AFF.
8. FOR LOCATIONS AND QUANTITIES OF DEVICES REFER TO FIRE ALARM FLOOR PLANS. WHERE THERE ARE DISCREPANCIES BETWEEN THE PLANS AND THE RISER DIAGRAM, THE GREATER QUANTITY SHALL BE USED.
9. CONTRACTOR SHALL VERIFY ALL WIRING WITH FIRE ALARM VENDOR AND OBTAIN WIRING DIAGRAMS BEFORE PROCEEDING WITH THE START OF ANY WORK.
10. ALL WIRING SHALL BE IN ACCORDANCE WITH THE 2023 NATIONAL ELECTRICAL CODE.
11. PROVIDE FAN SHUT DOWN CAPABILITY FOR FANS WITH A RATING LARGER THAN 2,000 CFM. SHUT DOWN SHALL BE ACCOMPLISHED BY ONE OR MORE OUTPUT CONTROL POINTS FROM THE FIRE ALARM SYSTEM TO RELAYS FOR SHUTDOWN. PROVIDE CONTROL AND MONITORING FOR ALL RELAYS. PROVIDE POWER, CONTROL RELAYS, MONITORING AND WIRING FOR ALL FIRE/SMOKE DAMPERS.
12. DUCT DETECTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR ALONG WITH FURNISHING OF THE SAMPLING TUBES. DUCTWORK MODIFICATIONS AND INSTALLATION OF SAMPLING TUBES SHALL BE BY THE MECHANICAL CONTRACTOR. FOR FANS RATED LARGER THAN 2,000 CFM PROVIDE DUCT DETECTORS IN SUPPLY AND RETURN DUCTWORK.
13. PROVIDE ALL REQUIRED EXPANSION PANELS, PC BOARDS, POWER SUPPLIES, BATTERIES, FUSE CUTOUTS AND BRANCH CIRCUITS, ETC, FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM.
14. STROBES AND HORNS SHALL BE WIRED ON ALTERNATING A-B CIRCUITING IN ALL AREAS, AS INDICATED ON THE RISER DIAGRAM.
15. CONTRACTOR SHALL PERFORM ALL BUILDING DEPT. FILINGS AND OBTAIN ALL APPROVALS. CONTRACTOR SHALL OBTAIN ALL REQUIRED SIGNED & SEALED BUILDING DEPT. FORMS AND ALL REQUIRED SETS OF DRAWINGS FROM ENGINEER OF RECORD AND BUILDING DEPT. EXPEDITOR.
16. UPON COMPLETION OF INSTALLATION THE SYSTEM SHALL BE 100% PRE-TESTED BY THE FIRE ALARM VENDOR AND THE LICENSED ELECTRICAL CONTRACTOR PRIOR TO FDNY INSPECTION.
17. CONTRACTOR SHALL SUBMIT TO THE ENGINEER A MARKUP OF FA DRAWINGS INDICATING "AS-BUILT" CONDITIONS FOR ENGINEER'S REFERENCE. IN PREPARING "AS-BUILT" DRAWINGS FOR FILING, CONTRACTOR SHALL SIGN "AS-BUILT" STATING A FUNCTIONAL TEST HAS BEEN CONDUCTED OF THE FIRE ALARM SYSTEM AND THE SYSTEM OPERATES AS DESIGNED AND IN ACCORDANCE WITH THE INPUT/OUTPUT PROGRAMMING MATRIX.

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FIRE ALARM NOTES, BUILDING DATA, SYMBOL LIST, ABBREVIATIONS, PLOT PLAN, I/O MATRIX & RISER DIAGRAM

FA001



LEGEND:

NEW

EXISTING

GENERAL NOTES:

1. ALL WORK TO THE FIRE ALARM SYSTEM SHALL COMPLY WITH ALL LOCAL FIRE CODES, LAWS, REGULATIONS, AND ORDINANCES.
2. ALL NEW FIRE ALARM DEVICES SHALL BE ADA APPROVED. COORDINATE COLOR WITH ARCHITECT AND BASE BUILDING. DEVICES TO MATCH BASE BUILDING SYSTEM MANUFACTURER. PROVIDE ANY ADDITIONAL POWER AMPLIFIERS REQUIRED FOR INSTALLATION OF NEW ADA APPROVED DEVICES.
3. ALL FIRE ALARM DEVICES, INCLUDING SPEAKERS, VISUALS, SMOKE DETECTORS, ETC... SHALL BE CONNECTED TO THE BASE BUILDING FIRE ALARM SYSTEM BY A LICENSED FIRE ALARM CONTRACTOR. COORDINATE CONNECTIONS WITH SYSTEM MANUFACTURER.
4. ALL DEVICES SHALL BE 110 CANDELA, UNLESS OTHERWISE NOTED.
5. THE ENTIRE LENS OF WALL MOUNTED VISUAL FIRE ALARM DEVICES SHALL BE MOUNTED AT LEAST 80" AFF.
6. COORDINATE FIRE ALARM SYSTEM SHUTDOWNS AND REPROGRAMMING WITH LANDLORD.
7. ALL FIRE ALARM DEVICES SHALL BE WHITE UNLESS OTHERWISE NOTED OR REQUIRED.
8. EVACUATION SIGNAL SHALL BE 3 PULSE TEMPORAL.
9. THE FIRE ALARM SYSTEM APPLIANCE LAYOUT INDICATES NEW DEVICE PLACEMENT REQUIREMENTS FOR THIS TENANT UPFIT. NEW DEVICES SHALL BE INSTALLED INTO THE BASE BUILDING FIRE ALARM SYSTEM. PROVIDE ALL PROGRAMMING REQUIRED TO MAKE THE NEW DEVICES FUNCTIONAL AND ANY PROGRAMMING OR NEW EQUIPMENT REQUIRED TO MAKE ALL OF THE VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR FLASH IN SYNCHRONIZATION.
10. FIRE ALARM CONTRACTOR SHALL COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR ALONG WITH REFLECTED CEILING PLAN PRIOR TO INSTALLATION.
11. ALL FIRE ALARM CABLING SHALL BE IN EMT WHERE EXPOSED. ANY FIRE ALARM CABLING ABOVE THE CEILING SHALL BE PLENUM RATED.
12. FOR EXISTING AND/OR RELOCATED DEVICES ADJUST STROBE LEVELS TO APPROPRIATE RATING SHOWN. IF ADJUSTABILITY IS UNAVAILABLE REPLACE WITH NEW.
13. FIRE ALARM SOUND LEVELS AND INTELLIGIBILITY SHALL COMPLY WITH CHAPTER 9 OF THE APPLICABLE STATE BUILDING CODE.
14. VERIFY PROPER FUNCTIONALITY OF ALL EXISTING AND RELOCATED FIRE ALARM DEVICES, INCLUDING THEIR HOUSING, LENSES, ETC... PROVIDE REPLACEMENTS AS REQUIRED IF ANY ARE NOT OPERATING AS INTENDED OR HAVE ABOVE NORMAL WEAR OR DEFECTS..
15. ALL DEVICES SHALL BE COMPATIBLE WITH AND MAINTAIN THE UL LISTING OF EXISTING FA SYSTEM.
16. G.C. SHALL FIELD VERIFY EXACT REQUIREMENTS FOR FIRE ALARM SYSTEM PRIOR TO BID. SUPPLY AND INSTALL ALL NECESSARY EQUIPMENT AS REQUIRED.
17. REFER TO DRAWING. FA001 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS.
18. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
19. CONFIRM REQUIRED DEVICES AND SEQUENCE OF OPERATION WITH FIRE ALARM CONTRACTOR.
20. HATCHED AREA NOT IN THIS SCOPE OF WORK. (IF APPLICABLE).

FIRE ALARM PLAN KEYED NOTES:

1. ALL NEW DEVICES SHALL BE CONNECTED TO BASE BUILDING'S EXISTING FIRE ALARM CONTROL PANEL (FACP). CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND OPERABLE CONDITION. IF NOT FOUND, PROVIDE NEW 'FACP' PANEL DEDICATED FOR THE PROJECT SPACE. COORDINATE EXACT REQUIREMENT WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.
2. ALL DEVICES SHALL BE COMPATIBLE WITH AND MAINTAIN THE UL LISTING OF THE FA SYSTEM. CONNECT ALL FIRE ALARM SYSTEM DEVICES TO THE FIRE ALARM CONTROL PANEL AS REQUIRED. BASE BID ACCORDINGLY.
3. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF NEW/EXISTING TAMPER AND WATER FLOW SWITCHES IN FIELD IN COORDINATION WITH SPRINKLER CONTRACTOR. PROVIDE THE PROVISION ACCORDINGLY.
4. CONTRACTOR SHALL FIELD VERIFY AND COORDINATE THE EXACT LOCATION WITH ELECTRICAL, PLUMBING, SPRINKLER, MECHANICAL AND ALL OTHER EQUIPMENTS/DEVICES PRIOR TO ROUGH-INS.
5. EXISTING FIRE ALARM DEVICES SHALL REMAIN. CONTRACTOR SHALL FIELD VERIFY OPERABLE CONDITION AND EXACT LOCATION OF EXISTING FIRE ALARM DEVICES. REUSE IF POSSIBLE OTHERWISE PROVIDE NEW AS REQUIRED. RELOCATE IF REQUIRED. BASE BID ACCORDINGLY.
6. NOTIFICATION APPLIANCE CIRCUIT PANEL. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-INS. PROVIDE AS PER MANUFACTURER CUT SHEET. BASE BID ACCORDINGLY.

NOTES:

1. CONTACT FA VENDOR WISEBT PRIOR TO STARTING ANY DEMO TO ENSURE ALL FA DEVICES ARE OFF-LINE.

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1 FIRE ALARM PLAN

SCALE: 3/8" = 1'-0"

FIRE ALARM PLAN

FA100

25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 A

PLUMBING SYMBOLS LIST

PLUMBING LEGENDS

		PLUMBING ABBREVIATIONS	
EX.W	EXISTING SANITARY	CW	COLD WATER
EX.V	EXISTING VENT	HW	HOT WATER
W	SANITARY WASTE (BELOW GRADE)	HWR	HOT WATER RETURN
W	SANITARY WASTE (CEILING LEVEL)	W	WASTE SANITARY
V	VENT PIPING	VTR	VENT THRU ROOF
CW	COLD WATER	V	VENT
HW	HOT WATER	AFF/AFG	ABOVE FINISHED FLOOR/GRADE
HWR	RECIRCULATING HOT WATER	AHJ	AUTHORITY HAVING JURISDICTION
EX. CW	COLD WATER	BFP	BACKFLOW PREVENTER
	SECONDARY BFP	ETR	EXISTING TO REMAIN
	BALANCING VALVE	CO	CLEANOUT
	PIPE UP OR DOWN	FCO	FLOOR CLEANOUT
	PIPE UP	GC	GENERAL CONTRACTOR
	UNION	IW	INDIRECT WASTE
	ISOLATION VALVE	PC	PLUMBING CONTRACTOR
FCO	FLOOR CLEANOUT	WCO	WALL CLEANOUT
CO	CLEANOUT	IWH	INSTANTANEOUS WATER HEATER
	BACKFLOW PREVENTER	ET	EXPANSION TANK
	POINT OFF CONNECTION	RCP	RE CIRCULATION PUMP
	RE-CIRCULATION PUMP	FD	FLOOR DRAIN
	HUB / FLOOR DRAIN	HD	HUB DRAIN
CD	CONDENSATE DRAIN	TYP	TYPICAL
F	FRANCHISE	CD	CONDENSATE DRAIN
EV	EQUIPMENT VENDOR	VLL	VERIFY WITH LANDLORD
CC	CONTRACTORS CHOICE	SPS	SEE PLUMBING SCHDULE
OC	OWNERS CHOICE	WHA	WATER HAMMER ARRESTOR
	ACCESS PANEL	VIF	VERIFY IN FIELD

APPLICABLE CODES

2024 INTERNATIONAL BUILDING CODE

2024 INTERNATIONAL MECHANICAL CODE

2024 INTERNATIONAL PLUMBING CODE

2024 INTERNATIONAL ENERGY CONSERVATION CODE

2023 NATIONAL ELECTRIC CODE (NEC 2023)

PLUMBING DRAWING LIST

P-001	PLUMBING GENERAL NOTES, SYMBOLS LIST, ABBREVIATIONS AND FIXTURE SCHEDULE
P-100	PLUMBING FLOOR PLAN, RISERS & DETAILS

PLUMBING FIXTURE COUNT SIZING AND SCHEDULE

TAG	CW	HW	SAN	VENT	DFU	WSFU	DESCRIPTION
(WC)	1/2"	--	4"	2"	4	5.0	WATER GUARD VITREOUS CHINA, CLOSE COUPLED DESIGN, SIPHON JET FLUSHING ACTION, 1.6 GAL FLUSH, 16 1/2" HIGH ELONGATED BOWL, 12" ROUGH-IN, WHITE. KOHLER HIGHLINE K-3427 OR AMERICAN STANDARD CADET 2108.408. LUSTRA, PLASTIC, OPEN FRONT, COVER, WHITE SEAT KOHLER K-4650. 3/8" ANGLE SUPPLY W/STOP KOHLER K-7637.
(LAV)	1/2"	1/2"	2"	1-1/2"	1	1.5	VITREOU CHINA, 4" CENTERS, OVERFLOW. KOHLER UNDERMOUNT LAVATORY. OFFSET DRAIN, KOHLER K-13885, 3/8" ANGLE SUPLLIERS W/STOPS, K-7605-P. 1.25" CAST BRASS P-TRAP. KOHLER K-8998. FAUCET DECK MOUNT, 4" CENTERSET, WRISTBLADE HANDLES, CHROME PLATED, OPTIONAL 0.5 GPM AERATOR, CHICAGO E280SJKCP.
(IWH-1)	1/2"	1/2"	--	--	--	--	CHRONOMITE SR-20L/208, 4.1 KW, 0.5 GPM @ 71 DEGREE - ELECTRIC (POINT OF USE)WATER HEATER, DIMENSION 9-5/8" (L) X 6-1/4" (H) X 2-3/4" (B)
(FD-1)	--	--	3"	2"	4	--	ZURN #LC-P3S PVC BODY FLOOR DRAIN AND TRAP PRIMER, WITH #LC-CS CAST IRON ADAPTOR THREADED SHANK, COMPLETE WITH #LC-FR05NI 5" ROUND POLISHED NICKEL FRAME TOP GRATE.

PLUMBING GENERAL NOTES

1. IT IS THE INTENT OF THESE SPECIFICATIONS TO PROVIDE A COMPLETE INSTALLATION FOR FINISHED WOK, TESTED AND READY FOR OPERATION. THE WORK THROUGHOUT SHALL BE EXECUTED IN THE BEST AND MOST THOROUGH MANNER UNDER THE DIRECTION OF AND TO THE SATISFACTION OF THE OWNER.

2. ALL MATERIALS REQUIRED FOR THIS WORK SHALL BE NEW, UNUSED, BEST OF ITS RESPECTIVE KINDS, AND FREE FROM DEFECTS AND OF FIRST CLASS QUALITY. BASIS OF QUALITY SHALL BE LATEST STANDARDS OF ASTM, ANSI FEDERAL SPECIFICATIONS OR OTHER ACCEPTABLE STANDARDS.

3. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR WORK UNTIL 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.

4. THE PLUMBING CONTRACTOR SHALL GUARANTEE ALL WORK PERFORMED AND MATERIALS INSTALLED TO BE FREE FROM INHERENT DEFECTS AND SHALL KEEP IN REPAIR AND REPLACE ANY DEFECTIVE MATERIALS OF WORKMANSHIP, FREE OF COST TO THE TENANT (OWNER) FOR A PERIOD OF ONE (1) YEAR AFTER THE OPENING FOR BUSINESS.

5. ALL WORK SHALL BE DONE ACCORDING TO THE REQUIREMENTS OF ALL APPLICABLE CODES AND LEASE CRITERIA (IF APPLICABLE) AND SHALL RECEIVE THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION. PREPARE ALL REQUIRED DOCUMENTS, DRAWINGS AND PERFORM ALL REQUIRED TESTS AND PAY ALL REQUIRED CHARGES TO OBTAIN THESE APPROVALS.

6. CONTRACTOR SHALL BE HELD TO HAVE EXAMINED THE SITE FOR THE WORK BEFORE HAVING SUBMITTED A PROPOSAL. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CONDITIONS FOUND DURING THE COURSE OF THE CONTRACT.

7. THIS CONTRACTOR MUST PROVIDE LANDLORD'S CONSTRUCTION REPRESENTATIVE WITH COPIES OF REQUIRED INSURANCE AND COPIES TO BE FURNISHED TO THE OWNER BEFORE COMMENCING WORK.

8. SUBMIT THREE (3) SETS OF SHOP DRAWINGS IDENTIFIED WITH PROJECT NAME OF THE FOLLOWING (1) ELECTRIC HOT WATER HEATER OR INSINKERATOR (2) PLUMBING FIXTURES AND TRIM. CONTRACTOR SHALL SUBMIT SHOP DRAWING OF PIPING LAYOUT TO THE OWNER FOR THEIR FILE.

9. THE PLUMBING SUBCONTRACTOR IS A SUBCONTRACTOR OF THE TENANT'S GENERAL CONTRACTOR.

10. NOTCHING AND BORING OF STRUCTURAL STEEL MEMBERS IS NOT PERMITTED. WHEN HANGING FROM STRUCTURAL STEEL ONLY HANG FROM TOP FLANGE OF BEAMS AND TOP CHORDS ONLY AT PANEL POINTS OF JOISTS / TRUSSES.

I. WORK RESPONSIBILITY

1. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND CONTRACTORS FOR A COMPLETE, SAFE INSTALLATION OF PLUMBING WORK IN FULL CONFORMITY WITH REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION AS INDICATED ON DRAWINGS AND/OR HEREIN SPECIFIED, INCLUDING IN GENERAL THE FOLLOWING:

2. SANITARY DRAINAGE CONNECTIONS TO PLUMBING FIXTURES AND EQUIPMENT REQUIRING SAME WITH FINAL CONNECTIONS TO EXISTING PREINSTALLED OUTLETS PROVIDED BY PRIOR TENANT(S) OR LANDLORD. PLUMBER SHALL VERIFY EXACT LOCATION OF WASTE PIPE OUTLET BEFORE SUBMITTING BID AND NOTIFY THE ARCHITECT OF ANY LOCATION DISCREPANCIES. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CONCRETE SAWCUTTING REQUIRED TO MAKE THE FINAL CONNECTION TO THE EXISTING WASTE PIPING OR CAPPED OUTLET(S). SAWCUTTING, EXCAVATING, BACKFILLING AND NEW CONCRETE MUST MEET WITH THE LANDLORD'S APPROVAL.
   A. SNAKE SANITARY FOR A DISTANCE OF 100 FEET AND REPORT ANY BLOCKAGE.
   B. TEST WATER PRESSURE TO INSURE MINIMUM OF 50 PSI.

3. COMPLETE VENT SYSTEM, ALL FIXTURES INDIVIDUALLY VENTED WITH FINAL CONNECTION THROUGH ROOF OR TO EXISTING LANDLORD SUPPLIED COMMON VENT. ROOF PENETRATION AND FLASHING TO BE PERFORMED BY LANDLORD'S ROOFER (IF APPLICABLE). COST OF ROOF PENETRATION AND FLASHING TO BE PART OF THIS CONTRACT, UNLESS NOTED OTHERWISE IN BID PROPOSAL (IF APPLICABLE).

4. DOMESTIC WATER SUPPLY SYSTEM INCLUDING CONNECTION TO EXISTING CAPPED OUTLET AND FINAL CONNECTIONS TO PLUMBING FIXTURES AND EQUIPMENT REQUIRING SAME. VERIFY EXACT LOCATION AND SIZE BEFORE SUBMITTING BID.

5. INSULATION OF ALL HOT AND COLD WATER PIPING, INCLUDING UNDER LAVATORY A.D.A. PIPE WRAPPINGS.

6. FURNISH AND INSTALL WATER METER (IF APPLICABLE) ACCESSIBLE TO UTILITY COMPANY OR LANDLORD'S REPRESENTATIVE FOR MONITORING WATER, BUT METER SHOULD IN NO WAY BE IN THE PATH OF THE A.D.A./CABO-ANSI, 5'-0" CIRCULAR PATTERN.

7. COSTS FOR WORKING BELOW TENANT'S SLAB IN ANOTHER TENANT'S SPACE.

8. INSTALLATION OF FLOOR DRAIN, BACKFLOW PREVENTER (IF REQ. BY CODE) PER LANDLORD REQUIREMENT AND CLEANOUT PER LOCAL CODE. COORDINATE ALL LOCATIONS WITH OPERATIONS MANAGER.

II. GENERAL ITEMS

1. SLEEVES: PROVIDE #22 GAGE GALVANIZED IRON PIPE SLEEVES FOR PIPING THROUGH WALLS AND FLOOR, PACK WITH NON-ASBESTOS ROPE AND FILL WITH EXPANDO NON-SHRINKING CEMENT.

2. ESCUTCHEONS: PROVIDE EXPOSED PIPING, BOTH BARE AND COVERED, WITH CP CAST BRASS ESCUTCHEONS WHERE PASSING THROUGH FLOORS, CEILINGS, WALLS OR PARTITIONS.

3. HANGERS AND SUPPORTS: SUPPORT HORIZONTAL DRAINAGE PIPING AT LEAST EVERY 5 FEET OR AT EVERY HUB, COPPER TUBING EVERY 7 FEET AND STEEL PIPE EVERY 10 FEET WITH "CLEVIS" HANGERS AND INSULATION PROTECTION SHIELDS. PIPING SHALL NOT BE SUPPORTED FROM BRIDGING OR OTHER PIPING. ONLY SUPPORT FROM TOP FLANGES OF BEAMS AND TOP CHORDS AT PANELS OF JOIST AND TRUSSES. PROVIDE SWAY AND SEISMIC BRACING WHERE REQUIRED BY CODES.

4. TEST: TEST PIPING AND PROVE TIGHT FOR AT LEAST TWO HOURS IN ACCORDANCE WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION AND/OR AS SPECIFIED. TEST SHALL BE PERFORMED IN THE PRESENCE OF OWNER'S REPRESENTATIVE AND LOCAL INSPECTOR. TEST SHALL BE REPEATED IF NECESSARY UNTIL FINAL APPROVAL OF SYSTEM IS OBTAINED.
   A. TEST DRAINAGE AND VENT PIPING BY FILLING WITH WATER TO OVERFLOWING AT ROOF, WATER LEVEL TO REMAIN.
   B. TEST WATER PIPING WITH WATER 1 1/2 TIMES THE WORKING PRESSURE.

5. STERILIZATION OF DOMESTIC WATER SYSTEM: BEFORE BEING PLACED IN SERVICE, ALL WATER LINES SHALL BE CHLORINATED TO THE SATISFACTION OF THE ARCHITECT OR LANDLORD'S REPRESENTATIVE, IN ACCORDANCE WITH A.W.W.A. SPECIFICATION C651-05.

6. SLOPE WASTE LINES 2 INCHES AND SMALLER NOT LESS THAN 1/4 INCH PER FOOT. SLOPE LARGER MAINS NOT LESS THAN 1/8 INCH PER FOOT.

7. INSTALL A CLEANOUT AT BASE OF EACH SOIL STACK, AT EACH CHANGE IN DIRECTION, AT INTERVALS NOT OVER 50 FEET AND ELSEWHERE AS SHOWN ON DRAWINGS OR REQUIRED BY LOCAL CODE. CLEANOUTS SHALL NOT BE INSTALLED IN PUBLIC AREAS WITHOUT SPECIFIC PERMISSION BY TENANT'S CONSTRUCTION MANAGER.

III. MATERIALS

1. DRAINAGE AND VENT PIPING: EXTRA HEAVY HUB AND SPIGOT CAST IRON SOIL WITH RUBBER GASKETS CONFORMING TO ASTM C564. NO-HUB CAST IRON TO HAVE HEAVY DUTY, TYPE 304 STAINLESS STEEL COUPLINGS CONFORMING TO ASTM A 666, TYPE 304 STAINLESS STEEL SHIELD, TYPE 304 STAINLESS STEEL BANDS AND SLEEVE.
   NPS 1 1/2" TO NPS 4": 3" WIDE SHIELD WITH 4 BANDS;
   NPS 5" TO NPS 10": 4" WIDE BAND WITH 6 BANDS.

2. WATER PIPING BELOW SLAB: TYPE K HARD COPPER TUBING, WITH CAST BRONZE OR WROUGHT COPPER SOLDER JOINT FITTINGS USING 95-5 SOLDER. WATER PIPING ABOVE SLAB: TYPE L HARD COPPER TUBING USING SILVER SOLDER. ALL WATER SUPPLY PIPING TO CONFORM TO NSF/ANSI 61 AND ASTM B 75, ASTM B 88, ASTM B 251, OR ASTM B 447. ALL PIPE FITTINGS SHALL CONFORM TO ASSE 1061, ASME B 16.15, ASME B 16.18, ASME B 16.22, ASME B 16.23, ASME B 16.26, AND ASME B 16.29.

3. VALVES: GATE VALVE WATTS SERIES B-3000, CHECK VALVE WATTS SERIES B-5000, BALL VALVE WATTS SERIES B6080 OR B6081 FULL PORT. ALL VALVES 1/2" TO 2" BRONZE BODY. VALVES SHALL CONFORM TO NSF/ANSI 61.

4. PRESSURE AND TEMPERATURE RELIEF VALVE: WATTS REGULATING CO. MODEL 10L. T&P RELIEF VALVE SHALL CONFORM TO ANSI Z21.22.

5. AIR VENT: HOFFMAN #79 WATER MAIN VENT VALVE.

6. MIXING VALVE: WATTS SERIES MMV MIXING VALVE, 1/2" LINE SIZE. MIXING VALVE SHALL CONFIRM TO ASSE 1070.

IV. INSULATION

1. ALL HOT AND COLD WATER PIPING AND FITTINGS SHALL BE INSULATED WITH 1" THICK RIGID FIBERGLASS WITH VAPOR BARRIER UNIVERSAL JACKET PASTED WITH VAPOR BARRIER CEMENT. VAPOR BARRIER NOT REQUIRED ON HOT WATER PIPING.

2. ALL ADA CONFORMING, WHEELCHAIR ACCESSIBLE LAVATORY P-TRAP AND ANGLE VALVE ASSEMBLIES TO BE COVERED WITH THE MOLDED, ANTIMICROBIAL TRUBRO, INC "LAV-GUARD" UNDERSINK PROTECTIVE PIPE COVER MODEL #103.

V. SPECIFIC PLUMBING SPECIFICATIONS

1. INSTALL NEW ONLY IF EXISTING DOES NOT MEET CURRENT ADA/CABO-ANSI (AS APPLICABLE) STANDARDS, OR IS DAMAGED, NOT IN WORKING ORDER OR NOT EXISTING AS APPLICABLE.

2. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO SUPPLY HANDICAPPED TOILET FIXTURES, IF REQUIRED BY CODE OR NOTED ON THE DRAWINGS, UTILIZING THE SPECIFICATION ABOVE AS A STANDARD AND MEETING CODE REQUIREMENTS. SPACING OF FIXTURES TO BE COORDINATED WITH THE GENERAL CONTRACTOR AS WELL AS THE PLUMBING INSPECTOR'S REQUIREMENTS.

VI. LANDLORD'S CRITERIA

1. THE PLUMBING CONTRACTOR IS TO BECOME FAMILIARIZED WITH LANDLORD'S CRITERIA FOR THIS LOCATION AND INCLUDE ANY WORK REQUIRED OF THIS CRITERIA, WHICH IS NOT SPECIFICALLY NOTED IN THESE DRAWINGS AND SPECIFICATIONS.

FIELD VERIFY ALL CONDITIONS

DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS COST.

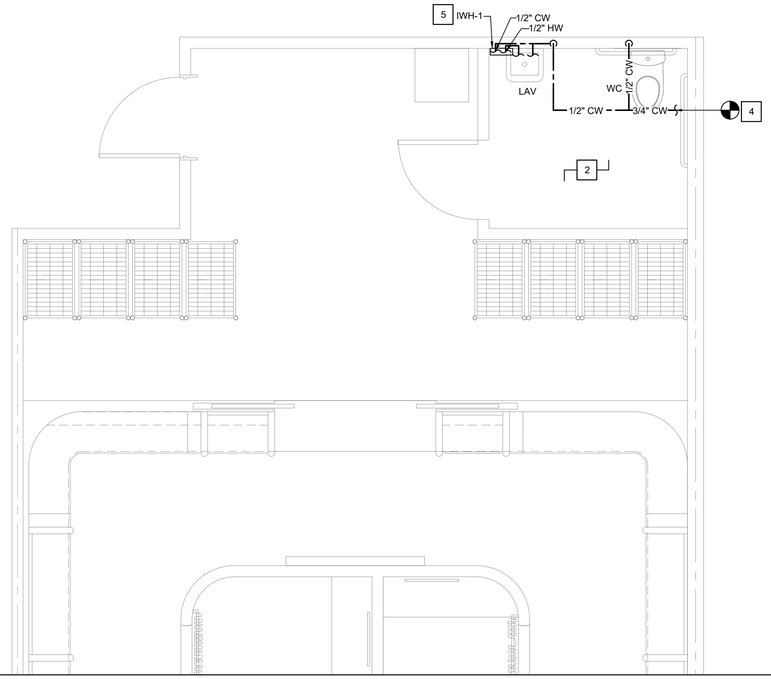
BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

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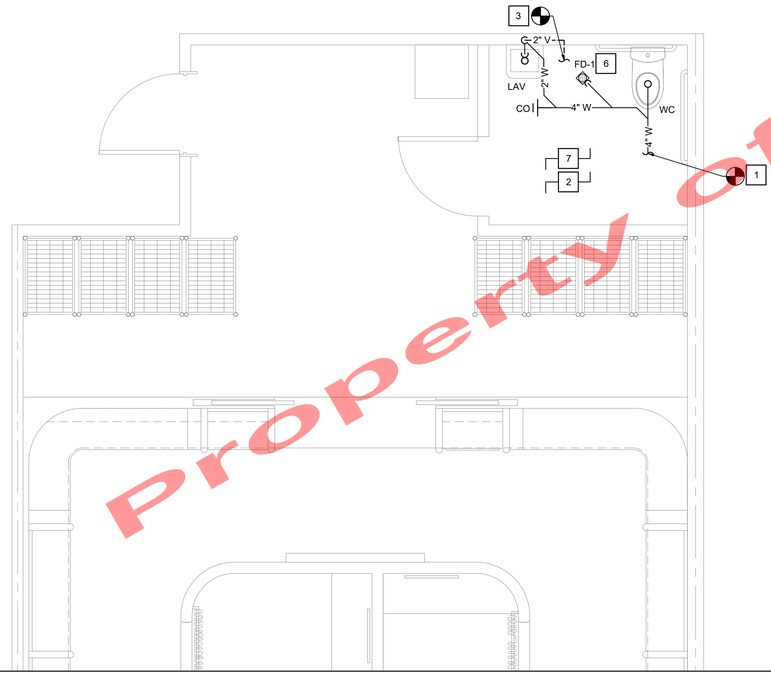
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SHEET TITLE: PLUMBING GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND FIXTURE SCHEDULE

P001



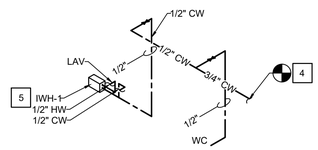
1 SCALE: 3/8" = 1'-0" PLUMBING WATER SUPPLY PLAN



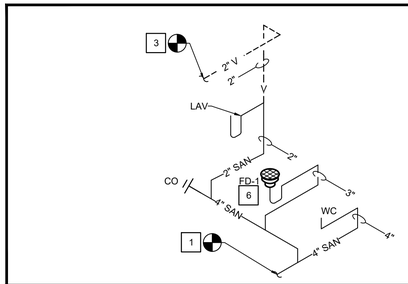
2 SCALE: 3/8" = 1'-0" PLUMBING SANITARY AND VENT PLAN

1 PLUMBING KEY NOTES

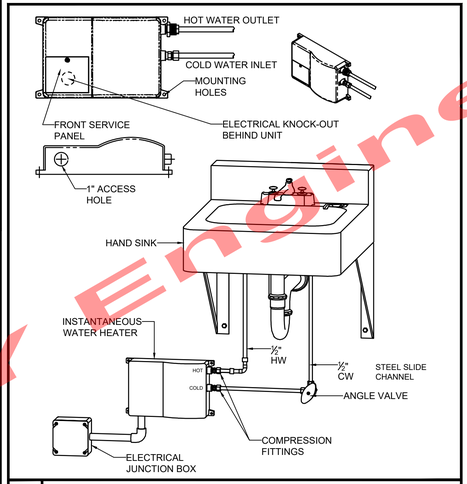
1	EXTEND AND CONNECT NEW 4" SANITARY PIPING TO THE EXISTING SANITARY LINE WITHIN THE SPACE. CONTRACTOR SHALL FIELD VERIFY THE EXISTING SANITARY PIPE SIZE, LOCATION, INVERT ELEVATION, FLOW DIRECTION, AND TIE-IN POINT PRIOR TO BID. VERIFY THE FEASIBILITY OF THE PROPOSED CONNECTION IN THE FIELD AND RE-ROUTE NEW SANITARY PIPING AS REQUIRED. BASE BID ACCORDINGLY
2	CONTRACTOR TO COORDINATE WITH THE CLIENT/LANDLORD AND FIELD VERIFY THAT THE EXISTING DOMESTIC WATER, SANITARY, AND VENT PIPING WITHIN THE SPACE IS IN GOOD CONDITION. REPLACE ANY PIPING FOUND TO BE DEFECTIVE OR DETERIORATED AND NOTIFY THE ENGINEER OF ANY FIELD DISCREPANCIES PRIOR TO BID.
3	EXTEND AND CONNECT NEW 2" VENT LINE TO EXISTING VENT LINE IN THE SPACE. CONTRACTOR TO FIELD VERIFY EXISTING VENT LOCATION AND SIZE PRIOR TO BID.
4	EXTEND AND CONNECT NEW 3/4" CW LINE TO THE EXISTING CW LINE WITHIN THE SPACE. CONTRACTOR TO FIELD VERIFY THE LOCATION AND SIZE OF THE EXISTING CW LINE PRIOR TO CONNECTION. COORDINATE WITH THE CLIENT/LANDLORD TO VERIFY THE REQUIREMENT FOR A WATER METER AND BACKFLOW PREVENTER. PROVIDE NEW IF REQUIRED BY THE AHJ OR OWNER. UPGRADE THE EXISTING WATER SERVICE IF REQUIRED. BASE BID ACCORDINGLY.
5	PROVIDE INSTANTANEOUS POINT-OF-USE ELECTRIC WATER HEATER (IWH-1), SET TO 110°F INSTALLED UNDER LAVATORY (LAV) WITH ALL ASSOCIATED ACCESSORIES AND FITTINGS. CONTRACTOR SHALL FIELD VERIFY AND INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS.
6	PROVIDE TRAP PRIMER FOR THE FLOOR DRAINS.
7	CONTRACTOR TO FIELD VERIFY AND PROVIDE HEAT TRACE FOR THE PIPING EXPOSED IN FREEZING CONDITION AS PER MALL CRITERIA IF REQUIRED. COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR THE ELECTRICAL INPUT.



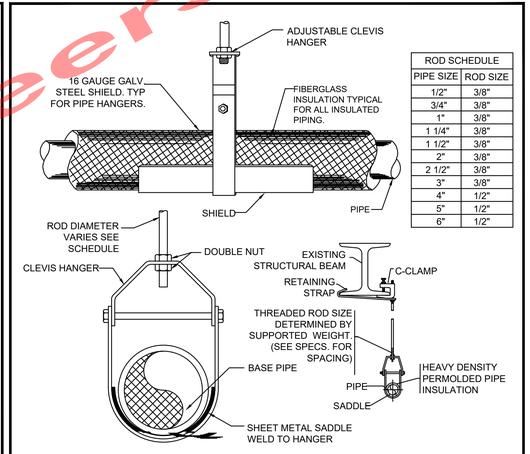
3 WATER SUPPLY ISOMETRIC DIAGRAM



4 SANITARY ISOMETRIC DIAGRAM

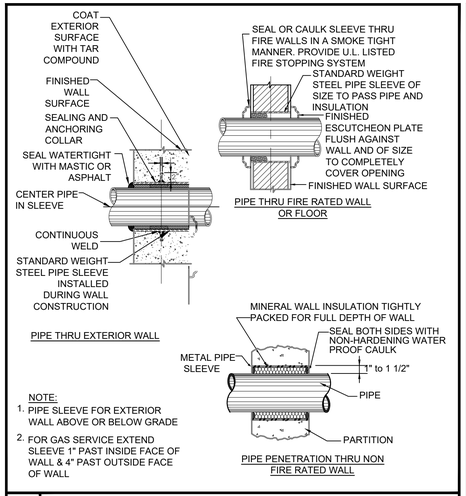


5 WATER HEATER (POINT OF USE) DETAIL

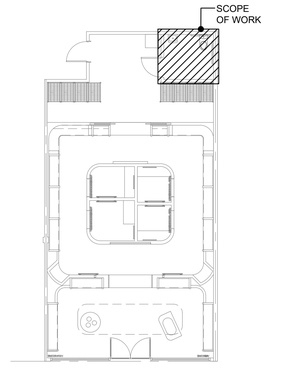


ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
1"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

6 HANGER DETAILS



7 HANGER DETAIL



8 KEY PLAN

Property of NY Engineers

THIRDLOVE

PLUMBING FLOOR PLAN, RISERS & DETAILS

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