MECHA	NICAL SYMBOLS LIST	F	MECHANICAL ABBREVIATIONS
AC-1) (TXF-1)	EQUIPMENT SYMBOL		I
		AFF	ABOVE FINISHED FLOOR
•	POINT OF NEW CONNECTION TO EXISTING	AL	ACOUSTIC LINING
		BD	BACKDRAFT DAMPER
	AIR DEVICES	CFM	CUBIC FEET OF AIR PER MINUTE
XX	CEILING DIFFUSER SUPPLY	CD	CONDENSATE DRAIN PIPE DOWN
	CEIEINO BILLOSEIX SOLLET	DN	ENERGY EFFICIENCY RATIO
	CEILING DIFFUSER RETURN/EXHAUST	EER FC	FLEXIBLE CONNECTION
			FIRE DAMPER W/ACCESS DOOR
†	SIDEWALL LINEAR DIFFUSER-SUPPLY	FD/AD FD	FIRE DAMPER W/FUSIBLE LINK
		10	INTEGRATED ENERGY
ı		IEER	EFFICIENCY RATIO
\$	SIDEWALL LINEAR DIFFUSER-RETURN		SEASONAL ENERGY
		SEER	EFFICIENCY RATIO
DU(CT ACCESSORIES	VD	VOLUME DAMPER
		BOD	BOTTOM OF DUCT
Į M	MOTORIZED DAMPER W/ ACCESS DOOR	EX	EXHAUST AIR
	MOTORIZED DAMIFER WY ACCESS DOOR	AHU	AIR HANDLING UNIT
		OA	OUTSIDE AIR
	VOLUME DAMPER W/ ACCESS DOOR	ACCU	AIR COOLED CONDENSING COIL UNIT
	_	EDH	ELECTRIC DUCT HEATER
BD		SA	SUPPLY AIR
<u> </u>	BACKDRAFT DAMPER	RA	RETURN AIR
		OAF	OUTSIDE AIR FAN
CONTR	OLS AND SENSORS	KEF	KITCHEN EXHAUST FAN
	OLS AND SENSONS	MAU	KITCHEN MAKE UP AIR UNIT
T	THERMOSTAT	EF	EXHAUST FAN
Ūs	TEMPERATURE SENSOR		
	DUCTWORK		
24X12	RECTANGULAR DUCT (WIDTH X DEPTH)		
======	AIR DUCT W/ 1.5" ACOUSTICAL LINING		
FC FC	FLEXIBLE CONNECTION		
ø12	ROUND DUCT (DIAMETER)		
\bigcap	DOUND DUOT OPOSS OFSTION		

SR. NO.		MECHANICAL DRAWING LIST
1	M-1	MECHANICAL SYMBOL, DRAWING LIST, ABBREVIATION & NOTES
2	M-2	MECHANICAL SPECIFICATIONS (1 OF 2)
3	M-3	MECHANICAL SPECIFICATIONS (2 OF 2)
4	M-4	MECHANICAL FLOOR PLAN
5	M-5	MECHANICAL ROOF PLAN
6	M-6	MECHANICAL DETAILS (1 OF 3)
7	M-7	MECHANICAL DETAILS (2 OF 3)
8	M-8	MECHANICAL DETAILS (3 OF 3)
9	H-1	HOOD DETAILS (1 OF 2)

ROUND DUCT CROSS SECTION

SUPPLY AIR RECTANGULAR DUCT

RETURN AIR RECTANGULAR DUCT

HOOD DETAILS (2 OF 2)

GOING UP/DOWN

GOING UP/DOWN

| H-2

JOHNSON CITY BUILDING NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2018-NORTH CAROLINA BUILDING CODE AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- 1. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
- 2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2018 INTERNATIONAL BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704].
- 3. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
- 4. SMOKE DETECTOR SHALL MEET UL268A.
- 5. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
- A. STANDARDS OF HEATING 2015 IMC SECTION 309.1
- B. DUCT CONSTRUCTION AND INSTALLATION— 2015 IMC SECTION 603
 C. AIR INTAKES, EXHAUSTS AND RELIEF 2015 IMC SECTION 401.5
- D. AIR FILTERS 2015 IMC SECTION 605
- 6. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- 7. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2015 IMC SECTION 401.
- 8. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2015 IMC SECTION 403.3.1.1
- 9. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE—RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- 10. 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.
- 11. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.

GENERAL NOTES

- 1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
- 2. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- 3. BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF—DAYS WITHOUT PRIOR WRITTEN APPROVAL.
- 4. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
- 5. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY 1) THE "PREMIUM" PORTION OF THE WAGES PAID.
- 6. CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
- 7. DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE OTHER TRADES IS REQUIRED.
- 8. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
- 9. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- 10. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
- 11. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
- 12. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- 13. ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
- 14. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
- 15. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- 16. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- 17. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
- 18. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- 19. 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.

- 20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
- 21. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
- 22. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- 23. 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.
- 24. 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.
- 25. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.

DEFINITIONS:

- 1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE 3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE MOVED THROUGH ALL AREAS.

 AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

SCOPE OF WORK

SCOPE OF WORK

- 1. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFI'S, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.
- 2.THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
- 3.THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.



	ISSUE
No. DATE	DESCRIPTION
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PROJECT No.:	23109
DWG TITLE:	
MECH	HANICAL

SHEET No.

GENERAL NOTES

ABBREVIATION 8

SYMBOLS

M-I

GENERAL HVAC NOTES

- 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. PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO, AND WITHIN 50 FT. OF, ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW SUPPORTS AND ANCHOR POINTS).
- 12. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP— AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- 13. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK. CUTTING OF PIPING. OR FABRICATION OF BEAMS.
- 14. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- 15. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL
- 16. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
- 17. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION—FREE INSTALLATION.
- 18. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
- 19. ALL ROOF—MOUNTED EQUIPMENT CURBS/STEEL RAILS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
- 20. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- 21. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- 22. ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
- 23. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.

AIR OUTLETS

GENERAL:

- 1) MARGIN TYPES, COLORS, FINISH AND METHODS OF ATTACHMENT FOR ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE COORDINATED WITH ARCHITECTURAL CEILING AND WALL DETAILS AND SPECIFICATIONS.
- 2) FRAME TYPE SUITABLE FOR MOUNTING IN CEILING OR WALL CONSTRUCTION AS INDICATED ON ARCHITECTURAL PLANS.
- 3) EXACT LOCATION OF ALL AIR OUTLETS AS PER ARCHITECTURAL PLANS.
- 4) SUITABLE FOR OPERATION AT 20% EXCESS AND 20% LESS THAN NOTED CAPACITY FOR CONSTANT VOLUME SYSTEMS AND AT 20% EXCESS AND 60% LESS THAN NOTED CAPACITY FOR VARIABLE VOLUME SYSTEMS. MANUFACTURER RESPONSIBLE FOR EXAMINING APPLICATION OF EACH OUTLET AND GUARANTEE THAT EACH WILL PROVIDE REQUIRED NC LEVELS AND COMFORT SPACE CONDITIONS WITHOUT DRAFTS THROUGHOUT OPERATING RANGE.
- 5) ALL DIFFUSERS SHALL BE PROVIDED WITH OPPOSED BLADE VOLUME DAMPERS. DAMPER OPERATING LEVERS SHALL BE ACCESSIBLE AT THE FACE OF AIR OUTLETS.
- A. SQUARE DIFFUSERS: DIFFUSERS SHALL BE STEEL CONSTRUCTION PAINTED WHITE SIMILAR TO ANEMOSTAT

INSULATION — GENERAL REQUIREMENTS

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

B. DEFINITIONS:

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

DUCTWORK INSULATION

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

SERVICE SUPP/RET SUPP/RET INTAKE KITCHEN EX	LOCATION CONCEALED EXPOSED ALL	CHEDULE — DI R-VALUE R-6 R-8 R-8 1.5" (2 LAYERS)	UCTWORK TYPE D-1 D-1 D-1	FINISH VAPORSEAL VAPORSEAL VAPORSEAL 3M FIRE MASTER
SUPPLY	EXTERIOR	R-8	D-1	DUCT WRAF VAPORSEAL

- B. REINSULATE ALL DUCTWORK AND PIPING WHICH IS EXISTING TO REMAIN AND WAS DAMAGED DURING CONSTRUCTION OR SHOWN OR REQUIRED TO BE RELOCATED. INSULATE WITH SAME MATERIAL AND THICKNESS.
- C. NON-INSULATED DUCTWORK:
- 1) WHERE SOUND LINING IS OF MINIMUM THICKNESS SPECIFIED FOR INSULATION.
- 2) AIR CONDITIONING RETURN AIR DUCTWORK EXPOSED IN AIR CONDITIONED SPACES AND INSTALLED IN HUNG CEILINGS WHERE SPACE IMMEDIATELY ABOVE AND BELOW ARE BOTH AIR CONDITIONED.MATERIAL:

D. MATERIAL:

- 1) TYPE D-1: MINIMUM 1-LB DENSITY FIBERGLASS BLANKET, MAXIMUM 0.28 K-FACTOR AT 75 ADEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FOIL-SKRIM-KRAFT FACING SIMILAR TO MANVILLE MICROLITE.
- 2) TYPE D-2: 3 LB. FIBERGLASS BOARD. THE MAXIMUM K FACTOR SHALL BE 0.23 AT 75 DEG F MEAN TEMPERATURE WITH A MINIMUM DENSITY OF 3 LB. THE INSULATION SHALL BE PROVIDED WITH A FACTORY—APPLIED ALL PURPOSE OR ALL SERVICE FACING. THE INSULATION SHALL BE EQUAL TO MANVILLE TYPE 814 SPIN—GLAS AP.
- 3) TYPE D-3: MINIMUM 6 LB FIBERGLASS BOARD. MAXIMUM 0.22 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY APPLIED ALL PURPOSE OR ALL SERVICE FACING. SIMILAR TO MANVILLE 817 SPIN-GLAS AP

E. 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.

F. INSTALLATION:

- a. FIBERGLASS BLANKET: 2 IN. LAP STRIPS AT ALL SEAMS. SECURE BOTTOM OF ALL DUCTS OVER 24 IN. WIDE WITH MIN 2 ROWS OF WELD PINS 12 IN. ON CENTER. SECURE ALL SEAMS WITH FOIL VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE.
- b. FIBERGLASS BOARD: SEAL JOINTS AND BREAKS IN FACING WITH 3 IN. WIDE TAPE TO MATCH FACING AND ADHERE WITH VAPOR SEAL ADHESIVE. APPLY 5 IN. WIDE TAPE AT CORNERS, WELD PINS ON TOP, SIDES AND BOTTOM.

PIPING INSULATION

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

PIPING INSULATION SCHEDULE

SERVICE	SIZE	THICKNESS	MATERIAL FINISH
REFRIGERANT PIPING CONDENSATE DRAIN		1.5" 1"	P-6 P-6

- B. PIPING, VALVES AND FITTINGS TO BE INSULATED:
- 1) 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.
- 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.
- 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:

- 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: ALLIMINUM JACKETING WITH MINIMUM 0.016 IN
- 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.

VIBRATION ISOLATION

GENERAL:

- 1) PROVIDE ISOLATION FOR EQUIPMENT, PIPING AND DUCTWORK.
- 2) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 3) PROVIDE LEVELING DEVICES AND APPROVED RESILIENT RESTRAINING DEVICES AS REQUIRED TO LIMIT EQUIPMENT AND PIPING MOTION IN EXCESS OF 1/4".

 4) ACCEPTABLE MANUFACTURERS:

a.MASON INDUSTRIES, INC.

b. VIBRATION ELIMINATOR CO.

TYPE PCHS.

c.KORFUND DYNAMICS CORP.

B. CEILING-HUNG FANS AND EQUIPMENT:

1) PROVIDE SPRING HANGER ROD ISOLATORS. STEEL COMPRESSION SPRING AND NEOPRENE SOUND PAD WITHIN A STEEL RETAINER BOX. SIMILAR TO MASON

- 2) 1 IN. MINIMUM STATIC DEFLECTION. 1/2 IN. MINIMUM RESERVE DEFLECTION. FACTORY—PRELOADED TO 75% OF RATED LOAD.
- 3) PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE EQUIPMENT OR STRUCTURE CANNOT SUPPORT POINT
- C. FLOOR MOUNTED EQUIPMENT HAVING INTERNAL ISOLATION:
- 1) PROVIDE 5/16 IN.—THICK NEOPRENE ACOUSTICAL BASE PADS OF RIB.

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.
- 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
- 5. 5. 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.
- 6. 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.
- 7. 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
- 22 13 TO 24 1"X1"X1/8" ANGLES ON 4
 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

- 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.
- ALUMINUM SHEETS.
 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:
- 8. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.
- 9. END OF SECTION 233113



NO. DATE DESCRIPTION

DWG DATE: 02-16-2023

REVIEWED BY: NYE

PROJECT No.: 23109

DWG TITLE:

SHEET No.

M-2

MECHANICAL

SPECIFICATIONS

(I OF 2)

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
- 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

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: GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.
- B. FIRE-TEST-RESPONSE CHARACTERISTICS: 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: OWNER-ENGAGED AGENCY ACCORDING 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 230548 - VIBRATION CONTROLS FOR HVAC EQUIPMENT

PART 1 — GENERAL

- 1.1 PERFORMANCE REQUIREMENTS A. SEISMIC-RESTRAINT LOADING:

 - 1. SITE CLASS AS DEFINED IN THE IBC: A, B 2. ASSIGNED SEISMIC USE GROUP OR BUILDING
 - CATEGORY AS DEFINED IN THE IBC: I II III a. COMPONENT IMPORTANCE FACTOR: 1.0
 - b. COMPONENT RESPONSE MODIFICATION FACTOR:
 - c. COMPONENT AMPLIFICATION FACTOR: 2.5. 3. DESIGN SPECTRAL RESPONSE ACCELERATION AT
 - SHORT PERIODS (0.2 SECOND) 18% 4. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%

1.2 COMPONENTS

A. VIBRATION ISOLATORS:

- 1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
- 2. MOUNTS: DOUBLE-DEFLECTION TYPE.
- 3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS 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
- 8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
- 9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COIL-SPRING COMBINATION 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, WELDE STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE

1.3 FIELD QUALITY CONTROL

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

PART-2 PRODUCTS

1.4 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:

CTION 230593 — TESTING, ADJUSTING, AND BALANCING FOR HVAC

- SUMMARY TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
- MOTORS.
- 2. CONDENSING UNITS.
- 3. AIR SYSTEM: CONSTANT VOLUME

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

END OF SECTION 230548

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 <mark>FURNISH AND</mark> 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.
- ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY
- H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT

TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING

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

SEASONAL TESTS. END OF SECTION 230593

- NOISE CONTROL A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.
- B. PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK: 1) ALL DUCTWORK WITHIN NOT LESS THAN 20 FT ON EACH
- 2) AIR TRANSFER DUCTS.

4) ALL MIXED AIR PLENUMS.

- 3) DOWNSTREAM OF ALL CONSTANT VOLUME BOXES FOR A MINIMUM OF 15 FT.
- 5) FULL EXTENT OF SUPPLY DUCTS SERVING CONFERENCE
- ROOMS. 6) ALL EXPOSED INTERIOR SUPPLY DUCTWORK.

SIDE OF ALL FANS AND AC UNITS.

- 7) ALSO WHERE NOTED ON A DRAWING. C. SOUND LINING IN DUCTWORK: FIBROUS GLASS, MINIMUM 3 LB DENSITY, 1 IN. THICKNESS, MAXIMUM 0.25 K FACTOR AT 75 DEG F MEAN TEMPERATURE WITH ACRYLIC COATED FINISH FACTORY APPLIED EDGE COATING AND STENCILED IN ACCORDANCE WITH NFPA 90. FLAMESPREAD SHALL BE A MAXIMUM OF 25. LINING SHALL NOT SUPPORT MICROBIAL GROWTH AND SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1071 AND ASTM G21/G22. SIMILAR TO MANVILLE
- PERMACOTE LINA COUSTIC. D. ALL SOUND LINING, ADHESIVES, FACES AND ACCESSORIES TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, EXCEPT AS OTHERWISE NOTED.

THERMOSTATIC CONTROLS:

C403.4 HEATING AND COOLING SYSTEM CONTROLS

EACH HEATING AND COOLING SYSTEM SHALL BE PROVIDED WITH THERMOSTATIC CONTROLS AS SPECIFIED IN SECTION C403.4.1, C403.4.1.2, C403.4.1.3 AND C403.4.2

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 TEMPERATUR WITHIN THE ZONE. WHERE HUMIDIFICATION DEHUMIDIFICATION OR BOTH IS PROVIDED, AT LEAST ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

C403.4.1.2 DEADBAND

WHERE USED TO CONTROL BOTH HEATING AND COOLING ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS CAPABLE OF BEING SHUT OFF OR REDUCED TO A MINIMUM.

- 1. THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN
- HEATING AND COOLING MODES. 2. OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL

C403.4.1.3 SET POINT OVERLAP RESTRICTION

WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE ROVIDED WITH THE CAPABILITY TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.4.1.2

403.4.2 OFF-HOUR CONTROLS

EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AU<mark>TOMATIC</mark> TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A READILY ACCESSIBLE MANUAL SHUTOFF SWITCH.

(13°C) OR UP TO 85°F (29°C).

1. ZONES THAT WILL BE OPERATED CONTINUOUSLY

C403.4.2.1 THERMOSTATIC SETBACK CAPABILITIES THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE

SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F

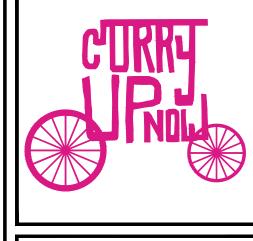
2. ZONES WITH A FULL HVAC LOAD DEMAND NOT

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN CAPABILITIES AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR AT LEAST 10 HOURS. ADDITIONALLY THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.4.2.3 AUTOMATIC AND OPTIMUM START CAPABILITIES

AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

INDIVIDUAL HEATING AND COOLING SYSTEMS WITH SETBACK CONTROLS AND DIRECT DIGITAL CONTROL SHALL HAVE OPTIMUM START CONTROLS. THE CONTROL ALGORITHM SHALL, AS A MINIMUM, BE A FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SET POINT, THE OUTDOOR TEMPERATURE, AND THE AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY. MASS RADIANT FLOOR SLAB SYSTEMS SHALL INCORPORATE FLOOR TEMPERATURE INTO THE OPTIMUM START ALGORITHM.



DATE DESCRIPTION DWG DATE: 02-16-2023 REVIEWED BY: PROJECT No.: 23109 DWG TITLE:

ISSUE

SPECIFICATIONS (2 OF 2)

MECHANICAL

SHEET No.

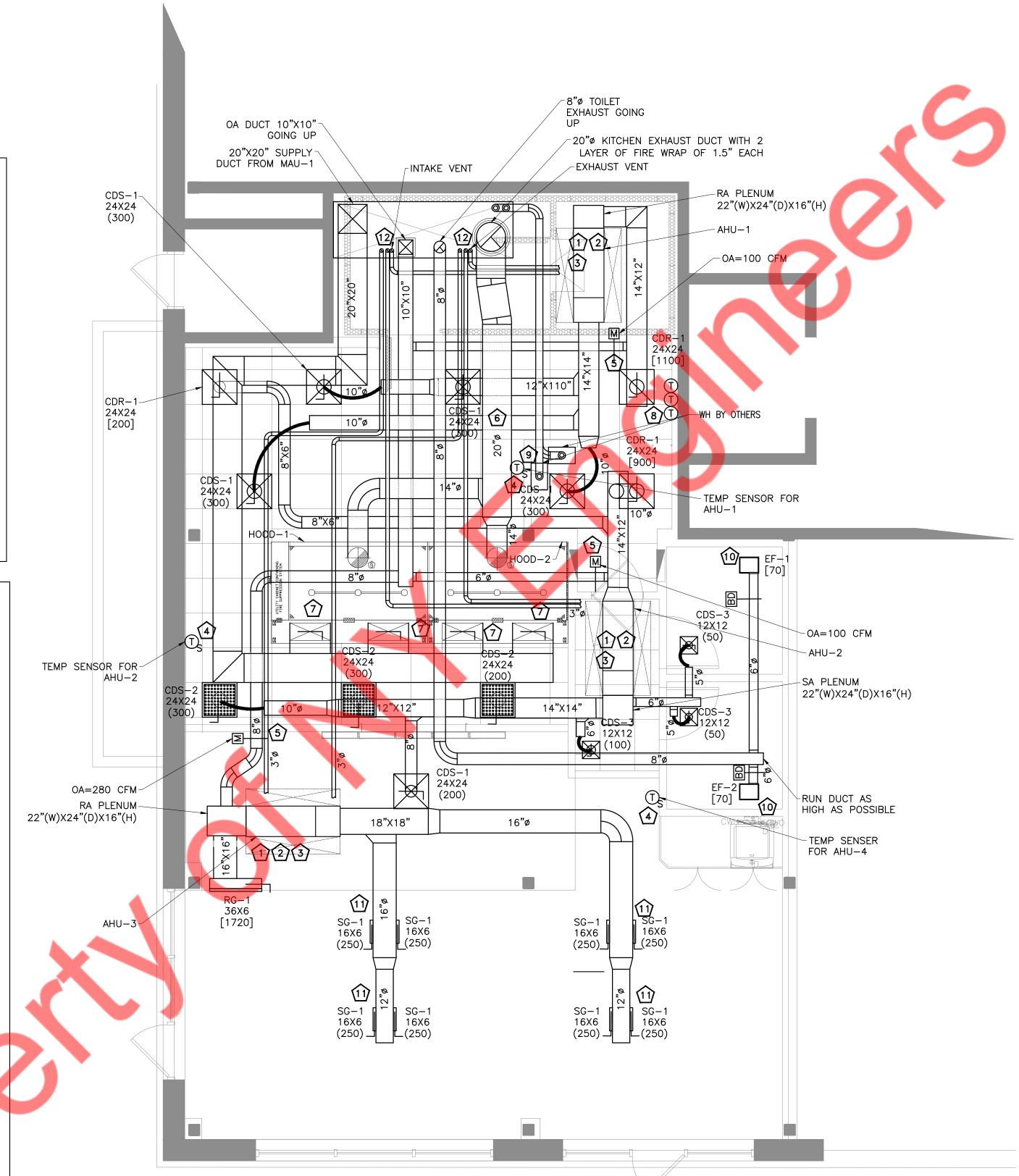
MECHANICAL GENERAL NOTES

- A. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN. B. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFEST AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION. . COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL
- . EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING
- DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON
- ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION. . CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL
- EQUIPMENT SELECTED.
- H. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- MOUNT DUCTWORK AS HIGH AS POSSIBLE. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
- K. PROVIDE R-6 INSULATION FOR SUPPLY AND RETURN DUCT INSIDE THE SPACE AND R-8INSULATION FOR OUTSIDE DUCTING.
- COORDINATE ALL EQUIPMENT WITH STRUCTURAL M. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/ BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE
- N. PROVIDE CORD-OPERATED DAMPERS IN INACCESSIBLE CEILINGS.
- O. PROVIDE 1.5" FIRE WRAP (TWO LAYERS) TO KITCHEN EXHAUST DUCT AS PER MANUFACTURERS RECOMMENDATIONS. . PROVIDE INTERNAL INSULATION FOR EXPOSE DUCTING AND EXTERNAL INSULATION FOR
- DUCTING IN CEILING SPACE. Q. ALL MOTORIZED DAMPER SHALL BE CLASS I MOTORIZED DAMPERS. THE DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 4 CFM/FT2 OF DAMPER SURFACE AREA AT 1.0 INCH WATER GAUGE AND SHALL BE LABELED BY AN APPROVED AGENCY WHEN TESTED IN

FLOOR PLAN KEY NOTES

ACCORDANCE WITH AMCA 500D.

- 1. CONNECT 1-1/4" CD FROM AC TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1% TOWARD SINK. PROVIDE CONDENSATE PUMP AS/IF REQUIRED.
- 2. INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE INSULATION TO REF PIPING AS PER ENERGY CONSERVATION CODE. COORDINATE WITH BASE BUILDING ENGINEER FOR PIPE ROUTING AND RISER LOCATION. NOTIFY THE ENGINEER OF ANY DISCREPANCY BEFORE COMMENCING BID.
- PROVIDE ACOUSTICAL JACKET TO AHU. PROVIDE AN AUXILIARY DRAIN PAN WITH WATER LEAKAGE SENSOR IN ORDER TO SHUT-OFF THE UNIT IN CASE OF WATER LEAKAGE. THE PAN SHALL HAVE A DEPTH OF NOT LESS THAN 1.5 INCHES, SHALL BE NOT LESS THAN 3 INCHES LARGER THAN THE UNIT. OR THE COIL DIMENSIONS IN WIDTH AND LENGTH AND SHALL BE CONSTRUCTED OF CORROSION—RESISTANT MATERIAL. METALLIC PANS SHALL HAVE A THICKNESS OF NOT LESS THAN 0.0236 INCH (NO. 24 GAGE) FOR GALVANIZED SHEET METAL PANS, 0.0179 INCH (NO. 26 GAGE) FOR STAINLESS STEEL PANS, OR 0.0320 INCH (NO. 20 GAGE) FOR ALUMINUM PANS. NON-METALLIC PANS SHALL HAVE A THICKNESS OF NOT LESS THAN 0.0625 INCH.
- 4. PROVIDE REMOTE TEMP SENSOR AND WIRE BACK TO T-STAT.
- 5. MD TO INTERLOCK WITH RESPECTIVE AHU'S
- 6. 20"ø GREASE EXHAUST DUCT UP TO ROOF TO KEF-1. DUCT TO BE 16GA. BLACK IRON WELDED LIQUID TIGHT. CLEAN OUT OPENING SHALL BE PROVIDED EVERY CHANGE IN DIRECTION WITHIN 3 FEET OF EXHAUST FAN.
- 7. 28"X8" SUPPLY AIR DUCT TO HOOD COLLAR.
- 8. PROVIDE PROGRAMMABLE THERMOSTAT WITH LOCKING COVER. COORDINATE LOCATION ON SITE WITH ARCHITECT / OWNER. PROVIDE REMOTE SENSOR LOCATED 72" ABOVE FINISHED FLOOR NEAR LOCATION INDICATED. SEAL WALL OPENINGS WITH CAULK. COORDINATE LOCATION ON SITE WITH GENERAL CONTRACTOR AND EQUIPMENT. AVOID LOCATING NEAR OR ABOVE SOURCES OF HEAT.
- 9. Ø3"/Ø5" CONCENTRIC VENT FOR COMBUSTION AIR INTAKE/EXHAUST FROM WATER HEATER EQUIPMENT TO ROOF TERMINATION KIT.ROUTE PIPING WITH MINIMAL AMOUNT OF BEND AND LENGTH AS REQUIRED BY RESPECTIVE UNIT MANUFACTURERS'S REQUIREMENT.
- 10. PROVIDE A NEW CEILING-MOUNTED EXHAUST FAN. INTERCONNECT EXHAUST FAN WITH AHU-IN THE ROOM. REFER ELECTRICAL LIGHT FAN. FAN SHALL BE SUSPENDED STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURE MEMBER PRIOR TO INSTALLATION.
- 11. PROVIDE AIR SCOOP FOR SG-1.
- 12. TERMINATE 3"Ø VENT FOR COMBUSTION AIR INTAKE/EXHAUST FROM GAS FIRED EQUIPMENT THE ROOF WITH VENT CAP. RUN VENT AS HIGH AS POSSIBLE.





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MECHANICAL FLOOR PLAN

GENERAL NOTES

A. ALL ROOF WORK (PENETRATIONS, CURBS, ETC.) TO BE COMPLETED BY HAMLIN ROOFING.

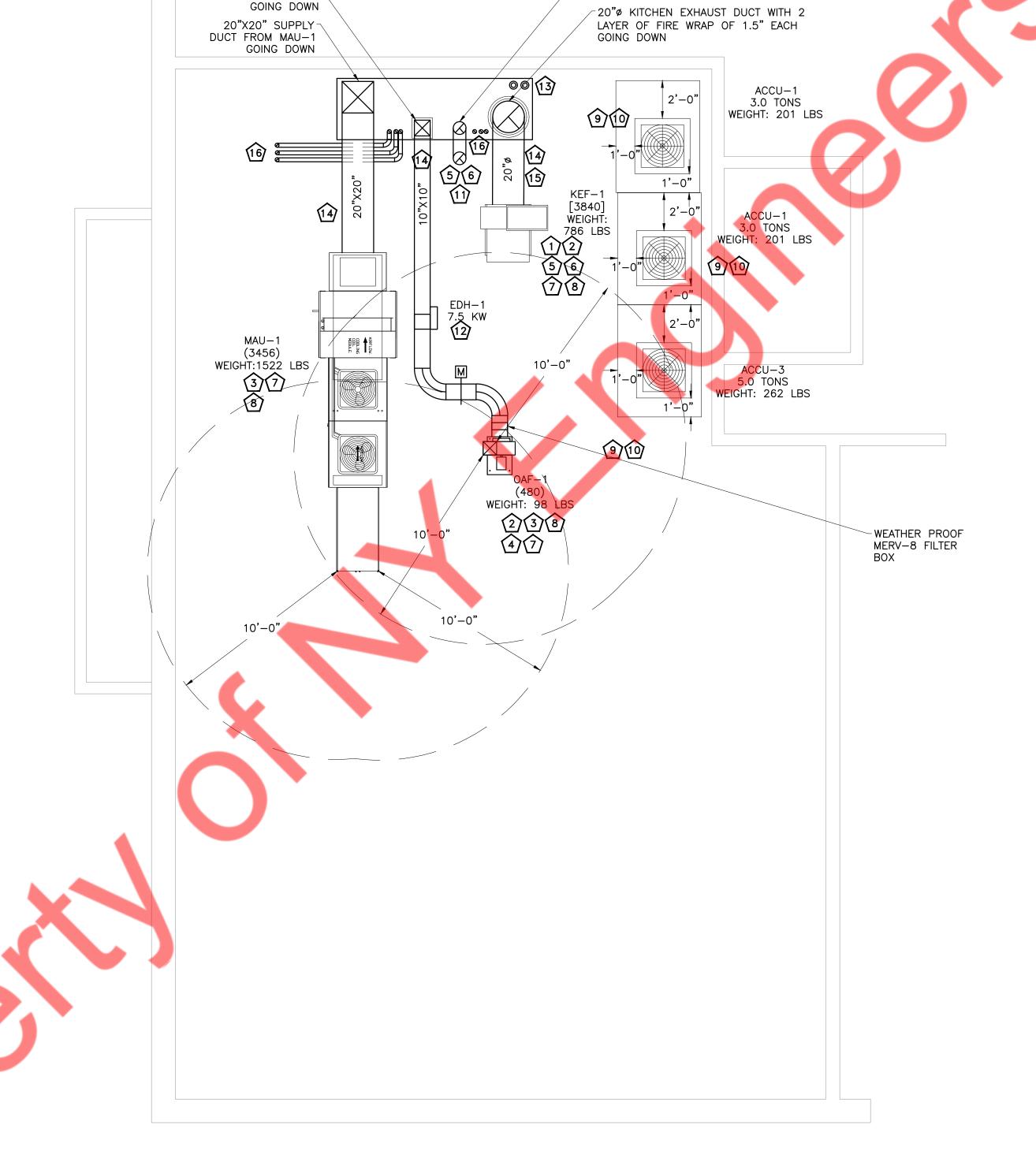
B. WALK PADS TO BE ADDED AT ANY EQUIPMENT ADDED ON THE ROOF.
C. SEE TYPICAL SHAFT (RESTAURANT) EXHIBIT FOR DETAIL TENAT CHASES.

ROOF PLAN KEY NOTES

- 1. FAN ROOF RAIL BY CAPTIVEAIRE. SEE HOOD DRAWING.
- 2. INSTALL EXHAUST AND OUTSIDE AIR INTAKE FAN ON THE ROOF AS PER MANUFACTURERS RECOMMENDATIONS.
- 3. ALL OUTSIDE AIR INTAKE ON THE ROOF SHALL BE MINIMUM 10 FEET AWAY FROM ANY EXHAUST SOURCE. IF NOT MAINTAIN MINIMUM 3 FEET VERTICAL DISTACE FROM ANY EXHAUST SOURCE.
- 4. OUTSIDE AIR INTAKE DUCT. TERMINATE 36" ABOVE ROOF WITH GOOSENCK AND BIRD SCREEN.
- 5. ALL EXHAUST AIR SOURCES ON THE ROOF SHALL BE MINIMUM 10 FT AWAY FROM OUTSIDE AIR INTAKE. IF NOT MAINTAIN 3 FEET VERTICAL DISTANCE. TERMINATE WITH GOOSENECK AND BIRD SCREEN.
- 6. ALL EXHAUST SOURCE SHALL BE MINIMUM 5 FT AWAY FROM OUTSIDE AIR INTAKE OF ADJACENT TENANT.
- 7. PROVIDE STRUCTURAL SUPPORT AS REQUIRED.

MANUFACTURERS RECOMMENDATIONS.

- 8. COORDINATE WITH OWNER FOR EXHAUST AND OUTSIDE AIR FAN LOCATIONS ON THE ROOF.
- 9. INSTALL OUTDOOR CONDENSING UNITS ON THE ROOF WITH ALL REQUIRED ACCESSORIES. COORDINATE EXACT LOCATION IN FIELD.
- 10. INSTALL REFRIGERANT PIPING FROM INDOOR UNITS TO OUTDOOR UNITS AS PER MANUFACTURER RECOMMENDATION. PROVIDE WEATHER PROOF COATING FOR EXPOSED PIPING. PROVIDE PIPING INSULATION AS PER TABLE C403.11.3 2020 NYCECC.
- TERMINATE TOILET/GENERAL EXHAUST DUCT 36" ABOVE ROOF WITH GOOSENECK AND BIRD SCREEN.
- 12. THE ELECTRIC DUCT HEATER AND FILTER RACK MUST BE RATED FOR OUTDOOR USE.
- 13. WATER HEATER CONCENTRIC VENT KIT TERMINATION OUT AT ROOF. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS.
- 14. PROVIDE WEATHER PROOF COATING FOR ALL EXPOSE DUCTING AND REFRIGERANT PIPING.
- 15. TENANT TO PROVIDE GREASE MAT ON ROOF WHERE GREASE EXHAUST COMES UP.
- 16. TERMINATE 3"Ø VENT TO ROOF. MAINTAIN 10' DISTANCE FOR EXHAUST VENT FROM ANY OUTSIDE AIR INTAKE SOURCE. TERMINATE AS PER



-8"ø TOILET EXHAUST GOING

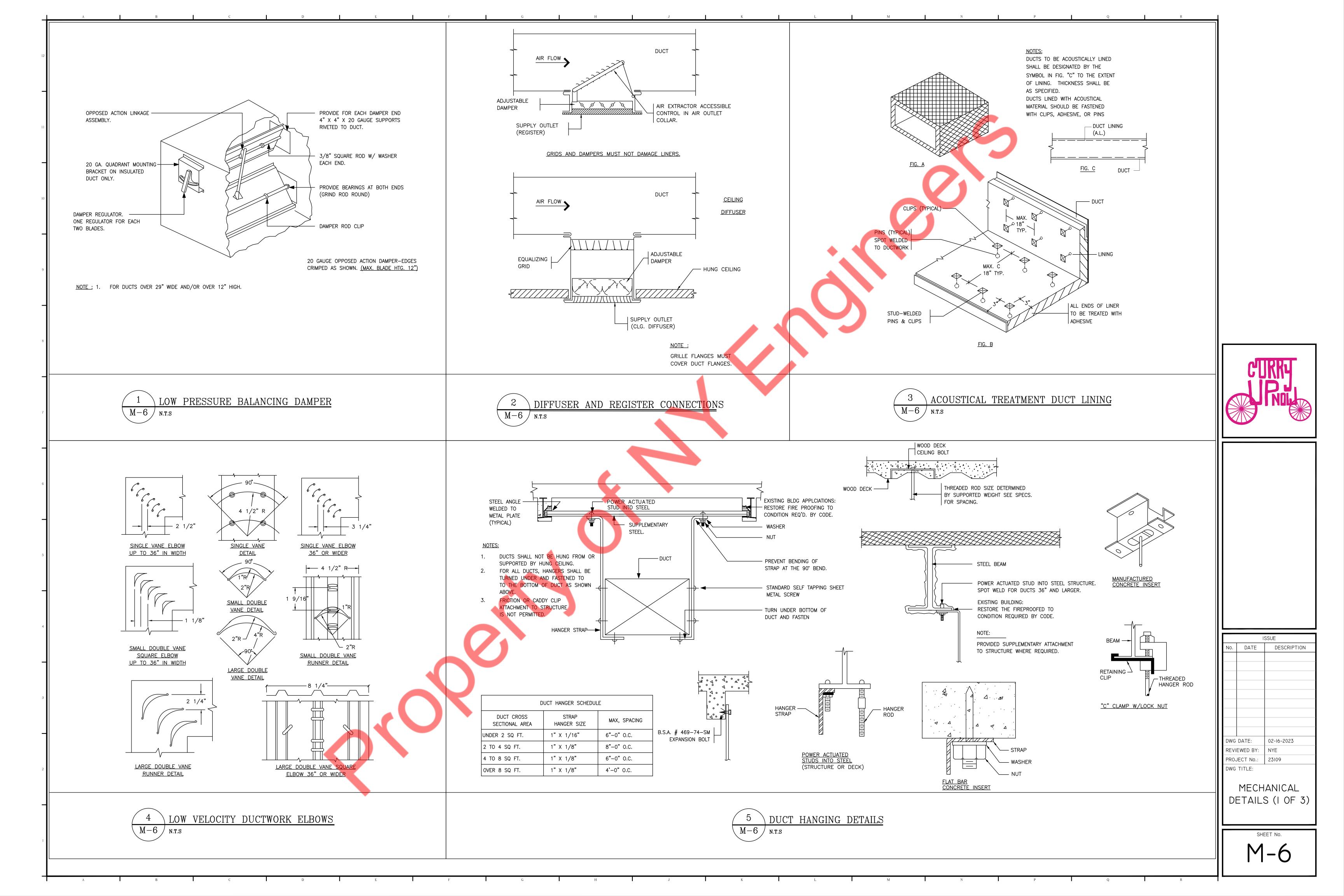
OA DUCT 10"X10"-

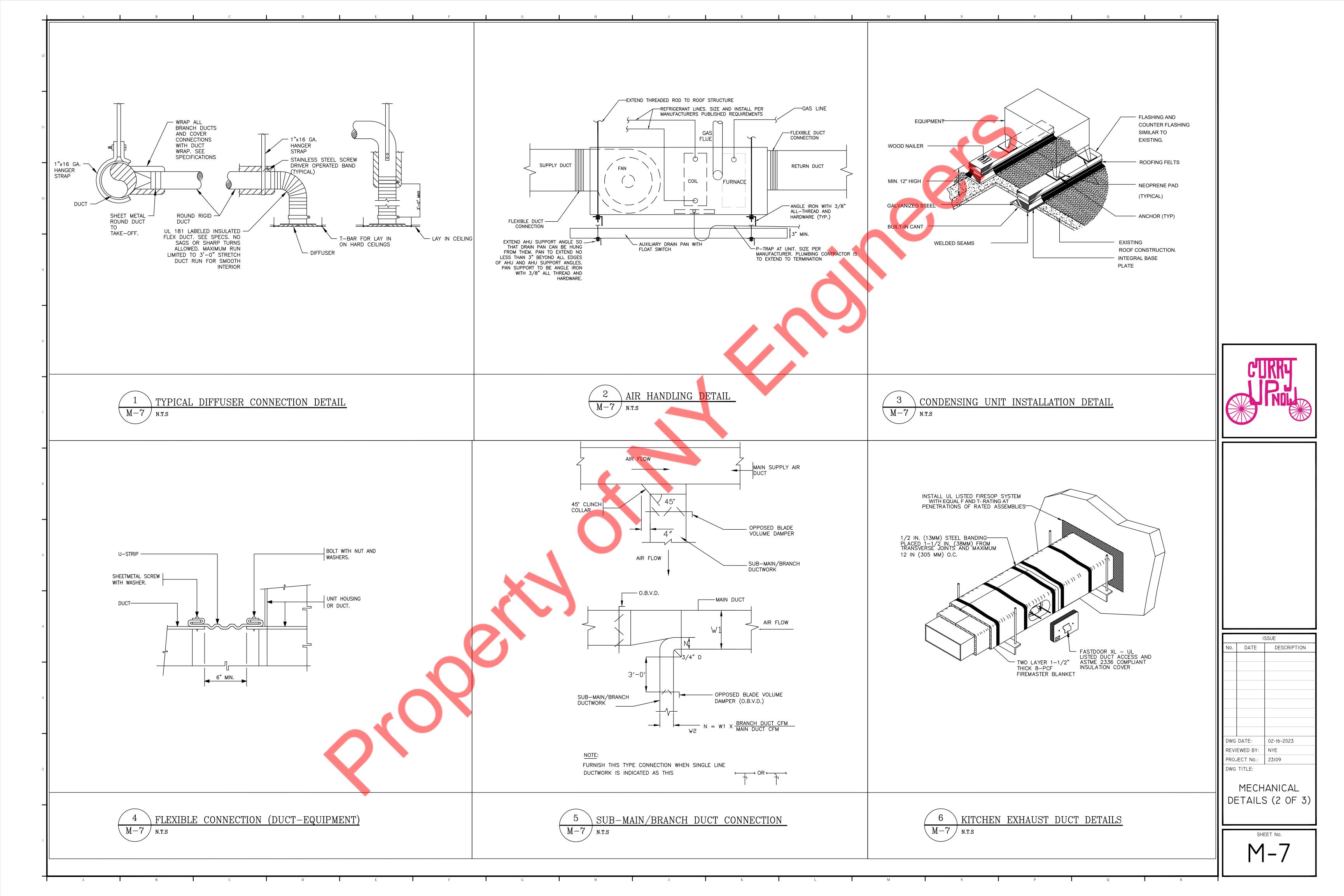


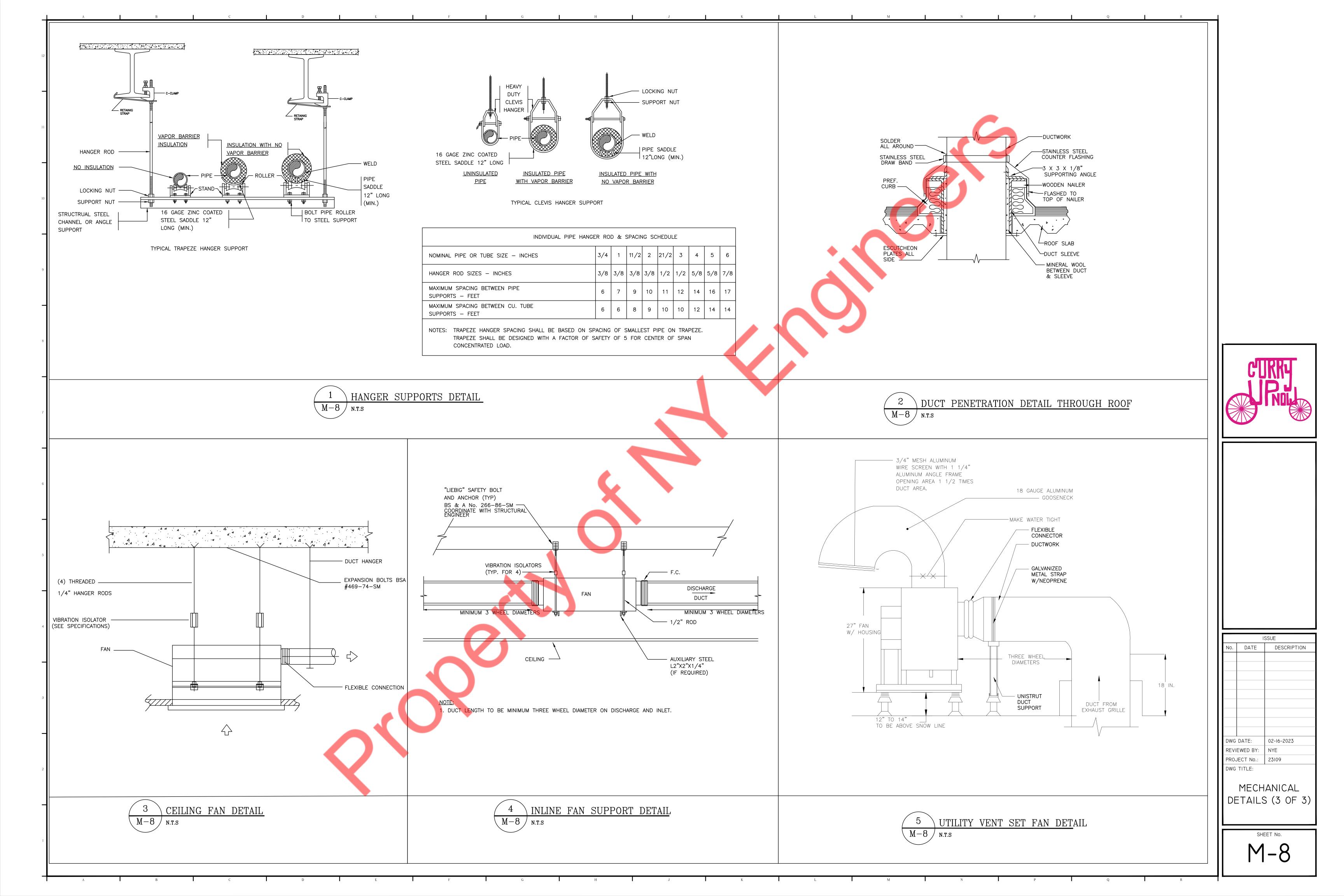
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PROJ	ECT No.:	23109										
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MECHANICAL ROOF PLAN												

SHEET No.

MECHANICAL ROOF PLAN







					AIR CONI	DITIONING UNIT S	SCHEDULE (IND	OOR)							MAKE : CARRIER						
TAG	AREA SERVED	ТҮРЕ	TON	TOTAL COOLING CAP. (MBH)	NOMINA	L HEATING	SUPPLY AIRFLOW (CFM	OUTDOOR	ELECTRICAL DATA		ELECTRICAL DATA						REFRIGERANT PIPE SIZE (IN.)	WEIGHT (LBS.)	AFUE (%)	MODEL NO. (FURNACE/INDOOR COIL)	REMARK
				C/ (1 / (1/15/11)	INPUT (MBH)	OUTPUT (MBH)	7 11111 2017 (CF 17)	, , , , , , , , , , , , , , , , , , , ,	PH/VOLT/HZ	MCA (A)	MOCP (A)	(HxWxD) (IN.)	LIQUID SUCTIO								
AHU-1	SEE PLAN	SEE PLAN	3	36	60	58	1200	100	1/115/60	12.6	15	61"X18"X30"	3/8" 7/8"	206	96.3	59TN6B-060C1714/CAPVP3617ACA OR EQUIVALENT	NEW				
AHU-2	SEE PLAN	SEE PLAN	3	36	60	58	1200	100	1/115/60	12.6	15	61"X18"X30"	3/8" 7/8"	206	96.3	59TN6B-060C1714/CAPVP3617ACA OR EQUIVALENT	NEW				
AHU-3	SEE PLAN	SEE PLAN	5	60	100	98	2000	280	1/115/60	18	20	69"X21"X30"	1-3/8" 7/8"	262	96.1	59TN6B-100C2122/CAPVP6021ACA OR EQUIVALENT	NEW				
NOTES :-																					

1) SUPPLY AIR CFM BASED ON HIGH SPEED. PROVIDE VARIABLE AIRFLOW ADJUSTMENT CONTROL FOR ALL UNITS.

2) REFRIGERANT R410A SHALL BE PROVIDED.

3) PROVIDE ALL ASSOCIATED ACCESSORIES. 4) ALL REFRIGERANT PIPING TO BE SIZED AS PER MANUFACTURERS RECOMMENDATIONS.

5) CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.

6) PROVIDE DRAIN PAN WITH WATER LEAK DETECTOR TO SHUT DOWN AHUS.

7) PROVIDE DISCONNECT SWITCH & NON-POWERED GFI OUTLET.

8) PROVIDE ACCESS PANELS FOR THE UNITS.

9)PROVIDE CONDENSATE PUPM IF REQUIRED. 10) HOT GAS BYPASS SHALL BE LESS THAN 240 MBH.

					CONDE	NSING UNITS SCH	HEDULE (O	UTDOOR)								MAKE : CARRIER	
TAC	LOCATION	INDOOR UNITS	CAPACITY	TOTAL COOLING	COMPRESSOR	UNIT	WEIGHT		DIAMETER N.)	ELECTF	ELECTRICAL DATA		FED	CEED	SOUND RATING	MODEL	DENAM
TAG	LOCATION	SERVED	(TON)	САР. (МВН)	ТҮРЕ	DIMENSIONS IN.(HxWxD)	(LBS)	LIQUID	GAS	PH./V/Hz	MCA (A)	MOCP (A)		SEER	(DBA)	MODEL RE	REMAI
ACCU-1	SEE PLAN	AHU-1(N)	3	36	SCROLL	33"X35"X35"	201	3/8"	7/8"	1/208-230/60	19.8	35	13.5	17	72	24TPA736A003	NEW
ACCU-2	SEE PLAN	AHU-1(N)	3	36	SCROLL	33"X35"X35"	201	3/8"	7/8"	1/208-230/60	19.8	35	13.5	17	72	24TPA736A003	NEW
ACCU-3	SEE PLAN	AHU-2(N)	5	60	SCROLL	39"X35"X35"	256	1-3/8"	7/8"	1/208-230/60	33.2	50	13.5	16	74	24TPA760A003	NEW
NOTES :-				_		_											

1. UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.

2. PROVIDE COMPRESSOR CYCLE PROTECTOR.

3. STEEL RAILS FOR CONDENSER MOUNTING TO BE PROVIDED BY MECH. CONTRACTOR.

4. OUTDOOR REFRIGERANT LINESET TO BE WRAPPED IN UV RESISTANT, FIRE RATED, AND ANTI-MICROBIAL INSULATION PROTECTION BASED ON AIREX-FLEX GUARD OR EQUAL. 5. OUDOOR CONDENSING UNITS TO BE LOCATED WITH PROPER CLEARANCES AND MUST PREVENT RE-CIRCULATION OF AIR. COORDINATE WITH MANUFACTURER AND ARCHITECT.

	FAN SCHEDULE													
UNITID	MANUFACTURER	CFM	ESP(IN W.G.)	RPM	HP	VOLTS/PH	FLA(A)	WEIGHT (LBS)	MODEL	NOTES				
KEF-1	KEF-1 CAPTIVEAIRE 3840 2 1025 5 208/3 15.8 786 USBI22DD-RM 1													
EF-1	EF-1 GREENHECK 70 0.8 1493 - 115/1 1.5 24 CSP-A390-VG 2,3,4,5,													
OAF-1														
REMARK:														
1. REFER S	SHEET H-1 TO H-3.													
2. INTERLO	OCK WITH AHU-2.													
3. PROVID	E BACKDRAFT DAIV	IPER												
4. VARIAB	LE SPEED CONTROL													
5. THERM	AL OVERLOAD PROT	TECTION												
6. AMCA S	SEAL & UL LISTING.													
7. PROVID	7. PROVIDE 2" MERV-8 FILTER.													
8. WEATH	ERPROOF PRE-WIRE	ED DISCONN	IECT SWITCH											

		All	R BALANCE		
UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)
AHU-1	SEE PLAN 2000		280	1720	0 CFM
AHU-2	SEE PLAN	1200	100	1100	0 CFM
AHU-3	SEE PLAN	1200	100	1100	0 CFM
MAU-1	SEE PLAN	3456	3456	0	0 CFM
KEF-1		-	-	-	3840 CFM
EF-1		-		-	70 CFM
EF-2		-	-	-	70 CFM
TOTAL:		7856	3936	3920	3840
	BUILDING PRESSURE	•	96	ITIVE	
NOTES:	-				

1. CONTRACTOR TO ADJUST MOTORIZED DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

	KITCHEN MAKE UP AIR UNIT SCHEDULE																														
FLOW EXTERNAL SPEED COOLING DATA GAS HEATING CAPACITY PRESSURE TEPM										E	LECTRIC DATA	Α			\\\\\	EIGHT	DACIC O	F DESIGN													
TAG	SERVICE	RATE	STATIC		OIL TYPE	NO OF	ENTERING DB	ENTERING	LEAVING	LEAVING WB	TOTAL	SENSIBLE	CEED	INPUT	ОИТРИТ	EFFICIENCY	RANGE	DICE		ONDENSER	1	CONDENSER 2		CONDENSER 2 FAN		AN] SONES $\begin{vmatrix} v_i \\ i \end{vmatrix}$.IGHI	DASIS U	r DESIGN	REMARK
		CFM	IN W.G.	RPM	JIL I TPE	CONDENSER	TEMP °F	WB	DB	TEMP °F	CAPACITY	CAPACITY	SEER	MBH	MBH	EFFICIENCY	IN. WC	NISE	V/PH/HZ	MCA (A)	MOCP (A) V/PH/H	Z MCA (A) N	MOCP (A)	V/PH/HZ MC/	(A) MOCP (A)] '	MA	ANUFACTURER	MODEL		
MAU-1	HOOD	3456	0.5	1426	DX	2	92	76	76.8	69.9	79.6	54.6	14	205	190	92%	7-14	52 °F	208/3/60	11.2	20 208/3/6	21.4	30	208/3/60 1:	L.9 20	12.8	L522 C	CAPTIVEAIRE	A2-D.250-20D-MPU	1,2	

1) PROVIDE ALL NECESSARY ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATIONS.

2) REFER HOOD SHEET FROM H-1 TO H-3

4) PROVIDE DUCT HEATER WITH SCR CONTROL.

9.OAF-1 SHALL INTERLOCK WITH ALL AC UNITS.

10.PROVIDE ALL MANUFACTURER RECOMMENDED ACCESSORIES.

					HOOD S	CHEDULE				
		LENGTH			COOKING		EXHAUST			WEIGHT
UNITID	MANUFACTURER	(FEET-INCH)	MODEL	TYPE	TEMPERATURE (DEG F)	AIR (CFM)	COLLAR (INCH)	E.S.P (IN. W.G.)	CONSTRUCTION	(LBS)
HOOD-1	CAPTIVE-AIRE	8'-0"	5424 ND-2-PSP-F	1	600	1920	14"	0.749	430 STAINLESS STEEL	847
HOOD-2	CAPTIVE-AIRE	8'-0"	5424 ND-2-PSP-F	1	600	1920	14"	0.749	430 STAINLESS STEEL	451

		El	ECTRIC E	DUCT HE	ATER SC	HEDULE				BA:	SIS OF DESIGN:GREENHECK
UNITID	LOCATION	HEATER D	IMENSION	QTY.		ELE	CTRICAL D	4ΤΑ	MODEL	HEATER TYPE	
ONTID	LOCATION	W	Н	QII.	KW	V	PH	Hz	Amps	IVIODEL	HEATER TIPE
EDH-1	SEE PLAN	10	10	1	7.5	208	3	60	20.82	IDHE-O	SLIP IN
NOTES:											
1) INSTALI	L ELECTRIC DU	ICT HEATER	R AS PER MA	NUFACTU	IRER'S RECO	OMMENDA	TION.				
2) PROVID	DE T-STAT AND	O WIRE TO	DUCT HEAT	ER.							
3) PROVID	DE DISCONNE	CT SWTICH,	VAPOR BA	RRIER, DU	ST TIGHT B	OX AND FA	AN INTERLO	OCK SWITC	Н.		

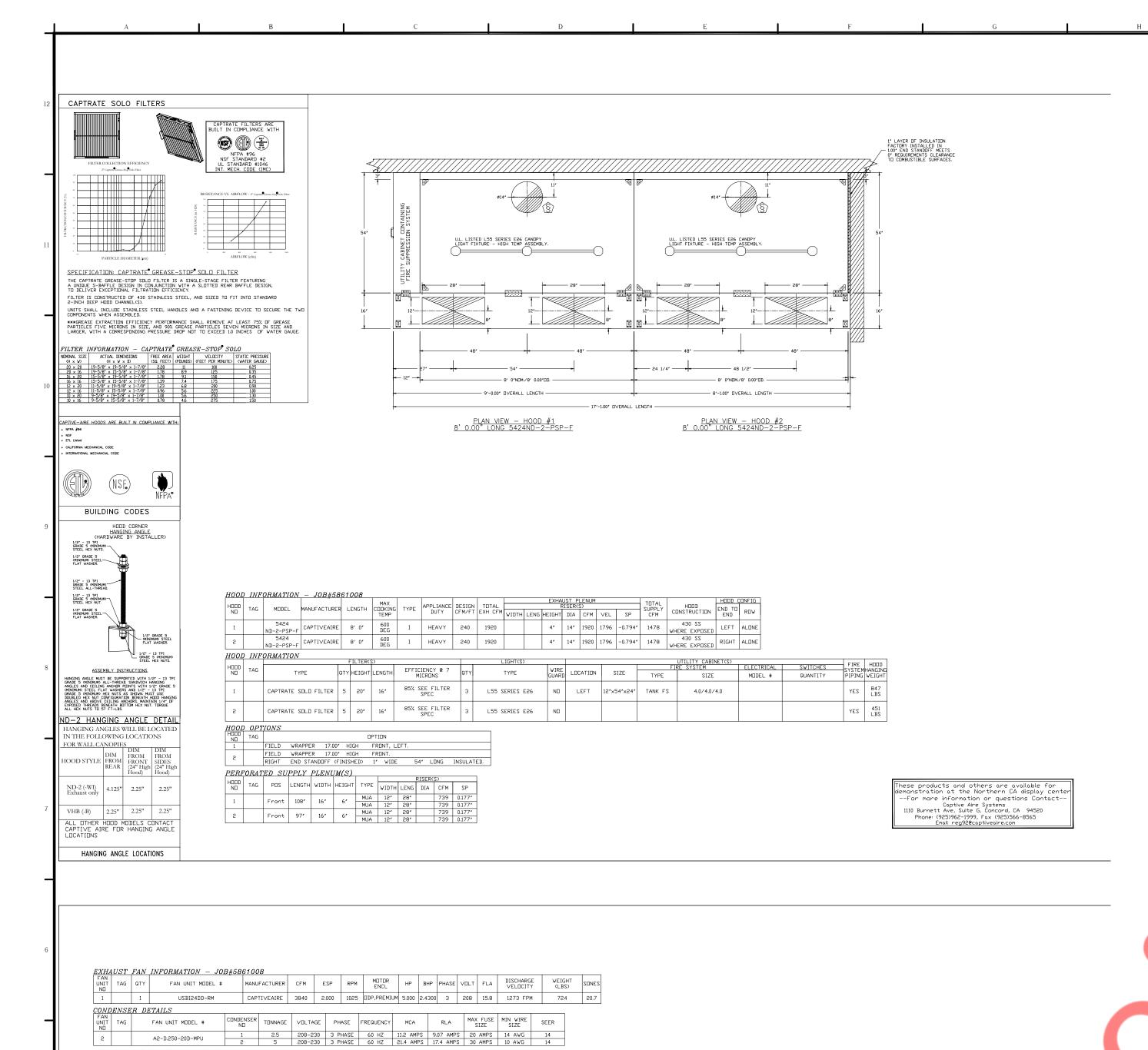
SC	HEDULE OF GRIL	LES/DIFF	USER	MAKE	TITUS
TAG	TYPE	CFM RANGE	DIMENSION(IN)	MODEL NO.	MAX NO dBA
SG-1	SUPPLY GRILLE	0-250	16X6	300 FS	25
CDS-1	SUPPLY	0-650	24x24	TDC-AA	20
CDS-1	SUPPLY(PERFORATED)	250-350	24X24	PAS	25
CDS-3	SUPPLY	50-175	12X12	TDC-AA	20
CDR-1	RETURN	500-1100	24X24	50FF	25
RG-1	RETURN GRILLE	0-1200	36X6	300 FS	25
NOTES FO	R DIFFUSERS				
1. ALL GRI	LLES : CONTRACTOR S	HALL COOF	DINATE WITH L	_ATEST	
2. COORD	INATE COLOR/FINISH	WITH ARCH	HITECT.		
FOR ROUN	ID NECK DIFFUSERS:				
6"-100 CFI	VI				
8"-105-17!	5 CFM				
10"-180-2	75 CFM				
12"-280-40	00 CFM				
14"-410-54	40 CFM				
16"-545-6!	50 CFM	·		<u> </u>	

			41									
					V	ENTILATION C	ALCULATION					
		NO. OF	NO. OF		FINAL	MIN OUTSIDE AI	R AS PER IMC 2015	<u> </u>		EXHAUST AIRFLOW	TOTAL	
ROOM NAME	AREA (SQ.FT.)	PEOPLE/1000sq. t AS PER IMC 2015	PEOPLE AS PER IMC 2015	NO. OF CHAIR	PEOPLE NO.	CFM/PEOPLE	CFM/SQ.FT	REQ. OSA	PROVIDED OSA	RATE (CFM/SQ.FT OR CFM/FIXT.)	EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
DINING ROOM	540	70	38	26	28	7.5	0.12	275		0	0	0
SERVICE LINE	185	0	0	0	2	7.5	0.12	38		0	0	0
KITCHEN	243	20	5	0	4	7.5	0.12	60	480	0.7	170	3840
MENS RESTROOM	49	0	0	0	8	0	0	0	480	0	0	70
WOMEN RESTROOM	49	15	1	0	8	0	0	0		0	0	70
PREP AREA	404	20	9	0	4	7.5	0.12	79		0.7	75	0
TOTAL	1470		53	26	54			452	480	TOTAL	245	3980



		SSUE
No.	DATE	DESCRIPTION
DWG	DATE:	02-16-2023
REVI	EWED BY:	NYE
PROJ	JECT No.:	23109
DWG	TITLE:	
	MECH	IANICAL

SCHEDULES



| FAN UNIT | TAG | TYPE | PRESSURE | FAN UNIT | TAG | TYPE | PRESSURE | FAN UNIT | FAN U

These products and others are available for demonstration at the Northern CA display center --For more information or questions Contact-- Captive Aire Systems
1110 Burnett Ave. Suite G. Concord, CA 94520
Phone: (925)962-1999, Fox (925)566-8565
Email reg928captiveaire.com

MUA FAN INFORMATION - JOB#5861008

CAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO TAG OTY DESCRIPTION

1 UTILITY SET GREASE CUP

1 BI24 - 24' DISCHARGE EXTENSION

1 BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE

1 BI24 - INLET CONNECTION STANDARD 24' FLANGED GREASE DUCT

1 UTILITY SET / SPRING VIBRATION ISDLATORS - BI24 THRU BI30 / EQUIVALENT SIZED

1 UTILITY SET / SIF 24-30 + FILTER BANK - INDDOR/OUTDOOR USE

1 2 YEAR PARTS WARRANTY

1 INLET PRESSURE GAUGE, 0-35'
1 MANIFOLD PRESSURE GAUGE, 5-5 TD 15' WC
1 SHIP LODSE GAS STRAINER 1'
1 MCTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING - MEETS AMCA CLASS IA RATING
1 BUTTERFLY MOD VALVE DPTION FOR MOD SIZE 2 (1' MOD VALVE)

7.5 TON 2 CIRCUIT (25/5) MODULAR PACKAGED CODLING DPTION FOR SIZE 2 DF/EH MUA
1 (2,700 TO 4,500 CFM), 208V/230V, 3 PHASE. CODLING THERMOSTAT OR PROGRAMMABLE

STAT REQUIRED FOR PROPER OPERATION

2 SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY

CCESSORIES

| 1 # 1 | 62 LBS | RAIL | 4.000°W X 60.000°L X 20.000°H ALDNG WIDTH, RIGHT CDMES AS A SET DF 2. | 2 # 2 | 107 LBS | CURB | 31.000°W X 79.000°L X 20.000°H ALDNG WIDTH, RIGHT INSULATED. | # 2 | RAIL | 6.000°W X 31.000°L X 20.000°H RIGHT.

COILS - JOB#5861008

FAN OPTIONS

FAN ACCESSORIES

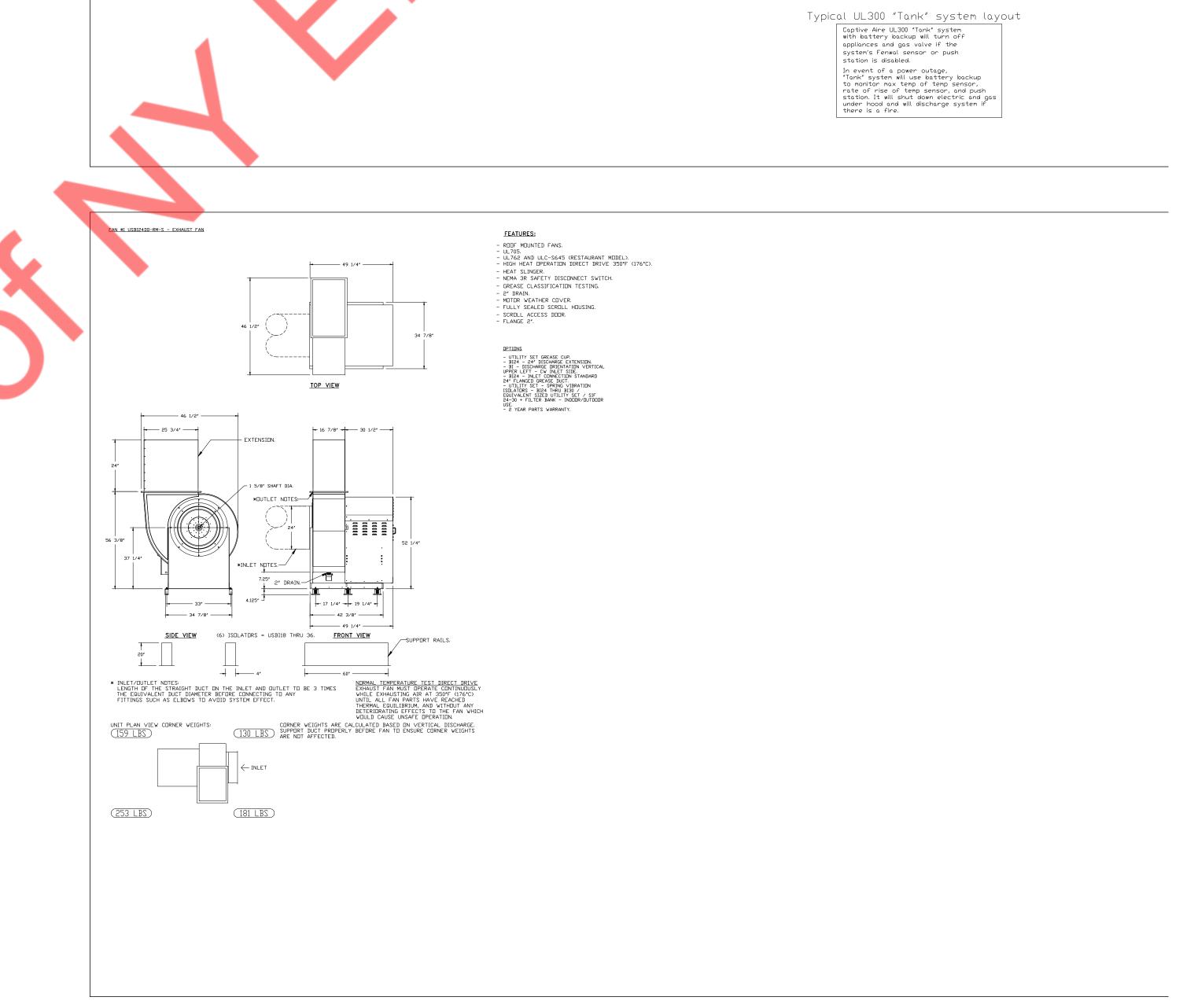
CURB ASSEMBLIES

EXHAUST

ND DN WEIGHT ITEM

FAN UNIT MODEL # BLOWER HOUSING MIN CFM CFM ESP RPM MOTOR HP BHP PHASE VOLT FLA MCA MOCP WEIGHT SONES

2 1 A2-D.250-20D-MPU 20MF-2-MDD A2-D.250 2700 3456 0.500 1426 DDP,PREMIUM 3.000 1.6350 3 208 9.5 11.9A 20A 1415 12.8



L55 SERIES E26 CANDPY LIGHT FIXTURE -- HIGH TEMP ASSEMBLY, INCLUDES CLEAR THERMAL AND SHOCK RESISTANT GLOBE (L55 FIXTURE).

FIELD WRAPPER 17.00° HIGH (SEE HOOD OPTIONS TABLE).

___ ATTACHING PLATES.

SUPPLY RISER WITH VOLUME DAMPER.

EXHAUST RISER. —

HANGING ANGLE. -

20" CAPTRATE SOLO — FILTER WITH HOOK. —

3" INTERNAL STANDOFF.

GREASE DRAIN ✓ WITH REMOVABLE CUP.

EQUIPMENT BY DTHERS.

SECTION VIEW - MODEL 5424ND-2-PSP-F HOOD - #2

EXHAUST RISER. —

20" CAPTRATE SOLO ~ FILTER WITH HOOK. ~

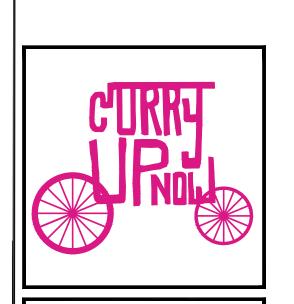
EQUIPMENT BY DTHERS.

SHUNT TRIP BREAKER (DPTIDNAL)
-2 VIRES, 120VAC
-51 TD AL DN SHUNT BREAKER
-NEUTRAL TD A2 DN SHUNT TRIP
BREAKER

SECTION VIEW - MODEL 5424ND-2-PSP-F HOOD - #1

CDDKING APPLIANCE(S)

3" INTERNAL STANDOFF.



L55 SERIES E26 CANDPY LIGHT FIXTURE -HIGH TEMP ASSEMBLY, INCLUDES CLEAR THERMAL AND SHOCK RESISTANT GLOBE (L55 FIXTURE).

FIELD WRAPPER 17.00" HIGH (SEE HOOD OPTIONS TABLE).

SUPPLY RISER WITH VOLUME DAMPER.

23.5% OPEN STAINLESS STEEL PERFORATED PANEL

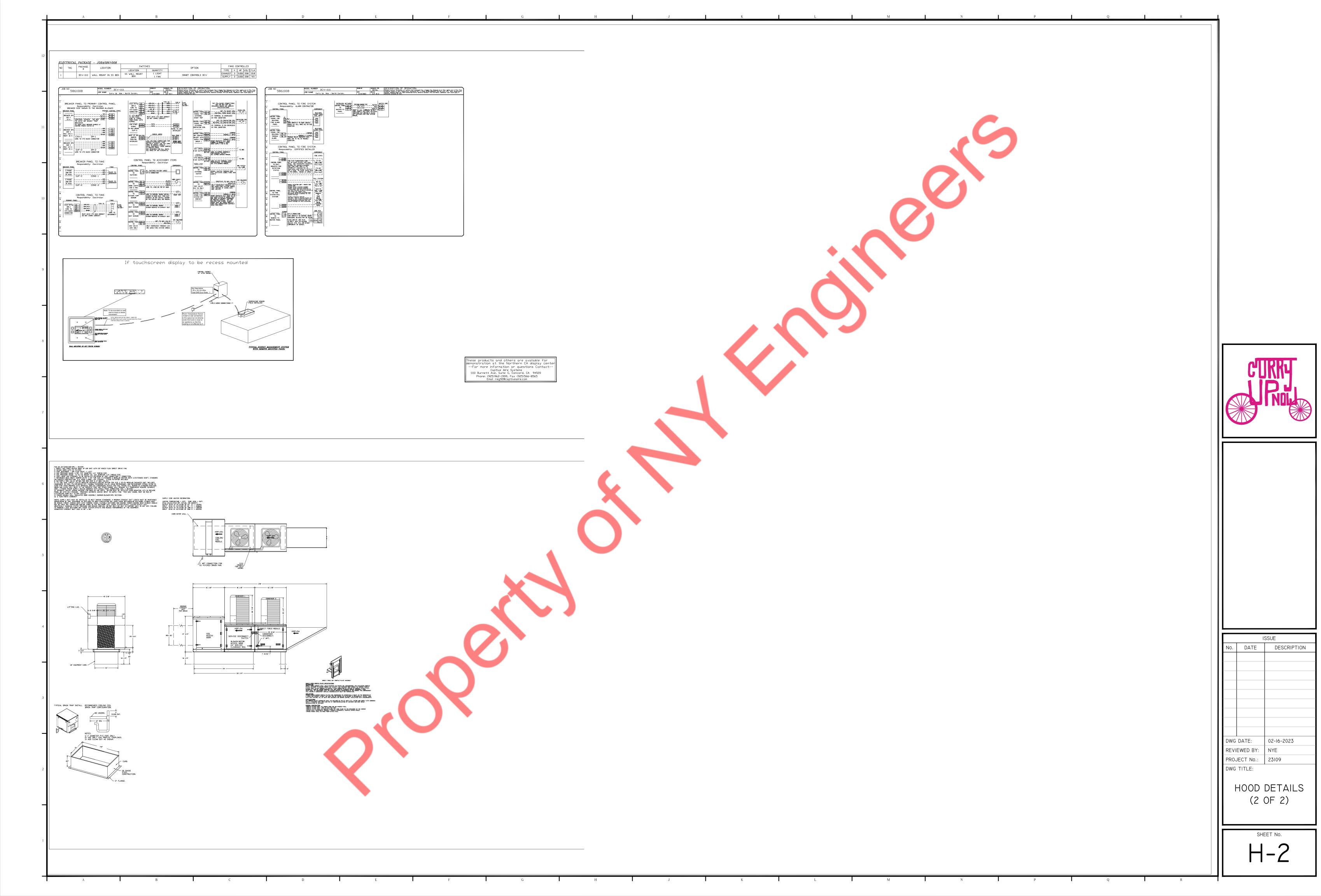
-2 VIRES & GROUND -120 VAC WIRE TO GAS &

low voltage
electric pull station
with battery backup
48' AFF, 10'-20' from
hazard, in the path of
egress

		SSUE						
No.	DATE	DESCRIPTION						
DWG	DATE:	02-16-2023						
REVI	EWED BY:	NYE						
PROJECT No.:		23109						
DWG	TITLE:							
HOOD DETAILS								

SHEET No.

(I OF 2)





- MATERIALS AND INSTALLATION, AS A MINIMUM, ARE TO CONFORM WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE. THE LATEST EDITION OF N.F.P.A.. AND THE LATEST EDITIONS OF THE LOCAL CODES AND ORDINANCES, INCLUDING ALL AMENDMENTS TO THE N.E.C. EQUIPMENT, WHERE APPLICABLE, WILL BE LISTED WITH THE UNDERWRITERS LABORATORIES, INC. QUALITY AND WORKMANSHIP ESTABLISHED BY DRAWINGS AND SPECIFICATIONS ARE NOT TO BE REDUCED BY THE ABOVE MENTIONED CODES.
- BIDDERS ARE TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND SATISFY THEMSELVES AS TO THE NATURE AND SCOPE OF WORK. THE SUBMISSION OF A BID WILL BE EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR LABOR, EQUIPMENT, OR MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD AN EXAMINATION BEEN MADE, WILL NOT BE ALLOWED.
- 3. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST-CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM IS TO BE FULLY OPERABLE AND ACCEPTANCE OF THIS SYSTEM BY THE ENGINEER/ARCHITECT MUST BE A CONDITION OF THE SUB CONTRACT.
- 4. ALL WORK TO BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
- 5. CONTRACTOR TO GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF ACCEPTANCE.
- 6. CORRECTION OF ANY DEFECTS TO BE COMPLETED WITHOUT ADDITIONAL CHARGE AND TO INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN
- 7. ALL REQUIRED INSURANCE TO BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY OF PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
- 8. CONTRACTOR TO PAY FOR ALL PERMITS, FEES INSPECTIONS AND TESTINGS.
- 9. ELECTRICAL INSTALLATION TO MEET ALL STANDARD REQUIREMENTS OF LOCAL POWER AND TELEPHONE COMPANIES. ELECTRICAL CONTRACTOR SHALL CONTACT LOCAL POWER AND TELEPHONE COMPANIES PRIOR TO START OF CONSTRUCTION.
- 10. ALL WIRING SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED, MINIMUM WIRE SIZE SHALL BE #12 AWG, EXCLUDING CONTROL WIRING. ALL CONDUCTORS SHALL BE COPPER WITH THWN/THHN INSULATION. CONDUCTORS #10 AND SMALLER MAY BE SOLID; ALL THOSE #8 AND LARGER TO BE STRANDED.
- 11. ALL UNDERGROUND RACEWAYS SHALL BE MINIMUM 3/4", GALVANIZED RIGID STEEL CONDUIT OR SCHEDULE 40 PVC. ALL OTHER RACEWAYS TO COMPLY WITH GOVERNING CODES. WHERE RIGID STEEL IS USED, IT SHALL BE COMPLETELY COATED WITH AN ALKALI AND RUST RESISTANT BITUMASTIC PAINT, KOPPER NO. 50, AND THREADS SHALL BE COATED WITH ZINC CHROMATE. RIGID STEEL SHALL ALSO BE USED WHEN CONDUIT IS EXPOSED TO EXTERIOR ENVIRONMENT SUCH AS EXTERIOR OF BUILDING OR WHERE IT IS EXPOSED AND SUBJECT TO DAMAGE, INSIDE OF BUILDING.
- 1.1 ALL UNDERGROUND <u>SERVICE CONDUITS/RACEWAYS</u> ENTERING BUILDING OR STRUCTURE FROM OUTSIDE TO INSIDE SHALL BE SEALED, INCLUDING SPARE CONDUITS. SEALANT SHALL BE SUITABLE FOR THIS USE.
- 12. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND BE OF SPECIAL CONSTRUCTION FOR OTHER CLASSIFIED AREAS. ALL BOXES SHALL BE RECESSED (FLUSH) IN WALLS OR CEILINGS WHENEVER POSSIBLE.
- 13. DISCONNECT SWITCHES SHALL BE H.P. RATED, GENERAL DUTY, QUICK-MAKE, QUICK-BREAK TYPE. ENCLOSURES SHALL BE AS REQUIRED BY N.E.C. AND LOCATION (WEATHERPROOF, EXPLOSION PROOF, ETC.). ENGRAVED LAMINATED PLASTIC IDENTIFICATION PLATES SHALL BE FURNISHED AND INSTALLED ON ALL PANELS, DISCONNECT SWITCHES, CONTACTORS AND STARTERS.
- 13.1. ALL FUSES FOR SAFETY SWITCHES SHALL BE DUAL ELEMENT, CARTRIDGE TYPE. FUSES SHALL BE THOSE MANUFACTURED BY EITHER BUSSMAN OR LITTLEFUSE. THE CONTRACTOR SHALL FURNISH TO THE OWNER ONE SPARE FUSE FOR EACH SIZE AND TYPE OF FUSE INSTALLED. FUSES 600 AMPS OR LESS SHALL BE CLASS RK1, TYPICAL UNLESS OTHERWISE NOTED. FUSES OVER 600 AMPS SHALL BE CLASS L.
- 14. ALL GENERAL PURPOSE SWITCHES AND RECEPTACLES SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. CATALOG NUMBERS LISTED ARE LEVITON: HOWEVER, COMPARABLE DEVICES BY PASS & SEYMOUR, BRYANT, OR ARROW HART WILL BE ACCEPTED. COLOR OF DEVICES AND PLATES SHALL BE DICTATED BY ARCHITECT/OWNER.
- A. SWITCHES: LEVITON #CSB1-20I (SALES AREA); LEVITON #CSB1-20B (SERVICE LINE) B. RECEPTACLES: LEVITON #BR20-I (SALES AREA); LEVITON #BR20-B (SERVICE LINE) C. COVER PLATES: STAINLESS STEEL
- NOTE: ALL OTHER REQUIRED DEVICES SHALL MATCH IN COLOR AND STYLE.
- 15. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM, AND PROVIDE ALL NECESSARY DEVICES AND COMPONENTS FOR EQUIPMENT BE PLACED IN PROPER WORKING ORDER.
- 16.1. A SEPARATE, GREEN TYPE THW COPPER GROUND CONDUCTOR SHALL BE RUN FROM GROUND LUG OF EACH GROUNDED RECEPTACLE TO AN APPROVED CONNECTION INSIDE THE ENCLOSING STEEL OUTLET BOX. DEVICE MOUNTING SCREWS SHALL NOT BE CONSIDERED AN APPROVED GROUND.
- 16.2. A SEPARATE GROUND CONDUCTOR SHALL BE INSTALLED IN EVERY CONDUIT AND RACEWAY AND SECURELY BONDED IN AN APPROVED GROUNDING TERMINAL AT BOTH ENDS OF THE RUN. THE GROUNDING CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH TABLE 250.122 OF THE N.E.C. CONTRACTOR SHALL SIZE CONDUIT TO ACCOMMODATE ADDITIONAL CONDUCTOR.
- 16.3. GROUND RODS SHALL BE 5/8" DIAMETER, TEN (10) FEET LONG COPPERCLAD STEEL. OBTAIN TWENTY FIVE (25) OHMS MAXIMUM RESISTANCE AS READ WITH A GROUNDING RESISTANCE TESTER, USING TWO REFERENCE RODS. IF TWENTY FIVE (25) OHMS CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE ADDITIONAL RODS, UNTIL TWENTY FIVE (25) HAS BEEN OBTAINED.
- 17. LOAD DATA IS BASED ON INFORMATION GIVEN TO ENGINEER AT THE TIME OF DESIGN. VERIFY ALL EQUIPMENT NAMEPLATE RATINGS BEFORE ORDERING.
- 18. CIRCUITS SHOWN ON PLANS ARE TO DETERMINE LOAD DATA AND PANEL SIZES. THE CONTRACTOR IS TO PROVIDE CIRCUITS AND ROUTING OF CONDUITS TO SUIT JOB CONDITIONS.
- 19. FURNISH AND INSTALL DISCONNECT SWITCHES, WIRING, AND CONNECTIONS ON AIR CONDITIONING SYSTEM AS SHOWN ON PLANS. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE WITH MECHANICAL CONTRACTOR REGARDING SUPPLY AND INSTALLATION OF ALL REQUIRED CONTROLS.

- 19.1 ELECTRICAL CONTRACTOR SHALL MAKE LINE VOLTAGE CONNECTIONS TO THE MAIN TERMINAL BLOCK OR LUGS ON ALL EQUIPMENT SHOWN. ANY ADDITIONAL LINE VOLTAGE CONNECTIONS BETWEEN VARIOUS COMPONENTS OF A MULTI-COMPONENT PIECE OF EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE EQUIPMENT INSTALLER, UNLESS THE FULL SCOPE OF THE ELECTRICAL INSTALLATION REQUIREMENTS ARE PROVIDED TO THE ENGINEER AT THE TIME OF DESIGN.
- 20. THE DISCONNECT SWITCH, FUSE SIZES, CONDUIT AND WIRE SHOWN FOR ALL HVAC ARE SIZED PER THE MANUFACTURER. AND MODEL NUMBER LISTED ON THE MECHANICAL PLANS. IF THERE IS AN EQUAL MANUFACTURER, OR OTHER MANUFACTURER PROVIDED, THE MECHANICAL/ GENERAL CONTRACTOR SHALL BEAR ANY ADDITIONAL COST INCURRED IF THE ELECTRICAL IS NOT EQUAL TO SPECIFICATIONS.
- 21. ALL SWITCHBOARDS, PANELS, STARTERS, CONTACTORS ETC., SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, THE SYSTEM DESIGN IS BASED ON SQUARE "D"; HOWEVER, COMPARABLE EQUIPMENT BY SIEMENS, G.E. AND CUTLER HAMMER ONLY WILL BE ACCEPTABLE. ALL PANELBOARDS SHALL HAVE BOLT-ON TYPE CIRCUIT BREAKERS. TANDEM AND HALF-SPACE CIRCUIT BREAKERS SHALL NOT BE
- 21.1. TYPEWRITTEN CIRCUIT INDEX SHALL BE AFFIXED TO INSIDE SURFACE OF EACH PANELBOARD DOOR, CLEARLY INDICATING AREA AND TYPE OF LOAD SERVED BY EACH BRANCH CIRCUIT PROTECTIVE DEVICE, INCLUDING SPARES. HAND PRINTED WILL NOT BE ACCEPTED.
- 21.2. ENGRAVED, LAMINATED PLASTIC IDENTIFICATION PLATES SHALL BE FURNISHED AND INSTALLED ON ALL PANELS AND SWITCHBOARDS. PLATES SHALL BE AFFIXED TO FRONT OF PANELS, INDICATING PANEL NAME, VOLTAGE AND AMPERAGE.
- 22. ALL UNDERGROUND PVC CONDUIT RUNS SHALL HAVE RIGID STEEL ELBOWS AND RIGID STEEL SECTIONS AT SLAB PENETRATIONS WHERE SUBJECT TO POSSIBLE DAMAGE.
- 23. THE ELECTRICAL CONTRACTOR SHALL MEET AND COORDINATE WITH THE LOCAL POWER COMPANY AT THE SITE PRIOR TO CONSTRUCTION. AT THAT TIME, THE CONTRACTOR SHALL COORDINATE ALL RELATED WORK WITH THE UTILITY COMPANY'S RESPONSIBILITIES TO MEET THE OWNER'S SCHEDULE.
- 24. ALL ELECTRICAL CONDUCTORS SHALL BE INSTALLED IN AN APPROVED RACEWAY, EMT, IMC, RIGID GALVANIZED CONDUIT OR SCHEDULE 40 P.V.C. TYPE 'MC', ELECTRICAL NON-METALLIC TUBING, & FLEXIBLE METAL CONDUIT MAY BE USED FOR BRANCH CIRCUITING AS ALLOWED BY THE N.E.C. & AHJ. MAXIMUM NUMBER OF 120V CIRCUITS ALLOWED IN A COMMON CONDUIT SHALL BE SIX (6). THE CONTRACTOR SHALL STRICTLY CONFORM TO THE N.E.C. REQUIREMENTS OF DERATING FOR CONDUCTOR AMPACITY AND CONDUIT FILL. NO CONDUITS SHALL BE INSTALLED, EXPOSED ON ROOF.
- 24.1. CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

NEUTRAL - WHITE ABC, TOP TO BOTTOM PHASE A - BLACK LEFT TO RIGHT, FRONT PHASE B — RED TO BACK PHASE C - BLUE GRD.CON - GREEN

- 24.2. WHEN MAIN ELECTRICAL SERVICE HAS A WIREWAY, E.C. SHALL TAP OFF OF <u>ALL SERVICE ENTRANCE</u> <u>FEEDERS</u> (PARALLEL CONDUCTORS) FOR TOTAL AMPACITY & BALANCING.
- 25. CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ALL CONDUIT PENETRATIONS MADE THROUGH FIRE RATED WALLS, CEILINGS, SLABS, ETC. PENETRATION SEALS SHALL BE PER U.L. ASSEMBLY
- 26. CONTRACTOR SHALL PROVIDE SHOP DRAWING SUBMITTALS FOR LIGHT FIXTURES, SWITCHBOARDS, WIRING DEVICES, EMERGENCY GENERATOR/TRANSFER EQUIPMENT, AND ALL SYSTEMS (FIRE ALARM, SECURITY, ETC.). PROVIDE TWO (2) COPIES, TEN (10) DAYS PRIOR TO BID DATE FOR ENGINEER'S APPROVAL TO SUBMIT. ENGINEER'S APPROVAL OF THE PRIOR APPROVAL PACKAGE WILL BE CONSIDERED PRELIMINARY. FINAL APPROVAL WILL BE CONTINGENT UPON REVIEW OF FINAL SHOP DRAWINGS. ALL PROPOSED ALTERNATES MUST BE INDUSTRY STANDARD EQUALS TO THE ITEMS SPECIFIED AS THE BASIS OF DESIGN; HOWEVER, IF THE ITEMS ARE NOT CONSIDERED EQUAL BY THE ENGINEER, IT SHALL BE DISAPPROVED FOR FINAL SUBMITTAL. IF ELECTRICAL CONTRACTOR/GENERAL CONTRACTOR DOES NOT SUBMIT SHOP DRAWINGS TO ELECTRICAL ENGINEER FOR ITEMS LISTED ABOVE, ELECTRICAL ENGINEER WILL NOT BE RESPONSIBLE FOR ANY OMISSIONS AND/OR ERRORS DUE TO SHOP DRAWINGS NOT SUBMITTED. SHOP DRAWINGS WILL ONLY BE REVIEWED TWICE AS PART OF THIS CONTRACT. ADDITIONAL SHOP DRAWING REVIEWS SHALL BE INVOICED AT \$85.00 PER HOUR, BILLABLE TO THE SUB-CONTRACTOR, C.O.D.
- 27. CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF CONTRACT DRAWINGS AT JOB SITE WITH COLORED MARKINGS INDICATING PROGRESS OF WORK. THIS SET OF CONTRACT DRAWINGS IS TO BE SEPARATE FROM AND IN ADDITION TO CONTRACTOR'S CONSTRUCTION SET. EVERY UNIT OF EQUIPMENT, DEVICE, CONDUIT AND WIRE IS TO MARKED WHEN INSTALLED. USE GREEN TO INDICATE INSTALLATION AS SHOWN ON DRAWINGS AND USE RED TO INDICATE FIELD CHANGES. UPON COMPLETION OF WORK, THIS SET OF CONTRACT DRAWINGS IS TO BE TURNED OVER TO, AND BECOME PROPERTY OF THE ARCHITECT.
- 28. THE OWNER RESERVES THE RIGHT TO REVISE THE DRAWING FROM TIME TO TIME TO INDICATE CHANGES IN THE WORK. WHEN REVISED DRAWINGS AND/OR ANY REVISIONS ARE ISSUED, THE CONTRACTOR SHALL EVALUATE THE CHANGES PROMPTLY. BEFORE INSTALLATION OF ANY ITEM OR PERFORMANCE THE WORK INDICATED BY THE REVISED DRAWINGS OR REVISIONS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IN WRITING THAT THE REVISED DRAWINGS INVOLVE AN ADDITION OR DEDUCTION OF A SPECIFIC AMOUNT OF MONEY TO THE CONTRACT PRICE. THE CONTRACTOR SHALL NOT PROCEED WITH THE REVISED WORK WITHOUT PRIOR WRITTEN APPROVAL BY THE ARCHITECT/ENGINEER OF THE COST OF THE REVISED WORK.
- 29. IF ELECTRICAL CONTRACTOR HAS QUESTIONS, OR IN THEIR OPINION FINDS OMISSIONS OR ERRORS ON ELECTRICAL DOCUMENTS, IT IS THEIR RESPONSIBILITY TO BRING THIS TO THE ATTENTION OF THE ELECTRICAL ENGINEER/ARCHITECT/OWNER IMMEDIATELY. IF ELECTRICAL CONTRACTOR PROCEEDS WITH ANY CHANGES TO THE CONTRACT DOCUMENTS WITHOUT WRITTEN PRIOR APPROVAL FROM THE ELECTRICAL ENGINEER/ARCHITECT/OWNER WILL NOT BE COMPENSATED.

A |---- LED LIGHT FIXTURE, LETTER INDICATES TYPE

- RECESSED LIGHT FIXTURE, LETTER INDICATES TYPE WALL BRACKET LIGHT FIXTURE, LETTER INDICATES TYPE

POLE WITH ARM MOUNTED FIXTURE, LETTER INDICATES TYPE LIGHT FIXTURE ON EMERGENCY POWER OR WITH BATTERY PACK

EXIT LIGHT (ARROW INDICATES DIRECTION, SHADING INDICATES FACE) BATTERY POWERED EMERGENCY LIGHT

- SINGLE POLE SWITCH, LOWER CASE LETTER INDICATES LIGHT CONTROLLED, MOUNT 48" AFF UON
- DOUBLE POLE SWITCH, MOUNT 48" AFF UON
- THREE-WAY SWITCH, MOUNT 48" AFF UON
- FOUR-WAY SWITCH, MOUNT 48" AFF UON
- DIMMER SWITCH, WATTS AS NOTED, (6= 600W, 10= 1000W) MOUNT
- SINGLE POLE SWITCH WITH PILOT LIGHT, MOUNT 48" AFF UON
- FAN CONTROLLER, MOUNT 48" AFF UON
- MOTOR RATED SWITCH
- SMC MOMENTARY CONTACT SWITCH, MOUNT 48" AFF UON
- SK KEY OPERATED SINGLE POLE SWITCH, MOUNT 48" AFF UON
- OCCUPANCY SENSOR SWITCH, MOUNT 48" AFF UON OCCUPANCY SENSOR SWITCH, CEILING MOUNT
- SINGLE RECEPTACLE, 125V, 20A MOUNT 18" AFF UON
- DUPLEX RECEPTACLE, MOUNT 18" AFF UON
- DUPLEX RECEPTACLE, FLUSH CEILING MOUNT
- DUPLEX RECEPTACLE, MOUNT ABOVE COUNTER HEIGHT UON
- QUADRAPLEX RECEPTACLE, MOUNT 18" AFF UON QUADRAPLEX RECEPTACLE, MOUNT ABOVE COUNTER HEIGHT UON
- DUPLEX RECEPTACLE, HORIZONTAL MOUNT
- 1/2 SWITCHED DUPLEX RECEPTACLE, MOUNT 18" AFF UON
- SPECIAL RECEPTACLE AS NOTED
- FLOOR MOUNTED DUPLEX RECEPTACLE

MAGNETIC MOTOR STARTER

- PLUGMOLD (SIZE AND LENGTH AS NOTED)
- JUNCTION BOX (FLUSH MOUNT IN FINISHED AREAS UON) DISCONNECT SWITCH, NEMA/SIZE/POLE/FUSES (250V., NEMA 1 UON)
- COMBINATION MAGNETIC MOTOR STARTER/DISCONNECT SWITCH LIGHTING OR POWER PANELBOARD
- 277/480V, PANELBOARD
- DRY TYPE TRANSFORMER
- CONTACTOR (AS NOTED)
- MANUAL FIRE ALARM PULL STATION 48" AFF

- CONCEALED IN WALL OR ABOVE CEILING WITH 2 #12, 1 #12 EG CONDUCTORS IN 1/2" CONDUIT MIN UON
 - CONDUIT CONCEALED BELOW FLOOR SLAB OR FINISHED GRADE WITH 2 #12, 1 #12 EG CONDUCTORS IN 3/4" CONDUIT MIN UON CONDUIT EXPOSED ON WALL OR CEILING WITH 2 #12, 1 #12 EG
- CONDUCTORS IN 1/2" CONDUIT MIN UON PHASE, NEUTRAL, ISOLATED GROUND CONDUCTORS
- FLEXIBLE CONDUIT NOT TO EXCEED 6 FEET IN LENGTH
- TELEVISION SYSTEM EMPTY CONDUIT WITH PULL WIRE LOW VOLTAGE WIRING
- CONDUIT SEAL-OFF FITTING FOR COOLER/FREEZER CIRCUITS CONDUIT STUB
- CONDUIT UP
- JUNCTION BOX FOR PADDLE FAN, FLUSH MOUNTED PER THE N.E.C.
- THERMOSTAT. PROVIDE SINGLE GANG BOX WITH 1/2" C STUBBED INTO CEILING SPACE, MOUNT 60" AFF UON (COORDINATE WITH MECHANICAL DRAWINGS PRIOR TO ROUGH-IN)
- MOTOR PERMANENTLY CONNECTED WITH FLEXIBLE CONDUIT
- ELECTRIC DUCT HEATER
- SPEAKER
- DATA OUTLET, PROVIDE SINGLE GANG BOX WITH 3/4" CONDUIT WITH PULL WIRE AND INSULATING BUSHING STUBBED INTO CEILING SPACE.
- MOUNT BOX 18" AFF UON REFER TO LIKE NUMBERED NOTES/EQUIPMENT DESIGNATIONS
- TELEVISION OUTLET. PROVIDE SINGLE GANG BOX WITH 3/4" CONDUIT WITH PULL WIRE AND INSULATING BUSHING STUBBED INTO CEILING SPACE. MOUNT BOX 18" AFF UON
- TELEPHONE WALL OUTLET, PROVIDE SINGLE GANG BOX WITH 3/4"
- CONDUIT WITH PULL WIRE AND INSULATING BUSHING STUBBED INTO CEILING SPACE. MOUNT BOX 18" AFF UON
- DATA WALL OUTLET. PROVIDE SINGLE GANG BOX WITH 3/4" CONDUIT WITH PULL WIRE AND INSULATING BUSHING STUBBED INTO CEILING SPACE. MOUNT BOX 48" AFF UON
- FLOOR MOUNTED TELEPHONE OUTLET
- TELEPHONE BACKBOARD (SIZE AS NOTED) #6 GROUNDING CONDUCTOR
- TO SERVICE GROUND. COMBINATION TELEPHONE/DATA WALL OUTLET, PROVIDE SINGLE GANG BOX WITH 3/4" CONDUIT WITH PULL WIRE AND INSULATING BUSHING
- STUBBED INTO CEILING SPACE. MOUNT BOX 18" AFF UON STUB-UP, PROVIDE SINGLE GANG BOX WITH 3/4" CONDUIT WITH PULL WIRE AND INSULATING BUSHING STUBBED INTO CEILING SPACE.
- MOUNT BOX 18" AFF UON TELEPHONE/DATA-POWER POLE
- PUSHBUTTON, MOUNT 48" AFF UON
- DOOR CHIME WITH TRANSFORMER DEVICE AS NOTED
- TIME CLOCK
- PHOTOCELL

COMBINATION HORN/VISIBLE CD- CANDELA RATING/SETTING WALL MOUNTED.

F MANUAL PULL STATION MOUNTED 44" AFF

CD- CANDELA RATING/SETTING

VISIBLE ONLY(STROBE) - WALL MOUNT

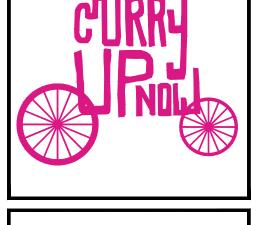
- DUCT SMOKE DETECTOR REMOTE TEST/LED SWITCH
- R RELAY
- MODULE
- М MINI HORN SMOKE DETECTOR, PHOTOELECTRIC
- lacksquareHEAT DETECTOR
- FLOW SWITCH 5-->-5
- TAMPER SWITCH
- $^{f B}$ SYSTEM BELL
- WATER GONG FIRE ALARM COMBINATION HORN/STROBE (75 CANDELLA UON)
- MOUNTED PER NFPA 72 FIRE ALARM STROBE (75 CANDELA UON) MOUNTED PER NFPA 72
- FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATOR PANEL
- <u>ABBREVIATIONS</u> ACC-CU CONDENSING UNIT HORSE POWER
- ISOLATED GROUND AFG ABOVE FINISH GRADE JB JUNCTION BOX
- LONG, SHORT, INSTANTANEOUS GROUND FAULT SETTING AFI ARC FAULT INTERRUPTER
- A/H-AHU AIR HANDLING UNIT NEW AUTOMATIC TRANSFER NEUT NEUTRAL ATS
- BFG BELOW FINISHED GRADE NON FUSED
- CONDUIT NOT IN CONTRACT CLG CEILING MOUNTED NIGHT LIGHT CT CURRENT TRANSFORMER NAME PLATE
- NOT TO SCALE NTS EX-(E) EXISTING
- EC ELECTRICAL CONTRACTOR RE-(R) RELOCATED E/F-EF EXHAUST FAN RTU ROOF TOP UNIT
 - EQUIPMENT GROUND TWIST LOCK EWC ELECTRIC WATER COOLER TTB TELEPHONE TERMINAL BOARD
 - TYP ELECTRIC WATER HEATER TYPICAL GROUNDING ELECTRODE CONDUCTOR UON UNLESS OTHERWISE NOTED
 - GROUND FAULT INTERRUPTER WP WEATHERPROOF HIGH INTENSITY DISCHARGE WR WEATHER RESISTANT
- MOUNTING HEIGHTS SHOWN ARE MAXIMUM/MINIMUM HANDICAPPED ACCESSIBILITY STANDARDS THEY SHALL NOT BE ALTERED WITHOUT WRITTEN AUTHORIZATION

ALL MOUNTING HEIGHTS ARE TO CENTERLINE UON. ALL SYMBOLS MAY NOT BE USED

PROJECT COORDINATION NOTES

- 1. BIDDERS ARE TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND SATISFY THEMSELVES AS TO THE NATURE AND SCOPE OF WORK. THE SUBMISSION OF A BID WILL BE EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR LABOR. EQUIPMENT OR MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD AN EXAMINATION BEEN MADE. WILL NOT BE ALLOWED.
- 2. COORDINATE WITH OTHER TRADES FOR ITEMS IN THEIR SCOPE OF WORK WHICH WOULD REQUIRE ELECTRICAL WORK (DISCONNECTION/RECONNECTION,

ETC.) AND ARE NOT INDICATED ON THE ELECTRICAL PLANS.



ISSUE DATE DESCRIPTION DWG DATE: 02-16-2023 REVIEWED BY: PROJECT No.: 23109 DWG TITLE:

SPECIFICATIONS

SHEET No.

LEGEND AND

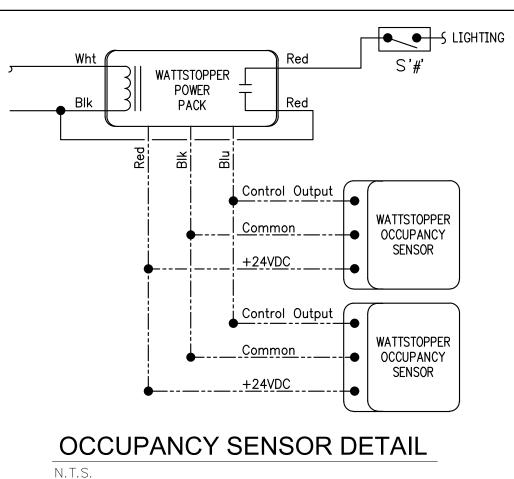
LIGHTING SCHEDULE FIXTURE VOLTAGE NO. TYPE MOUNTING REMARK MANUFACTURER INTERIOR 1 37W LED 37 RECESSED 2X2 FLAT PANEL LED TROFFER. ECONOLITE DIMMABLE #C=TR=C=FP22=37L=35K-WH (EB,PER PLAN) 13.9W LED 13.9 RECESSED 6" DIAMETER LED DOWNLIGHT. **ECONOLITE** DIMMABLE 11.1W LED 11.1 RECESSED 4" DIAMETER LED DOWNLIGHT. ECONOLITE #DLE4 DIMMABLE 1 20W LED 18 SURFACE TRACK WITH LED SPOT LIGHTS. ECONOLITE TRACK LENGTH PER PLAN. #E-KIT TRACK PROVIDE FEED CONNECTORS AS NEEDED. #E-KCN HEAD verify finish. 120 1 20W LED 20 PENDANT RESTROOM WALL SCONCE TBD LED WALL SCONCE. DIMMABLE. LED PENDANT LIGHT. VERIFY FINISH 120 1 20W LED 20 PENDANT TUDO CO WOODEN BIRD CAGE PENDANT LIGHT/SMALL VERIFY CORD FINISH VASPI STUDIOS DAIMYO 20W LED 20 PENDANT LED PENDANT LIGHT. VERIFY FINISH BLACK MONOLITH MINIMALIST PENDANT W/CUSTOM CORD 120 3.7 LED EXIST SIGN WITH 90 MINUTE BATTERY FURNISHED WALL/ #C-EE-A-EX-DF-RED-BB WITH BACK-UP CEILING FIXTURE 120 2.1 FURNISHED WALL LED EMERGENCY LIGHT WITH 90 MINUTE **ECONOLITE** #E-XML2W WITH BATTERY BACK-UP FIXTURE 120 FURNISHED 3.7 LED EXIT SIGN WITH EM LIGHTING 90 MINUTE WALL/ BATTERY BACK-UP #E-XCL2RW WITH CEILING FIXTURE FURNISHED EXTERIOR EMERGENCY EGRESS LIGHT. 90 WALL AFF-OEL-UVOLT-LTP-SDRT-FCT **ABOVE** WITH MINUTE BATTERY BACK-UP. VERIFY FINISH WITH FIXTURE DOOR ARCHITECT

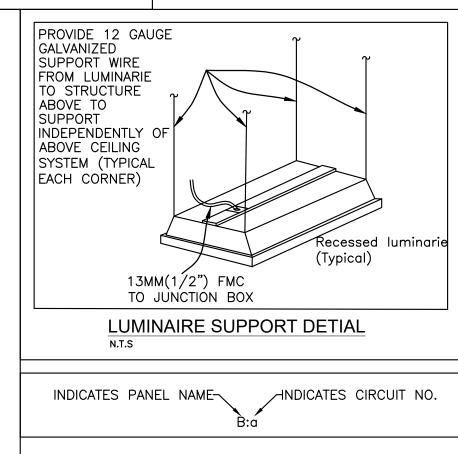
LIGHTING PLAN GENERAL NOTES

- 1. E.C. TO COORDINATE WITH ARCHITECT/OWNER FOR FINAL SELECTION, WATTAGES AND QUANTITY OF LIGHTING FIXTURE.
- 2. E.C. TO COORDINATE WITH ARCHITECT/OWNER FOR MOUNTING DETAILS OF LIGHT FIXTURE.

LIGHTING PLAN - KEYED WORK NOTES

- 1. WALL MOUNTED OCCUPANCY SENSOR. SET OFF TIME TO 20 MINUTES FOR RESTROOM, OFFICE APPLICATIONS SET DIP SWITCH TO AUTOMATIC ON.
- 2. WIRE ALL EMERGENCY AND EXIT FIXTURE AHEAD OF SWITCHING & CONTROL FOR CONTINUOUS OPERATIONS.
- 3. LOW VOLTAGE OCCUPANCY SENSOR. INTERCONNECT OCCUPANCY SENSORS SO THAT ANY SENSOR WILL TRIGGER ALL LIGHTS. SET OFF TIME FOR 15 MINUTES.
- 4. LIGHT FIXTURES FURNISHED BY WALK—IN BOX VENDOR. GC TO PROVIDE ELECTRICAL CONNECTION TO WALK—IN BOX FREEZER AND COOLER LIGHTING AND POWER AS PER MANUFACTURER REQUIREMENT.
- 5. HOOD LIGHTS PROVIDED BY HOOD MANUFACTURER. E.C. TO PROVIDE POWER PROVISION FOR HOOD CONTROL PANEL.





FOOD SERVICE GENERAL NOTES

- 1. LIGHTING FIXTURES IN AREAS WHERE FOOD IS PREPARED OR OPEN FOOD IS STORED OF WHERE UTENSILS ARE CLEANED SHALL HAVE A SHATTER-PROOF LENS AND ARE READILY CLEANABLE.
- 2. VERIFY ALL OUTLET LOCATIONS PRIOR TO ROUGH-IN.
- 3. COORDINATE DEMOLITION WORK WITH ARCHITECTURAL DRAWINGS.
- 4. PROVIDE TYPEWRITTEN SCHEDULES INDICATING LOAD DESCRIPTION FOR ALL CIRCUITS IN PANEL BOARDS, ON PANEL DOOR.
- 5. USE ONLY INSULATED CONDUCTORS IN CIRCUITS. CONDUCTORS SHALL BE SIZED PER NEC AND DRAWINGS (MINIMUM #12 COPPER). MINIMUM CONDUCTOR INSULATION SHALL BE 'THW' OR 'THWN' FOR CONDUCTORS SIZE #6 AWG AND LARGER. NO ROMEX ALLOWED. WHERE PVC CONDUIT IS USED, A GROUND WIRE SIZED PER NEC ART. 250-45 (EQUIPMENT GROUND) SHALL BE PULLED.
- 6. FINAL CONNECTIONS TO ALL DIRECT CONNECTED KITCHEN EQUIPMENT SHALL BE WITH U.L. APPROVED LIQUID—TIGHT CONDUIT, PROVIDED WITH GROUND WIRE SIZED PER NEC ART 250—35.
- COMPLETE SYSTEM SHALL BE GROUNDED PER NEC ART. 250.
- 8. SAFETY SWITCHES SHALL BE HEAVY DUTY WITH CLASS 'R' REJECTION FUSE CLIPS.
- 9. CONDUIT INSIDE BUILDING SHALL BE EMT OR RSC. FLEXIBLE CONDUIT, AY BE USED WITH OWNER APPROVAL. ALL EXPOSED FLEX CONDUIT SHALL BE SEAL—TIGHT OR
- 10. ALL JUNCTION BOXES SHALL BE 4" SQUARE, UNLESS NOTED OTHERWISE.
- 11. VERIFY MOUNTING HEIGHTS AND LOCATIONS OF ALL ELECTRICAL OUTLETS, J-BOXES, ETC. WITH OWNER PRIOR TO ROUGH-IN.
- 12. ALL EFFORTS SHALL BE MADE TO ENCLOSE ALL CONDUIT WITHIN THE WALLS. WHERE THIS IS NOT POSSIBLE, MULTIPLE RUNS OF CONDUIT SHALL BE FURRED IN, ENCASED IN AN APPROVED RACEWAY OR OTHER APPROVED, SEALED ENCLOSURE.
- 13. WHERE ELECTRICAL CONDUIT ENTERS A WALL, CEILING OR FLOOR, THE OPENING AROUND THE CONDUIT SHALL BE TIGHTLY SEALED.
- 14. ALL SWITCHES TO BE 36" MINIMUM, 48" MAXIMUM AFF. PER SECTION 3-380-8 OF
- 15. PROVIDE RECEPTACLE, DISCONNECT SWITCH, ETC. AS REQUIRED BY EQUIPMENT BEING INSTALLED. VERIFY RECEPTACLE CONFIGURATION WITH FINAL EQUIPMENT SELECTION.

KITCHEN EQUIPMENT NOTES

- 1. COORDINATE EXACT LOCATION, TERMINATIONS, MOUNTING HEIGHTS AND ELECTRICAL CHARACTERISTICS FOR EACH SPECIFIC MODEL AND PIECE OF EQUIPMENT WITH THE OWNER'S REPRESENTATIVE AND KITCHEN EQUIPMENT SUPLIER PRIOR TO ROUGH—INS INSTALLATION. PROVIDE ELECTRICAL SERVICE AS REQUIRED FOR EACH PEICE OF EQUIPMENT. ALL RECEPTACLES SHALL BE VOLTAGE RATING AND AMPACITY TO MATCH MANUFACTURERS RECOMMENDATIONS. INCLUDE ALL COSTS IN BASE BID PROPOSAL.
- 2. ALL EXPOSED CONDUIT SHALL BE INSTALLED AT LEAST 6" OFF THE FLOOR AND 1" AWAY FROM THE WALL TO FACILITATE CLEANING.
- 3. ALL 125 VOLT, SINGLE, 15 AND 20 AMPERE RECEPTACLES INSTALLED IN KITCHEN AND WITHIN & 6 FEET OF ANY SINK TO BE GFCI PROTECTED PER NEC 210.8(B).
- 4. COORDINATE KITCHEN EQUIPMENT ROUGH-INS WITH FS SHEETS.

	TO GOTTINGE GOTTED GEE
TYPE/MAKE	DISCRIPTION
CONTROLS	
EPC EPC-2-D	LVS 0-10V EMERGENCY DEVICE
\$	120-277 V, 6A MAESTRO DUAL-CIRCUIT SWITCH WITH DUAL-TECHNOLOGY OCCUPANCY AND VACANCY SENSOR
\$2 _{RL} PJ2-2BRL-GWH-L01	2 BUTTON WITH RAISE/LOWER AND LIGHT ICON — PICO KEYPAD
\$ 2 PJ2-4B-GWH-L31	4 BUTTON SCENE WITH LIGHT ICON — PICO KEYPAD
SENSORS	
OL) LRF2-DCRB-WH	RADIO POWER SAVR WIRELESS CEILING MOUNT DAYLIGHT SENSOR
OS LRF2-OCR2B-P-WH	RADIO POWR SAVR WIRELESS CEILING OCCUPANCY SENSOR
VIVE	
HUB HJS-0-FM	STARTER HUB, FLUSH-MOUNT ADAPTER AND POWER SUPPLY
8TN RMJS-8TN-DV-B	POWPACK DIMMING MODULE WITH 0-10 V CONTROL.
PNE RMJS-PNE-DV	VIVE POWPAK PHASE SELECT DIMMING MODULE. 120V/277V. MOUNTS IN STD 4x4 BOX.
ACCESSORI	ES
CW-1-WH	CLARO WALLPLATE

LIGHTING CONTROL SCHEDULE

LIGHTING PLAN GENERAL NOTES

PICO-WBX-ADAPT | PICO WIRELESS CONTROL

CONTRACTOR TO ADJUST TYPE & QTY OF LIGHTING CONTROL DEVICES IN FIELD AS PER REQUIREMENT.

CLARO WALLPLATE-2 GANG

WALLBOX ADAPTER KIT

2. COORDINATE WITH THE MANUFACTURER FOR EXACT DETAILS OF THE CONTROL DEVICES.



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No.	DATE	DESCRIPTION
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PRO	JECT No.:	23109
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LIGHTING PLAN

E-I



SCALE: 1/4" = 1'-0"

PNE

FLOOR PLAN - POWER KEYED WORK NOTES

- COORDINATE FINAL PLACEMENT OF ALL DEVICES WITH FRANCHISEE.
- 2. JUNCTION BOX FOR GAS WATER HEATER. E.C SHALL COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.
- 3. NOT USED.
- 1. PROVIDE POWER CONNECTION TO THE CAPSULE PAK SELF CONTAINED WALK—IN BOX EQUIPMENT. E.C SHALL COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENT WITH EQUIPMENT
- MANUFACTURER. PROVIDE BREAKER AND BRANCH CIRCUIT ACCORDINGLY.
- 6. JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO BUILDING MOUNTED SIGNAGE. VERIFY EXACT LOCATION AND CONNECT TO SIGN PER MANUFACTURE'S INSTRUCTION. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING/SIGNAGE.

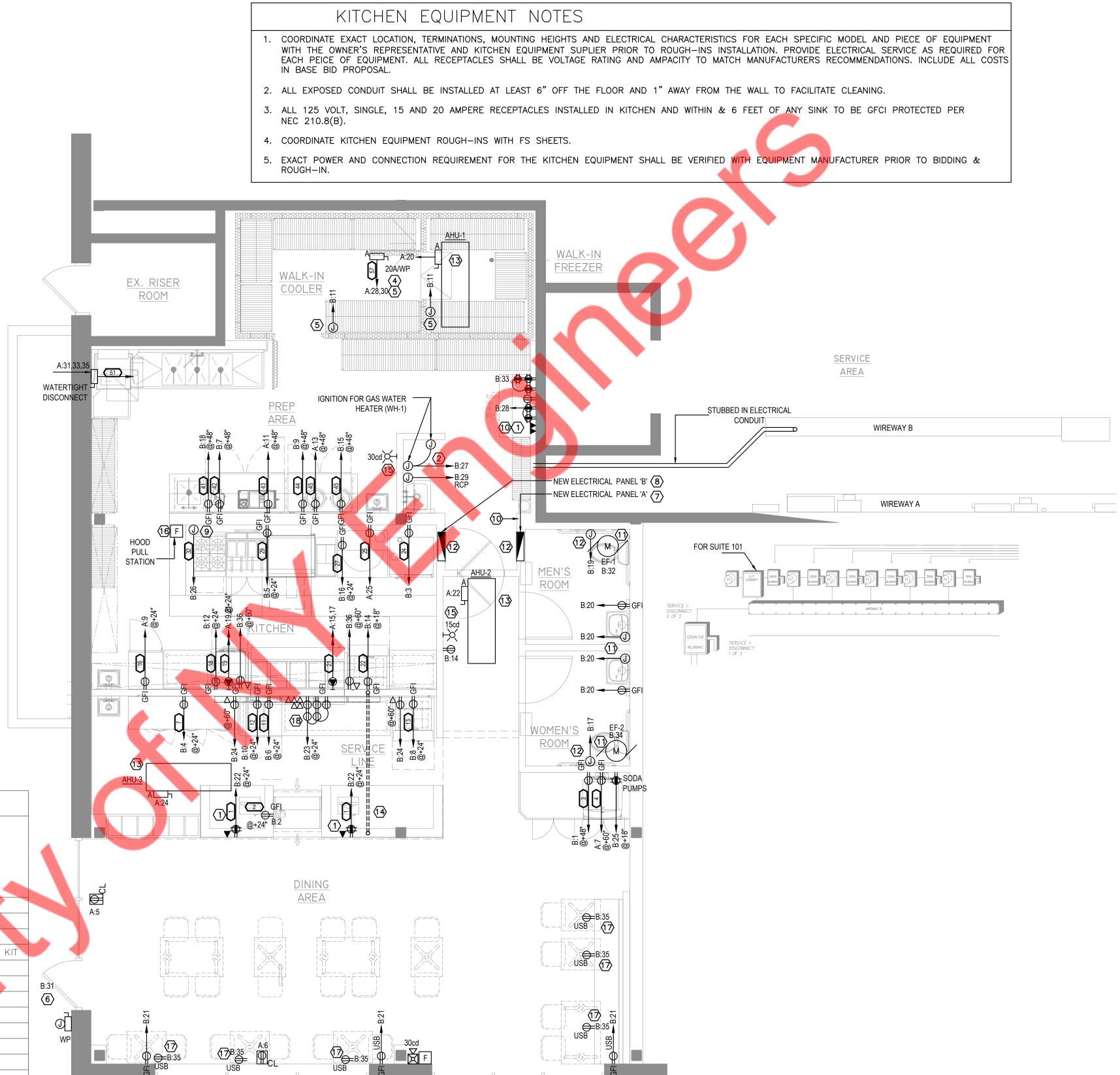
E.C. TO COORDINATE WITH WALK IN COOLER/FREEZER FOR EXACT LOCATION OF ELECTRICAL CONNECTION AND POWER SUPPLY REQUIREMENT IN FIELD.

- 7. NEW 400A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL 'A' FOR THE SPACE. E.C. SHALL COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER IN FIELD.
- 8. NEW 125A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL 'B' FOR THE SPACE. E.C. SHALL COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER IN FIELD.
- 9. E.C. SHALL PROVIDE POWER AND NECESSARY WIRING FOR THE HOOD CONTROL PANEL AS PER MANUFACTURER/MECHANICAL DRAWINGS.
- 10. TWO NUMBER OF GENERAL RECEPTACLE AND DATA OUTLET FOR DESK AREA. E.C. SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
- 11. EXHAUST FAN SHALL BE POWERED AND CONTROLLED ALONG WITH AHU-2 IN THE ROOM. E.C SHALL COORDINATE EXACT LOCATION WITH MECHANICAL
- 12. ALL CONDUITS SHALL BE CONCEALED IN WALL FOR ALL PANELS.
- 13. E.C. TO COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENT OF MECHANICAL EQUIPMENTS WITH MECHANICAL CONTRACTOR. PROVIDE THE ELECTRICAL CONNECTION AS PER MECHANICAL EQUIPMENTS REQUIREMENT IN FIELD.
- 14. DATA & ELECTRICAL CONDUIT DOWN TO WALL BELOW SLAB. TURN UP INTO MILLWORK CHASE WALL.
- 15. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER FOR MORE INFORMATION ABOUT FIRE ALARM SYSTEM.
- 16. INSTALL ANSUL CONDUIT IN WALL AND CONDUIT ON WALL SURFACE IS NOT ALLOWED.
- | | 17. EXACT LOCATION, HEIGHT AND MOUNTING OF THE RECEPTACLE SHALL BE COORDINATED IN FIELD WITH ARCHITECT/OWNER.
- 18. REFER TO INTERIOR ELEVATIONS FOR THE EXACT LOCATION AND MOUNTING HEIGHT OF THE OUTLETS.

POWER PLAN GENERAL NOTES

- 1. ALL RECEPTACLES IN KITCHEN AREA SHALL BE "GFCI" IN ACCORDANCE WITH NEC ARTICLE 210.8(B). PROVIDE GFI RATED BREAKER AT PANEL FOR KITCHEN EQUIPMENT.
- 2. ALL LOW VOLTAGE, POS, MENU BOARDS, TOUCH SCREEN MONITORS, ACCESS POINT AND MUSIC SPEAKERS TO HAVE CAT6 CABLE FOR DATA.
- 3. THE 2 POS TERMINALS ON THE FRONT SERVICE COUNTER REQUIRE A DATA LINE (2 LINES PER ITEM) AND ELECTRIC.
- 4. THE MENU BOARDS REQUIRE A DATA LINE AND ELECTRIC. FOUR MENU BOARDS, EACH REQUIRES ELECTRIC AND DATA.
- 5. THE TOUCH SCREENS ON EITHER SIDE OF THE EXPO WINDOW AND ALONG THE COOKS LINE REQUIRES ELECTRIC AND DATA TO EACH SCREEN.
- 6. THE ACCESS POINT IN THE DINING ROOM CEILING IS DATA ALONE.
- 7. ALL DATA CABLES ARE TO BE RUN THE IT BOX MOUNTED ON THE WALL ABOVE THE OFFICE SHELVING.
- 8. SEE ARCHITECTURAL ELEVATIONS FOR PLACEMENT OF DEVICES.
- 9. COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS ON ABOVE CEILING WITH MECHANICAL CONTRACTOR.
- 10. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER FOR FINAL SELECTION PRIOR TO ROUGH—IN. E.C. COORDINATE LOCATION OF DISCONNECT SWITCH WITH MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH—IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.
- 11. E.C. TO COORDINATE ALL OUTLETS HEIGHTS WITH ARCHITECT/MANUFACTURER IN FIELD.

			EQUIPN	MENT SCHEDULE						
					SQ	Ø	(N	ct	<u> </u>	
Item No	Qty	Equipment Category	 Manufacturer	Model Number	Amp	Volts	Pha	Direc		Equipment Remarks
1	2	POS System	TBD	TBD	VFY	120	1	X	5-15P	BY OWNER
2	1	Refrigerated Self-Service Counter Case	Structural Concepts	CO3324R-UC	12.0	120	1	X	5-15P	
3	1	Soda/Ice Dispenser	Cornelius Or Equal	ENDURO 150 OR EQUAL	3.0	120	1	X	5-15P	BY SODA SUPPLIER
4	1	lce Maker w/o Bin	Manitowoc Ice	IYT0620A	20.0	115	1	X		W/ K00438 TOP AIR KIT
7	1	Refrigerator, Reach—In	True Mfg.	TBR84-RISZ1-L-B-GGGG-1	3.2	115	1	X	5-15P	
11	1	Refrigerator, Undercounter, ADA	True Mfg.	TUC-27D-2-ADA-HC	2.0	115	1	X	5-15P	
12	1	Hot Food Well, Countertop	Vollrath	72020	12.0	120	1	X	5-20P	
13	1	Refrigerator, Sandwich/Salad Prep	True Mfg.	TFP-32-12M-D-2	3.3	115	1	X	5-15P	
16	1	Heated Cabinet, Mobile, Elec.	Carter-Hoffman	HL4-18	17.5	120	1	X	5-20P	
18	1	Freezer, Undercounter	True Mfg.	TUC-27F-D-2-HC	5.0	115	1	X	5-15P	
19	1	Oven, Rapid-Cook, Electric	MerryChef	EIKON E4S	30.0	208	1	X	6-30P	
21	1	Steamtable, Electric	Vollrath	38119	16.6	208	1	×	6-30P	
22	1	Refrigerator, Sandwich/Salad Prep	True Mfg.	TFP-32-12M-D-2	3.3	115	1	X	5-15P	
24	1	Oven-Steamer, Combination, Gas	RATIONAL USA	ICOMBI PRO 6-HALF SIZE G	6.0	120	1	×	5-15P	
25	1	Tandoor Oven, Rotating, Gas	Rotoquip	RD-30	VFY	120	1		VFY	
27	1	Equipment Stand, Refrigerated	True Mfg.	TRCB-48	5.4	115	1	X	5-15P	
29	1	Fryer, Gas, w/ Filter	Pitco	SSH55R-2FD	0.7	115	1	X	5-15P	
32	1	Hood Fire Suppression System	Ansul	R-102	VFY	120/208	1/3	X		*INTEGRAL TO HOOD #31
41	1	Refrigerator, Undercounter, ADA	True Mfg.	TUC-60-ADA-HC	4.0	115	1	X	5-15P	
42	1	Food Processor	Robot Coupe	R602VV	12.0	120	1	X	5-15P	
43	1	Immersion Circulator	Vollrath	60039	12.0	120	1	X	5-15P	
44	1	Freezer, Undercounter, ADA	True Mfg.	TUC-48F-ADA-HC	3.2	115	1			
45	2	Cooker, Rice, Elec.	Town Food Service Equipment	57137	15.0	120	1	×	5-15P	
51	1	Warewasher, High Temp, Ventless	CMA Dishmachines	CMA-180-VL	49.0	208	3	X		WATERTIGHT DISCONNECT
56	1	Walk-In Cooler/Freezer	Nor-Lake	CUSTOM	4.0	120	1	X		
57	1	Capsule Pak Self Contained			_	208	1	X		



SCALE: 1/4" = 1'-0"



ISSUE

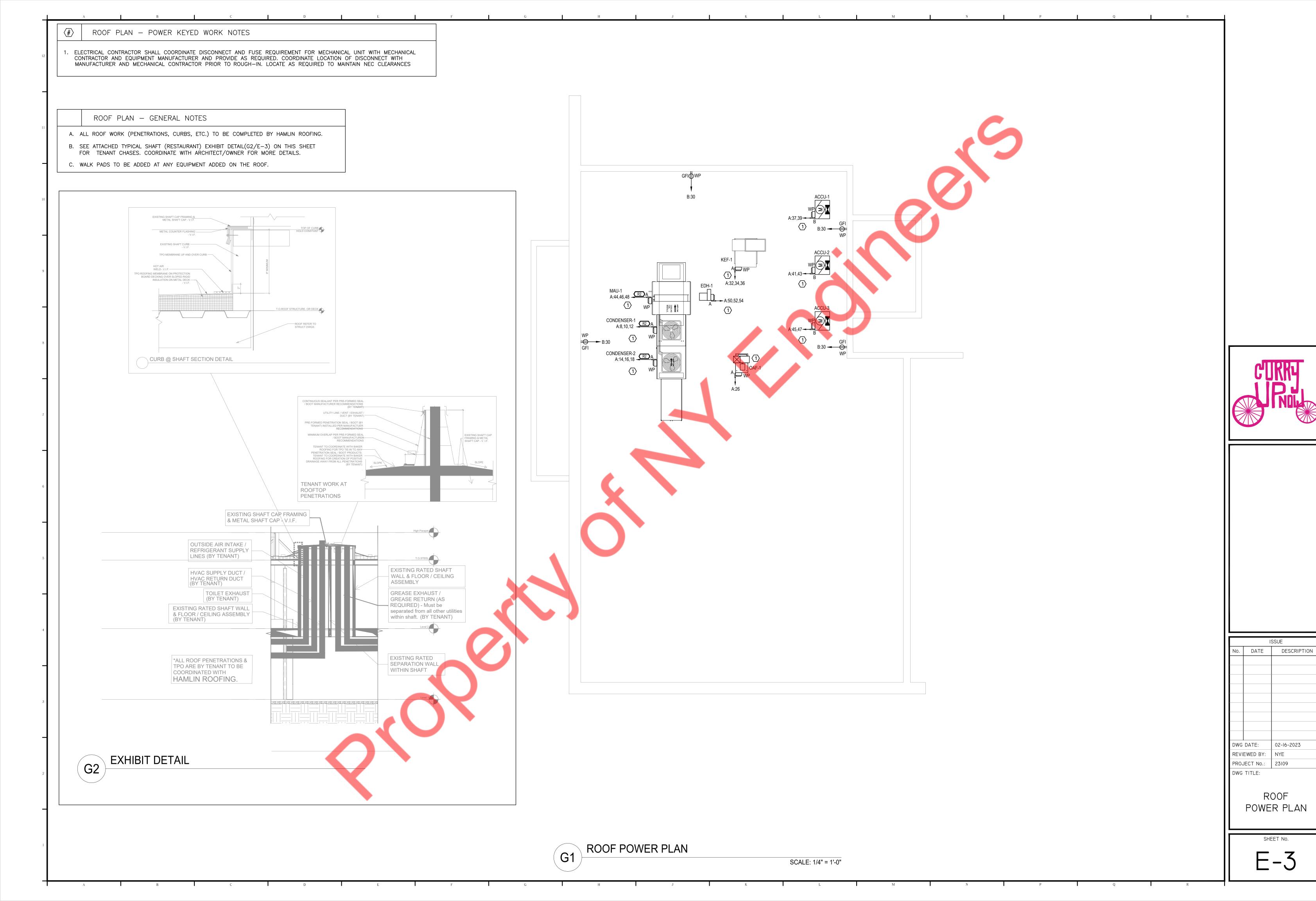
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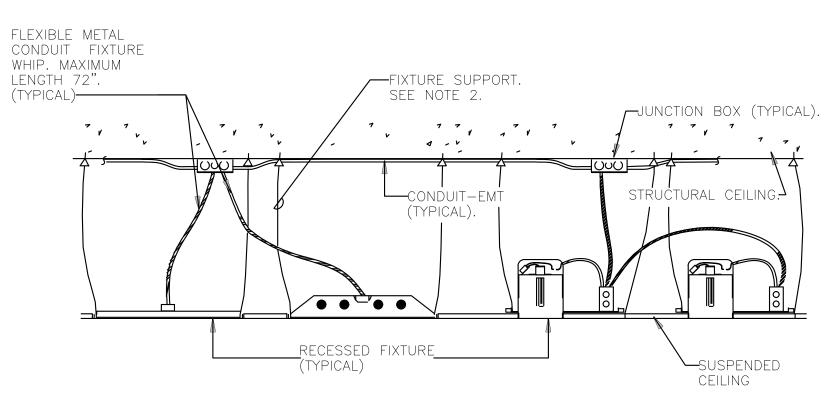
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SHEET No.

F-2

POWER PLAN



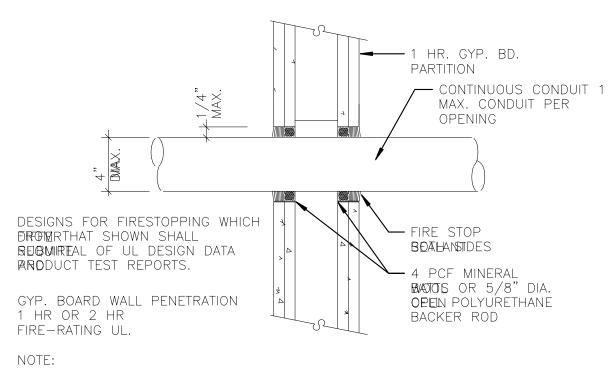


NOTES: 1. MC CABLE IS ACCEPTABLE WHERE CONCEALED ABOVE CEILINGS OR IN WALLS. MC CABLE SHALL NOT ENTER PANELBOARDS.

2. SUPPORT FIXTURES DIRECTLY FROM STRUCTURE. A. FOR LINEAR FIXTURES: MINIMUM TWO 2.5mm (0.1") #10AWG GALVANIZED STEEL WIRES AT DIAGONAL CORNERS (WITHIN 4" OF FIXTURE CÒRNÉR)" DIRECTLY FROM STRUCTURE.

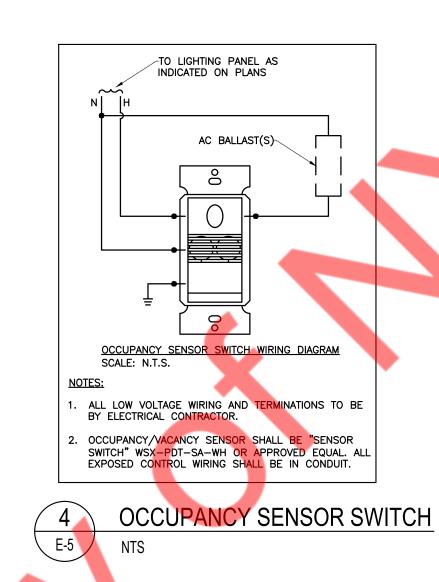
B. FOR DOWNLIGHTS: WIRE FROM STRUCTURE.

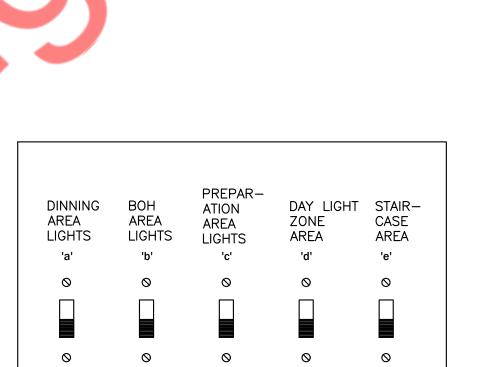
TYPICAL RECESSED FIXTURE INSTALLATION DETAIL NTS



THIS DETAIL USED IN BOTH 1 HR. AND 2 HR. PARTITIONS. THIS DETAIL USED DRRWBOTHAND PLASTER/STUD PARTITIONS, DESIGNATED AS IF. FIELD VERIFY CONDITIONS.







E-5 /

1 TYPICAL FOR WOOD

AND METAL STUD ROUGH-IN

3 LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.

IN ACCORDANCE WITH UBC 4304 OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24"

DETAIL TYPICAL ROUGH-IN REQUIREMENTS

2 PLASTER RINGS NOT SHOWN

HORIZONTAL DISTANCE.

OUTLETS

- PROVIDE CONDUIT SUPPORTS IN ACCORDANCE

OF RACEWAY REQUIRED.

OUTLET BOX.

WITH NEC. SPACING REQUIREMENTS FOR TYPE

AS REQUIRED FOR

TYPE OF CONSTRUCTION.

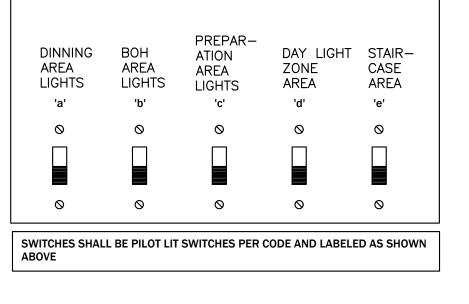
- STEEL CITY

SUPPORT

OUTLET BOX.

NO. 7501 BOX

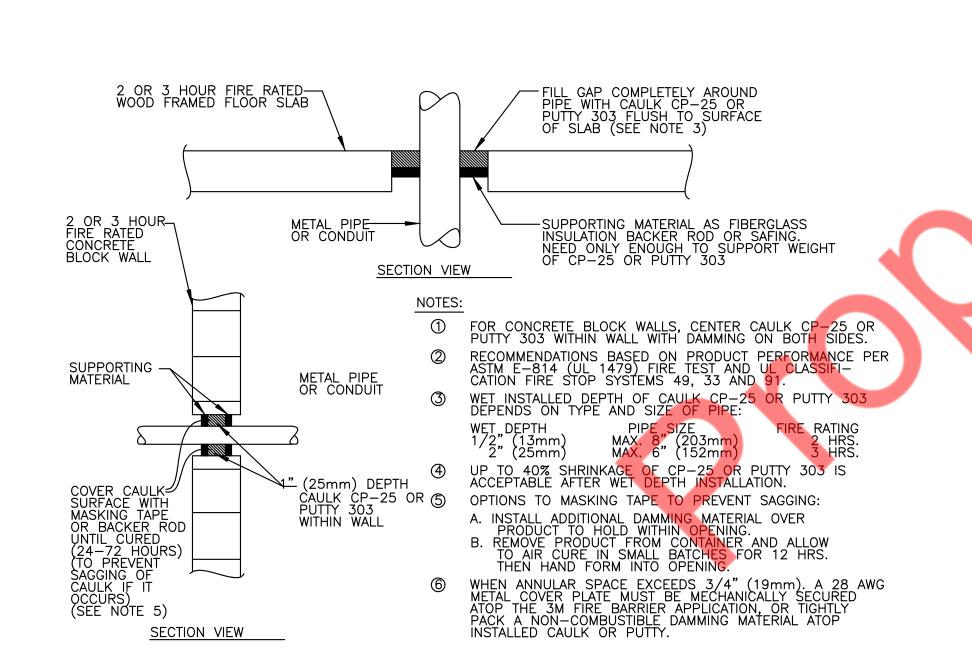




No. DATE	DESCRIPTION
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DWG DATE:	02-16-2023
REVIEWED BY:	NYE
PROJECT No.:	23109
DWG TITLE:	•

ELECTRICAL DETAILS

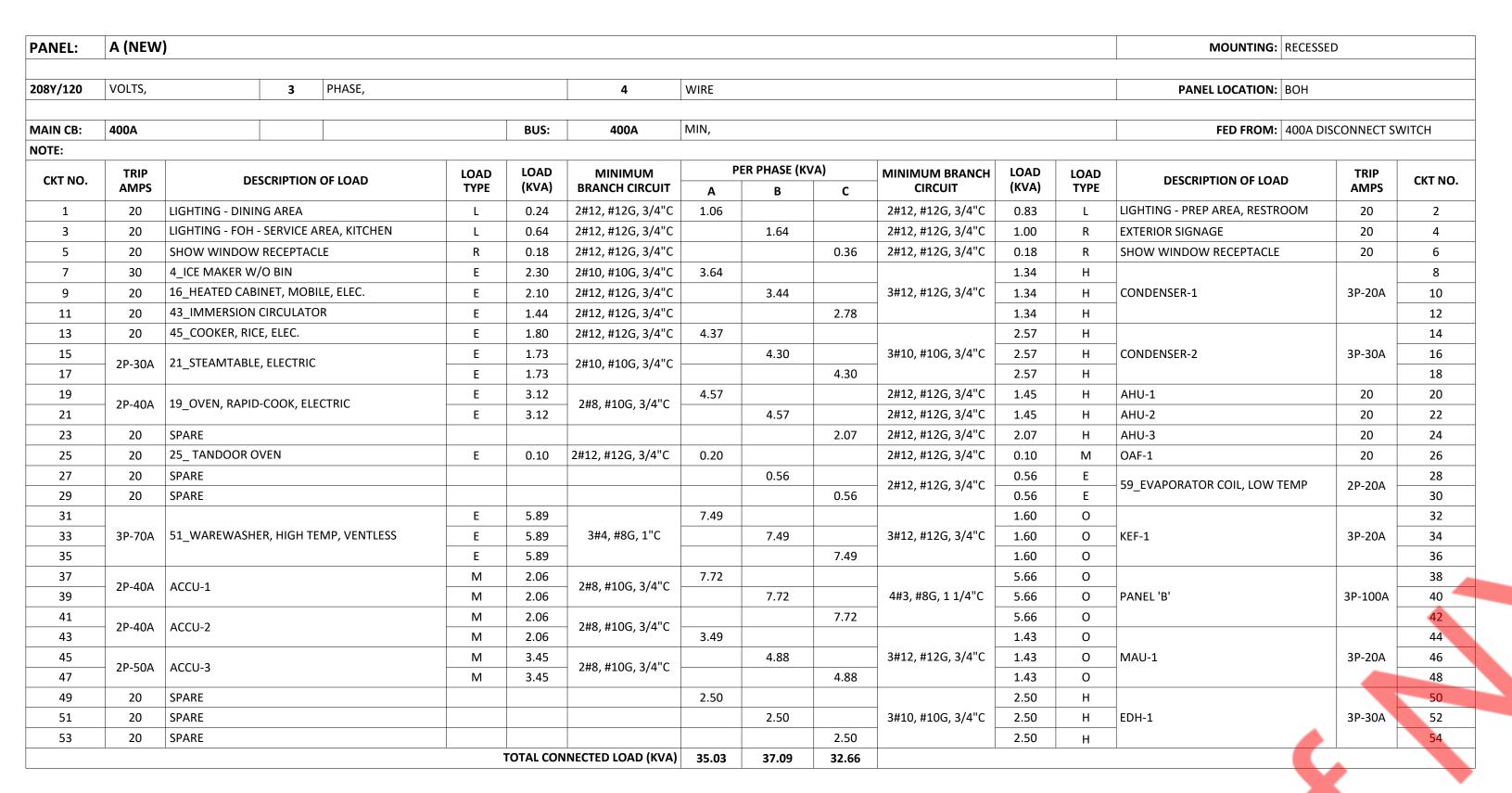
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FIRE STOP DETAIL

E-5

NTS

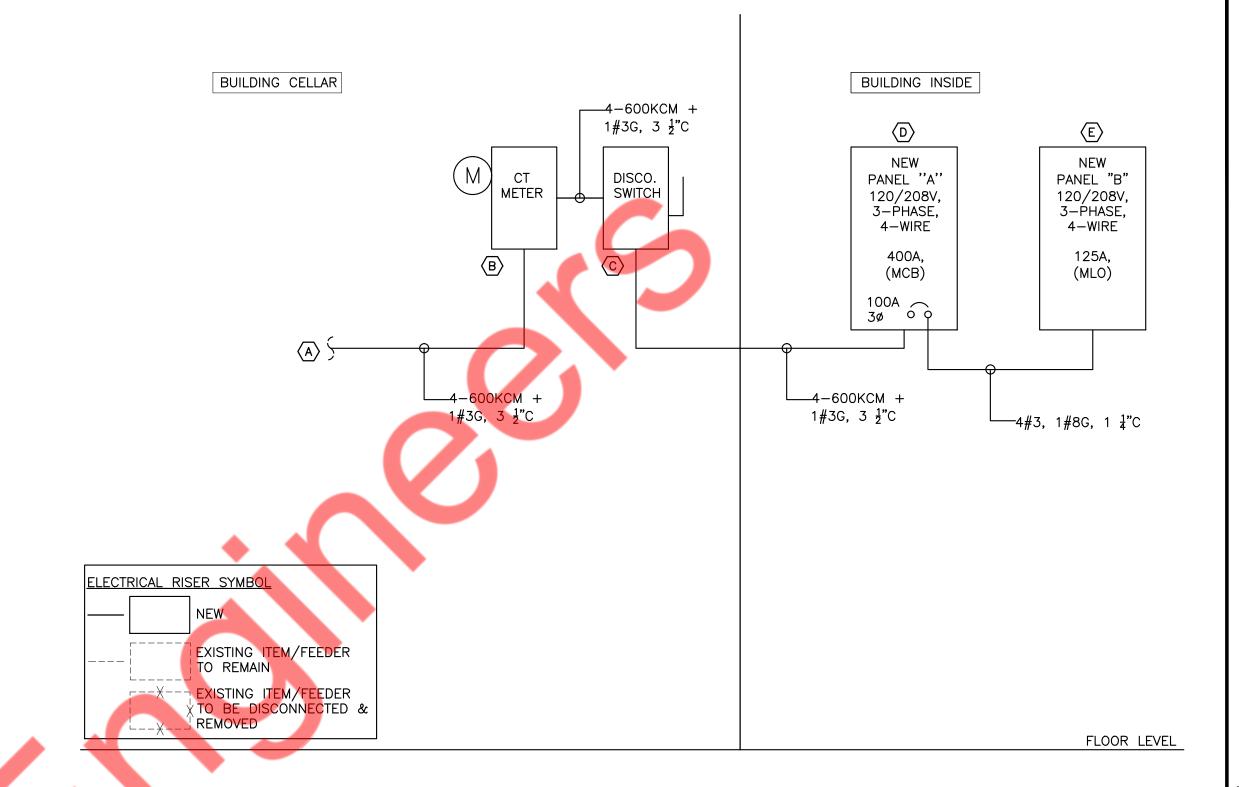


PANEL:	B (NEW											MOUNTING: RECESSED		
208Y/120	VOLTS,	3 PHASE,			4	WIRE						PANEL LOCATION: BOH		
MLO:	125A			BUS:	125A	MIN,						FED FROM: PANEL 'A'		
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	A P	ER PHASE (K) B	VA)	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	3_SODA/ICE DISPENSER	E	0.36	2#12, #12G, 3/4"C	1.80			2#12, #12G, 3/4"C	1.44	<u></u> E	2_REFRIGERATED SELF-SERVICE COUNTER CASE	20	2
3	20	24_OVEN-STEAMER, COMBINATION, GAS	E	0.72	2#12, #12G, 3/4"C		1.09		2#12, #12G, 3/4"C	0.37	E	7_REFRIGERATOR, REACH-IN	20	4
5	20	29_FRYER, GAS, W/ FILTER	E	0.10	2#12, #12G, 3/4"C			0.33	2#12, #12G, 3/4"C	0.23	E	11_REFRIGERATOR, UNDERCOUNTER, ADA	20	6
7	20	42_FOOD PROCESSOR	E	1.44	2#12, #12G, 3/4"C	1.82			2#12, #12G, 3/4"C	0.38	E	13_REFRIGERATOR, SANDWICH/SALAD PREP	20	8
9	20	44_FREEZER, UNDERCOUNTER, ADA	E	0.37	2#12, #12G, 3/4"C		1.81		2#12, #12G, 3/4"C	1.44	E	12_HOT FOOD WELL, COUNTERTOP	20	10
11	20	56_WALK-IN COOLER/FREEZER	E	0.48	2#12, #12G, 3/4"C			1.06	2#12, #12G, 3/4"C	0.58	E	18_FREEZER, UNDERCOUNTER	20	12
13	20	SPARE				0.38			2#12, #12G, 3/4"C	0.38	E	22_REFRIGERATOR, SANDWICH/SALAD PREP	20	14
15	20	45_COOKER, RICE, ELEC.	E	1.80	2#12, #12G, 3/4"C		2.42		2#12, #12G, 3/4"C	0.62	E	27_EQUIPMENT STAND, REFRIGERATED	20	16
17	20	TOILET HAND DRYER	E	1.00	2#12, #12G, 3/4"C			1.46	2#12, #12G, 3/ <mark>4"C</mark>	0.46	E	41_REFRIGERATOR, UNDERCOUNTER, ADA	20	18
19	20	TOILET HAND DRYER	E	1.00	2#12, #12G, 3/4"C	1.36			2#12, #12G, 3/4"C	0.36	R	TOLIET RECEPTACLE	20	20
21	20	GENERAL RECEPTACLE	R	0.54	2#12, #12G, 3/4"C		1.26		2#12, #12G, 3/4"C	0.72	R	1_POS RECEPTACLE	20	22
23	20	DIGITAL MENUBOARD RECEPTCLE	R	0.90	2#12, #12G, 3/4"C			1.30	2#12, #12G, 3/4"C	0.40	R	TOUCHSCREENS	20	24
25	20	SODA/ICE DISPENCER	E	0.40	2#12, #12G, 3/4"C	1.40			2#12, #12G, 3/4"C	1.00	Е	32_HOOD CONTROLS	20	26
27	20	IGNITION FOR WATER HEATER (WH-1)	0	0.10	2#12, #12G, 3/4"C		0.82		2#12, #12G, 3/4"C	0.72	R	DESK RECEPTACLE	20	28
29	20	RCP	М	0.10	2#12, #12G, 3/4"C			0.82	2#12, #12G, 3/4"C	0.72	R	ROOFTOP RECEPTACLE	20	30
31	20	EXTERIOR SIGNAGE	Е	1.00	2#12, #12G, 3/4"C	1.17			2#12, #12G, 3/4"C	0.17	Н	EF-1	20	32
33	20	DESK RECEPTACLE	R	1.08	2#12, #12G, 3/4"C		1.25		2#12, #12G, 3/4"C	0.17	Н	EF-2	20	34
35	20	USB RECEPTACLES	R	0.72	2#12, #12G, 3/4"C			1.12	2 #12 , #12 G, 3/4"C	0.40	R	TOUCHSCREENS	20	36
37		SPACE				0.00						SPACE		38
39		SPACE					0.00					SPACE		40
41		SPACE						0.00				SPACE		42
			7	TOTAL CON	INECTED LOA <mark>D (KV</mark> A)	7.93	8.65	6.09						

PANEL SCHEDULE ABBREVIATIONS:

L = LIGHTING , R = RECEPTACLE , H = HVAC , E = EQUIPMENT , O = OTHER, M = MOTOR





RISER DIAGRAM KEYED WORK NOTES

- A. NEW 400A, 120/208V, 3-PH, 4 WIRE FEEDER FROM THE EXISTING WIREWAY SWITCHGEAR. E.C. TO COORDINATE WITH OWNER/LANDLORD FOR MORE DETAILS.
- B. NEW 400A, 208Y/120V, 30 ELECTRICAL METER AND CT CABINET FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF THE METER AND CT CABINET IN THE FIELD.
- C. NEW 400A, 208Y/120V, 3Ø ELECTRICAL DISCONNECT SWITCH FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF THE DISCONNECT SWITCH IN THE FIELD.
- D. NEW 400A (MCB), 120/208V, 3-PH, 4-WIRE ELECTRICAL PANEL "A" FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF THE PANEL IN FIELD.
- E. NEW 125A (MLO), 120/208V, 3-PH, 4-WIRE ELECTRICAL PANEL "B" FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF THE PANEL IN FIELD.

RISER DIAGRAM GENERAL NOTES

- 1. ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSE ONLY. E.C TO VERIFY EXACT POWER DISTRIBUTION & OPERABLE CONDITION OF EXISTING DEVICES IN FIELD AND INFORM, ENGINEER FOR ANY DISCREPANCY.
- 2. E.C. SHALL VERIFY THE RATING, SIZE, LOCATION AND OPERABLE CONDITION OF ALL THE EXISTING PANELS AND ELECTRICAL CONNECTION IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND BEFORE COMMENCING ANY WORK.
- 3. E.C. SHALL VERIFY THE INCOMING SERVICE AMPERAGE, VOLTAGE, NUMBER OF PHASES, WIRE SIZE AND DISTRIBUTION IN FIELD.
- 4. E.C. TO COORDINATE FAULT CURRENT (ISC) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
- 5. E.C. SHALL VERIFY THE EXACT POWER DISTRIBUTION & INCOMING CONNECTION TO ALL PANELS IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND.
- 6. E.C. TO VERIFY IF DEDICATED METER EXISTS FOR THE SPACE. ELSE COORDINATE WITH OWNER/LANDLORD FOR PROVIDING NEW METER.

ELECTRICAL RISER DIAGRAM

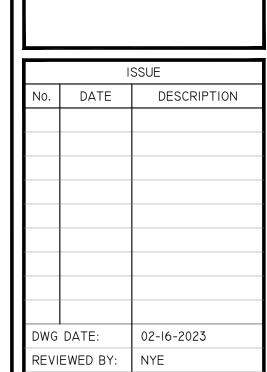
IN. I .S

PANEL SCHEDULE GENERAL NOTES

N.T.S

- 1. ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY CIRCUITING OF THE EXISTING DEVICES IN FIELD AND INFORM ENGINEER FOR ANY DISCREPANCIES.
- 2. ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.
- 3. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT CIRCUIT NUMBER & BREAKER SIZE OF EXISTING DEVICES IN FIELD.
- 4. E.C. SHALL PROVIDE NEW CIRCUIT BREAKERS IN PLACE OF EXISTING CIRCUIT BREAKERS WHEREVER NECESSARY TO BE IN LINE WITH THE PANEL SCHEDULE. BASE BID ACCORDINGLY.
- 5. E.C. SHALL VERIFY THE EXISTING EQUIPMENT LOAD & RATINGS IN FIELD AND ACCORDINGLY CONSIDER THE ELECTRICAL LOAD IN PANEL BOARD SCHEDULE.

 6. E.C. TO UPDATE THE PANEL BOARD SCHEDULE AS PER EXISTING SITE CONDITION & NEW EQUIPMENT REQUIREMENTS.
- 7. EXISTING EQUIPMENTS AND ITS EXISTING ELECTRICAL CONNECTION SHALL REMAIN. E.C. SHALL VERIFY THE CIRCUIT NUMBER, BREAKER SIZE AND OPERABLE CONDITION OF EXISTING ELECTRICAL CONNECTION IN FIELD. REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
- 8. ALL EXISTING HVAC EQUIPMENTS AND ITS ELECTRICAL CONNECTION SHALL REMAIN. E.C. SHALL VERIFY THE CIRCUIT NUMBER & OPERABLE CONDITION OF EXISTING ELECTRICAL CONNECTION IN FIELD. REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
- 9. E.C. TO ENSURE THAT DEMAND LOAD AMPERES ON PANEL A SHALL NOT BE MORE THAN 225A.
- 10. E.C. TO ENSURE THAT DEMAND LOAD AMPERES ON PANEL E SHALL NOT BE MORE THAN 100A.



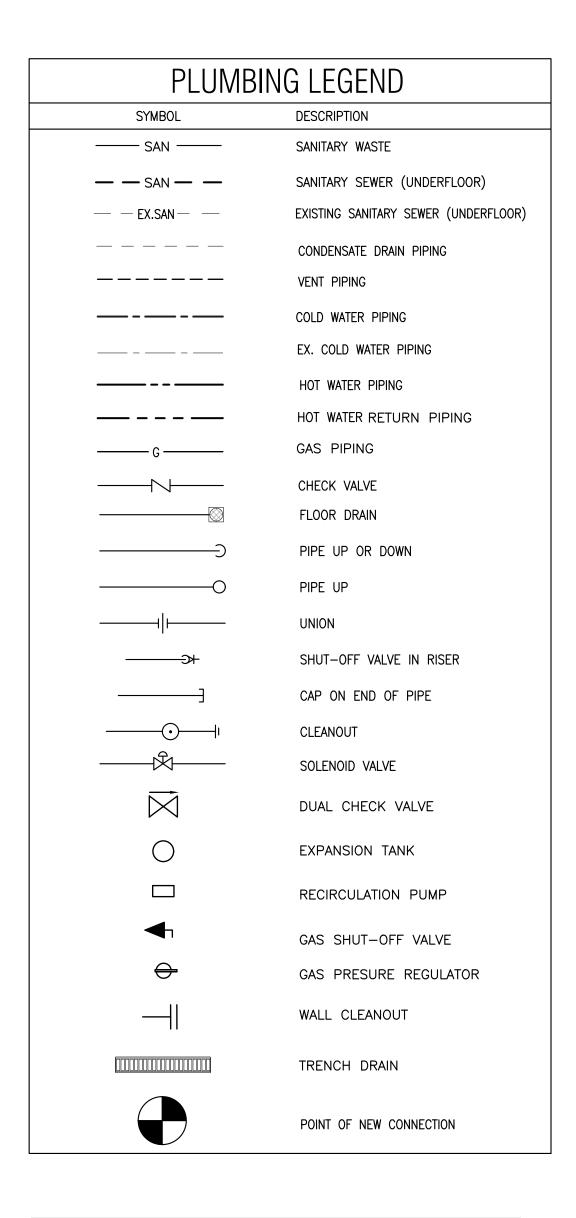
ELECTRICAL RISER DIAGRAM & PANEL SCHEDULES

PROJECT No.: 23109

DWG TITLE:

CHEET N

E-4



PLUMBING DRAWING LIST

P-1 PLUMBING SYMBOLS, ABBREVIATIONS & SPECIFICATIONS

P-2 PLUMBING SPECIFICATIONS

P-3 PLUMBING ROOF GAS, DOMESTIC WATER & GAS FLOOR PLAN

P-4 PLUMBING SANITARY & VENT FLOOR PLAN

P-5 PLUMBING DETAILS

P-6 PLUMBING DETAILS

P-7 PLUMBING RISERS

P-8 PLUMBING SCHEDULES

CODE COMPLIANCE

ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT:

a. NORTH CAROLINA BUILDING CODE 2018

b. NORTH CAROLINA MECHANICAL CODE 2018

c. NORTH CAROLINA PLUMBING CODE 2018

d. NORTH CAROLINA FUEL GAS CODE 2018

e. NORTH CAROLINA ENERGY CONSERVATION CODE 2018

f. NORTH CAROLINA ELECTRIC CODE 2017

PLUMBING ABBREVIATIONS

CO CLEANOUT CODP CLEAN OUT DECK PLATE CW COLD WATER HOT WATER HW HOT WATER RETURN HWR SANITARY SOIL WASTE LAVATORY WATER CLOSET TYPICAL DOWN EXISTING EXIST ABOVE FINISH FLOOR FLOOR DRAIN FLOOR SINK SQ. FT. SQUARE FEET BACK FLOW PREVENTER HOT WATER HEATER SHUTOFF VALVE EXPANSION TANK RECIRCULATION PUMP WALL CLEANOUT

BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2018 NORTH CAROLINA PLUMBING CODE (IPC 2018).

2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 702.2

ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 702.2

3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS

AS PER SECTION PC 305.

4. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION PC

5. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 303, PC 605, PC 702, PC 902,PC 1102.

6. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 4, 5, 6, 7 AND 9.

7. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER PC 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 708

8. DRAINAGE PIPE CLEANOUTS AS PER SECTION PC 708.

9. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 308

10. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 SECTION PC 601-603, 604, 606, 607, 608, 610

11. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 SECTION PC 701, 704, 705, 706, 707, 708,

12. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 9 SECTIONS PC 901 THROUGH PC 912 THROUGH

13. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION PC 312 TESTS AND INSPECTION.

14. GAS PIPING INSTALLATION SHALL BE IN ACCORDANCE WITH 2018 NORTH CAROLINA FUEL GAS CODE (2015 IFGC).

PLUMBING SPECIFICATIONS:

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

1.01 SCOPE

A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.

B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.

C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.

D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.

E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.

F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.

G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.

H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE

I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.

J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.

K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

1.02 SUBMITTALS

A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.

1. PIPE AND FITTINGS

VALVES
 HANGERS AND SUPPORTS

4. PLUMBING PIPING LAYOUT 5. TESTS

6. PLUMBING FIXTURES

7. WATER HEATERS & ACCESSORIES 8. FLOOR DRAINS

9. MIXING VALVES
10. ALL SCHEDULED PLUMBING EQUIPMENT

B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH

THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.

C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

D. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.

E. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.

F. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS—BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.

G. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.04 DEFINITIONS

DEFINITIONS.

A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.

B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.

C. PROVIDE: TO FURNISH AND INSTALL.

D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.

E. REFER TO THE INTERNATIONAL PLUMBING CODE 2018 FOR ADDITIONAL

1.04 DRAWINGS

A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.

B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.

C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.

D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.

E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.

F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FIN ARCHITECTURAL DRAWINGS.

1.05 PRODUCTS

A. SANITARY AND VENT PIPING:

1. ABOVE GRADE/ UNDERGROUND PIPING SHALL BE CAST IRON PIPE WHICH SHOULD COMPLY WITH ASTM A 74 STANDARD/CISPI 301.

2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 2-1/2" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO

3. PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE

INSTALLED IN CEILING PLENUM SPACES.

4. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE

DOMESTIC WATER PIPING:

1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.

INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE COPPER OR COPPER ALLOY AS PER TABLE 605.5, 2018 NORTH CAROLINA PLUMBING CODE (IECC 2015).

3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.

4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.

5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER—SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.

6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE—RETARDANT, FACTORY—APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY—APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH 2018 NORTH CAROLINA ENERGY CONSERVATION CODE (IECC 2015) SECTION C404.4. REFER BELOW TABLE C403.11.3 FOR MINIMUM PIPE INSULATION THICKNESS.

MINIMUM PIPE INSULATION THICKNESS											
FLUID OPERATING	INSULATION	CONDUCTIVITY	NOMINAL PIPE OR TUBE SIZE (INCHES)								
TEMPERATURE RANGE AND USAGE (*F)	CONDUCTIVITY BTU·IN./ (H·FT2·*F) MEAN RATING TEMPERATURE,		<1	1 to < 1½	1½ to < 4	4 to < 8	<8				
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5				
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0				

7. AS PER 2018 NORTH CAROLINA ENERGY CONSERVATION CODE (IECC 2015) SECTION C404.7 WATER DISTRIBUTION SYSTEM HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED—WATER SUPPLY PIPE BACK TO THE HEATED—WATER SOURCE THROUGH A COLD—WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM.PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:

1. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL

FROM THE ACTION OF A USER OF A FIXTURE, SENSING THE PRESENCE
OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR
TEMPERED WATER TO A FIXTURE.

2. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER

2. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD—WATER PIPING TO 104°F(40°C).

8. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2018 NORTH CAROLINA ENERGY CONSERVATION CODE (IECC 2015) SECTION C404.5, THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE		PIPING LENGTH (FEET)		
(INCHES)	PUBLIC LAV	OTHER FIXTURES		
½"	2'	43'		
3⁄4"	0.5'	21'		
1"	0.5'	13'		
11/4"	0.5'	8'		
11/2"	0.5'	6'		
2" OR LARGER	0.5'	4'		

9. AS PER NORTH CAROLINA ENERGY CONSERVATION CODE 2018 (IECC 2015) SECTION C404.6.1 HEATED—WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.

C. GAS PIPING

A. PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS FIRED EQUIPMENT AND EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON DRAWINGS

B. NATURAL GAS PIPING SHALL BE AS FOLLOWS:

1. ASTM A-53 SCHEDULE 40 STEEL PIPE PAINTED WITH YELLOW ANTI-CORROSIVE PAINT, SCREWED OR WELDED IN ACCORDANCE WITH CODE REQUIREMENT (FITTINGS FOR LINES LARGER THAN 2" SHALL BE WELDED STEEL FITTINGS FOR LINES 2" AND SMALLER, EXCEPT WHEN LOCATED IN AIR PLENUMS, SHALL BE SCREWED STANDARD WEIGHT BLACK MALLEABLE).

C. PROVIDE ALL UNIONS, SHUT—OFF VALVES AND DIRT LEGS
REQUIRED BY NFPA—54 AND GOVERNING LOCAL CODES AND AT
EACH GAS APPLIANCE CONNECTION.

PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM

PAINT ALL GAS PIPING EXPOSED TO WEATHER WITH ONE COAT OF PRIMER, AND TWO COATS OF RUST—PROOF PAINT. COLOR OF PIPE ON ROOF SHALL BE YELLOW. COORDINATE COLOR OF PIPE ON EXTERIOR OF BUILDING WITH GC TO MATCH BUILDING COLORS.

F. GAS COCKS 1-1/2" AND SMALLER SHALL BE ALL BRONZE, SCREWED, FLAT HEAD, BRASS PLUG AND WASHER 200 LB NOG PROVIDE LINE SIZE 6" LONG DIRT LEG DOWN STREAM OF GAS COCK AT ALL EQUIPMENT CONNECTIONS.

G. NO VALVES ARE TO BE LOCATED IN AIR PLENUMS

H. PROVIDE GAS PIPE SUPPORTS IN ACCORDANCE WITH CODE REQUIREMENTS

D. MIXING VALVES

1. VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.

2. TYPES A, C & D VALVES: VALVE SHUTS OFF IN FULL COLD POSITION AND MUST PASS THROUGH COLD RANGE BEFORE DELIVERING WARM, AND/OR HOT WATER. TEMPERATURE LIMIT SET AT 105°F MAXIMUM DELIVERY TEMPERATURE. IF ONE SUPPLY SHOULD FAIL, THE OTHER WILL AUTOMATICALLY AND INSTANTLY SHUT DOWN. DELIVERY CAPACITY IS 5GPM @ 45 PSIG DIFFERENTIAL.

3. TYPES OF VALVES: TYPE A— THERMOSTATICALLY OPERATED BY MEANS OF BI—METALLIC STRIP, OR EXPANSION BELLOWS; TYPE B— SINGLE HANDLE MECHANICAL MIXER, OR INDIVIDUAL HOT AND COLD CONTROL VALVES; TYPE C— PRESSURE BALANCING SHOWER VALVE/PISTON OPERATED MIXING VALVE; TYPE D— BALANCED PRESSURE OPERATION, WITH INTEGRAL DIAL THERMOMETER INDICATING DELIVERED WATER TEMPERATURE.

4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT—OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

D. GAS FIRED INSTANTANEOUS WATER HEATER:

1. PROVIDE HIGH EFFICIENCY GAS FIRED, INSTANTANEOUS WATER HEATERS. SIZE, LOCATION AND CAPACITY SHALL BE AS AS INDICATED ON THE DRAWINGS.

2. FACTORY-INSTALLED TEMPERATURE AND PRESSURE RELIEF VALVE EXTEND DISCHARGE PIPE, FULL SIZE, TO WITHIN 6" ABOVE THE MOP SINK OR FLOOR DRAIN.

3. PROVIDE POTABLE WATER EXPANSION TANK AS SPECIFIED EQUAL PRODUCTS BY WATTS, AMTROL, OR BELL & GOSSETT MAY BE

E. HANGERS AND SUPPORTS:

CLEVIS HANGERS.

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.

2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY

3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED

PROVIDED AT THE CONTRACTOR'S OPTION.

4. SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH

THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

F. HOT WATER RE-CIRCULATING PUMP

1. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.

2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.

3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE DRIP—PROOF, SLEEVE—BEARING, QUIET OPERATING, RUBBER—MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT—IN THERMAL OVERLOAD PROTECTION.

4. INSTALL IN—LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN—LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.



No. DATE DESCRIPTION

DWG DATE: 02-16-2023

REVIEWED BY: NYE

PROJECT No.: 23109

DWG TITLE:

PLUMBING

ISSUE

SHEET No.

SYMBOLS,

ABBREVIATIONS 8

SPECIFICATIONS

P-1

G. VALVES:

- PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.
- 2. ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
- 3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF
- VALVES ON SUPPLY LINES.

 4. ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
- 5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
- 6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

H. SLEEVES AND ESCUTCHEONS:

- 1. SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.
- 2. PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 20 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.

I. DRAINAGE ACCESSORIES

1. GENERAL:

- a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.
- b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.

2. DEVICES:

- a. CLEANOUT & CLEANOUT PLUG
- THREADED PIPE FITTING OR CAST IRON FERRULE WITH GAS TIGHT CLEANOUT PLUG
- PLUG SHOULD BE CAST BRASS OR BRONZE, WITH THREADED END, AND RAISED OR COUNTERSUNK HEAD.
- LUBRICATE THREADS OF CLEANOUT PLUG WITH ANTI-SEIZE LUBRICANT BEFORE FINAL INSTALLATION.

b. CLEANOUT WALL PLATE

- IT SHOULD BE ROUND, STAINLESS STEEL OR POLISHED CHROME PLATED BRONZE COVER PLATE WITH STAINLESS STEEL VANDAL RESISTANT FASTENER TO SECURE TO CLEANOUT PLUG.
- c. CLEANOUT DECK PLATE
- IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED CAST IRON BODY; ROUND, POLISHED NICKEL BRONZE SCORIATED TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER; THREADED HEIGHT ADJUSTMENT, CAST IRON HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.
- J. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.

K. VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES.

L. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPEANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.

M. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.

N. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL. REMOVE PROTECTIVE COATINGS PRIOR TO INSTALLATION.

O. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE—PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.

- P. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- Q. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
- R. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.
- S. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.
- T. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.
- U. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.
- V. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.
- W. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY
- X. ALL PIPING INSTALLED ON THE ROOF SHALL BE SUPPORTED BY "PILLOW BLOCK" PIPE STANDS AS MANUFACTURED BY MIRO INDUSTRIES, OR APPROVED EQUAL. WOOD PIPE SUPPORTS SHALL NOT BE ACCEPTABLE. PROVIDE TRAFFIC/WALK PADS BELOW ALL PIPE STANDS.
- Y. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS. WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.
- Z. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK—CLOSING VALVES.
- AA. UNLESS OTHERWISE INDICATED, TRAPS SEALS AT ALL FLOOR DRAINS SHALL BE MAINTAINED BY AN APPROVED TRAP PRIMING DEVICE.
- AB. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.
- AC. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ALL PLUMBING V.T.R.S AND ALL OUTDOOR AIR INTAKES. OFFSET VENT STACKS AND STACK VENTS IF AND AS REQUIRED BELOW ROOF TO MAINTAIN SUCH CLEARANCE WHETHER OR NOT SUCH OFFSET IS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED SEISMIC SUPPORTS.
- 2. INSTALLATION

2.01 GENERAL

- A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.
- B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.
- C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
- AND THE CONSTRUCTION SCHEDULE.

D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK

- E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.
- F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
- G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND
- H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.
- I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED
- J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AND DRAIN DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.
- K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.
- L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

- A. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.
- B. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT—OFF VALVES AND ALL LOW POINTS IN PIPING.
- C. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

2.03 INSULATION

COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1½" THICK FOR PIPE SIZE UP TO 1½" AND 2" THICK FOR PIPE SIZE GREATER THAN 1½". INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL PIPE INSULATION SHALL COMPLY WITH INTERNATIONAL ENERGY CONSERVATION CODE 2018 EDITION.

3. TESTING

- A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.
- B. TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.
- C. THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL. PARTITION OR BEAM.
- D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.
- E. ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.
- F. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.
- G. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.
- H. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

I. ALL EQUIPMENT WILL BE FACTORY TESTED.

- J. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.
- L. REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

M. TESTING REQUIREMENTS

a. TEST ALL DOMESTIC WATER PIPING AS PER 2018 NC PLUMBING CODE SECTION 312 TESTS AND INSPECTION.
b. TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
c. THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE

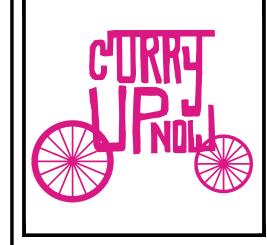
TEST AREA AND ADJACENT TENANT OR ESB SPACES.

- N. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.
- O. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.

4. WARRANTY

A. EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL.

THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

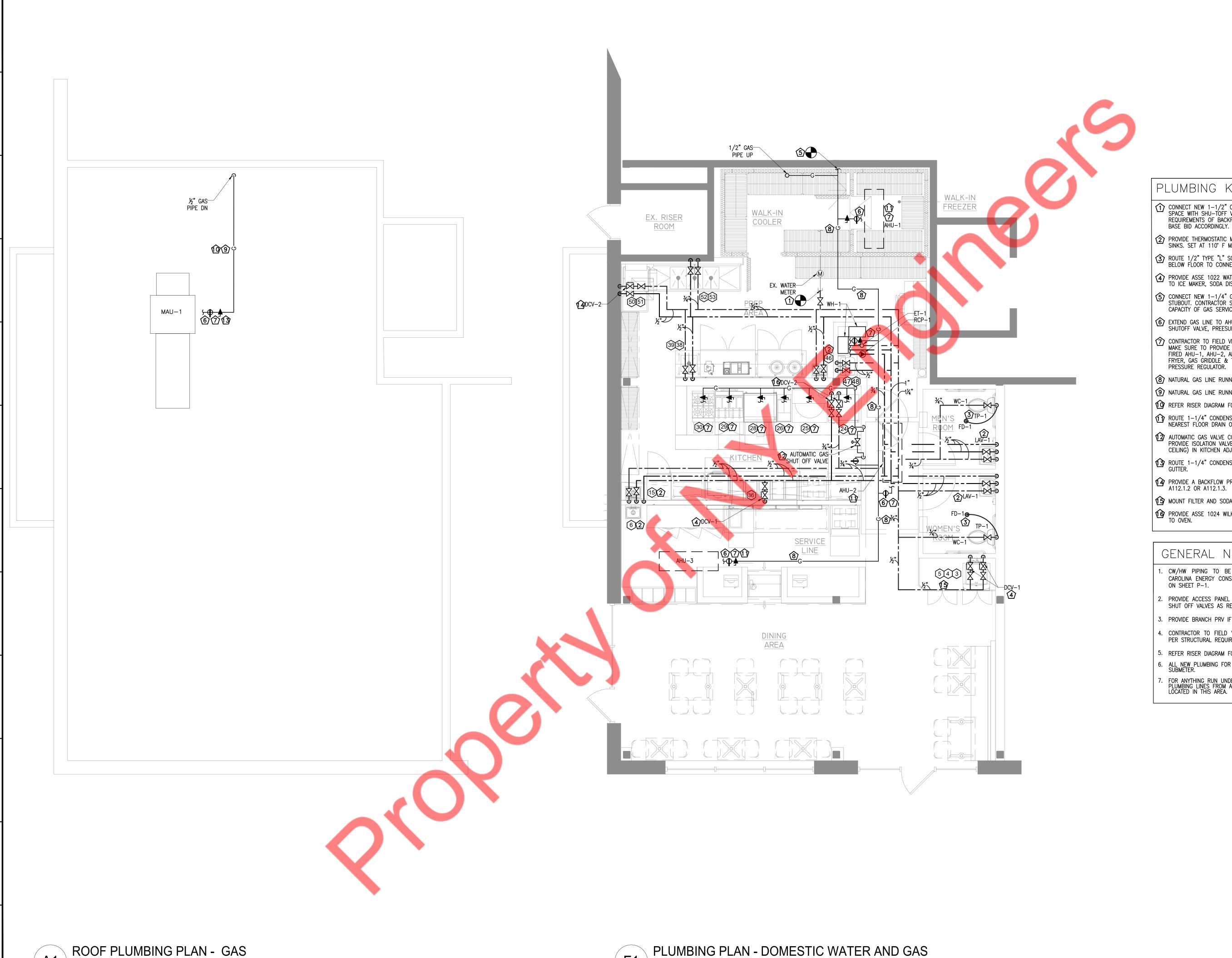


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PLUMBING SPECIFICATIONS

SHEET No.

P-2





- CONNECT NEW 1-1/2" CW PIPING TO EXISTING 1-1/2" CW PIPING IN SPACE WITH SHU-TOFF VALVE. CONTRACTOR TO FIELD VERIFY THE REQUIREMENTS OF BACKFLOW PREVENTER AND WATER SUB METER AND
- PROVIDE THERMOSTATIC MIXING VALVES AT ALL LAVATORIES AND HAND SINKS. SET AT 110° F MAX.
- ROUTE 1/2" TYPE "L" SOFT COPPER TRAP PRIMER LINES DOWN TO BELOW FLOOR TO CONNECTIONS TO FLOOR DRAIN.
- PROVIDE ASSE 1022 WATTS SD-3 DUAL CHECK BACKFLOW PREVENTER TO ICE MAKER, SODA DISPENSER & POT FILLER.
- CONNECT NEW 1-1/4" GAS PIPING TO EXISTING 1-1/4" GAS PIPE STUBOUT. CONTRACTOR SHALL VERIFY EXACT LOCATION, PRESSURE AND CAPACITY OF GAS SERVICE AND METER WITH UTILITY COMPANY.
- 6 EXTEND GAS LINE TO AHU-1, AHU-2, AHU-3 & MAU-1. PROVIDE SHUTOFF VALVE, PREESURE REGULATOR, UNION AND DIRTLEG.
- (7) CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR GAS FIRED AHU-1, AHU-2, AHU-3, MAU-1, GAS RANGE, GAS OVEN, GAS FRYER, GAS GRIDDLE & TANDOOR OVEN. PROVIDE GAS SHUTOFF VALVE 8 PRESSURE REGULATOR.
- 8 NATURAL GAS LINE RUNNING THROUGH CEILING.
- (9) NATURAL GAS LINE RUNNING ON ROOF.
- REFER RISER DIAGRAM FOR ALL GAS PIPE SIZES.
- ROUTE 1-1/4" CONDENSATE DRAIN FROM AHU-1, AHU-2, AHU-3 TO NEAREST FLOOR DRAIN OR FLOOR SINK.
- AUTOMATIC GAS VALVE CONNECT TO FIRE EXTINGUISHING SYSTEM. PROVIDE ISOLATION VALVE, LOCATE VALVES AT 9' AFF. (12" BELOW CEILING) IN KITCHEN ADJACENT TO HOOD.
- ROUTE 1-1/4" CONDENSATE DRAIN FROM MAU-1 TO NEAREST ROOF GUTTER.
- PROVIDE A BACKFLOW PREVENTER WITH AIR GAP SHALL COMPLY WITH A112.1.2 OR A112.1.3.
- (15) MOUNT FILTER AND SODA PUMPS UNDER THE COUNTER.
- PROVIDE ASSE 1024 WILKINS 700 DUAL CHECK BACKFLOW PREVENTER TO OVEN.

GENERAL NOTES:

- CW/HW PIPING TO BE PROVIED WITH INSULATION AS PER NORTH CAROLINA ENERGY CONSERVATION CODE 2018. REFER UNDER 1.05.B.6
- PROVIDE ACCESS PANEL FOR WATER HAMMER ARRESTOR, CLEANOUTS & SHUT OFF VALVES AS REQUIRED.
- 3. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
- CONTRACTOR TO FIELD VERIFY FEASIABILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
- 5. REFER RISER DIAGRAM FOR ALL PIPE SIZES.

SCALE: 1/4" = 1'-0"

- ALL NEW PLUMBING FOR TENANT MUST BE INSTALLED AFTER WATER SUBMETER.
- FOR ANYTHING RUN UNDER SLAB IN SPACE, AVOID ALL EXISTING PLUMBING LINES FROM ADJACENET TENANT SPACE THAT MAY BE LOCATED IN THIS AREA.



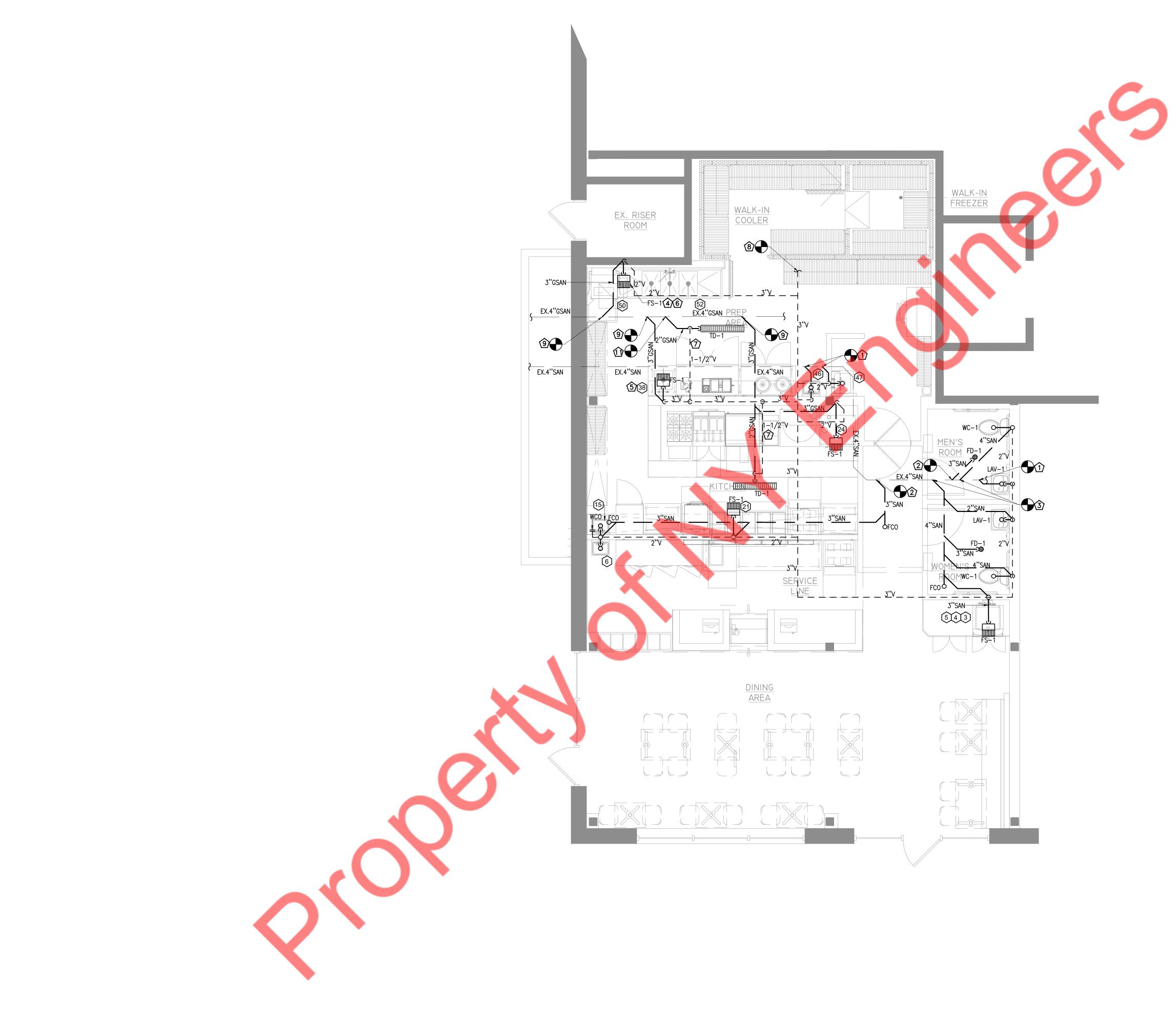
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SHEET No.

WATER & GAS

FLOOR PLAN

SCALE: 1/4" = 1'-0"



PLUMBING KEYED NOTES:

- CONNECT NEW 2" SANITARY WASTE PIPING TO EXISTING 4"
 SANITARY PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT
 SIZE, INVERT AND LOCATION OF EXISTING PIPING. FOR MORE
 DETAILS REFER CIVIL PLAN.
- CONNECT NEW 3" SANITARY WASTE PIPING TO EXISTING 4"
 SANITARY PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT
 SIZE, INVERT AND LOCATION OF EXISTING PIPING. FOR MORE
 DETAILS REFER CIVIL PLAN.
- CONNECT NEW 4" SANITARY WASTE PIPING TO EXISTING 4"
 SANITARY PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT
 SIZE, INVERT AND LOCATION OF EXISTING PIPING. FOR MORE
 DETAILS REFER CIVIL PLAN.
- PROVIDE 2" INDIRECT WASTE FROM 3 COMP SINK TO FLOOR SINK WITH APPROVED AIR GAP.
- 5 PROVIDE 1-1/2" INDIRECT WASTE FROM PREP SINK TO FLOOR SINK WITH APPROVED AIR GAP.
- PROVIDE 2" INDIRECT WASTE FROM DISHWASHER TO FLOOR SINK WITH APPROVED AIR GAP.
- 77 VENT PIPE RUNNING UNDER THE FLOOR.
- © CONNECT NEW 3" VENT PIPING TO EXISTING PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE & LOCATION OF EXISTING VENT PIPING. FOR MORE DETAILS REFER CIVIL PLAN.
- (9) CONNECT NEW 3" GREASE SANITARY WASTE PIPING TO EXISTING 4" GREASE SANITARY PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, INVERT AND LOCATION OF EXISTING PIPING. FOR MORE DETAILS REFER CIVIL PLAN.
- CONNECT NEW 4" GREASE SANITARY WASTE PIPING TO EXISTING 4" GREASE SANITARY PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, INVERT AND LOCATION OF EXISTING PIPING. FOR MORE DETAILS REFER CIVIL PLAN.
- CONNECT NEW 2" GREASE SANITARY WASTE PIPING TO EXISTING 4" GREASE SANITARY PIPING IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, INVERT AND LOCATION OF EXISTING PIPING. FOR MORE DETAILS REFER CIVIL PLAN.

GENERAL NOTES:

- CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
- 2. ALL NEW PLUMBING FOR TENANT MUST BE INSTALLED AFTER WATER SUBMETER.
- 3. FOR ANYTHING RUN UNDER SLAB IN SPACE, AVOID ALL EXISTING PLUMBING LINES FROM ADJACENET TENANT SPACE THAT MAY BE LOCATED IN THIS AREA.

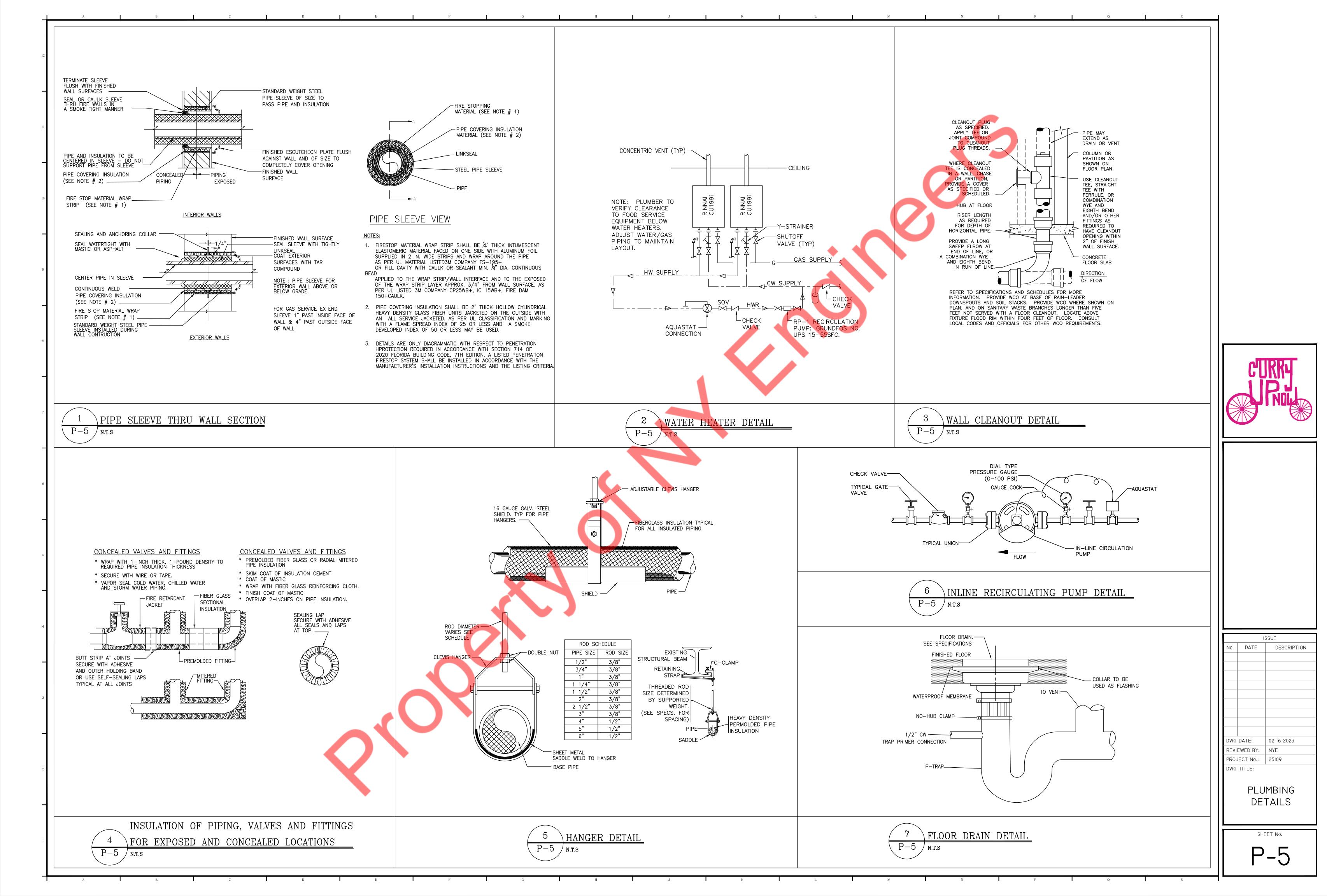


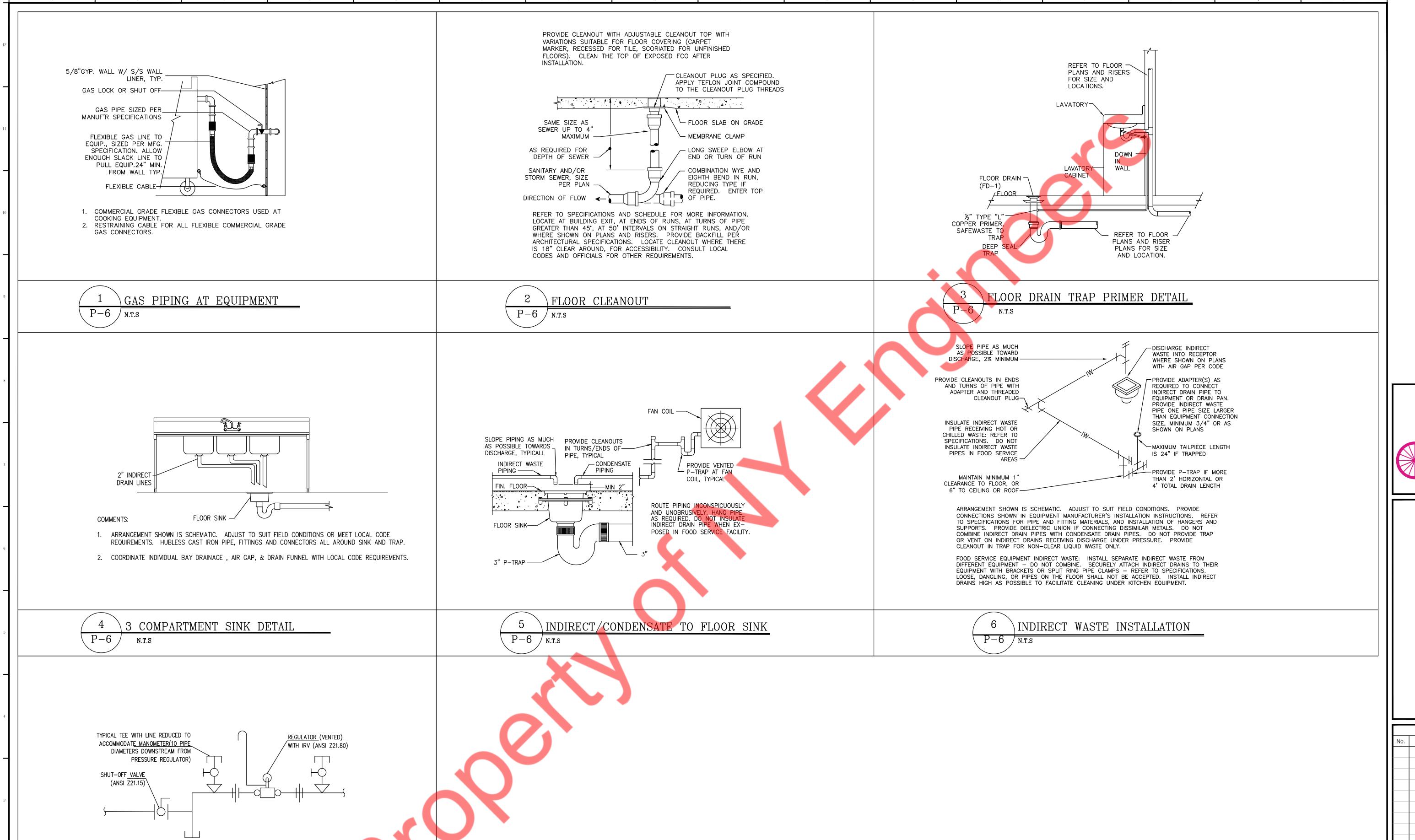
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PLUMBING WASTE AND VENT PLAN

CHEET NO

P-4





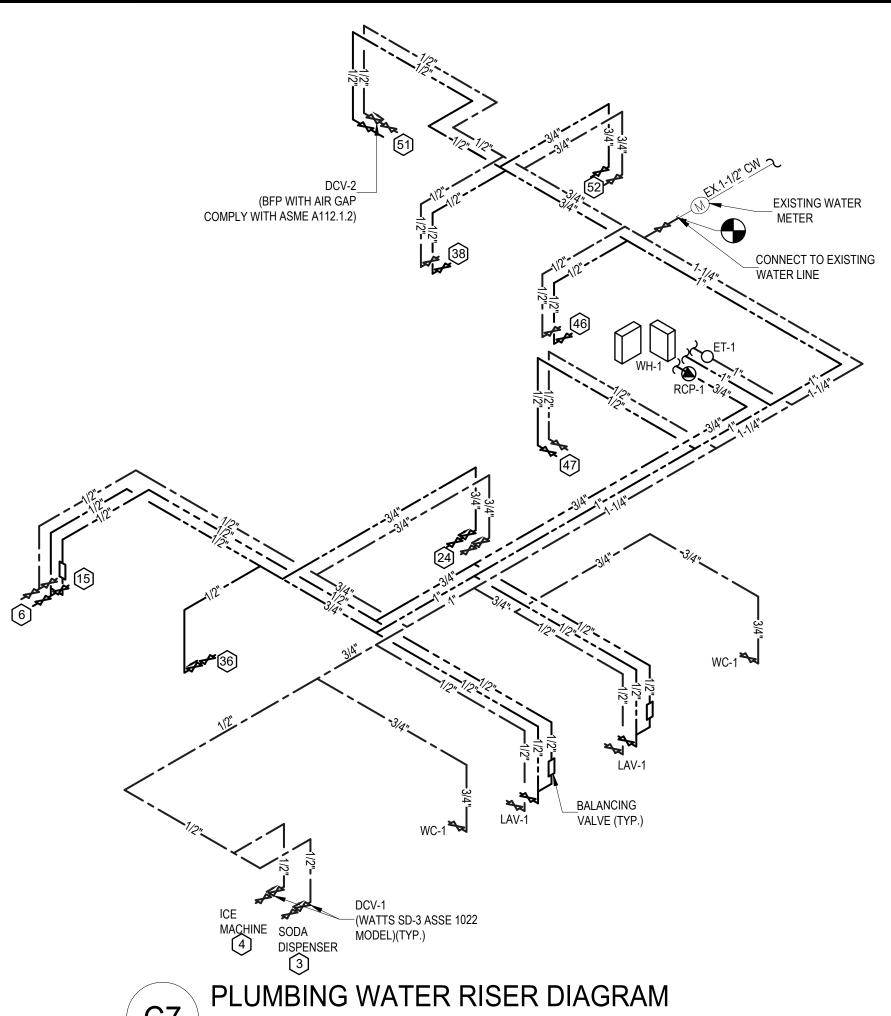
GAS PRESSURE REGULATOR DETAIL

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DETAILS

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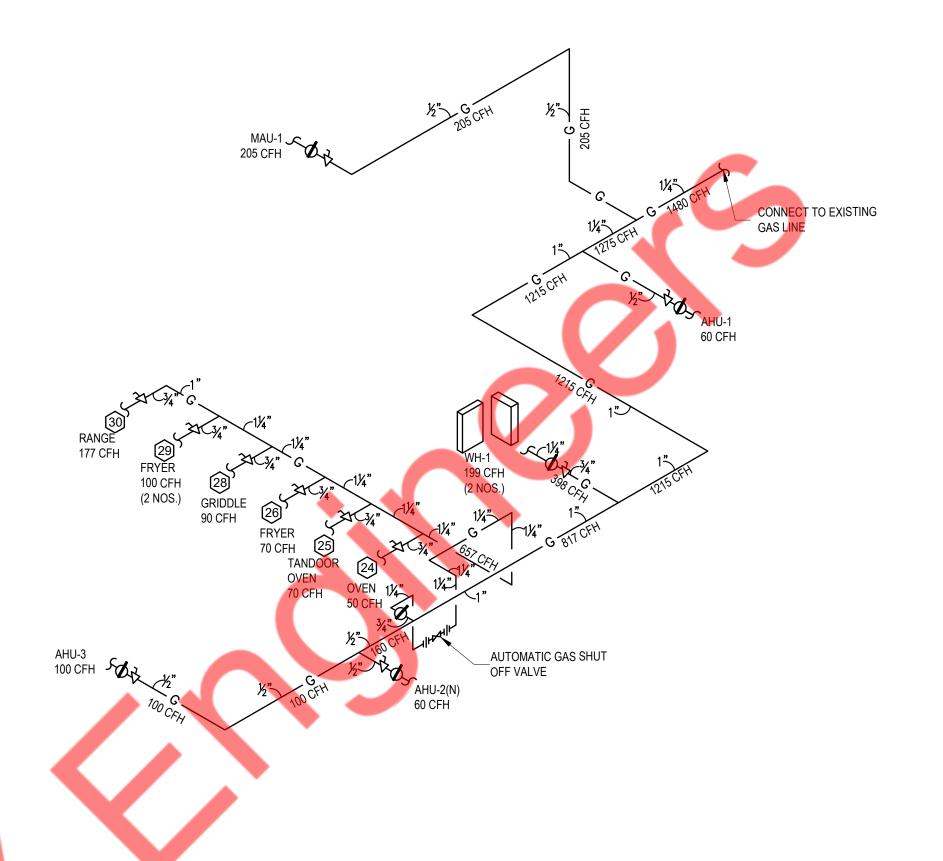


PLUMBING SANITARY RISER DIAGRAM

TO EXISTING VENT MAIN

SCALE: N.T.S.

SCALE: N.T.S.



PLUMBING GAS RISER DIAGRAM

SCALE: N.T.S.

NATURAL GAS PIPING SYSTEM

SERVE GAS EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL. PROVIDE ALL UNIONS, SHUT—OFF VALVES AND DIRT LEGS REQUIRED BY NFPA—54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWD FITTINGS 2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR. 3. VERIFY ALL EQUIPMENT BTUS'S PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING 2018 NORTH CAROLINA FUEL GAS CODE (IFGC 2015), TABLE 402.4(5). 4. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING GAS METER, LOCATION, PRESSURE & CAPACITY. UPGRADE IF REQUIRED.

5. PROVIDE SHUT-OFF VALVE, PRESSURE REGULATOR IN AN ACCESSIBLE LOCATION.

(GAS LOAD	SUM	MARY	
TAG	FIXTURE/EQUIPMENT	QTY	UNIT LOAD (CFH)	TOTAL CFH LOAD
AHU-1	AIR HANDLING UNIT	1	60	60
AHU-2	AIR HANDLING UNIT	1	60	60
AHU-3	AIR HANDLING UNIT	1	100	100
MAU-1	MAKEUP AIR UNIT	1	205	205
24	OVEN	1	50	50
25	TANDOOR OVEN	1	70	70
26	FRYER	1	70	70
28	GRIDDLE	1	90	90
29	FRYER	2	100	200
30	RANGE	1	177	177
WH-1	WATER HEATER	2	199	398
	•		TOTAL	1480

GAS PIPE SIZING PER TABLE 402.4(5) NORTH CAROLINA FUEL GAS CODE (IFGC 2015)

GAS INLET PRESSURE - 2 PSI. <u>PRESSURE DROP</u>- 1 PSI

SPECIFIC GRAVITY - 0.60 EQUIVALENT LENGTH OF PIPE = 168 FT

GAS PIPE SIZING PER TABLE 402.4(2) NORTH CAROLINA FUEL GAS CODE (IFGC 2015)

GAS INLET PRESSURE - <2 PSI. PRESSURE DROP - 0.5 IN. W.C.

SPECIFIC GRAVITY - 0.60

EQUIVALENT LENGTH OF PIPE = 40 FT

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PLUMBING RISERS

KITCI	HEN	FIXTURE CONNECT	TION SCHEDULE									
ITEM NO.	QTY	FIXTURE/EQUIPMENT	MANUFACTURER	MODEL	HOT WATER (IN.)	1 /	INDIRECT	WASTE	VENT	GAS LOAD (MBH)	GAS (IN)	NOTES
3	1	SODA DISPENSER	CORNELIUS OR EQUAL	ENDURO 150 OR EQUAL		1/2"	1"		2"			DRAIN TO FS
4	1	ICE MAKER	MANITOWOC ICE	IYT0620A		3/8"	1/2"					DRAIN TO FS
5	1	FIITER SYSTEM	EVERPURE	EV9324-21		1/2"						
6	1	HAND SINK, WAII MOUNT	ADVANCE TABCO	7-PS-66	1/2"	1/2"		2"	1-1/2"			THERMOSTATIC MIXING VALVE
15	1	HAND SINK, WAII MOUNT	ADVANCE TABCO	7-PS-66	1/2"	1/2"		2"	1-1/2"			THERMOSTATIC MIXING VALVE
21	1	STEAMTABLE	VOLLRATH	38119			1-1/2"					DRAIN TO FS
24	1	OVEN-STEAMER	RATIONAL USA	ICOMBI PRO 6-HALF	3/4"	3/4"		2"		50	3/4"	DRAIN TO FS
26	1	FRYER	PITCO	VF35						70	3/4"	
28	1	GRIDDIE	SOUTHBEND	HDG-48						90	3/4"	
29	2	FRYER	PITCO	SSH55R-2FD						100	3/4"	
30	1	RANGE	SOUTHBEND	4361D						177	3/4"	
36	1	FAUCET, POT FILLER	T & S BRASS	B-0581	1/2"							
38	1	PREP SINK	ADVANCE TABCO	KMS-3012			1-1/2"		2"			
39	1	FAUCET, DECK MOUNT	T & S BRASS	B-0221	1/2"	1/2"						
46	1	HAND SINK, WAII MOUNT	ADVANCE TABCO	7-PS-66	1/2"	1/2"		2"	1-1/2"			THERMOSTATIC MIXING VALVE
47	1	MOP SINK	ADVANCE TABCO	9-OP-20				2"				
48	1	FAUCET, MOP SINK	T & S BRASS	B-0674-BSTP	1/2"	1/2"						
51	1	WAREWASHER	CMA DISHMACHINES	CMA-180-VL	1/2"	1/2"	2"					DRAIN TO FS
52	1	3-COMP SINK	ADVANCE TABCO	FC-3-1824-24RL	3/4"	3/4"	2"					DRAIN TO FS
53	1	PRE-RINSE FAUCET	T & S BRASS	B-0133-12-CR-BC	1/2"	1/2"		2"	1-1/2"			
25	1	TANDOOR OVEN	ROTOQUIP	RD-30						70	3/4"	

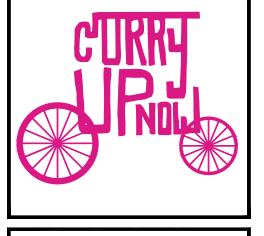
			WATER	R HEA	TER SCHEDU	JLE					
TAG No.	CAPACITY (GPM)	FIXTURES SERVING	QUANTITY	STATUS	TYPE	THERMAL EFFICIENCY %	MANUFACTURER & MODEL NO.	GAS LOAD (CFH)	GAS SI PRES (IN	SURE	REMARKS
WH-1		3-COMPARTMENT SINK, PREP SINK, MOP SINK, HAND SINK, LAVATORY, DISHWASHER	2	NEW	GAS TANKLES WATER HEATER (WALL MOUNTED)	97	RINNAI CU199I	199 EACH	MIN 3.5	MAX 10.5	-DIMENSIONS 18.5"(L) X 26.4"(H) X 11.4"(W)

RECIRCULATION PUMP SCHEDULE TOTAL HEAD FT. MARK SERVICE QTY GPM ELECTRICAL DATA MANUFACTURER & REMARKS RCP-1 HW RECIRCULATION 1 BELL & GOSSET #UP 15-18 BUC5 W/AQUASTAT + TIMER 55 WATTS, 115V

	EXP	ANSION	TANK	SCHEDULE	• •	
ITEM	SERVICE	QTY	GALLONS	MAKE	REMARKS	
EXPANSION TANK (ET-1)	HOT WATER	1	2	AMTROL ST-1	DIMENSIONS— 4"(H) x 3.4"(SHIPPING WEIGHT— 1 LBS	(DIA.)

NOTE: 1. ALL FIXTURE OR EQUIPMENTS MAY BE SUBSTITUTED WITH APPROVED EQUAL. CONTACT OWNER FOR APPROVAL. 2. REFER TO KITCHEN EQUIPMENT PLAN AND COORDINATED WITH KITCHEN CONSULTANT FOR MORE DETAILS.

FIXTURE BI	RANCH CONNECTI	ON SCHED)ULE		
FIXTURE TYPE	MANUFACTURER/MODEL	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET (FLUSH VALVE)	KOHLER #K-3999	3/4"		4"	2"
LAVATORY	KOHLER #K-2005	1/2"	1/2"	2"	1-1/2"
MOP SINK	ADVANCE TABCO 9-0P-20	1/2"	1/2"	3"	2"
FLOOR SINK	JR SMITH #3001			3"	2"
FLOOR DRAIN	JR SMITH #2005			3"	2"
FLOOR CLEANOUT	SMITH #4051L				
TRENCH DRAIN	ZURN #Z884			2"	1-1/2"



	SSUE				
No. DATE	DESCRIPTION				
DWG DATE:	02-16-2023				
REVIEWED BY:	NYE				
PROJECT No.:	23109				
DWG TITLE:					
PI I	IMBING				
	SERS				