

MECHANICAL SPECIFICATIONS

A. GENERAL CONDITIONS OTHER CONTRACT DOCUMENTS

1. THE GENERAL CONDITIONS AND OTHER CONTRACT DOCUMENTS AS SET FORTH HEREBY ARE TO BE INCORPORATED INTO AND BECOME A PART OF THE SPECIFICATIONS FOR THE WORK UNDER THIS DIVISION.

B. CODES AND PERMITS

1. COMPLY WITH RULES, REGULATIONS OF STATE, COUNTY, AND CITY AUTHORITIES HAVING JURISDICTION OVER THE PREMISES, INCLUDING SAFETY REQUIREMENTS OF OSHA. DO NOT CONTRIBUTE THIS AS RELIEVING CONTRACTOR FROM COMPLYING WITH SPECIFICATIONS WHICH EXCEED CODE REQUIREMENTS AND NOT IN CONFLICT THEREWITH.

2. SECURE AND PAY FOR ALL PERMITS AND CERTIFICATES OF INSPECTION REQUIRED. MAKE PAYMENTS TO ALL PUBLIC UTILITIES FOR WORK PERFORMED BY THEM IN PROVIDING SERVICE CONNECTIONS.

C. LOCAL CONDITIONS

1. VISIT SITE, BECOME FAMILIAR WITH CONDITIONS AFFECTING THIS WORK. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM LACK OF KNOWLEDGE OF EXISTING CONDITIONS.

D. DRAWINGS

1. DRAWINGS AND SPECIFICATIONS ARE TO BE CONSIDERED AS SUPPLEMENTING EACH OTHER. WORK SPECIFIED SHALL BE PERFORMED OR FURNISHED AS THOUGH MENTIONED IN BOTH SPECIFICATIONS AND DRAWINGS.

E. SHOP DRAWINGS

1. THIS CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON THE ITEMS OF EQUIPMENT AND SYSTEMS AS NECESSARY TO CLEARLY SHOW EQUIPMENT AND CONSTRUCTION.

F. SUPERVISION

1. THIS CONTRACTOR SHALL HAVE IN CHARGE OF THE WORK, A COMPETENT SUPERINTENDENT WITH EXPERIENCE IN THE WORK TO BE INSTALLED UNDER THIS CONTRACT.

G. COORDINATION

1. THIS CONTRACTOR SHALL COORDINATE HIS WORK AND COOPERATE WITH THE OTHER CONTRACTORS. HE SHALL ARRANGE HIS WORK WITH THEIRS SO THAT THERE WILL BE NO DELAY IN THE PROPER INSTALLATION.

2. EXAMINE WORK OF OTHER TRADES WHICH COMES IN CONTACT WITH OR IS COVERED BY THIS WORK. DO NOT ATTACH TO, COVER, OR FINISH AGAINST ANY DEFECTIVE WORK, OR INSTALL WORK OF THIS DIVISION IN A MANNER WHICH WILL PREVENT OTHER TRADES FROM PROPERLY INSTALLING THEIR WORK. CONSULT ALL DRAWINGS, SPECIFICATIONS AND DETAILS OF OTHER DIVISIONS OF THE WORK.

H. CUTTING AND PATCHING

1. ALL CUTTING AND PATCHING WORK RELATED TO THIS CONTRACT WILL BE THE RESPONSIBILITY OF THIS CONTRACTOR.

I. GUARANTEE AND WARRANTIES

1. WARRANT THAT EQUIPMENT AND ALL WORK IS INSTALLED IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE AND THAT ALL EQUIPMENT WILL MEET REQUIREMENTS SPECIFIED. ANY EQUIPMENT FAILING TO PERFORM OR FUNCTION AS SPECIFIED SHALL BE REPLACED WITH COMPLYING EQUIPMENT, WITHOUT COST TO THE OWNER.

2. GUARANTEE AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS; MAKE GOOD REPAIR OR REPLACE ANY DEFECTIVE WORK, MATERIAL OR EQUIPMENT WITHIN ONE YEAR FROM DATE OF ACCEPTANCE.

J. INSTALLATION REQUIREMENTS

1. LOCATION OF EQUIPMENT, DUCTS, ETC., ON THE DRAWINGS IS DIAGRAMMATIC; INDICATED POSITIONS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE; EXACT LOCATIONS SHALL BE SUBJECT TO BUILDING CONSTRUCTION AND INTERFERENCES WITH OTHER WORK. ARCHITECT RESERVES RIGHT TO MAKE MINOR CHANGES IN LOCATION OF ANY PART OF THE WORK UP TO THE TIME OF ROUGHING-IN WITHOUT ADDITIONAL COST.

K. TEST AND ADJUSTMENTS

1. OBTAIN ALL INSPECTIONS REQUIRED BY LAW, ORDINANCES, RULES, REGULATIONS OF AUTHORITIES HAVING JURISDICTION, FURNISH CERTIFICATES OF SUCH INSPECTIONS. PAY ALL FEES AND PROVIDE ALL EQUIPMENT, POWER AND LABOR NECESSARY FOR INSPECTIONS AND TEST.

2. PRESSURE TESTS

- a. TEST MEDIUM FOR REFRIGERANT PIPING SHALL BE OIL PUMPED DRY NITROGEN. TWENTY-FOUR HOUR STANDING TIME MINIMUM. TEST THE LOW SIDE OF THE SYSTEM TO 150 PSI AND THE HIGH SIDE TO 300 PSI. TESTS SHALL CONFORM TO ANSI STANDARD B31.5 "REFRIGERATION PIPING."

L. HVAC SYSTEMS ADJUSTMENTS AND BALANCE

1. PUT ALL HEATING, VENTILATING, EXHAUST AND AIR CONDITIONING SYSTEMS AND EQUIPMENT INTO FULL OPERATION AND CONTINUE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING. ALL TESTING AND BALANCING SHALL BE DONE UNDER BOTH SUMMER AND WINTER DESIGN CONDITIONS.

2. PERFORM TESTS AND BALANCE SYSTEMS IN ACCORDANCE WITH FOLLOWING REQUIREMENTS:

- a. BALANCE AND ADJUST ALL AIR HANDLING SYSTEMS FOR DESIGN FLOW OF SUPPLY, RETURN, RELIEF, EXHAUST AND OUTSIDE AIR TO WITHIN 10% OF DESIGN REQUIREMENTS.
- b. AFTER OR DURING ONE COMPLETE HEATING-COOLING SEASON, MAKE ANY MINOR ADJUSTMENTS THAT MAY BE NECESSARY TO INSURE UNIFORM TEMPERATURES THROUGHOUT THE SPACE.

M. INSULATION

1. ALL INSULATION SHALL BE INSTALLED OVER CLEAN DRY SURFACES. INSULATION MUST BE DRY AND IN GOOD CONDITION. WET OR DAMAGED INSULATION WILL NOT BE ACCEPTABLE. NO INSULATION SHALL BE APPLIED PRIOR TO PRESSURE TEST COMPLETION OF THE RESPECTIVE PIPING SYSTEMS.

2. FIBERGLASS PIPE INSULATION SHALL BE INSTALLED WITH JOINTS BUTTED FIRMLY TOGETHER. JACKET LAPS TO BE SEALED WITH FACTORY APPLIED ADHESIVE. BUTT JOINTS TO BE SEALED WITH BUTT STRIPES, HAVING FACTORY APPLIED ADHESIVE. VALVES AND FITTINGS SHALL BE INSULATED USING MITERED SECTIONS OF INSULATION, INSULATION CEMENT, OR PREMOLDED FITTING INSULATION. THE INSULATION APPLIED TO THE VALVES AND FITTINGS SHALL BE COVERED WITH THE SAME TYPE OF COVERING AS USED ON THE PIPE INSULATION.

3. PROVIDE THE FOLLOWING INSULATION PRODUCTS AS MANUFACTURED BY OWENS-CORNING. INSULATION PRODUCTS AS MANUFACTURED BY ARMSTRONG, CERTAINTED OR KNAUF ARE ACCEPTABLE. ADHESIVE SHALL BE BENJAMIN FOSTER OR EQUAL.

4. OWENS CORNING KAYLO 10: 1 1/2" THICK CALCIUM SILICATE BLOCK INSULATION

SERVICE

KITCHEN HOOD EXHAUST DUCTWORK

5. OWENS CORNING FIBERGLAS 705: 1" THICK ASJ EQUIPMENT INSULATION (DENSITY 6 PCF) OR ARMSTRONG AIR ARMAFLEX SHEET AND ROLL INSULATION (3/4")

SERVICE

- EXPOSED SUPPLY AIR DUCTWORK (IN NON AIR CONDITIONED SPACES)
EXPOSED OUTSIDE AIR INTAKE DUCTWORK
A.C. UNIT MIXED AND SUPPLY AIR PLENUMS INCLUDING STANDING SEAMS AND STEEL ANGLE FRAMING

6. OWENS CORNING ED 150 FRK 25: 2" THICK FACED DUCTWRAP

SERVICE

- CONCEALED SUPPLY AIR DUCTWORK (EXCEPT IN RETURN AIR PLENUMS)
CONCEALED OUTSIDE AIR INTAKE DUCTWORK

N. DUCTWORK

7. DUCT LINING: OWENS-CORNING, 1" THICK "AEROFLEX DUCT LINER" TYPE 300. LINING SHALL BE INSTALLED WITH STICK-KLIPS AND ADHESIVE PER MANUFACTURER'S INSTRUCTIONS.

1. PROVIDE ALL SHEET METAL WORK AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE ASHRAE GUIDE AND DATA BOOK, SMACNA STANDARDS AND THIS SPECIFICATION, THE MOST DEMANDING OF WHICH SHALL BE THE MINIMUM STANDARD.

2. LOW PRESSURE DUCTWORK

- a. ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED STEEL EXCEPT WHERE NOTED ON PLANS TO BE ALUMINUM. EXPOSED DUCTWORK IN ARCHITECTURALLY FINISHED SPACES SHALL BE FABRICATED FROM "PAINT GRIP" GALVANIZED STEEL OR SIMILAR MILL SURFACE ETCH TREATMENT.
- b. CONSTRUCT ALL DUCTWORK FOLLOWING SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," 1995 EDITION.
- c. ALL DUCTS, EXCEPT KITCHEN EXHAUST, SHALL BE CONSTRUCTED TO 1" W.G.
- d. SEAL ALL DUCTS TO SEAL CLASS "C."

3. SPECIAL SERVICE DUCTWORK

- a. KITCHEN HOOD EXHAUST - CONCEALED: 16 GAUGE BLACK STEEL, STEEL ANGLE REINFORCING, JOINTS AND SEAMS WELDED WATERTIGHT. EXPOSED: 18 GAUGE TYPE 302 STAINLESS STEEL, JOINTS AND SEAMS WELDED, GRIND AND POLISH TO A NO. 2 FINISH.
- b. DISHWASHER EXHAUST - STANDARD GAUGE TYPE 302 STAINLESS STEEL FABRICATED WATERTIGHT, EXPOSED JOINTS AND SEAMS TO BE WELDED, GROUND AND POLISHED TO A NO. 2 FINISH.

4.. FLEXIBLE DUCTS

- a. OMNIAR MODEL 1300 LOW PRESSURE NON INSULATED FOR EXHAUST DUCTS AND SUPPLY AIR DUCTS IN CONDITIONED SPACES UP TO 6" STATIC PRESSURE.
- b. INSTALL FLEXIBLE TUBING FULLY EXTENDED, FREE OF SAGS AND KINKS. MAXIMUM LENGTH OF TUBING SHALL BE 5' 0". FLEXIBLE TUBING SHALL BE CONNECTED TO SUPPLY AIR DUCTS WITH FLARED SPIN COLLAR FITTING.

O. WIRING

1. ALL WIRING INCIDENTAL TO THIS TEMPERATURE CONTROL SYSTEM SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.
2. THE TERM "WIRING" SHALL BE CONSTRUED TO INCLUDE FURNISHING OF WIRE, CONDUIT, MISCELLANEOUS MATERIALS AND LABOR AS REQUIRED FOR MOUNTING AND CONNECTING ELECTRICAL CONTROL DEVICES, AND PROVIDING ELECTRICAL INTERLOCKS BETWEEN EQUIPMENT.

P. THERMOSTATIC CONTROLS:

- A. GENERAL:
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE WITHIN THE ZONE. FOR THE PURPOSES OF SECTION C403.2.4, A DWELLING UNIT SHALL BE PERMITTED TO BE CONSIDERED A SINGLE ZONE.
- B. DEAD BAND:
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

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

D. AUTOMATIC SHUTDOWN:

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

E. SETPOINT OVERLAP RESTRICTION:

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

F. HEAT PUMP SUPPLEMENTARY HEAT :

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

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

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

1. AIR SYSTEMS: 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.

1.3 EXECUTION

- A. 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.

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

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

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

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

- F. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

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

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

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

1.1 QUALITY ASSURANCE

- SURFACE-BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME-SPREAD INDEX OF 25, AND SMOKE-DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE-DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTM E 84.

1.2 FIELD QUALITY CONTROL

- A. FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.

1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE;

- A. CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION:

- B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:
UNCONDITIONED SPACES WITHIN BUILDING: R-3.5
VENTED & UNVENTED ATTIC ABOVE INSULATED CEILING: R-6
EXTERIOR OF BUILDING: R-6

1.4 ITEMS NOT INSULATED:

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

1.5 PRODUCTS

- A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:
1. JOHNS-MANVILLE
2. OWENS-CORNING

1.6 ACOUSTICAL TREATMENT

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

1.7 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.

END OF SECTION 230713

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

MICHIGAN BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2015-MICHIGAN BUILDING CODE AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

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

2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2015 MICHIGAN 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. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION MC 107 AND THE FOLLOWING SECTIONS OF THE 2015 MICHIGAN MECHANICAL CODE:

- A. VENTILATION SYSTEM SERVING COMMERCIAL COOKING APPLIANCES - MC 506, MC 507
B. REFRIGERATION SYSTEMS - MC 1108

5. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:

- A. STANDARDS OF HEATING - MC 309.1
B. DUCT CONSTRUCTION AND INSTALLATION- MC 603
C. AIR INTAKES, EXHAUSTS AND RELIEFS - MC 401.5
D. AIR FILTERS - MC 605
E. GAS FIRED EQUIPMENT - FUEL GAS CODE

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

7. VENTILATION FOR ALL AREA SHALL COMPLY WITH MC 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 MC 403.3

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. MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER MECC 2015 C403.2.2, C408.2.1, C408.2.5 FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.

12. A COMMISSIONING PLAN SHALL BE DEVELOPED BY A LICENSED DESIGN PROFESSIONAL, MECHANICAL ENGINEER OR APPROVED AGENCY.


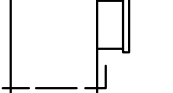
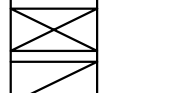





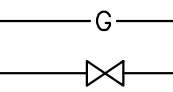

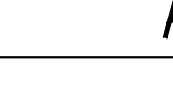
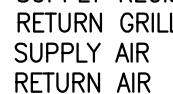
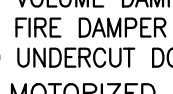
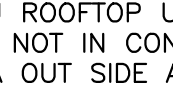

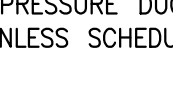
13. A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE LICENSED DESIGN PROFESSIONAL, ELECTRICAL ENGINEER, MECHANICAL ENGINEER OR APPROVED AGENCY AND PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT AS PER MECC 2015, C408.2.4.

14. A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH SECTION MECC 2015, C408.2.2.

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

16. SMOKE DETECTOR SHALL MEET UL268A.

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
	TURNING VANE
	AIR EXTRACTOR
	OPPOSED BLADE VOLUME DAMPER
	SUPPLY DUCT
	RETURN DUCT
	EXHAUST DUCT
	FLEXIBLE DUCT CONNECTION
	LINED DUCTWORK
	THERMOSTAT
	SMOKE DETECTOR TEST STATION
	DUCT SMOKE DETECTOR TO SHUT DOWN UNIT UNDER ALARM
	UNDERCUT DOOR (BY G.C.)
	CONNECT TO EXISTING
	FIRE & SMOKE DAMPER
	GAS
	SHUT-OFF VALVE

ABBREVIATIONS

SR SUPPLY REGISTER	G.C. GENERAL CONTRACTOR
RG RETURN GRILLE	M.C. MECHANICAL CONTRACTOR
SA SUPPLY AIR	P.C. PLUMBING CONTRACTOR
RA RETURN AIR	E.C. ELECTRICAL CONTRACTOR
VD VOLUME DAMPER	CLG,CEIL. CEILING
FD FIRE DAMPER	A.F.F. ABOVE FINISHED FLOOR
UCD UNDERCUT DOOR	ETR EXISTING TO REMAIN
MD MOTORIZED DAMPER	FSD FIRE & SMOKE DAMPER
RTU ROOFTOP UNIT	ETR EXISTING TO REMAIN
NIC NOT IN CONTRACT	WMS WIRE MESH SCREEN
OSA OUT SIDE AIR	BDD BACK DRAFT DAMPER

GENERAL MECHANICAL NOTES

1. PROVIDE ALL LOW PRESSURE DUCTWORK SIZED EQUAL TO OR LESS THAN 0.1" W.G./100' (TYP.) UNLESS SCHEDULED OTHERWISE. INDICATE ALL DUCT SIZES ON SHOP DRAWINGS.
2. PROVIDE MINIMUM DUCT RADIUS ON ELBOWS AT 1-1/2 TIMES DUCT SIZE.
3. PROVIDE 5'-0" MAX. FLEX DUCT CONNECTION TO DIFFUSERS, TYPICAL.
4. ALL CONCEALED SUPPLY DUCTWORK NOT LOCATED IN RETURN AIR PLENUM SHALL BE INSULATED.
5. ALL DUCTS SHALL BE FREE FROM CONTACT WITH ALL: PIPING, WALLS, ELECTRICAL CONDUITS, CEILING SUSPENSION SYSTEMS, ETC.
6. PROVIDE THROAT WITH PROPORTIONAL SPLIT AND TURNING VANES ON TEE TRANSITIONS. (BULLHEAD TEES WILL NOT BE PERMITTED.
7. CEILING DIFFUSER CORES AND BACK-PANS SHALL HAVE A FLAT BLACK ENAMEL FINISH. FACE TO BE OFF-WHITE BAKED ENAMEL ON PERFORATED PLATE AND MARGIN UNLESS SPECIFIED OTHERWISE BY ARCHITECT AND APPROVED BY MECHANICAL ENGINEER. NECK VELOCITIES NOT TO EXCEED 500 FPM MAXIMUM.
8. PROVIDE GALVANIZED SHEET METAL DUCTWORK. ALUMINUM OR ALUMINUM FLEX IS NOT PERMITTED.
9. ALL PIPING AND DUCTWORK SHALL FREELY PASS THROUGH ALL WALLS AND FLOORS WITHOUT RIGID CONNECTIONS. PENETRATION POINTS SHALL BE SLEEVED TO ALLOW PASSAGE OF PIPING OR DUCTWORK AND MAINTAIN 3/4" TO 1-1/4" CLEARANCE AROUND THE OUTSIDE SURFACES. THIS CLEARANCE SHALL BE TIGHTLY PACKED WITH ONE POUND DENSITY GLASS FIBER, AND CAULKED AIR TIGHT WITH NON-HARDENING SEALANT AFTER INSTALLATION OF PIPING OR DUCTWORK.
10. PROVIDE FIRE DAMPERS WITH ACCESS IN ALL RATED WALLS IN ACCORDANCE WITH LOCAL CODES.
11. FABRICATE, INSTALL, SEAL, AND INSULATE ALL DUCTWORK IN STRICT CONFORMANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL MECHANICAL CODE.
12. ALL EQUIPMENT, MATERIALS AND WORK SHALL CONFORM TO THE APPLICABLE CODES OF THE INTERNATIONAL BUILDING, FIRE, MECHANICAL, AND ELECTRICAL CODES AS ADOPTED BY THE CITY OF MICHIGAN AND ALL OTHER CODES, SAFETY ORDERS AND REGULATIONS AS ENFORCED BY THE STATE AND CITY FIRE MARSHALL'S PERTAINING TO THIS PROJECT.
13. PROTECTIVE BARRIERS SHALL BE INSTALLED IN FRONT OF EQUIPMENT WHERE EQUIPMENT IS SUBJECT TO MECHANICAL DAMAGE.
14. SUITABLE OPENINGS WITH TIGHTLY FITTED COVERS SHALL BE PROVIDED TO MAKE FIRE DAMPERS ACCESSIBLE FOR INSPECTION.
15. CONDENSATE DRAIN LINES SHALL BE PROVIDED FOR ALL MECHANICAL EQUIPMENT WHICH PRODUCES CONDENSATE.

FIELD VERIFY ALL CONDITIONS

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

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

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

VENTILATION CALCULATION FOR RTU-1 (N)									
ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER IMC 2015	NUMBER OF PEOPLE AS PER IMC 2015	NUMBER OF CHAIR	FINAL PEOPLE	MIN OUTSIDE AIR AS PER IMC 2015 CFM/PEOPLE	CFM/SQ.FT	REQ. OSA (CFM)	PROVIDED. OSA (CFM)
DINING-101	735	70	52	45	45	7.5	0.18	470	500
POS COUNTER-102	85	15	2	2	2	7.5	0.12	25	
TOILET-107	93	0	0	0	0	0	0	0	
TOILET-108	71	0	0	0	0	0	0	0	
CORRIDOR-105	106	0	0	0	0	0	0.06	6	
TOTAL								501	
VENTILATION CALCULATION FOR RTU-2 (N)									
ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER IMC 2015	NUMBER OF PEOPLE AS PER IMC 2015	NUMBER OF CHAIR	FINAL PEOPLE	MIN OUTSIDE AIR AS PER IMC 2015 CFM/PEOPLE	CFM/SQ.FT	REQ. OSA (CFM)	PROVIDED. OSA (CFM)
PREP-102-1	268	0	0	0	3	0	0	0	200
KITCHEN-102	473	0	0	0	3	0	0	0	
TOTAL								0	

ROOF TOP UNIT													
UNIT TAG	TR	SUPPLY AIRFLOW (CFM)	OUTSIDE AIR (CFM)	ESP (IN. OF W.C.)	STAGES	MCA/MOP	V/PH/HZ	COOLING CAPACITY TOTAL MBH	HEATING CAPACITY SENSIBLE MBH	MBH INPUT	MBH OUTPUT	GAS PRESS. INCH OF WC	MANUFACTURER & MODEL NO.
RTU-1(N)	5.0	2000	500	1	2	31/45	208/3/60	63	48.3	110	88	4.5 TO 14	CARRIER 48GCCEN06A3A5-6F0J0
RTU-2(N)	7.5	3000	200	1	2	49/60	208/3/60	92.1	69.4	180	148	4.5 TO 14	CARRIER 48HCEE08A3A5-6F0J0

- NOTES:
- UNIT MOUNTED NON FUSED DISCONNECT SWITCH.
 - NON-POWERED GFI OUTLET.
 - HINGED ACCESS PANELS AND EXTERNAL GAUGE PORTS/PRESSURE RESETS.
 - 14" ROOF CURB-CONTRACTOR SHALL FIELD INSUALTE . SHIP ASAP AHEAD OF THE UNIT.
 - BOTTOM SUPPLY AND RETURN DUCTS.
 - PROVIDE TEMPERATURE SENSORS AS PER REQUIREMENT FROM ARCHITECT/OWNER.
 - 7 DAYS PROGRAMMABLE THERMOSTAT.
 - PROVIDE HOT GAS BYPASS SYSTEM. THE CAPACITY OF HOT GAS BYPASS SHALL BE LIMITED TO 50% OF TOTAL UNIT CAPACITY.
 - ENTHALPY ECONOMIZER WITH 100% BAROMETRIC RELIEF.PROVIDE FDD FOR ECONOMIZER.
 - MERV 13 PLEATED FILTER
 - SMOKE DETECTOR WITH REMOTE ANNUNCIATOR (BY EC).
 - VFD SUPPLY FAN
 - ANTI SHORT CYCLE TIMER.
 - ALL EQUIPMENT MUST BE STANDARD / HIGH EFFICIENT MEETING THE BRAND MINIMUM REQUIREMENT.
 - ELECTRICAL CONNECTION TO BE SINGLE POINT AND THROUGH THE BOTTOM OF THE UNIT.
 - WHERE REQUIRED PROVIDE LOW AMBIENT COOLING CAPABILITY DOWN TO 0 DEGREES F.

GRILLE AND DIFFUSER								
UNIT TAG	MANUF. & MODEL NO	DAMPER NO	FRAME/BORDER	CFM	MODULE SIZE	PATTERN	FINISH	REMARK
A	TITUS TMS	OBD	LAY-IN	AS NOTED	24"x24"	4-WAY	WHITE	SUPPLY 1
B	TITUS TMS	OBD	LAY-IN	AS NOTED	12"x12"	4-WAY	WHITE	SUPPLY -
C	TITUS PAS	OBD	LAY-IN	AS NOTED	24"x24"	PERFORATED	WHITE	SUPPLY -
D	TITUS 50F	--	LAY-IN	AS NOTED	AS NOTED	4-WAY	WHITE	RETURN 1
E	TITUS FL15	--	LAY-IN	AS NOTED	48"	SLOT	WHITE	SUPPLY -

- REMARKS
- ALL THE GRILLE & DIFFUSER IN DINNING AREA SHOULD HAVE BLACK FINISH. COORDINATE COLOR CODE WITH ARCHITECT.

KITCHEN MAKE UP AIR UNIT										
UNIT TAG	SERVICE	CFM	E.S.P.	INPUT MBH	OUTPUT MBH	EFFICIENCY	PRESS RANGE IN WC	HP	ELECT.	REMARK
MUA-1(N)	HOOD	2640	0.5	198	182	92%	7-14	2.0	208/3	1

- REMARKS
- SEE CAPTIVE AIRE HOOD DRAWING & MAKEUP AIR UNIT DATA FOR ADDITIONAL INFORMATION.

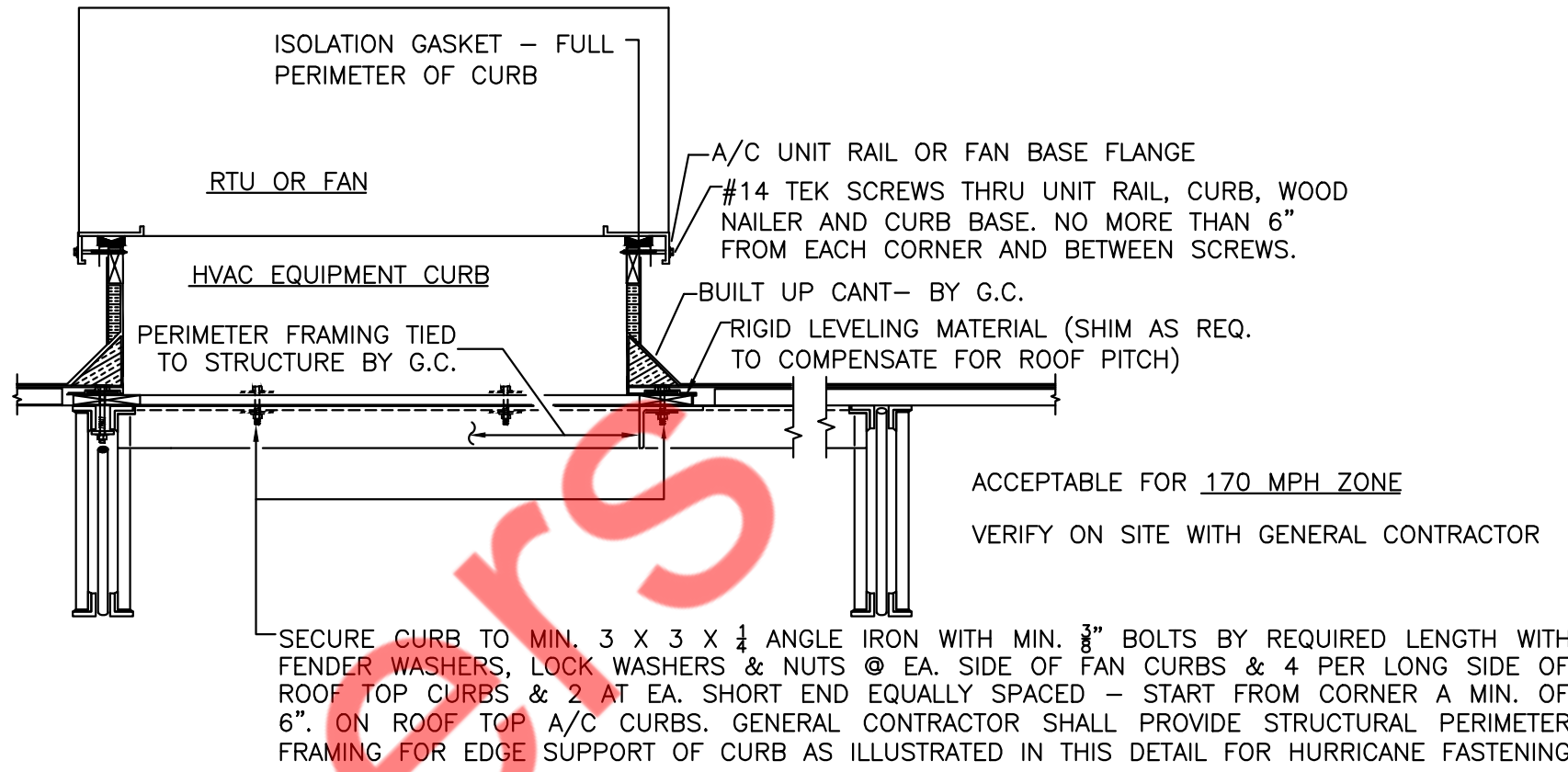
KITCHEN EXHAUST FAN SCHEDULE							
UNIT TAG	SERVICE	CFM	E.S.P.	HP	ELECT.	MANUF. & MODEL NO.	REMARK
KEF-1(E)	HOOD	SAE	SAE	SAE	SAE	SAE	1

- REMARKS
- SAE: SAME AS EXISTING.
 - CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION OF FAN & CONNECT THE EXHAUST DUCT ACCORDINGLY.
 - CONTRACTOR TO FIELD VERIFY THAT THE FAN CFM SHOULD NOT BE LOWER THAN THE 3000 CFM.
 - CONTRACTOR THE FIELD VERIFY THE ELECTRICAL POWER REQUIREMENT AND INFORM EC PRIOR TO THE START OF WORK.

EXHAUST FAN SCHEDULE						
UNIT TAG	SERVICE	CFM	S.P.	RPM/HP	ELECT.	REMARK
EF-1(N) & EF-2(N)	RESTROOM	70	0.5	750/29W	120/1	COOK GC-128 1-2

- REMARKS
- DISCONNECT SWITCH GRAVITY BACKDRAFT DAMPER, FLEXIBLE DUCT COLLAR CONNECTION.
 - ELECTORICAL CONTRACTOR SHALL INTERLOCK WITH ROOM LIGHT CONTROLLED VIA OCCUPANCY SENSOR.

AIR BALANCE					
UNIT	SUPPLY AIR	OUTSIDE AIR		RETURN AIR	EXHAUST AIR
		SUPPLY	%OSA		
RTU-1(N)	2000	500	25%	1500	-
RTU-2(N)	3000	200	6.66%	2800	-
EF-1(N)	-	-	-	-	70
EF-2(N)	-	-	-	-	70
MUA-1(N)	2640	2640	-	-	-
KEF-1(E)	-	-	-	-	3000
TOTAL	7640	3340		4300	3140
BUILDING PRESSURE:				200 CFM POSITIVE	



ROOF TOP UNIT INSTALLATION DETAILS

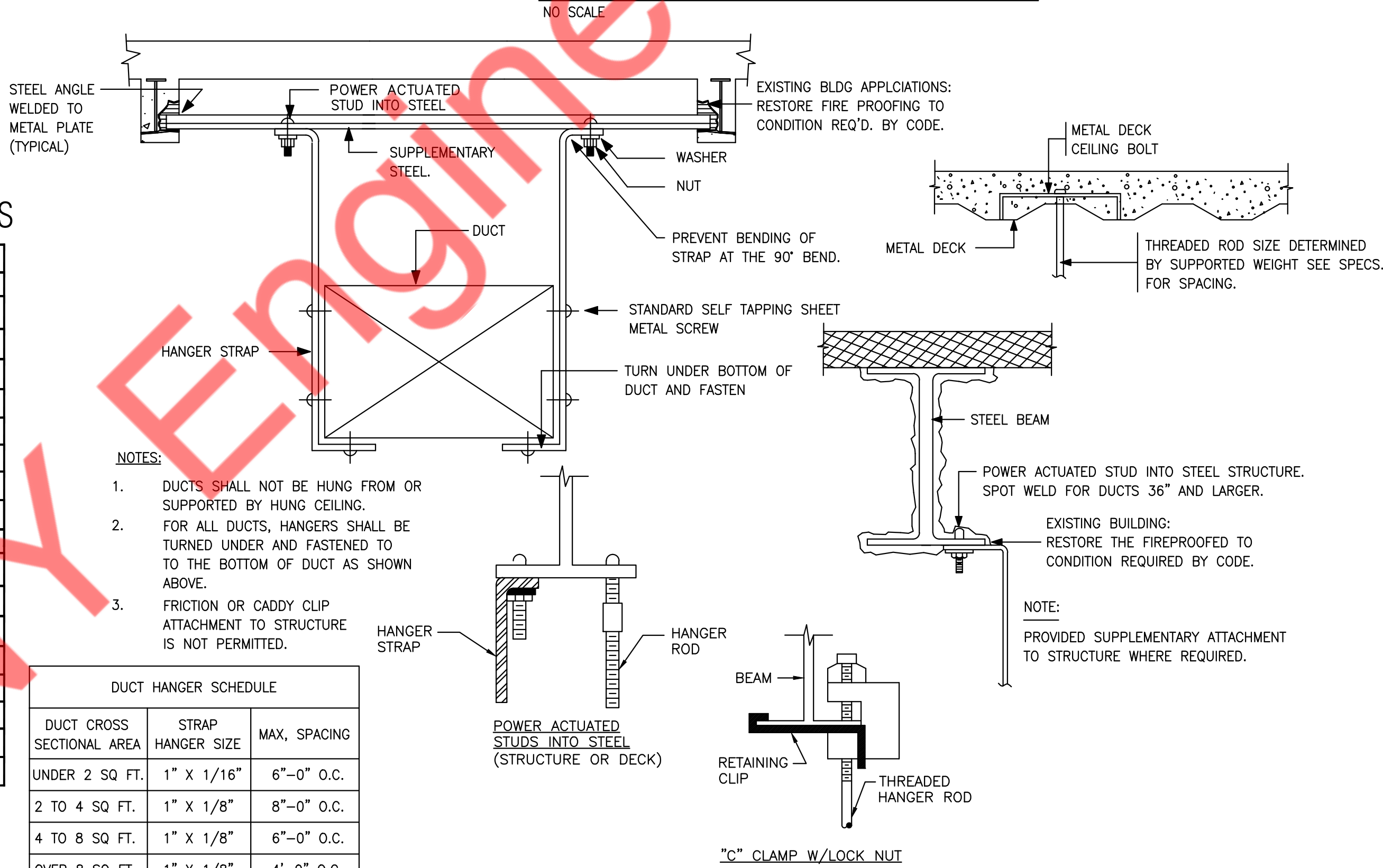
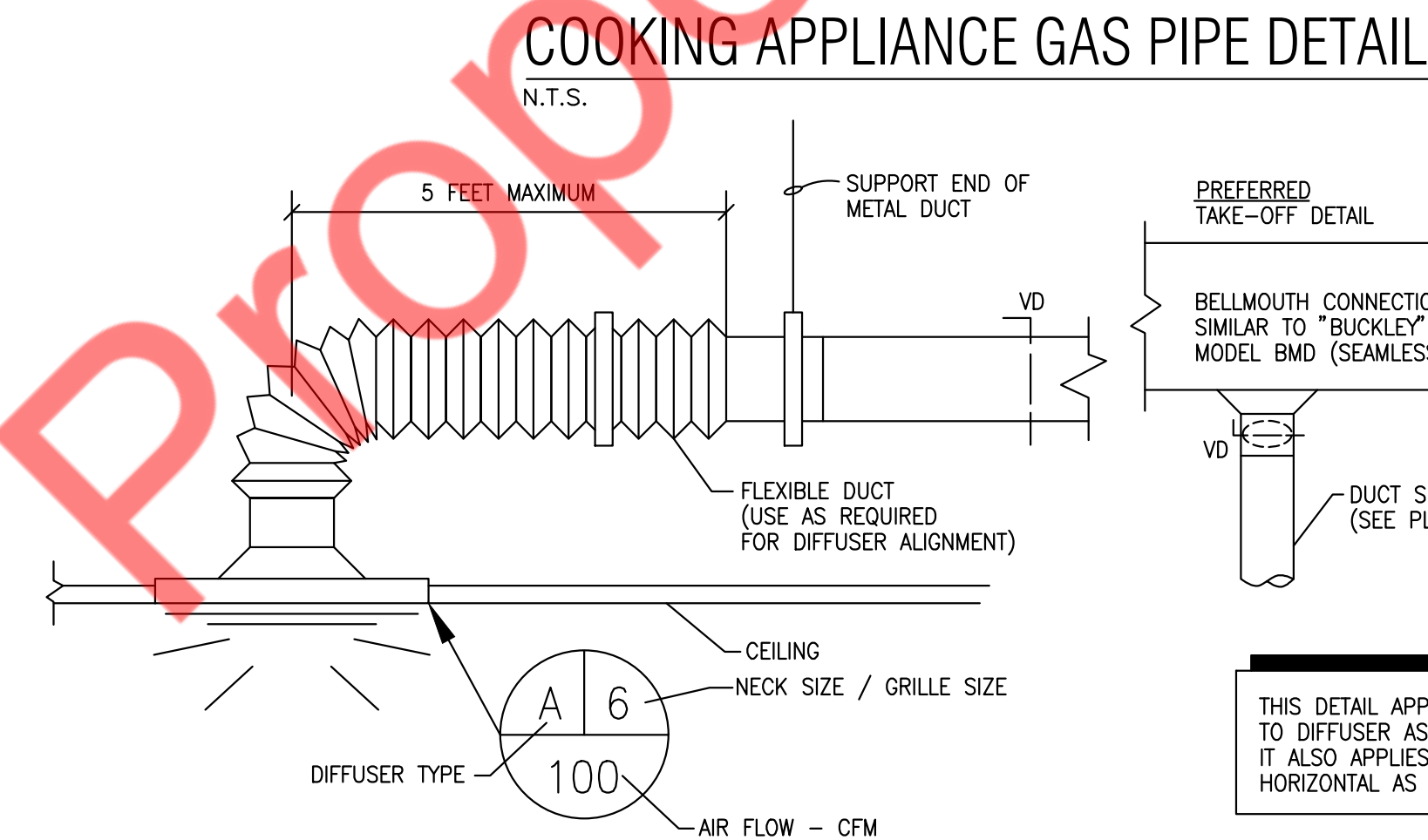
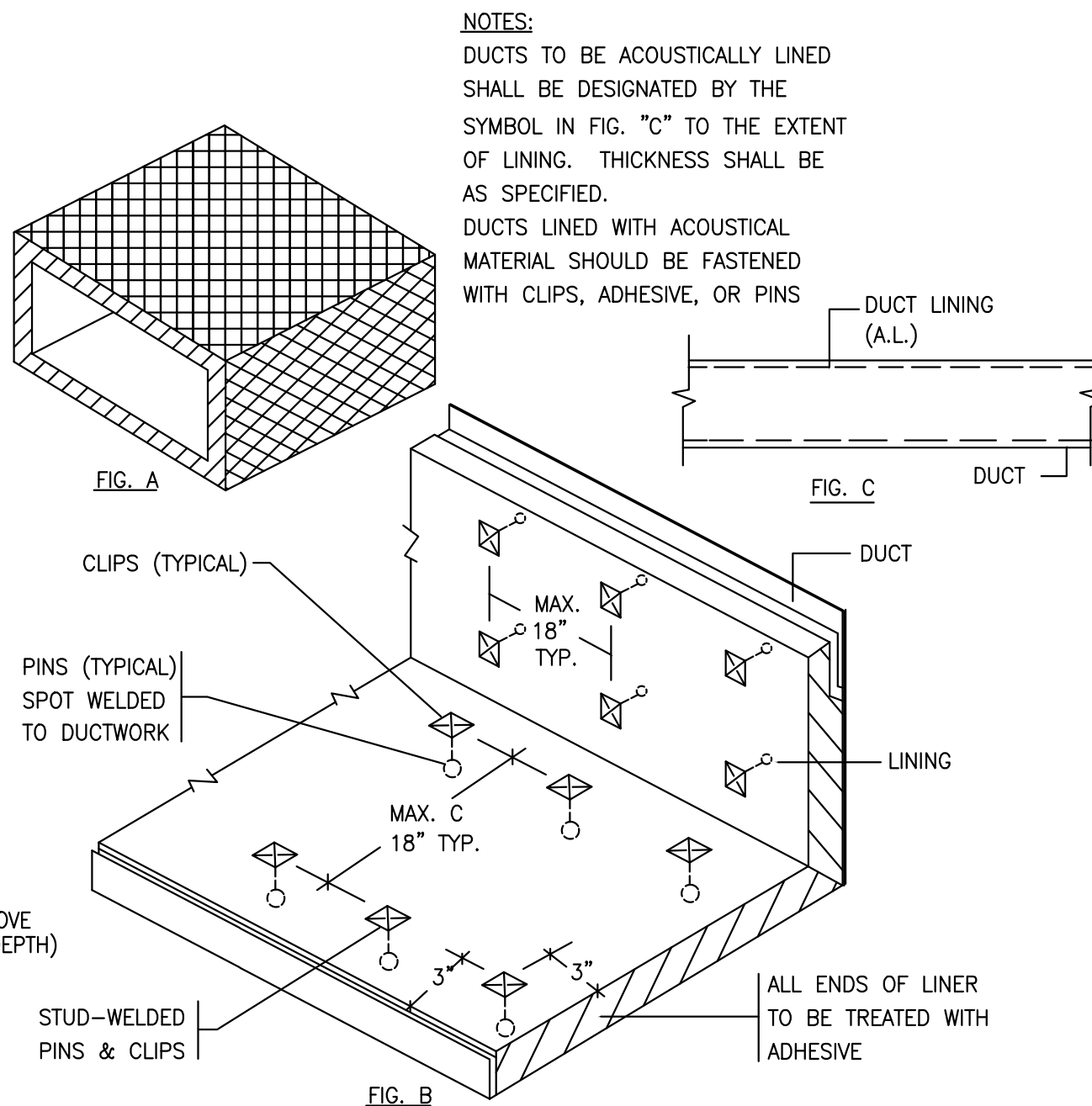
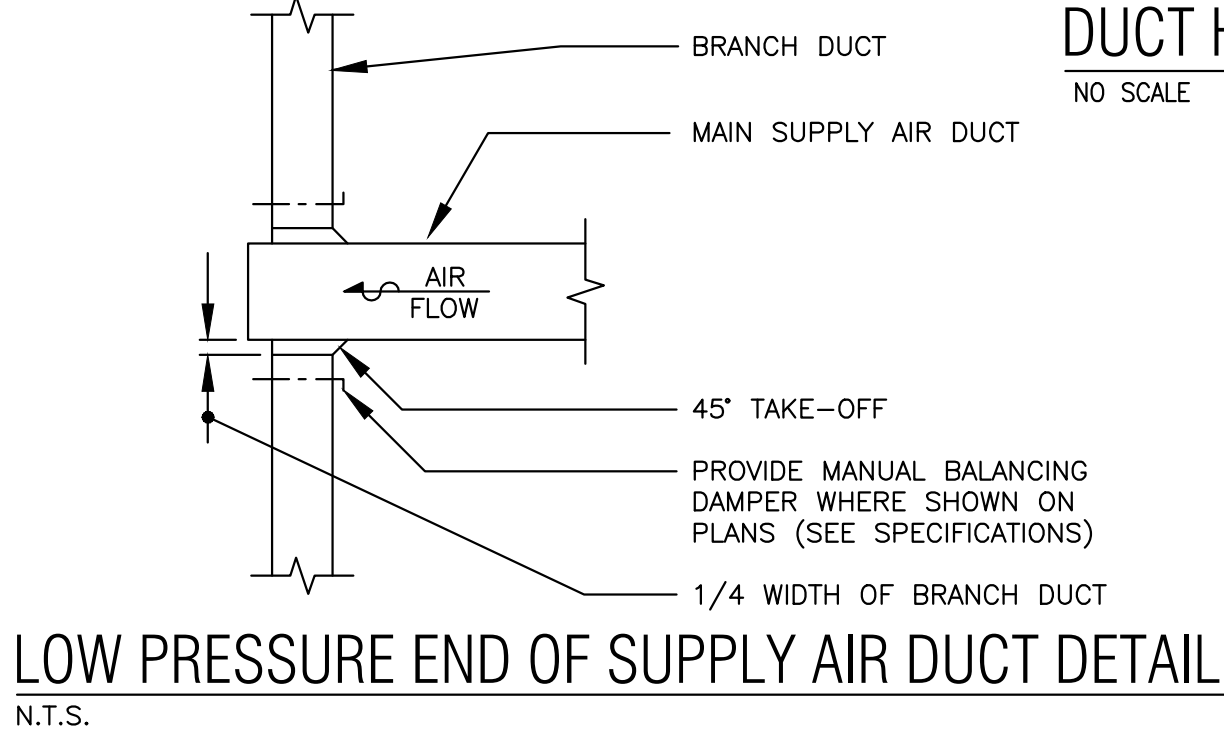
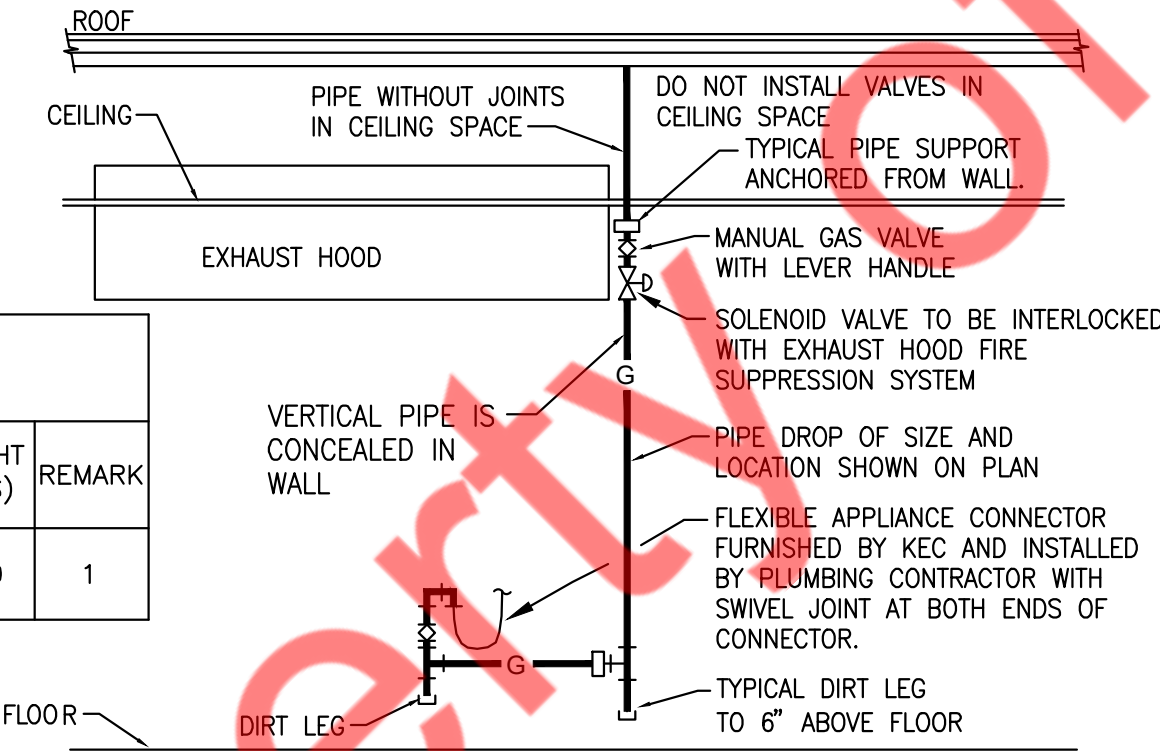


TABLE- DUCT CONSTRUCTION MIN. SHEET METAL THICKNESS

ROUND DUCT DIAMETER (inches)	STATIC PRESSURE			
	1/2-inch water gage		1-inch water gage	
	Thickness (inches)	Thickness (inches)	Thickness (inches)	Thickness (inches)
	Galvanized	Aluminum	Galvanized	Aluminum
<12	0.013	0.018	0.013	0.018
12 to 14	0.013	0.018	0.016	0.023
15 to 17	0.016	0.023	0.019	0.027
18	0.016	0.023	0.024	0.034
19 to 20	0.019	0.027	0.024	0.034
RECTANGULAR DUCT DIMENSION (inches)	STATIC PRESSURE			
	1/2-inch water gage		1-inch water gage	
	Thickness (inches)	Thickness (inches)	Thickness (inches)	Thickness (inches)
	Galvanized	Aluminum	Galvanized	Aluminum
≤ 8	0.013	0.018	0.013	0.018
9 to 10	0.013	0.018	0.016	0.023
11 to 12	0.016	0.023	0.019	0.027
13 to 16	0.019	0.027	0.019	0.027
17 to 18	0.019	0.027	0.024	0.034
19 to 20	0.024	0.034	0.024	0.034



DUCT TAKEOFFS

- NOTE:
- ALTERNATE FITTINGS SHALL BE USED WHEN DUCT HEIGHTS DOES NOT PERMIT THE USE OF THE PREFERRED FULL SIZE BELLMOUTH. SUBMIT FITTINGS FOR REVIEW BY ENGINEER PRIOR TO INSTALLATION.

Architect

CIVIL ENGINEER

STRUCTURAL ENGINEER

LANDSCAPE COMPANY

MEP ENGINEER

NY ENGINEERS

DEVELOPER

PROJECT:

MICI ITALIAN
INTERIOR TENANT BUILD-OUT

Drawing Issue

Description	Date
FOR PERMIT	06/06/2022

Drawn By: NYE

Checked By: NYE

Sheet Title

MECHANICAL SCHEDULES & DETAILS

Sheet No.

M0.2

Kolbrook

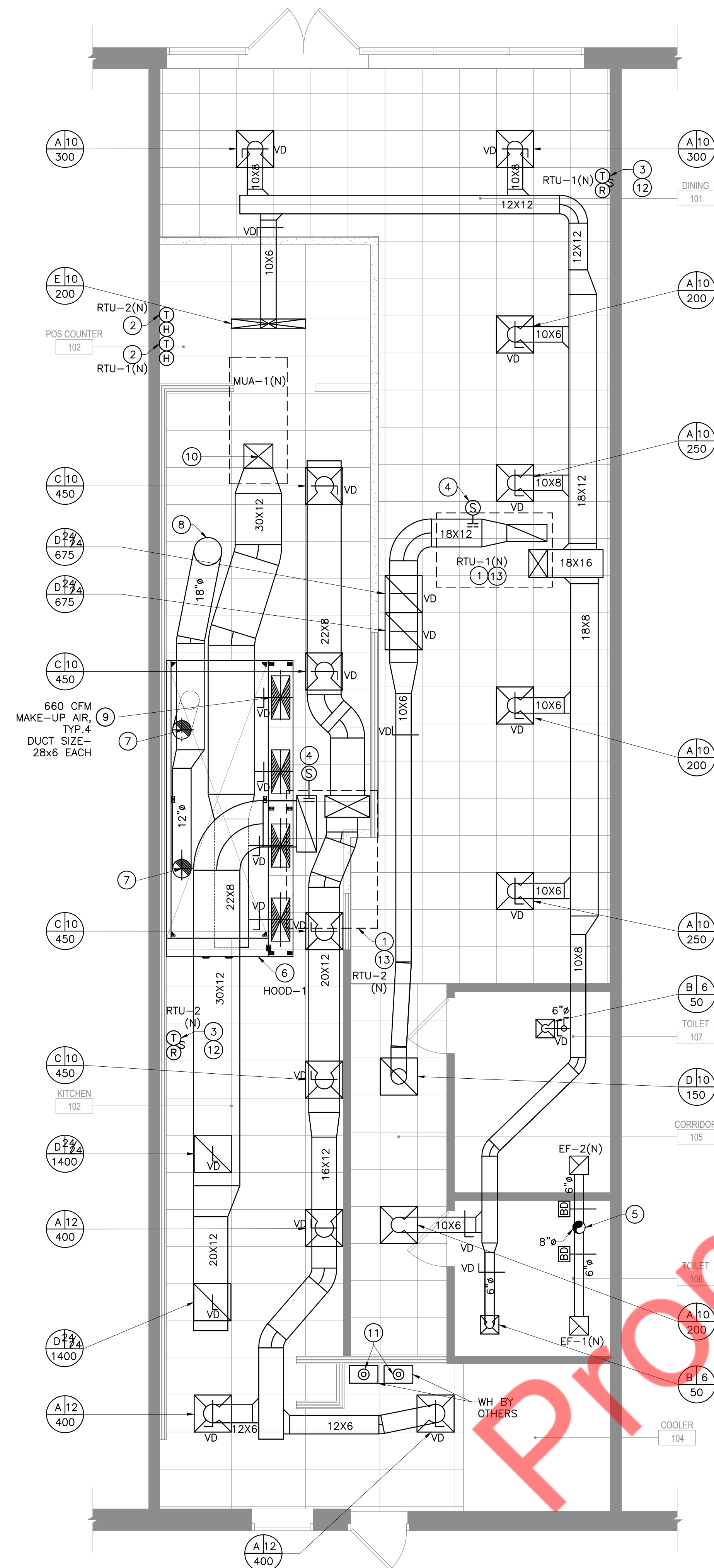
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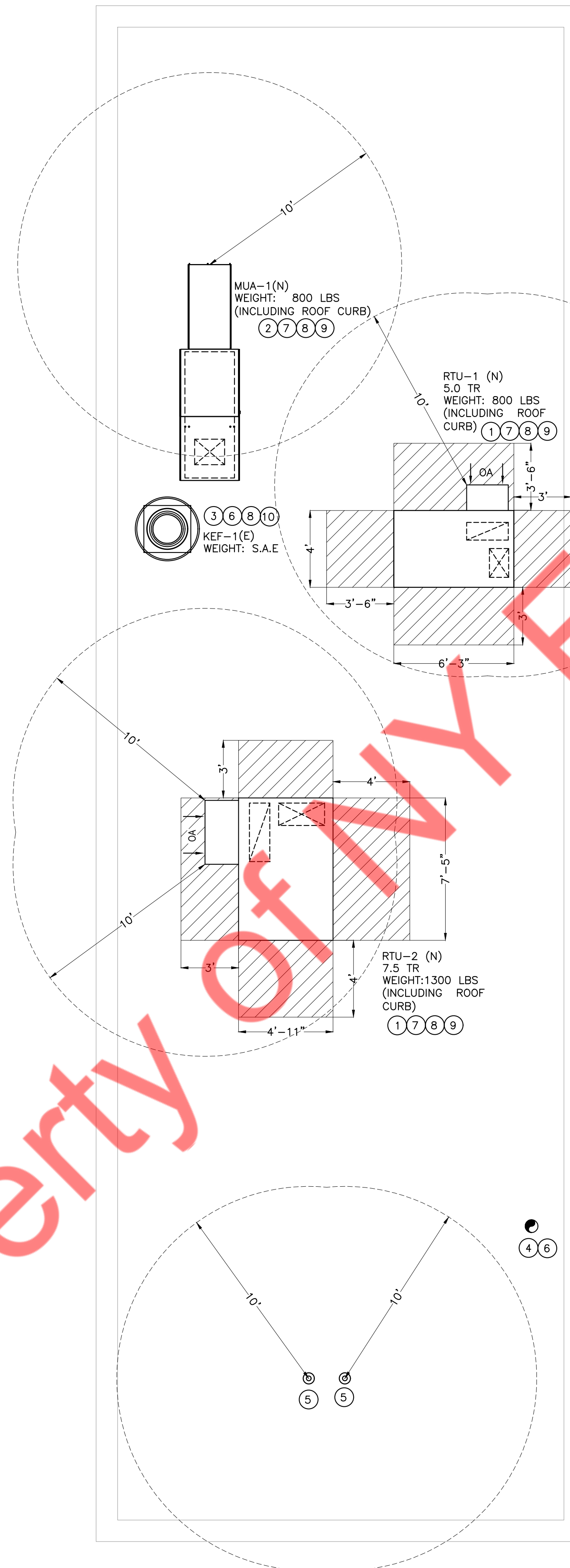
Consultant

Job No.

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1 MECHANICAL FLOOR PLAN
SCALE: 1/4" = 1'-0"



2 MECHANICAL ROOF PLAN
SCALE: 1/4" = 1'-0"

MECHANICAL FLOOR PLAN KEY NOTES

- ① EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM TWO NEW ROOFTOP UNITS TO SPACE. EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
- ② INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT & HUMIDISTAT. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
- ③ MECHANICAL CONTRACTOR TO MOUNT SMOKE DETECTOR REMOTE KEY STATUS AND TEST STATIONS (WITH AUDIO AND VISUAL ALARM). NEXT TO UNIT TEMPERATURE SENSOR. MC. TO INDICATE DETECTOR SERVING AIR CONDITIONING UNIT. COORDINATE EXACT LOCATION WITH FIRE MARSHAL PRIOR TO ROUGH-IN. ALL WIRING SHALL BE BY ELECTRICAL CONTRACTOR IN CONDUIT PER N.E.C. REMOTE STATION SHALL BE A SYSTEM SENSOR MODEL SSK451 OR EQUAL.
- ④ SMOKE DETECTOR SHALL BE FURNISHED/INSTALLED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR TO SHUT DOWN CORRESPONDING AIR CONDITIONING UNIT UNDER ALARM CONDITIONS. ALL WIRING SHALL BE IN CONDUIT PER N E C SMOKE DETECTOR SHALL BE SYSTEM SENSOR MODEL DH100ACDCLP OR EQUAL.
- ⑤ ROUTE 8"Ø EXHAUST DUCT UP THROUGH ROOF WITH TALL CONE FLASHING, WEATHER SKIRT, AND VENT CAP. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES AND TERMINATES 36" ABOVE ROOF.
- ⑥ INSTALL TYPE 1 GREASE EXHAUST HOOD. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE TRAPEZE HANGERS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. TRANSITION FROM HOOD CONNECTION TO WELDED KITCHEN EXHAUST DUCT SIZES SHOWN.
- ⑦ GREASE DUCT TO BE PROVIDED WITH KITCHEN EQUIPMENT AND INSTALLED BY OWNER. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
- ⑧ 18"Ø GREASE EXHAUST DUCT FROM HOOD UP THRU ROOF TO KEF-1(E).
- ⑨ EXTEND MAKE-UP AIR DUCT FROM HOOD COLLAR UP TO MOUNTED MAKE-UP AIR UNIT ON ROOF MUA-1(N).
- ⑩ MAKEUP DUCT UP THRU ROOF TO MUA-1(N).
- ⑪ 3"ØX5"Ø WATER HEATER CONCENTRIC VENT PIPE UP THROUGH ROOF.
- ⑫ TEMPERATURE SENSOR FOR THERMOSTAT SERVING DESIGNATED ROOF TOP UNIT.
- ⑬ CONTRACTOR TO FIELD VERIFY DUCT ROUTING AND PENETRATIONS AS PER SITE CONDITIONS. PROVIDE FITTINGS, TRANSITIONS AS REQUIRED.

MECHANICAL ROOFTOP PLAN NOTES

- ① PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCT CONNECTIONS, SET OUTSIDE AIR, AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR.
- ② MAKE-UP AIR UNIT AND ROOF CURB ARE OWNER PROVIDED. COORDINATE LOCATION OF UNIT WITH LANDLORD AND EXISTING CONDITIONS. ADJUST DUCTWORK ROUTING ACCORDINGLY. PROVIDE FLEXIBLE CONNECTION ON THE SUPPLY DUCT CONNECTION TRANSITION TO DUCT SIZE INDICATED. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- ③ ROOF MOUNTED GREASE EXHAUST FAN AND FAN CURB ARE OWNER PROVIDED. COORDINATE INSTALLATION OF FAN WITH LANDLORD AND EXISTING CONDITIONS TO ENSURE THAT FAN IS NOT INSTALLED WITHIN 10 FEET OF ANY OUTSIDE AIR INTAKE.
- ④ 8" EXHAUST DUCT UP THROUGH ROOF WITH TALL CONE FLASHING, WEATHER SKIRT, AND VENT CAP. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES AND TERMINATE 36" ABOVE ROOF.
- ⑤ 3"ØX5'± WATER HEATER CONCENTRIC VENT PIPE UP THROUGH ROOF WITH VENT CAP. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKE AND TERMINATES 36" ABOVE ROOF.
- ⑥ CONTRACTOR TO FIELD VERIFY THAT THE LOCATION OF ANY INTAKE SOURCE FROM ADJACENT TENANTS SHOULD BE AT LEAST 10' AWAY FROM THE KEF-1(E) AND OTHER EXHAUST DUCT TERMINATING ON ROOF.
- ⑦ CONTRACTOR TO FIELD VERIFY THAT THE LOCATION OF ANY EXHAUST SOURCE FROM ADJACENT TENANTS SHOULD BE AT LEAST 10' AWAY FROM THE RTU-1(N), RTU-2(N) & MUA-1(N).
- ⑧ CONTRACTOR TO COORDINATE WITH STRUCTURAL ENGINEER AND FIELD VERIFY THE BUILDING OR STRUCTURE SHALL NOT BE WEAKENED BY THE INSTALLATION OF NEW MECHANICAL SYSTEMS RTU-1(N), RTU-2(N), MUA-1(N) AND KEF-1(N).
- ⑨ CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION OF EXISTING RTUs, MUA AND REUSE THE EXISTING DUCT PENETRATION. MODIFY THE DUCT PENETRATION AS PER REQUIREMENT. PROVIDE ROOF CURB ADAPTER IF REQUIRED.
- ⑩ CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION OF KEF-1(E) AND ADJUST THE DUCT PENETRATION ACCORDINGLY. CHANGE THE LOCATION OF FAN IF REQUIRED.

FOR QUESTIONS, CALL THE
PROJECT OFFICE
PHONE: (781) 579-0989
EMAIL: captivair@captivair.com

HOOD INFORMATION - JOB#5470351

HOOD NO.	TAG	MODEL	MANUFACTURER	LENGTH	MAX. CAPACITY	TYPE	APPLIANCE	DESIGN	TOTAL CFM	TOTAL SUPPLY	TOTAL EXHAUST	HOOD END TO END	HOOD END TO END
1	KH-1	6624	6624	CAPTIVEAIRE	10' 0"	600	1	HEAVY	200	3000	3000	430	55

HOOD INFORMATION

HOOD NO.	TAG	TYPE	UTY	HEIGHT	LENGTH	EFFICIENCY	# 7	UTY	TYPE	LOCATION	SIZE	TYPE	SIZE	ELECTRICAL	QUANTITY	MODEL #	FAN	HOOD	HOOD
1	KH-1	CAPTIVEAIRE	SOLID FILTER	15"	20"	36"	80%	8	LSS SERIES	END	NO	LEFT	12'x46'x24"	TANK FS	4.5/4.0	SCV-100	1	FAN	YES

HOOD OPTIONS

HOOD NO.	TAG	TYPE	UTY	HEIGHT	LENGTH	EFFICIENCY	# 7	UTY	TYPE	LOCATION	SIZE	TYPE	SIZE	ELECTRICAL	QUANTITY	MODEL #	FAN	HOOD	HOOD
1	KH-1	CAPTIVEAIRE	SOLID FILTER	15"	20"	36"	80%	8	LSS SERIES	END	NO	LEFT	12'x46'x24"	TANK FS	4.5/4.0	SCV-100	1	FAN	YES

PREPARED SUPPLY PLAN(S)

HOOD NO.	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	SHEET	SHEET	SHEET
1	KH-1	Front	12'	36"	6'	6'	6'	6'	6'

FOR QUESTIONS, CALL THE
PROJECT OFFICE
PHONE: (781) 579-0989
FAX: (781) 579-0991

ALL WALLS AND STRUCTURES
THAT COME WITHIN 18" OF
HOOD MUST BE METAL STUDS
AND SHEETROCK. WOOD STUDS
OR ANY OTHER COMBUSTIBLE
MATERIAL WITHIN 18" OF HOOD
NOT ALLOWED.

HOOD MANUFACTURER
RECOMMENDS NO RETURNS
OR 4-WAY DIFFUSERS
WITHIN 10 FEET OF HOOD
IN ALL DIRECTIONS.

MAKE-UP AIR SHALL BE
DELIVERED INTO SPACE
IN MANNER THAT WILL NOT
DISRUPT HOODS ABILITY
TO CAPTURE AND CONTAIN

System Design Verification (SDV)

If ordered, CAS Service will perform a System Design Verification (SDV) once all equipment has had a complete start-up per the Operation and Installation Manual. Typically, the SDV will be performed after all inspections are complete.

Any field related discrepancies that are discovered during the SDV will be brought to the attention of the general contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office. If CAS Service has to resolve a discrepancy that is a field issue, the general contractor will be notified and billed for the work. Should a return trip be required due to any field related discrepancy that cannot be resolved during the SDV, there will be additional trip charges.

During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer. Should a return trip be required, the general contractor and appropriate sales office will be notified. There will be no additional charges for manufacturer discrepancies.

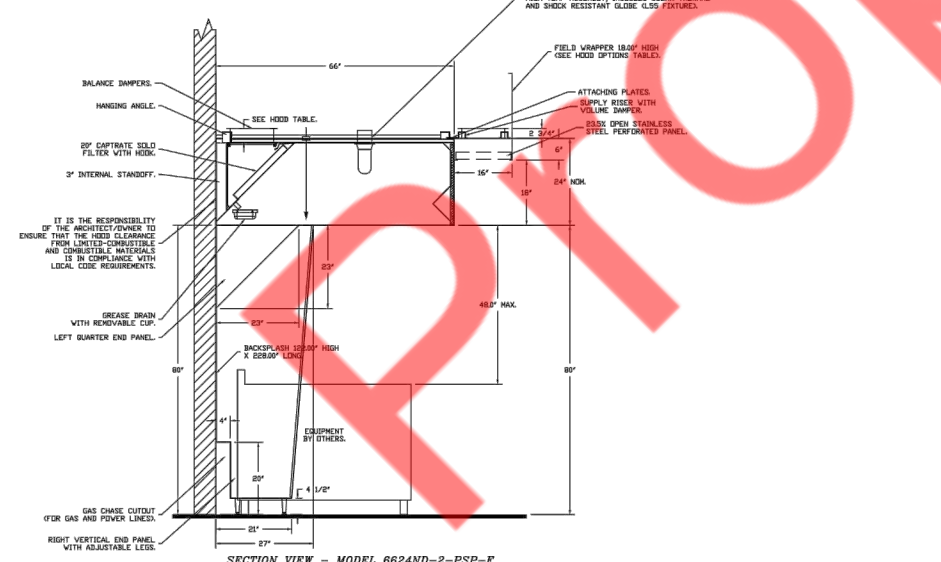
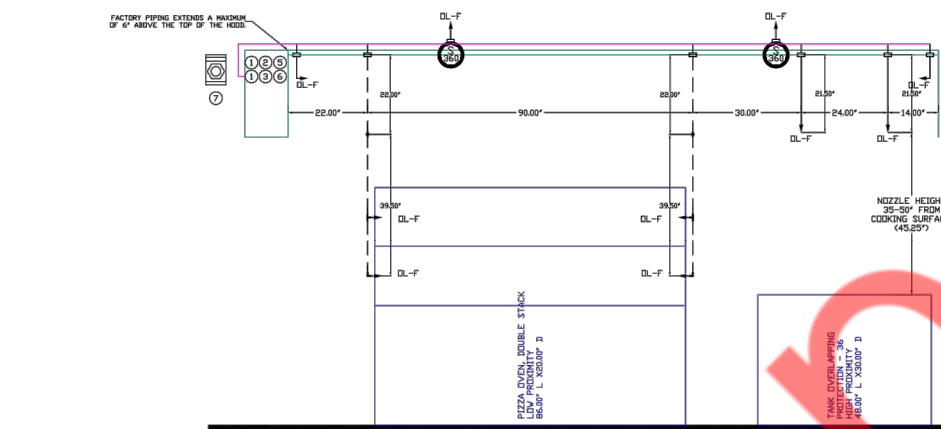
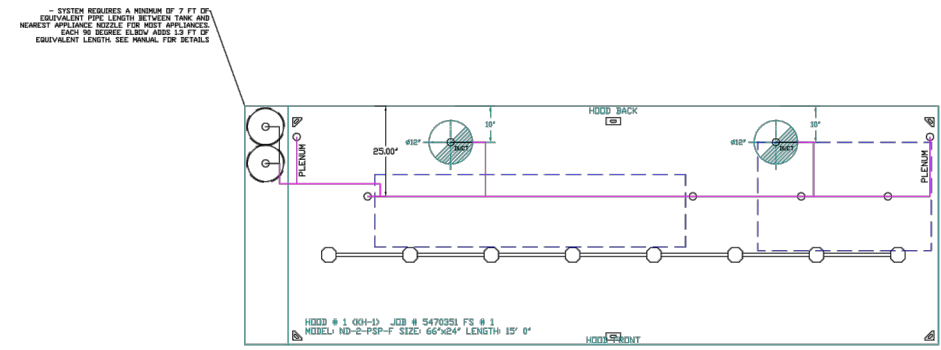
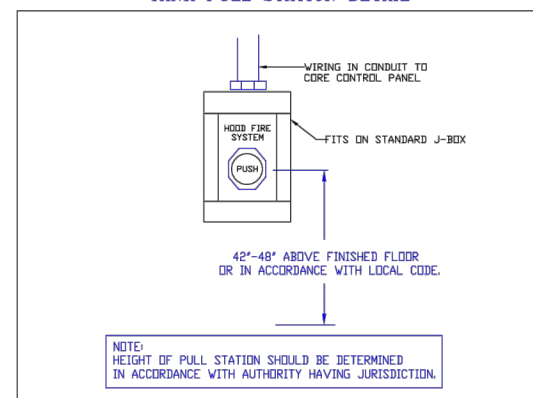
FIRE SYSTEM INFORMATION - JOB#5470351

FIRE SYSTEM NO.	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	LOCATION ON HOOD
1	FS-1	TANK FS	4.0/4.0	40	FIRE CABINET LEFT	LEFT, HOOD 1

CAS VALVE(S)

FIRE SYSTEM NO.	TAG	TYPE	SIZE	SUPPLIED BY
1	FS-1	SC ELECTRICAL	1.000	CAPTIVEAIRE SYSTEMS

TANK PULL STATION DETAIL



7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128

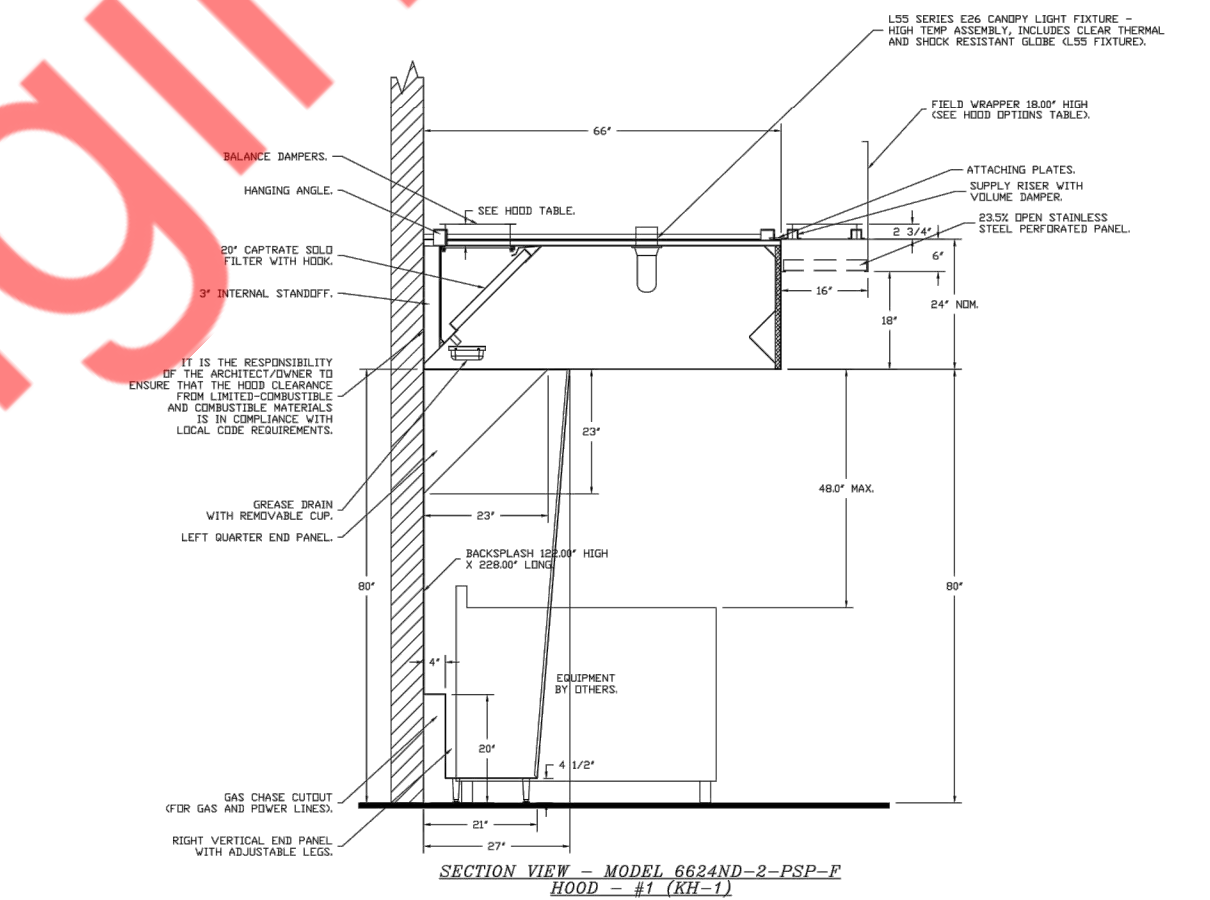
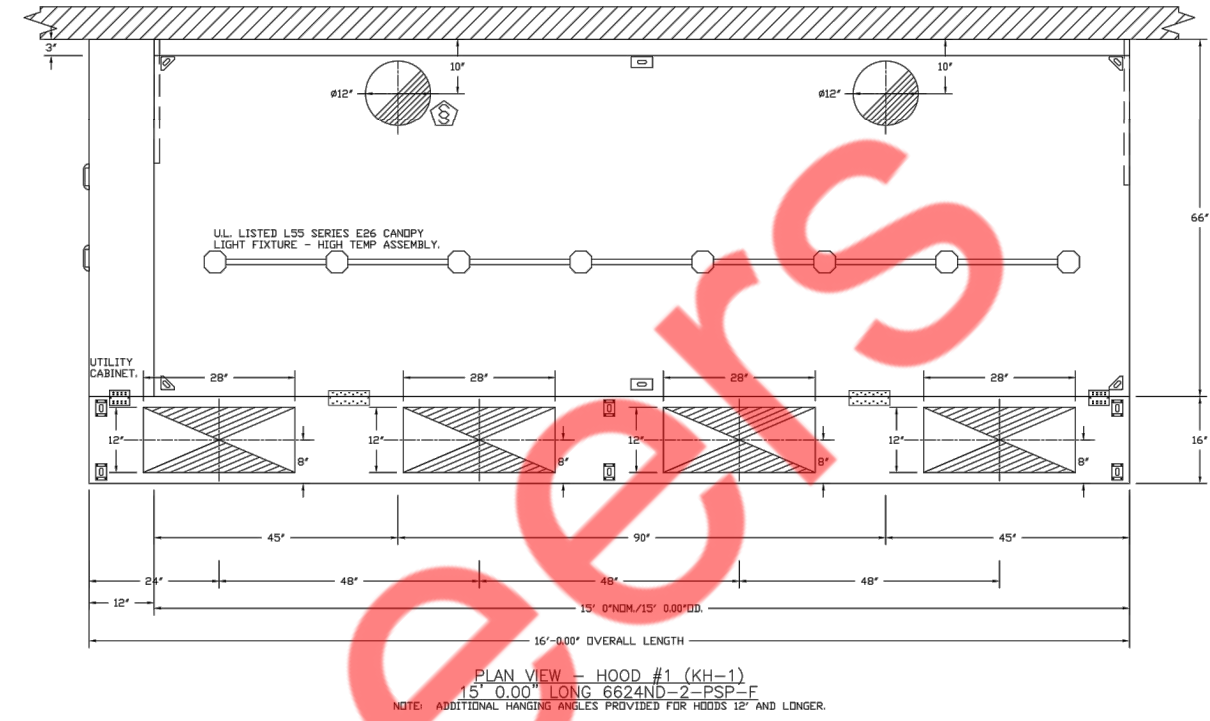
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DWG.#: 5470351
DRAWN BY: JAC - 42
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 1

7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128

DATE: 5/12/2022
DWG.#: 5470351
DRAWN BY: JAC - 42
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 3



7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128

DATE: 5/12/2022
DWG.#: 5470351
DRAWN BY: JAC - 42
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 2

7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128
7300 E. Arroyo Parkway, Suite 100, San Jose, California, CA 95128

DATE: 5/12/2022
DWG.#: 5470351
DRAWN BY: JAC - 42
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 4

Architect

CIVIL ENGINEER

STRUCTURAL ENGINEER

LANDSCAPE COMPANY

MEP ENGINEER

NY ENGINEERS

DEVELOPER

PROJECT:

MICI ITALIAN
INTERIOR TENANT BUILD-OUT

Drawing Issue

Description	Date
FOR PERMIT	06/06/2022

Drawn By: NYE

Checked By: NYE

Sheet Title

HOOD DRAWINGS

Sheet No.

M2.1

Kolbrook Job No. 0000.000 Consultant Job No. -

GENERAL ELECTRICAL NOTES

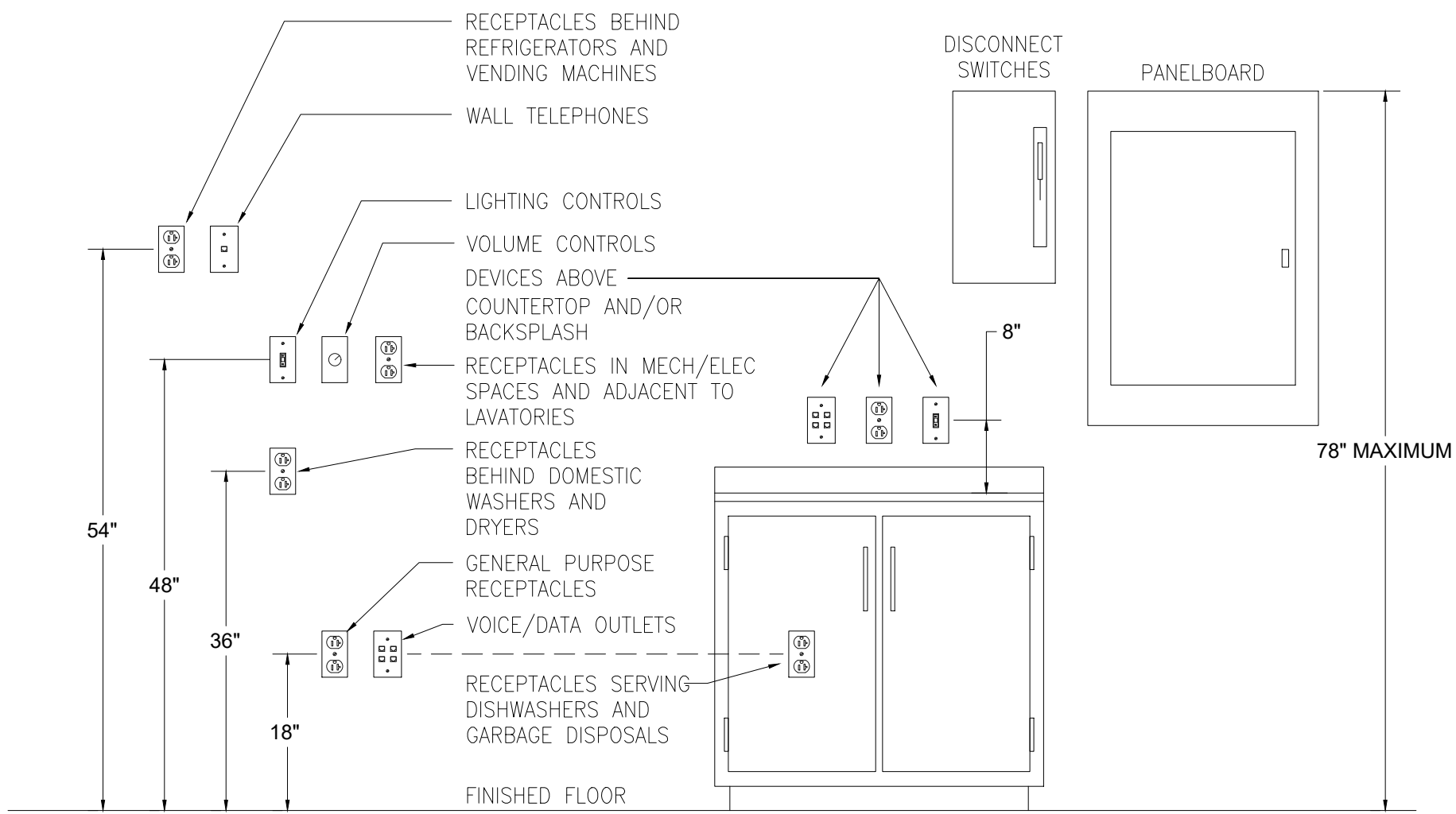
1. ANY AND ALL "BUILDING STANDARDS" AND/OR "BUILDING SPECIFICATIONS" SHALL BE CONSIDERED AN INTEGRAL PART OF THESE DOCUMENTS AND THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN A COPY OF THESE REQUIREMENTS/THIS DOCUMENT AND COMPLY WITH ALL REQUIREMENTS AND STANDARDS CONTAINED WITHIN.
2. THESE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT OF LIGHTING FIXTURES, DEVICES, CONTROLS, ELECTRICAL FIXTURES, MOTORS, PANELBOARDS, EQUIPMENT, ETC. THE LOCATIONS OF ALL ITEMS SHOWN ON THESE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT THE PROJECT. ALL LOCATIONS OF WORK EXPOSED TO VIEW ARE SUBJECT TO APPROVAL OF THE ARCHITECT PRIOR TO INSTALLATION.
3. THE ELECTRICAL CONTRACTOR SHALL VERIFY EXISTING CONDITIONS TO INSURE THAT ALL NEW WORK WILL FIT INTO THE EXISTING STRUCTURE IN THE MANNER INTENDED AND AS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/OWNERS REPRESENTATIVE PRIOR TO ANY ROUGH-INS, FABRICATIONS, OR PERFORMING ANY WORK IN THE AREA INVOLVING DIFFERENCES. NOTIFICATION SHALL BE IN THE FORM OF A DRAWING OR SKETCH INDICATING FIELD MEASUREMENTS AND NOTES RELATED TO THE AREA.
4. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE PROMPTLY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION DURING THE BIDDING PERIOD. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE TO THE CONTRACTOR BY REASON OF HIS FAILURE TO HAVE BROUGHT SAID DISCREPANCIES TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PERIOD OR OF ANY ERROR ON THE CONTRACTOR'S PART.
5. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT, PROFESSIONAL AND WORKMANLIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE.
6. ALL COMPONENTS SHOWN ON THE RISER/ONE-LINE DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
7. REVIEW ALL TRADES' CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT. COORDINATE EXACT MOUNTING LOCATIONS WITH THE ARCHITECT.
8. REFER TO ARCHITECTURAL ELEVATIONS TO DERIVE EXACT LOCATIONS OF ALL RECEPTACLES, OUTLETS/JACKS, SWITCHES, ETC. LUMINAIRES AND CEILING MOUNTED EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
9. EXACT LOCATION OF MECHANICAL EQUIPMENT THAT REQUIRE ELECTRICAL CONNECTION ARE SHOWN ON THE MECHANICAL DRAWINGS. FIELD VERIFY EXACT LOCATIONS WITH MECHANICAL CONTRACTOR PRIOR TO ANY ROUGH-INS.
10. ALL CIRCUITING SHALL BE RUN CONCEALED UNLESS SPECIFIED OTHERWISE.
11. ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
12. CONDUIT HOME RUNS SHOWN ON THE DRAWING WITH MORE THAN (3) CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. THIS CONTRACTOR SHALL NOT INSTALL MORE THAN (3) CURRENT CARRYING CONDUCTORS IN A RACEWAY UNLESS NATIONAL ELECTRIC CODE (N.E.C), ARTICLE 310.15 DERATING FACTORS ARE APPLIED.
13. ALL LIGHTING AND GENERAL POWER BRANCH CIRCUITS SHALL INCLUDE A SEPARATE NEUTRAL CONDUCTOR, UNLESS SPECIFICALLY NOTED OTHERWISE.
14. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ACCEPTABLE CONDUIT TYPES/LOCATIONS. ALL CONDUIT SIZES ON THE DRAWINGS ARE BASED ON THE LATEST EDITION OF THE N.E.C. CONDUIT FILL TABLES FOR ELECTRICAL METALLIC TUBING (E.M.T). CONDUIT SIZES SHALL BE REVISED TO THE SIZE REQUIRED, RELATIVE TO THE ACTUAL CONDUIT TYPE TO BE INSTALLED.
15. IT IS NOT INTENDED THAT THE PLANS INDICATE ALL THE NECESSARY BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL HIS WORK TO CONFORM TO THE STRUCTURE, MAINTAIN HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS AS REQUIRED.
16. IT IS NOT INTENDED THAT THE PLANS INDICATE ALL CONDUIT ROUTES, PULL BOXES, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ACTUAL CONDUIT ROUTING, QUANTITY AND LOCATION OF PULL BOXES WITHIN ACCESSIBLE LOCATIONS.
17. PROVIDE SCREW-COVER PULL BOXES IN CONDUIT RUNS AS REQUIRED TO LIMIT THE NUMBER OF BENDS TO NO MORE THAN THREE (3) OR 270 DEGREES TOTAL. SIZE PULL BOXES IN ACCORDANCE WITH NEC ARTICLE 314.28. DOCUMENT ON RECORD DRAWINGS, SIZE AND LOCATION OF PULL BOXES USED IN FEEDER CONDUIT RUNS.
18. ALL OUTLET BOXES IN WALLS SHALL HAVE A MINIMUM OF ONE (1) DEDICATED VERTICAL CONDUIT ENTERING AT THE TOP OF THE BOX. HORIZONTAL CONDUIT CONNECTIONS SHALL ONLY BE PERMITTED UNDER WINDOWS OR UNLESS OTHERWISE NOTED ON DRAWINGS.
19. WHERE MULTIPLE DEVICES ARE INDICATED IN A COMMON LOCATION, GANG INTO A SINGLE COVER PLATE.
20. ALL EXISTING PANELS SHALL BE PROVIDED WITH ENGRAVED NAMEPLATES AS DESIGNATED ON PANEL SCHEDULES SECURED TO PANEL FACE AND NEW ENGRAVED NAMEPLATES DENOTING ORIGIN OF FEEDER FROM WHICH PANEL IS SERVED.

SYMBOL LEGEND

	FLUORESCENT LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR "EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.
	LUMINAIRE TYPE : INDICATE BY LIPPERCASE LETTER SEE LIGHTING EXTURE SCHEDULE.
	CIRCUIT NUMBER : INDICATED BY NUMBER
	SWITCHING INDICATED BY LOWER CASE LETTERS.
	DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.
	DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT.
	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONALARROWS AS INDICATED. SHADED AREA DENOTES FACE(S). ISOLITE ELITE SERIES LED EXIT SIGN
	COMBINATION OF EXIT SIGN AND EMERGENCY BUG-EYE FIXTURE.
	EMERGENCY BATTERY UNIT WITH ATTACHED EMERGENCY FIXTURES AND OUTLET BOX.
	EMERGENCY BATTERY UNIT WITH ATTACHED EMERGENCY FIXTURE FOR EXTERIOR ENVIRONMENT
	LIGHT SWITCH. SINGLE POLE, 20A
	"a" CONTROL OF SPECIFIED LUMINAIRES "3" 3-WAY TYPE "OS" LINE VOLTAGE MULTI TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR WITH MANUAL ON/OFF SWITCH. "VS" LINE VOLTAGE MULTI TECHNOLOGY WALL SWITCH VACANCY SENSOR WITH MANUAL ON/OFF SWITCH. "VDS" LINE VOLTAGE MULTI TECHNOLOGY WALL SWITCH VACANCY SENSOR WITH MANUAL ON/OFF SWITCH.
	WALL MOUNTED OCCUPANCY SENSOR SWITCH.
	MANUAL OVERRIDE SWITCH
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
	30A/240V NON UNFUSED DISCONNECT SWITCH
	60A/240V NON UNFUSED DISCONNECT SWITCH
	100A/240V NON UNFUSED DISCONNECT SWITCH
	200A/240V NON UNFUSED DISCONNECT SWITCH
	JUNCTION BOX WITH BLANK COVER PLATE, FLUSH IN FLOOR.
	JUNCTION BOX WITH BLANK COVER PLATE, WALL MOUNTE, +18" AFF OR AS NOTED.
	DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.
	DUPLEX DEDICATED RECEPTACLE, +18" AFF OR AS NOTED.
	DOUBLE DUPLEX RECEPTACLE - 20A-1P, 125V, NEMA 5-20R.
	DUPLEX CONVENIENCE GFCI RECEPTACLE, +18" AFF OR AS NOTED.
	TELEPHONE/DATA OUTLET, 4"SQUARE OUTLET BOX WITH SINGLE GANG COLLAR AND BLANK PLATE. PROVIDE 3/4" E.C., U.O.N., UP TO HUNG CEILING AND TERMINATE WITH 90° ELBOW, BUSHING AND DRAG WIRE.
	DATA OUTLET
	VOICE OUTLET
	UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.
	MOTORIZED DAMPER.
	MANUAL MOTOR SWITCH
	PHOTOCELL IN NAMA 3R ENCLOSURE.
	ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING

ABBREVIATIONS

A	AMPERES	EF	EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AT	AMP TRIP	ER	EXISTING TO BE RELOCATED
AWG	AMERICAN WIRE GAUGE	FDR	FEEDER
C	CONDUIT	FIXT	FIXTURE
C/B,CB	CIRCUIT BREAKER	FL	FLOOR
CKT	CIRCUIT	G	GROUND
CLG	CEILING	GFI	GROUND FAULT INTERRUPTER
CU	COPPER	GP	GENERAL PURPOSE
DWG	DRAWING	HP	HORSEPOWER
KCMIL	ONE THOUSAND CIRCULAR MILS	HZ	HERTZ
KVA	KILOVOLT-AMPERES	IC	INTERRUPTING CAPACITY
KW	KILOWATTS	PP	POWER PANEL
LTG	LIGHTING	REC	RECEPTACLE
MAX	MAXIMUM	NIC	NOT IN CONTRACT
MCB	MAIN CIRCUIT BREAKER	NTS	NOT TO SCALE
MIN	MINIMUM	P	POLES
N	NEUTRAL	PNL	PANEL
TYP	TYPICAL	IG	ISOLATED GROUND
UON	UNLESS OTHERWISE NOTED	W	WATT
V	VOLT/VOLTAGE	EX	EXIT
WP	WEATHER PROOF	VA	VOLT AMPERE



TYPICAL DEVICE MOUNTING DETAIL

SCALE: NOT TO SCALE

NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO THE CENTERLINE OF DEVICE EXCEPT FIRE ALARM A/V DEVICES.
2. NO WIRING DEVICES OR OUTLET BOXES SHALL BE MOUNTED BACK TO BACK.
3. ALL MOUNTING DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. FOR ALL ELEVATIONS (WHERE APPLICABLE), CASEWORK DETAILS, FIRE WALLS, SMOKE WALLS, LOCATION OF COUNTERTOP RECEPTACLES, LIGHTING FIXTURE SWITCHES, TELEPHONE OUTLETS, EQUIPMENT ROUGH-INS, HEADWALLS, ETC., SEE ARCH DRAWINGS. WHERE NO ARCHITECTURAL ELEVATIONS OR DETAILS OCCUR, THE ELECTRICAL CONTRACTOR SHALL USE MEANS AND METHODS AS WELL AS THEIR FIELD KNOWLEDGE TO SPOT DEVICES IN THE BEST LOCATIONS FOR THE PROJECT.

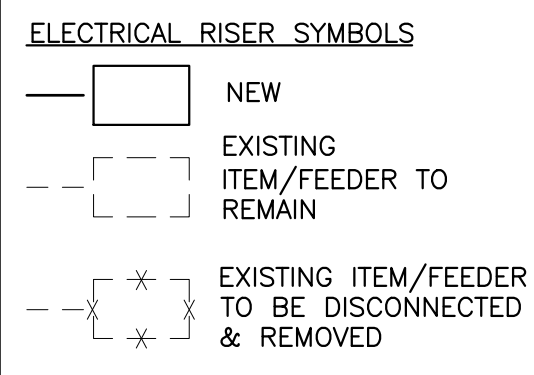
SPACE INTENTIONALLY LEFT BLANK FOR CITY
APPROVAL / STAMPS

Architect
CIVIL ENGINEER
STRUCTURAL ENGINEER
LANDSCAPE COMPANY
MEP ENGINEER NY ENGINEERS
DEVELOPER

PROJECT:	MICI ITALIAN INTERIOR TENANT BUILD-OUT
Drawing Issue	
Description	Date
FOR PERMIT	06/06/2022
Drawn By: NYE	
Checked By: NYE	
Sheet Title	
ELECTRICAL LEGENDS, NOTES & ABBREVIATIONS	
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Consultant Job No.	-



1. EXISTING 200A, 120/208V, 3 ϕ ELECTRICAL SERVICE FEEDER FROM UTILITY SHALL REMAIN. E.C. TO VERIFY RATING IN FIELD. INFORM ENGINEER ON RECORD IN CASE OF ANY DISCREPANCY.
2. EXISTING 200A, 120/208V, 3 ϕ ELECTRICAL METER & DISCONNECT SWITCH SHALL REMAIN. E.C. TO VERIFY RATING AND OPERABLE CONDITION IN FIELD. REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
3. EXISTING 200A, 120/208V, 3 ϕ ELECTRICAL PANEL "LA" TO REMAIN. E.C. SHALL VERIFY RATING AND OPERABLE CONDITION OF PANEL IN FIELD. REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
4. EXISTING 100A, 120/208V, 3 ϕ ELECTRICAL PANEL "LB" TO REMAIN. E.C. SHALL VERIFY RATING AND OPERABLE CONDITION OF PANEL IN FIELD. REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.



ELECTRICAL RISER GENERAL NOTES:

- ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO BID.
- E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.

GENERAL NOTES:

- THE ELECTRICAL CONTRACTOR SHALL COORDINATE TO CONFIRM ALL ELECTRICAL SPECIFICATIONS, CONNECTIONS, ROUGH-IN REQUIREMENTS, MOUNTING HEIGHTS, CORD TYPES/LENGTHS, ETC. WITH THE FOOD SERVICE EQUIPMENT CONTRACTOR PRIOR TO PLACING PURCHASE ORDER FOR ANY DEVICES, DISTRIBUTION EQUIPMENTS AND ROUGH-IN. FIXTURE AND EQUIPMENTS LOCATIONS SHOWN ARE SCHEMATIC IN NATURE. COORDINATE FINAL CONFIGURATION & LOCATION WITH OWNER PRIOR TO BID SUBMISSION.
- THE EXHAUST HOOD, SUPPLY FAN, AND EXHAUST FAN WILL BE PROVIDED AS A COMPLETE MANUFACTURED SYSTEM, ALL CONTROL PANELS, STARTERS, LIGHT SWITCHES, DISCONNECT SWITCHES, PUSHBUTTON STATIONS ETC. SHALL BE PROVIDED WITH THE EQUIPMENT AND/OR SYSTEM. THE E.C. SHALL PROVIDE ALL WIRING BETWEEN EACH ITEM LISTED AND SERVING PANELBOARD, CONTROL PANEL, CONTROL DEVICES, CONTROL FANS, ETC. FOR A FULLY FUNCTIONAL SYSTEM PER THE MANUFACTURER'S WIRING DIAGRAMS.
- ALL ITEM LOCATED BELOW HOOD SHALL BE AUTOMATICALLY SHUTDOWN UPON INITIATION OF THE EXHAUST HOOD FIRE SUPPRESSION SYSTEM IN ACCORDANCE WITH NFPA 86. PROVIDE AN ELECTRICALLY HELD CONTACTOR IN NEMA 1 ENCLOSURE INSTALLED ABOVE CEILING. HOLDING COIL OF CONTACTOR SHALL BE MAINTAINED BY A MICROSWITCH LOCATED IN THE HOOD FIRE SUPPRESSION CONTROL CABINET, VERIFY WITH THE KITCHEN DESIGNER IF MICROSWITCHES OR SHUNT TRIP BREAKERS ARE BEING USED. PROVIDE ALL CONTROL PANEL PER MANUFACTURER'S WIRING DIAGRAM. ALSO INCLUDE WIRING THROUGH THE CONTACTOR TO INCORPORATE A 120V GAS SOLENOID VALVE FOR FUEL SHUTDOWN.
- THE HOOD FIRE SUPPRESSION SYSTEM SHALL SHUTDOWN ALL FUEL AND POWER FOR EQUIPMENT LOCATED BELOW THE HOOD UPON INITIATION IN ACCORDANCE WITH NFPA 96.

ELECTRICAL PANEL ABBREVIATIONS:

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

ELECTRICAL PANEL GENERAL NOTE:

- E.C. SHALL REPLACE THE EXISTING BREAKERS AND WIRES (WHERE EVER REQUIRED) WITH NEW BREAKERS AND WIRES TO MATCH WITH PANEL SCHEDULE.

PANEL:	LA	(EXISTING)							MOUNTING:		SURFACE			
120/208	VOLTS		3	PHASE	4	WIRE			PANEL LOCATION:		KITCHEN			
MCB	200A		BUS:	225A	MINIMUM				FED FROM:		MAIN SERVICE			
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	103- TWO SECTION PREP TABLE	E	0.40	2#12, 1#12, 3/4"C	4.10			3#8, 1#10, 3/4"C	3.70	H	RTU-1 (N)	50/3P	2
3	20	EX. WALK IN FREEZER PLUG	E	0.10	EXISTING		3.80			3.70	H			4
5	15	104- TWO SECTION PREP TABLE	E	0.40	2#12, 1#12, 3/4"C			4.10		3.70	H			6
7	20	106- TWO SECTION PREP TABLE	E	0.40	2#12, 1#12, 3/4"C	6.20			3#6, 1#10, 3/4"C	5.80	H	RTU-2 (N)	60/3P	8
9	20	107- COUNTER TOP HEATED WELL	E	1.40	2#12, 1#12, 3/4"C		7.20			5.80	H			10
11	20	115-HEATED SELF	E	0.40	2#12, 1#12, 3/4"C			6.20		5.80	H			12
13	20	202-WASHER	E	1.60	2#12, 1#12, 3/4"C	2.50			3#12, 1#12, 3/4"C	0.90	H	MUA-1 (N)	20/3P	14
15	20	300-SODA DISPENSER	E	0.60	2#12, 1#12, 3/4"C		1.50			0.90	H			16
17	20	301-ICE MACHINE	E	1.50	2#12, 1#12, 3/4"C			2.40		0.90	H			18
19	20	302.1-TEA DISPENSER	E	1.80	2#12, 1#12, 3/4"C	1.80						SPARE	20	20
21	15	302-TEA DISPENSER	E	0.20	2#12, 1#12, 3/4"C		0.20					SPARE	15	22
23	20	408-DOUGH ROUNDER	E	0.60	2#12, 1#12, 3/4"C			0.60				SPARE	20	24
25	20	415-REACH IN FREEZER	E	1.00	2#12, 1#12, 3/4"C	1.36			2#12, 1#12, 3/4"C	0.36	R	WP/GFCI SERVICE RECEPTACLE	20	26
27	20	604-UC REFRIGERATOR	E	0.30	2#12, 1#12, 3/4"C		2.10		2#12, 1#12, 3/4"C	1.80	E	302.1-TEA DISPENSER	20	28
29	20	605-HOT HOLDING CABINET	E	1.80	2#12, 1#12, 3/4"C			1.80				SPARE		30
31	20	801-GELATO DIPPER WELL	E	0.50	2#12, 1#12, 3/4"C	1.50			2#12, 1#12, 3/4"C	1.00	E	BATHROOM-HAND DRYER	15	32
33	20	POS AT FRONT COUNTER	E	1.00	2#12, 1#12, 3/4"C		2.00		2#12, 1#12, 3/4"C	1.00	E	BATHROOM-HAND DRYER	20	34
35	20	POS AT FRONT COUNTER	E	1.00	2#12, 1#12, 3/4"C			1.72	2#12, 1#12, 3/4"C	0.72	R	QUAD FOR TTb	20	36
37	20	POS AT KITCHEN	E	1.00	2#12, 1#12, 3/4"C	9.07			4#3, 1#8, 1 1/4"C	8.07	O	TO PANEL LB	100/3P	38
39	20	QUAD FOR IT EQUIPMENT	R	0.72	2#12, 1#12, 3/4"C		8.79			8.07	O			40
41	20	MONITORS	E	1.00	2#12, 1#12, 3/4"C			9.07		8.07	O			42
						26.53	25.59	25.89						

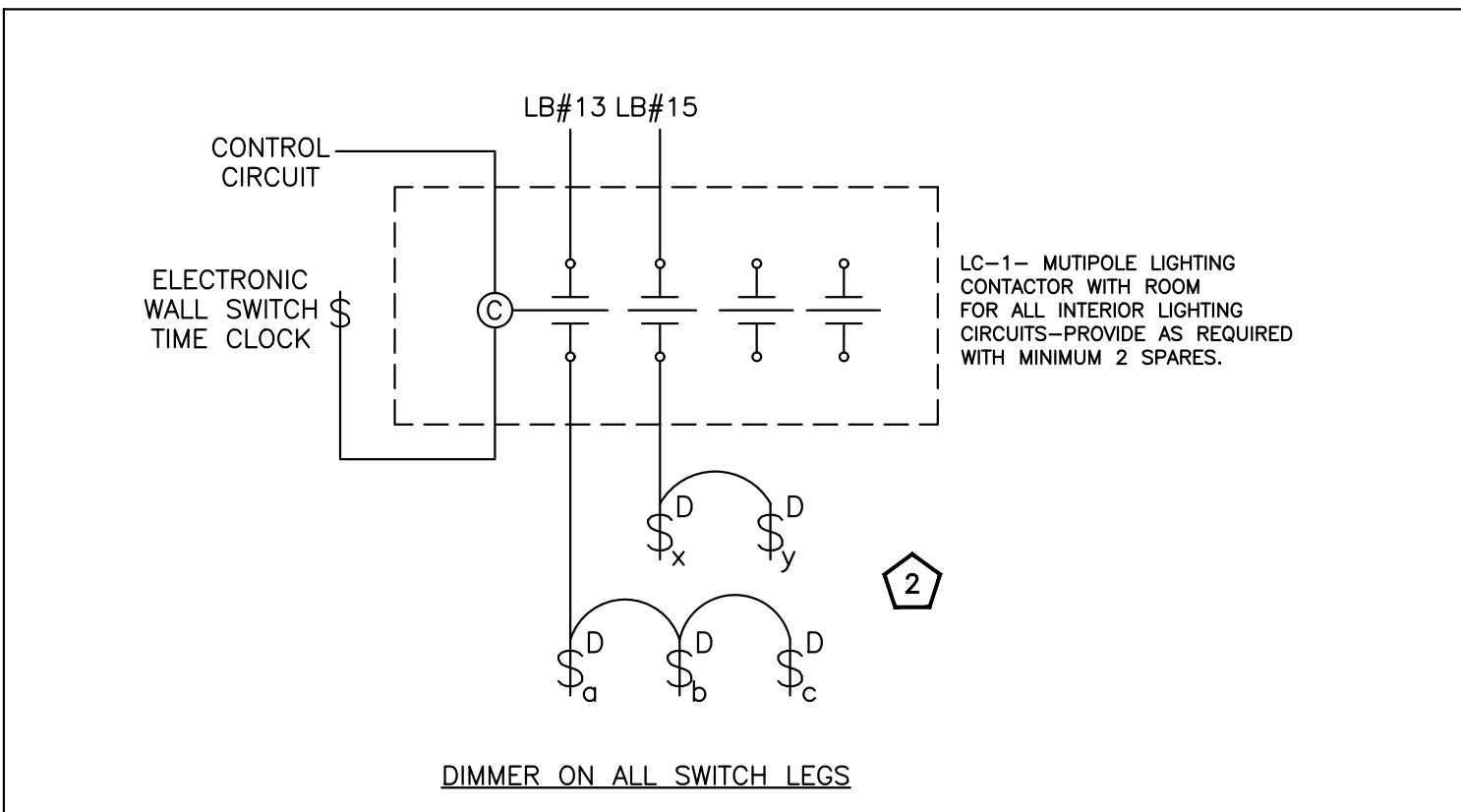
PANEL:		LB	(EXISTING)									MOUNTING: SURFACE			
120/208	VOLTS		3	PHASE	4	WIRE			PANEL LOCATION: KITCHEN AREA						
MLO	100A		BUS:	125A	MINIMUM			FED FROM: PANEL A							
NOTE:															
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.	
						A	B	C							
1	20	EXISTING - KITCHEN EXHAUST FAN (KEF-1)	H	1.80	EXISTING	1.90			2#12, 1#12, 3/4"C	0.10	E	912-BUG LITE STICKY FOX	15	2	
3	20	SPARE					0.50		EXISTING	0.50	L	LTG-BATHROOM AND FREEZER	20	4	
5	30/2P	EX. WALK IN FREEZER	M	2.40	EXISTING			2.90	2#12, 1#12, 3/4"C	0.50	O	WATER HEATER (WH-1)	20	6	
7			M	2.40				2#12, 1#12, 3/4"C	0.10	M	RECIRCULATION PUMP (RCP-1)	20	8		
9	15	HCP-HOOD CONTROL PANEL	O	1.00	2#12, 1#12, 3/4"C		1.00					SPARE	20	10	
11	20	SPARE						1.30	3#12, 1#12, 3/4"C	1.30	E	402-MIXER	20/3P	12	
13	15	LIGHTING - DINING AREA	L	1.00	2#12, 1#12, 3/4"C	2.30				1.30	E			14	
15	15	LIGHTING - KITCHEN AREA	L	1.00	2#12, 1#12, 3/4"C		2.30			1.30	E			16	
17	15	EXTERIOR SIGNAGE	L	1.00	2#12, 1#12, 3/4"C			2.00	2#12, 1#12, 3/4"C	1.00	E	101-PIZZA OVEN	20/2P	18	
19	20	STORE FRONT SIGNAGE	L	1.50	2#12, 1#12, 3/4"C	2.50				1.00	E			20	
21	20	STORE FRONT SIGNAGE	L	1.50	2#12, 1#12, 3/4"C		2.40		2#12, 1#12, 3/4"C	0.90	R	DINING - GENERAL RECEPTACLE	20	22	
23	20	STORE FRONT SIGNAGE	L	1.50	2#12, 1#12, 3/4"C			2.40	2#12, 1#12, 3/4"C	0.90	R	DINING - GENERAL RECEPTACLE	20	24	
25	20	DEDICATED RECEPTACLE - DINING	R	0.18	2#12, 1#12, 3/4"C	0.18						SPARE	20	26	
27	20	102-COUNTERTOP GAS RANGE	E	0.20	2#12, 1#12, 3/4"C		0.20					SPARE	20	28	
29	20	SPARE						0.00				SPARE	20	30	
						9.38	6.40	8.60							

LUMINAIRE SCHEDULE GENERAL NOTES:

1. VERIFY ALL LUMINAIRE COLORS, TRIMS, LENGTHS, ETC. WITH THE ARCHITECT PRIOR TO PLACING FINAL PURCHASE ORDERS. SUBMISSION PF SHOP DRAWINGS WILL BE INTERPRETED AS HAVING BEEN COORDINATED WITH THE ARCHITECTURAL DRAWINGS .
2. PROVIDE ALL LENGTHS, FEEDS, ACCESSORIES, CONNECTORS, WIRING, POWER SUPPLIES, DRIVERS ETC. FOR A COMPLETE INSTALLATION. THE E.C. SHALL VERIFY THE COMPLETE BILL OF MATERIAL WITH MANUFACTURER'S REPRESENTATIVE AND ENSURE ALL EQUIPMENT ARE INCLUDED IN BID PRICE. COORDINATE INSTALLATION WITH ARCHITECTURAL DETAILS.
3. VERIFY FINAL LUMINAIRE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENTS SUCH AS DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLANS.
4. VERIFY EXACT MOUNTING HEIGHT AND LOCATIONS OF ALL WALL MOUNTED LUMINAIRE WITH ARCHITECTURAL PLANS AND ELEVATIONS PRIOR TO ROUGH-IN
5. ANY PROPOSED ALTERNATE LUMINAIRES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO FINAL BID PRICING.
6. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS, EQUIPMENT AND DEVICES OTHER THAN THOSE SPECIFIED AND LISTED, THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR SUBSTITUTIONS, TO THE ENGINEERS AT LEAST TEN (10) BUSINESS DAYS PRIOR TO BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID AND SHALL INCLUDE A COMPLETE SPECIFICATIONS CUTSHEET SUBMITTAL AS OUTLINED IN THE SPECIFICATIONS, COMPLETE WITH DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. INDICATE ANY ADDITIONS OR DEDUCTIONS TO THE CONTRACT PRICE WITH THE SUBSTITUTION SUBMITTAL AND ON THE BID FORM.
7. ALL FIXTURES INDICATED AS EMERGENCY SHALL BE PROVIDED WITH 90-MINUTE BATTERY PACK AND ALL FLORECENT FIXTURES INDICATED AS EMERGENCY SHALL BE PROVIDED WITH 1300LUMENS, 90MINUTE BATTERY PACK.
8. PROVIDE SHATTER-RESISTANT LAMPS OR PROVIDE CLEAR LENSES ON ALL FIXTURES LOCATED ABOVE ALL KITCHEN AREA.
9. VERIFY FINAL SELECTION OF LIGHT FIXTURES WITH ARCHITECT.

LUMINAIRE SCHEDULE:

FIXTURE TAG	QUANTITY	WATTAGE	VOLTS	MANUFACTURER	MODEL NO.	DESCRIPTION
A	10	32	120/277	EATON / COOPER LIGHTIG	2GR8-IC	2'X4' METALUX, LENSED LED TROFFER LAY-IN FIXTURE
C(EX)	2	-	120/277	-	-	EXIST RECESSED CAN LIGHT
P	18	60	120/277	PROGRESS LIGHTING	PROGRESS P4403-29	OPAL GLOBES 1 LIGHT WHITE PENDANT CEILING LIGHT
EX	2	20	120/277	-	-	EXIST 2X4 LIGHT FIXTURE
EM	-	0.78W LED INT.	120/277	COOPER-SURE-LITES APEL	-	-
XEM	-	LED/5.4W INC	120/277	COOPER-SURE-LITES AP70 G DH UNV	-	-
EX-1	-	-	-	-	PERHC DB OD 30	LED EXTERIOR EMERGENCY FIXTURE

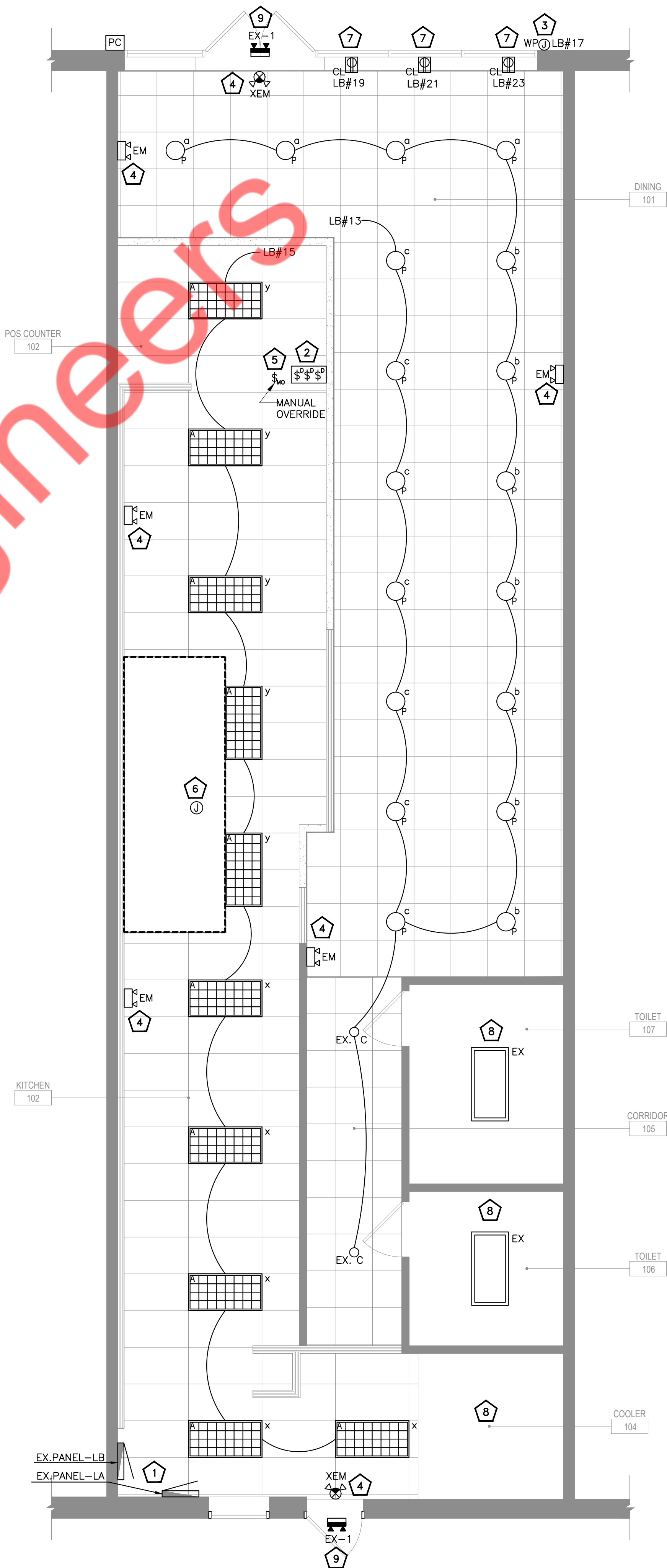


ELECTRICAL LIGHTING PLAN GENERAL NOTES:

ALL THE LIGHT FIXTURES MARKED AS "EX" ARE EXISTING.

ELECTRICAL LIGHTING PLAN KEYED WORK NOTES: #

1. EXISTING ELECTRICAL PANELS "LA" AND "LB" TO REMAIN. E.C. SHALL VERIFY THE LOCATION IN THE FIELD.
2. WALLBOX DIMMER SWITCH-PROVIDE COOPER - EATON SF10P-* OR EQUAL BY COOPER RATED FOR CONNECTED LOAD TYPE AND WATTAGE. SEE THE DIAGRAM ENTITLED "DIMMER ON ALL SWITCHES LEGS" FOR DETAIL.
3. PROVIDE DEDICATED CIRCUITS AND CONTROL FOR TENANT SIGNAGE. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT LOCATION & POWER REQUIREMENT OF THE EXTERIOR BUILDING SIGN WITH THE SIGN VENDOR. COORDINATE WITH ARCHITECT FOR EXACT MOUNTING HEIGHT
4. CONNECT ALL EMERGENCY EGRESS AND NIGHT LIGHTING FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES. EXIT SIGNS SHALL NOT EXCEED 5 WATTS PER FACE.
5. MANUAL OVERRIDE SWITCH FOR MANUAL CONTROL OF LIGHTING FIXTURES. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER FOR THE EXACT LOCATION OF THE SWITCH.
6. PROVIDE JUNCTION BOX ABOVE HOOD FOR HOOD LIGHTS. ALL THE LIGHTING FIXTURES LOCATED BELOW THE HOOD SHALL BE WIRED VIA THE KITCHEN HOOD CONTROL PANEL TO THE NEAREST LIGHTING CIRCUIT. COORDINATE WITH KITCHEN HOOD MANUFACTURER FOR DETAILS.
7. PROVIDE CEILING OUTLETS FOR SIGNAGE ON TOP OF THE STOREFRONT WINDOW.
8. LIGHTING FIXTURES IN EXISTING TOILETS AND WALK-IN COOLER AREA, ALONG WITH ITS CIRCUIT AND CONTROL TO REMAIN. E.C. SHALL VERIFY OPERABLE CONDITIONS IN FIELD. REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
9. WEATHERPROOF EMERGENCY LIGHT FIXTURE. E.C SHALL COORDINATE WITH ARCHITECT FOR FINAL FINISH & LOCATION.



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

SPACE INTENTIONALLY LEFT BLANK FOR CITY
APPROVAL / STAMPS

Architect

CIVIL ENGINEER

STRUCTURAL ENGINEER

LANDSCAPE COMPANY

MEP ENGINEER

NY ENGINEERS

DEVELOPER

PROJECT:

MICI ITALIAN
INTERIOR TENANT BUILD-OUT

Drawing Issue

Description	Date
FOR PERMIT	06/06/2022

Drawn By: NYE

Checked By: NYE

Sheet Title

ELECTRICAL LIGHTING
PLAN

Sheet No.

E1.0

Kolbrook
Job No.

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Consultant
Job No.

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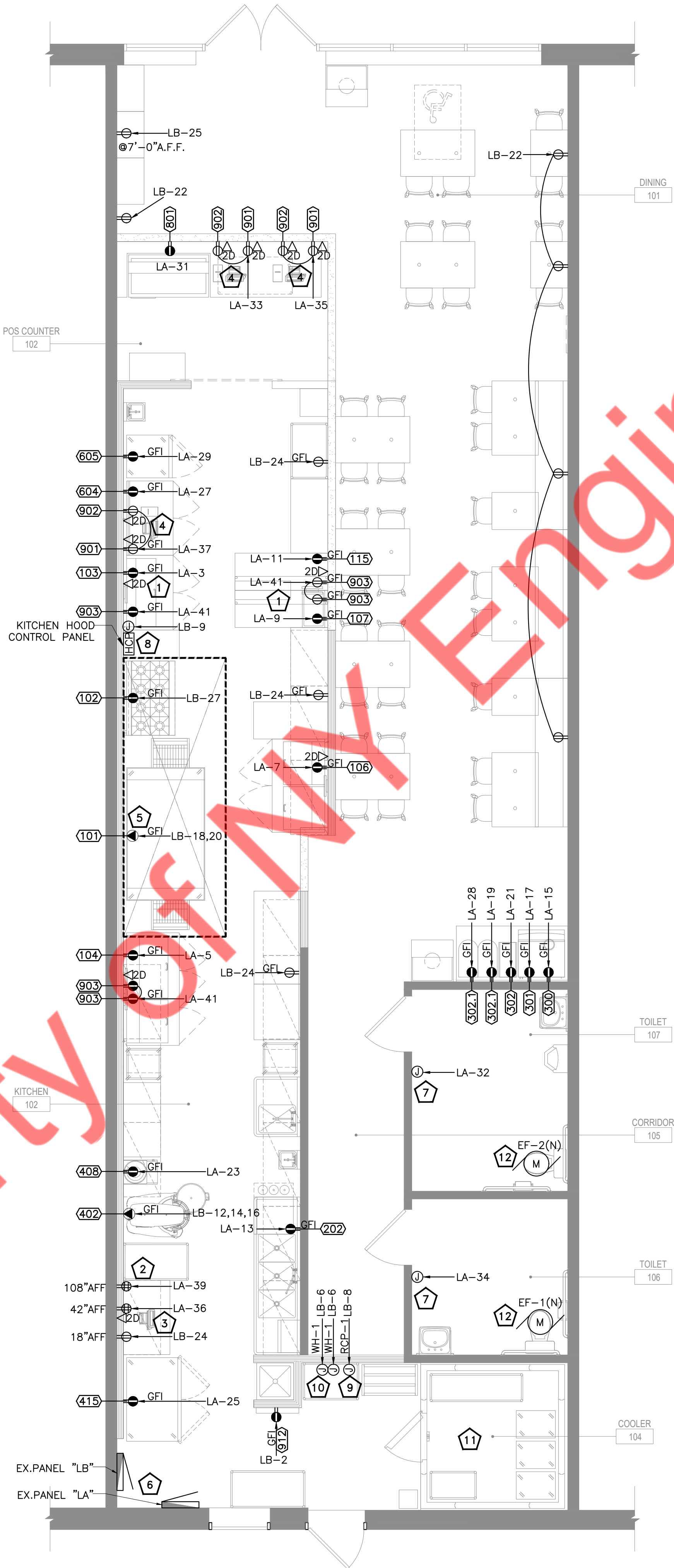
EQUIPMENT TAG & DISCRPTION	VOLTAGE	PHASE	AMPS	BREAKER	BRANCH CIRCUIT
101--PIZZA OVEN	208V	1Ø	10	20A/2P	2#12, 1#12G, 3/4"C
102--COUNTERTOP GAS RANGE	115V	1Ø	01	20A/1P	2#12, 1#12G, 3/4"C
103-- TWO SECTION PREP TABLE	115V	1Ø	2.8	20A/1P	2#12, 1#12G, 3/4"C
104-- TWO SECTION PREP TABLE	115V	1Ø	2.8	20A/1P	2#12, 1#12G, 3/4"C
106-- TWO SECTION PREP TABLE	115V	1Ø	2.8	20A/1P	2#12, 1#12G, 3/4"C
107-- COUNTER TOP HEATED WELL	115V	1Ø	12	20A/1P	2#12, 1#12G, 3/4"C
115--HEATED SELF	115V	1Ø	2.9	20A/1P	2#12, 1#12G, 3/4"C
202--WASHER	115V	1Ø	13.4	20A/1P	2#12, 1#12G, 3/4"C
300--SODA DISPENSER	115V	1Ø	5	20A/1P	2#12, 1#12G, 3/4"C
301--ICE MACHINE	115V	1Ø	13	20A/1P	2#12, 1#12G, 3/4"C
302--TEA DISPENSER	115V	1Ø	1.7	20A/1P	2#12, 1#12G, 3/4"C
302.1--TEA DISPENSER	115V	1Ø	1.8	20A/1P	2#12, 1#12G, 3/4"C
402--MIXER	208V	3Ø	10	20A/3P	3#12, 1#12G, 3/4"C
408--DOUGH ROUNDER	115V	1Ø	5	20A/1P	2#12, 1#12G, 3/4"C
415--REACH IN FREEZER	115V	1Ø	8.6	20A/1P	2#12, 1#12G, 3/4"C
604--UC REFRIGERATOR	115V	1Ø	2.3	20A/1P	2#12, 1#12G, 3/4"C
605--HOT HOLDING CABINET	115V	1Ø	16	20A/1P	2#12, 1#12G, 3/4"C
801--GELLATO DIPPER WELL	115V	1Ø	3.5	20A/1P	2#12, 1#12G, 3/4"C
912--BUG LITE - STICKY FOX	115V	1Ø	1.0	20A/1P	2#12, 1#12G, 3/4"C

POWER PLAN GENERAL NOTES:

- PROVIDE OUTLET WITHIN 25' OF EQUIPMENT IN ACCORDANCE WITH NEC 210-63 PROVIDE WEATHERPROOF GFI OUTLET ON ROOFTOPS WITHIN 25' OF ROOFTOP EQUIPMENT.
- FIELD VERIFY FINAL LOCATION OF ALL EQUIPMENT WITH PROVIDER PRIOR TO ROUGHIN.
- ALL RECEPTACLES IN BATHROOMS' KITCHENS, ROOFTOPS, OUTDOORS AND WITHIN 6' OF A SINK SHALL BE GFCI (OR SERVED BY A GFI CIRCUIT BREAKER) PER NEC 210.8(B). E.C. SHALL PROVIDE GFCI OUTLETS, OR CIRCUIT BREAKERS, IN ALL LOCATIONS REQUIRED BY THE NEC.
- ALL RECEPTACLES IN DWELLING UNITS, GUEST ROOMS, CHILD CARE FACILITIES, PRESCHOOLS AND ELEMENTARY SCHOOLS, OFFICES, CORRIDORS AND WAITING ROOMS IN CLINICS, MEDICAL AND DENTAL OFFICES AND OUTPATIENT FACILITIES, SUBSET OF ASSEMBLY OCCUPANCIES PER 518.2 TO INCLUDE WAITING TRANSPORTATION, GYMNASIUMS, SKATING RINKS AND AUDITORIUMS, DORMITORIES--(AS SPECIFIED BY ARTICLE 406.12 OF THE NEC) SHALL BE LISTED AS TAMPERY RESISTANT RECEPTACLES.
- PROVIDE CONNECTION TO TENANT SIGN, FIELD VERIFY ELECTRICAL REQUIREMENTS AND FINAL LOCATION WITH PROVIDER, TENANT AND LANDLORD. PROVIDE PHOTOCELL ON/TIMECLOCK OFF CONTROLS. PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION.
- NUMBERS NEXT TO DEVICES REFER TO CIRCUIT DESIGNATION IN UNIT PANEL UNLESS NOTED.
- ALL TELE/DATA LOCATIONS SHALL INCLUDE 4" SHARE J--BOX OF AND 3/4" CONDUIT TO CEILING SPACE. ALL TELEPHONE/DATA CABLE IS TO BE PLENUM RATED WIRE OR SHALL BE INSTALLED IN CONDUIT ABOVE CEILING OR IN WALLS.
- PROVIDE ALL DEMOLITION WORK AS REQUIRED TO ACCOMMODATE THE NEW WORK AS INDICATED ON THE ELECTRICAL PLANS. FIELD VERIFY EXISTING CONDITIONS. PROVIDE ANY ADDITIONAL WORK NECESSARY AS REQUIRED TO PRESERVE EXISTING DEVICES AND BRANCH CIRCUIT COMPONENTS TO REMAIN. REFER TO THE ARCHITECTURAL PLANS FOR DEMOLITION SCOPE OF WORK AND VISIT THE SITE PRIOR TO BID TO DETERMINE THE ELECTRICAL SCOPE OF WORK REQUIRED.
- #D NEXT TO DEVICES INDICATES NUMBER OF REQUIRED DATA PORT AT LOCATION. PROVIDE CAT5E CABLES TO HOME RUN TO PATCH PANEL AT ITB LOCATION. TERMINATE THE CABLE ENDS WITH STANDARD RJ45 IN DATA PLATE.

ELECTRICAL POWER PLAN KEYED NOTES:

- PROVIDE DUPLEX DEVICE RING, PULL STRING, AND COVER PLATE AT EACH END OF PASTA AND EXPO WITH GC VGA CONNECTION.
- TELEPHONE BOARD LOCATION (TTB) -- THE E.C. SHALL PROVIDE AND INSTALL 3/4" X 24" X 48" PLYWOOD BACKBOARD, INSTALL TIGHT TO CEILING AND PAINT TO MATCH WALL. PROVIDE 1"C WITH PULL STRING BACK TO THE BUILDING TELEPHONE/ DATA SERVICE ENTRANCE. PROVIDE DEDICATED NEMA 5.20R RECEPTACLE +84" AFF ON TTB AND CIRCUIT AS SHOWN. FIELD VERIFY LOCATION, MOUNTING HEIGHT AND ORIENTATION AND ADDITIONAL REQUIREMENTS WITH TENANT PRIOR TO BID OR ANY WORK.
- IT EQUIPMENT -- PROVIDE DEDICATED CIRCUIT WITH DEDICATED GROUND AND NEUTRAL CONDUCTOR. FIELD VERIFY FINAL LOCATION, MOUNTING HEIGHT, ELECTRICAL REQUIREMENTS WITH EQUIPMENT PROVIDER PRIOR TO ROUGH--IN.
- CASH WRAP/POS -- PROVIDE OUTLETS FOR POWER AND DATA IN MILLWORK AS REQUIRED. PROVIDE SEPARATE CIRCUIT WITH DEDICATED GROUND AND NEUTRAL CONDUCTOR. FIELD VERIFY CONDUIT ROUTING AND J--BOX LOCATIONS WITH MILLWORK PROVIDER AND TENANT PRIOR TO ANY ROUGH IN. FIELD VERIFY DATA J--BOX AND RACEWAY REQUIREMENTS WITH TENANT IT REPRESENTATIVE.
- PIZZA OVENS UNDER HOOD MUST BE CONNECTED WITH TWO WIRE CONTROL SYSTEM TO HOOD FIRE SUPPRESSION SYSTEM FOR SHUT--OFF OF THE OVENS. CONTROL WIRING CORDS TO BE PROVIDED BY MANUFACTURER AS PART OF ORDER. INSTALL PER MANUFACTURER REQUIREMENTS.
- EXISTING ELECTRICAL PANELS "LA" AND "LB" TO REMAIN. E.C. SHALL VERIFY LOCATION AND RATING OF PANEL IN FIELD.
- PROVIDE LOCKOUTS AT DISTRIBUTION PANEL FOR RESTROOM HAND DRYERS PER NEC 422.33.
- HOOD CONTROL PANEL (HCP) FOR KITCHEN. PANEL MUST BE INTEGRATED WITH HOOD SUPPRESSION SYSTEM. E.C. SHALL COORDINATE WITH KITCHEN HOOD MANUFACTURER FOR DETAILS RELATED TO ELECTRICAL CONNECTIONS AND CONTROL.
- ELECTRICAL POWER PROVISION FOR HOT WATER RECIRCULATION PUMP. E.C. SHALL COORDINATE WITH PLUMBING CONTACTOR FOR EXACT LOCATION POWER REQUIREMENT OF PUMP.
- ELECTRICAL POWER PROVISION FOR WATER HEATER. E.C. SHALL COORDINATE WITH PLUMBING CONTACTOR FOR EXACT LOCATION POWER REQUIREMENT OF HEATER.
- EXISTING WALK IN COOLER, ALONG WITH ITS ELECTRICAL CONNECTIONS SHALL REMAIN. E.C. SHALL VERIFY RATING AND OPERABLE CONDITION IN FIELD. RREPLACE IF INOPERABLE.
- EXHAUST FAN IN THE ROOM SHALL BE CIRCUITED AND COTROLLED ALONG WITH THE LIGHTING FIXTURES IN THE SAME ROOM.
- E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION AND POWER REQUIREMENTS OF MECHANICAL EQUIPMENTS. PROVIDE DISCONNECT AND FEEDER SIZE AS INDICATED ON THE DRAWING.



1 FLOOR POWER PLAN
SCALE: 1/4" = 1'-0"



2 ROOF POWER PLAN
SCALE: 1/4" = 1'-0"

SPACE INTENTIONALLY LEFT BLANK FOR CITY
APPROVAL / STAMPS

Architect
CIVIL ENGINEER
STRUCTURAL ENGINEER
LANDSCAPE COMPANY
MEP ENGINEER NY ENGINEERS
DEVELOPER

PROJECT:			<div>MICI ITALIAN</div> <div>INTERIOR TENANT BUILD-OUT</div>	
Drawing Issue				
Description		Date		
FOR PERMIT		06/06/2022		
Drawn By: NYE				
Checked By: NYE				
Sheet Title				
ELECTRICAL POWER PLAN				
Sheet No.				
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Kolbrook Job No.	0000.000	Consultant Job No.	-	

PART 1 - ELECTRICAL GENERAL PROVISIONS

1.1 RELATED DOCUMENTS

A. THE PROVISIONS OF THE INSTRUCTIONS TO BIDDERS, GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, ALTERNATES, ADDENDAS', AND DIVISION 1 ARE A PART OF THE CONTRACT. CONTRACTORS AND SUBCONTRACTORS SHALL EXAMINE SAME AS WELL AS OTHER DIVISIONS OF THE SPECIFICATIONS WHICH AFFECT WORK UNDER THIS DIVISION.

1.2 SUMMARY

A. THIS SECTION INCLUDES GENERAL ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS FOR ELECTRICAL INSTALLATIONS COMMON TO ALL SECTIONS OF DIVISION 16. THE ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS IN THIS SECTION EXPAND AND SUPPLEMENT THE REQUIREMENTS SPECIFIED IN DIVISION 1.

1.3 DESCRIPTION OF WORK

A. ELECTRICAL, ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, STRUCTURAL, ETC., AND ALL OTHER DRAWINGS AS WELL AS THE SPECIFICATIONS FOR ALL THE DIVISIONS ARE A PART OF THE CONTRACT DOCUMENTS.

B. DRAWINGS AND SPECIFICATIONS ARE TO BE CONSIDERED AS SUPPLEMENTING EACH OTHER. WORK SPECIFIED BUT NOT SHOWN, OR SHOWN BUT NOT SPECIFIED, SHALL BE PERFORMED OR FURNISHED AS THOUGH MENTIONED IN BOTH SPECIFICATIONS AND DRAWINGS.

C. VISIT THE SITE OF THE WORK AND BECOME FAMILIAR WITH CONDITIONS AFFECTING THE INSTALLATION. SUBMISSION OF A PROPOSAL SHALL PRESUPPOSE KNOWLEDGE OF SUCH CONDITIONS AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED WHERE EXTRA LABOR OR MATERIALS ARE REQUIRED BECAUSE OF IGNORANCE OF THESE CONDITIONS.

1.4 WORK INCLUDES

A. INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES, AND PERMITS NECESSARY FOR THE PROPER COMPLETION OF ALL ELECTRICAL WORK SHOWN. ITEMS OMITTED, BUT NECESSARY TO MAKE THE ELECTRICAL SYSTEM COMPLETE AND WORKABLE, SHALL BE UNDERSTOOD TO FORM PART OF THE WORK.

B. IT IS THE PURPOSE OF THE ELECTRICAL DRAWINGS TO INDICATE THE APPROXIMATE LOCATION OF ALL EQUIPMENT, OUTLETS, ETC., ASCERTAIN EXACT LOCATIONS AND ARRANGE WORK ACCORDINGLY. THE RIGHT IS RESERVED TO EFFECT REASONABLE CHANGES IN THE LOCATION OF OUTLETS UP TO THE TIME OF ROUGH-IN. WITHOUT ADDITIONAL COST TO THE OWNER. CHANGES IN LOCATION OF OUTLETS OR EQUIPMENT NECESSITATED BY INTERFERENCE WITH THE WORK OF OTHER TRADES SHALL BE MADE ONLY WITH THE CONSENT OF THE ARCHITECT AND ENGINEER OR OWNER'S REPRESENTATIVE, AND AT NO ADDITIONAL COST.

C. AS USED IN THIS SPECIFICATION, "PROVIDE" MEANS "TURNISH AND INSTALL" AND "HVC" MEANS "HEATING, VENTILATING AND AIR CONDITIONING" AND "POS" MEANS "PROVIDED UNDER OTHER SECTIONS". "TURNISH" MEANS "TO PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT," AND "INSTALL" MEANS "TO UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY FOR PROPER INSTALLATION PER CODES AND MANUFACTURERS REQUIREMENTS, TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT."

D. WORK INCLUDES, BUT IS NOT LIMITED TO:

1. RE-USE OF AND NEW PANELBOARDS AND CIRCUIT BREAKERS
2. FEEDERS AND BRANCH CIRCUIT WIRING
3. HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
4. ELECTRICAL IDENTIFICATION
5. CONDUCTORS AND CABLES
6. GROUNDING AND BONDING
7. RACEWAYS AND BOXES
8. WIRING DEVICES
9. LIGHTING CONTROL DEVICES
10. LUMINAIRES, INCLUDING LAMPS AND BALLASTS
11. RE-WORKING AND NEW DEVICES TO THE EXISTING FIRE ALARM SYSTEM
12. FIRE STOPPING
13. ELECTRICAL CONNECTIONS TO MECHANICAL HVAC AND PLUMBING EQUIPMENT
14. NAMEPLATES, LABELS, AND TAGS
15. COORDINATION DRAWINGS
16. SHOP DRAWINGS
17. OPERATION AND MAINTENANCE INSTRUCTIONS AND MANUALS
18. TESTING

E. THE ELECTRICAL DESIGN IS BASED ON THE CURRENT ADOPTED EDITION NFPA 70 - "THE NATIONAL ELECTRICAL CODE," THE CONTRACTOR SHALL INCLUDE IN THEIR BID THE COST OF INSTALLING MATERIALS AND EQUIPMENT NECESSARY TO SATISFY ALL LOCAL, AND/OR STATE CODES.

1.5 WORK OR MATERIALS NOT INCLUDED

A. THE EXACT WIRING REQUIREMENTS SHALL AS BE RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT AND SHALL BE VERIFIED BY THE ELECTRICAL CONTRACTOR WITH THE EQUIPMENT MANUFACTURER BEFORE SUBMITTING THE BID.

B. STARTERS SUPPLIED AS AN INTEGRAL PART OF THE EQUIPMENT SHALL BE FURNISHED UNDER THE DIVISION PROVIDING THE EQUIPMENT. POWER WIRING DISCONNECT SHALL BE UNDER DIVISION 16. ALL OTHER STARTERS AND AUXILIARY CONTROL EQUIPMENT SHALL BE SUPPLIED AND WIRED UNDER DIVISION 16, UNLESS OTHERWISE SHOWN.

1.6 RELATED WORK SPECIFIED ELSEWHERE

- A. DIVISION 13 - SPECIAL CONSTRUCTION
- B. DIVISION 15 - MECHANICAL

1.7 CODES, PERMITS, AND FEES

A. INSTALL WORK IN FULL ACCORDANCE WITH RULES AND REGULATIONS OF STATE, COUNTY, AND CITY AUTHORITIES HAVING JURISDICTION (HJ) OVER PREMISES. THIS SHALL INCLUDE SAFETY REQUIREMENTS OF THE STATE OF ILLINOIS DEPARTMENTS OF COMMERCE AND NATURAL RESOURCES. DO NOT CONSTRUCT THIS AS RELYING CONTRACTOR FROM COMPLIANCE WITH ANY REQUIREMENTS OF SPECIFICATION WHICH ARE IN EXCESS OF CODE REQUIREMENTS AND NOT IN CONFLICT THEREWITH. WORK SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL CODE, AS INTERPRETED BY THE LOCAL AUTHORITY HAVING JURISDICTION, AS WELL AS ANY FURTHER MODIFICATIONS OR REGULATIONS PUBLISHED BY LOCAL OR STATE AUTHORITIES.

B. GIVE PROPER AUTHORITIES NOTICE AS REQUIRED BY LAW RELATIVE TO THE WORK IN THEIR CHARGE. REARRANGING TEMPORARY OBSTRUCTIONS, OR EXCAVATIONS AND PAY ALL LEGAL FEES INVOLVED. COMPLY WITH THE REGULATIONS REGARDING TEMPORARY OBSTRUCTIONS, OR EXCAVATIONS AND PAY ALL LEGAL FEES INVOLVED.

C. SECURE AND PAY FOR PERMITS AND CERTIFICATES OF INSPECTIONS INCIDENTAL TO THIS WORK, AS REQUIRED BY ALL FOREGOING AUTHORITIES. BE RESPONSIBLE FOR PAYMENTS FOR ALL PUBLIC UTILITIES FOR WORK PERFORMED BY THEM IN CONNECTION WITH PROVISION OF SERVICE CONNECTIONS REQUIRED UNDER THIS DIVISION OF SPECIFICATIONS. TURN OVER CERTIFICATES OF APPROVAL TO THE CONSTRUCTION MANAGER AND/OR OWNER PROMPTLY WHEN RECEIVED, AND BEFORE PAYMENT IS MADE FOR THE WORK. DELIVER ALL CERTIFICATES TO ARCHITECT IN DUPLICATE.

D. PROVISIONS OF THE LATEST REVISIONS TO THE FOLLOWING CODES AND STANDARDS SHALL BE FOLLOWED WHERE APPLICABLE:

1. NFPA 70 - NATIONAL ELECTRIC CODE (NEC)
2. NFPA 101 - LIFE SAFETY CODE
3. IIA/EA - 568, 569, AND J-STD-607
4. AMERICANS WITH DISABILITIES ACT (ADA)
5. FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)

1.8 COORDINATION WITH OTHER TRADES

A. CONSULT THE DRAWINGS, PRODUCT DATA, AND SHOP DRAWINGS COVERING THE WORK FOR VARIOUS OTHER TRADES, THE FIELD LAYOUTS OF THE CONTRACTORS FOR THE TRADE AND MAKE ADJUSTMENTS ACCORDINGLY IN LAYING OUT THE ELECTRICAL WORK.

B. KEEP FULLY INFORMED OF THE PROGRESS OF THE GENERAL CONSTRUCTION. INSTALL WORK THAT IS TO BE CONCEALED WITHIN THE BUILDING CONSTRUCTION WITHOUT DELAY TO THE WORK OF OTHER TRADES. ALL CONDUIT, RACEWAYS, AND EQUIPMENT SHALL BE INSTALLED BEFORE THE OUTLET BOXES CONCEALED IN MASONRY CONSTRUCTION SHALL BE INSTALLED DURING WALL CONSTRUCTION. ATTEND TO ELECTRICAL WORK DURING THE PROGRESS OF BUILDING-IN TO PREVENT MISALIGNMENTS AND DAMAGES TO THE ELECTRICAL WORK.

C. EXAMINE THE WORK OF OTHER TRADES WHEN IT COMES IN CONTACT WITH, OR IS COVERED BY WORK IN THIS DIVISION. DO NOT ATTACH TO, COVER UP, OR FINISH AGAINST ANY DEFECTIVE WORK, OR INSTALL WORK IN A MANNER WHICH WILL PREVENT PROPER INSTALLATION OF THE WORK OF OTHER TRADES.

D. ALL OUTLETS, SWITCHES, AND RECEPTABLES SHALL BE CENTERED WITH REGARD TO PANELING, WALL COVERINGS, TRIM, EQUIPMENT, ETC., AND SHALL LINE UP WITH EITHER BOTTOM OR TOP OF MASONRY COURSES. CHANGES TO THE SPECIFIED MOUNTING HEIGHTS OF ANY DEVICE SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE BEFORE ROUGH-IN.

E. TAKE ALL FIELD MEASUREMENTS NECESSARY AND ASSUME RESPONSIBILITY FOR THEIR ACCURACY.

F. BEFORE BEGINNING CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE TO THE MECHANICAL CONTRACTOR, MARKED-UP PRINTS INDICATING ALL ELECTRICAL ITEMS WHICH AFFECT THE LOCATION OF HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, PIPING, AND DUCTWORK. THESE SHALL INCLUDE BUT NOT BE LIMITED TO PULL BOXES, CONDUIT, ETC.

1.9 EQUIPMENT AND MATERIALS

A. ALL EQUIPMENT, DEVICES, AND MATERIALS USED ON THIS PROJECT SHALL BE NEW AND U.L. LISTED AND LABELED FOR THE APPLICATION.

B. PROVIDE MATERIAL AND LABOR WHICH IS NEITHER DRAWN NOR SPECIFIED, BUT WHICH IS OBVIOUSLY A COMPONENT PART OF, AND NECESSARY TO COMPLETE WORK AND WHICH IS CUSTOMARILY A PART OF WORK OF SIMILAR CHARACTER.

C. EQUIPMENT AND MATERIALS FOR THE CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE PROTECTED BY SAME UNTIL FORMALLY ACCEPTED BY THE OWNER.

D. ALL MANUFACTURERS OF ELECTRICAL EQUIPMENT SHALL VERIFY TO THE SATISFACTION OF THE CONTRACTOR AND ENGINEER THAT THEIR EQUIPMENT WILL FUNCTION PROPERLY UNDER THE CONDITIONS OF USE, AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN. DIMENSIONS, WEIGHTS, OPERATING CHARACTERISTICS AND ALL OTHER RELATED APPURTENANCES SHALL BE VERIFIED BEFORE SUBMITTAL OF SHOP DRAWINGS.

1.10 MATERIAL SUBSTITUTIONS

A. BIDS SHALL BE BASED UPON THE SPECIFIED PRODUCTS OR LISTED ALTERNATES. DRAWINGS AND SPECIFICATIONS ARE BASED ON THE PRODUCTS SPECIFIED BY TYPE, MODEL, AND SIZE AND THESE ESTABLISH MINIMUM QUALITIES, WHICH SUBSTITUTES MUST MEET TO QUALIFY FOR REVIEW.

B. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS, EQUIPMENT, AND DEVICES, OTHER THAN THOSE SPECIFIED AND LISTED, THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR SUBSTITUTIONS, TO THE ENGINEER AT LEAST TEN (10) BUSINESS DAYS PRIOR TO BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID AND SHALL INCLUDE AND BE ACCOMPANIED WITH COMPLETE SPECIFICATIONS CUT SHEET SUBMITTAL, AS OUTLINED IN THIS SPECIFICATION SECTION, COMPLETE WITH DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. INDICATE ANY ADDITIONS OR DEDUCTIONS TO THE CONTRACT PRICE WITH THE SUBSTITUTION SUBMITTAL AND ON THE BID FORM.

C. ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO APPROVAL OF THE ARCHITECT AND ENGINEER. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT INSPECTION SAMPLES OF BOTH THE SPECIFIED AND THE PROPOSED SUBSTITUTE ITEMS.

D. IF ANY SUBSTITUTIONS ARE APPROVED, AN ADDENDUM LISTING THE APPROVED ITEM(S) WILL BE ISSUED TO ALL BIDDING CONTRACTORS PRIOR TO THE BID DATE.

E. IN ALL CASES WHERE SUBSTITUTIONS ARE PERMITTED, THE CONTRACTOR SHALL BEAR AN EXTRA COST OF EVALUATING THE EQUALITY OF THE MATERIAL AND EQUIPMENT TO BE INSTALLED.

F. WHERE ONLY ONE MAKE IS NAMED IN THE SPECIFICATIONS OR ON THE DRAWINGS, IT SHALL BE PROVIDED.

G. VERBAL REQUESTS OR APPROVALS SHALL NOT BE BINDING ON THE ENGINEER OR OWNER.

1.11 QUALITY ASSURANCE

A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: UNDERWRITER LABORATORIES, INC. (UL) LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.

1.12 SUBMITTALS

A. SHOP DRAWINGS AND PRODUCT DATA

1. PREPARE SHOP DRAWINGS AND PRODUCT DATA FOR ELECTRICAL EQUIPMENT WITH ADEQUATE DETAILS AND SCALES AS NECESSARY TO CORRELATE WITH THE CONTRACT DOCUMENTS. INDICATE OPERATING CHARACTERISTICS FOR EACH REQUIRED ITEM AND DESIGN CONDITIONS FOR EACH. CLEARLY IDENTIFY EACH ITEM ON THE DRAWINGS AS TO MARK, LOCATION, AND USE.

2. THIS CONTRACTOR SHALL REVIEW, STAMP WITH APPROVAL AND SUBMIT, WITH REASONABLE PROMPTNESS AND IN ORDERLY SEQUENCE SO AS TO CAUSE NO DELAY IN WORK OR IN THE WORK OF ANY OTHER CONTRACTOR, ALL SHOP DRAWINGS AND SAMPLES REQUIRED BY THE CONTRACT DOCUMENTS. SHOP DRAWINGS NOT STAMPED WITH CONTRACTOR APPROVAL WILL BE RETURNED FOR REPROCESSING. THE SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE AND NOT FOR DIMENSIONS, QUANTITIES, ETC.

3. IF THE SUBMITTAL SHOWS VARIATIONS FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS FOR ANY REASON, THE CONTRACTOR SHALL MAKE MENTION OF SUCH VARIATION IN A LETTER OF TRANSMITTAL. THE CONTRACTOR SHALL NOTE IN RED ON THE SUBMITTAL ANY CHANGE IN DESIGN OR DIMENSION ON THE ITEMS SUBMITTED INCLUDING CHANGES MADE BY THE MANUFACTURER WHICH MAY DIFFER FROM CATALOG INFORMATION.

4. CONTRACTOR FURTHER AGREES THAT IF DEViations, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWING SUBMITTALS AND THE CONTRACT DOCUMENTS IN THE FORM OF DESIGN DRAWING AND SPECIFICATIONS ARE DISCOVERED, EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS, AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED.

5. THE SUBMITTALS THAT ARE RETURNED SHALL BE USED FOR PROCUREMENT. THE RESPONSIBILITY OF CORRECT PROCUREMENT REMAINS SOLELY WITH THE CONTRACTOR. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR OMISSIONS AND DEVIATIONS FROM THE CONTRACT REQUIREMENTS.

6. IN CHECKING SHOP DRAWINGS, THE ARCHITECT AND ENGINEER WILL MAKE EVERY EFFORT TO DETECT AND CORRECT ERRORS, OMISSIONS, AND INACCURACIES IN SUCH DRAWINGS. HOWEVER, FAILURE TO DETECT ERRORS, OMISSIONS, AND INACCURACIES SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR THE PROPER AND COMPLETE INSTALLATION IN ACCORDANCE WITH THE INTENT OF THE CONTRACT DOCUMENTS.

7. CONTRACTOR AGREES THAT SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS; THAT THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN, THAT THEY DEMONSTRATE THEIR UNDERSTANDING BY INDICATING WHICH EQUIPMENT AND MATERIAL THEY INTEND TO FURNISH AND THAT THEY HAVE REVIEWED THE DESIGN AND SPECIFICATIONS AND BY DETAILING THE FABRICATION AND INSTALLATION METHODS THEY INTEND TO USE.

8. SHOP DRAWINGS SHALL CLEARLY INDICATE ALL DIMENSIONAL DATA FOR ALL PARTS OF THE ITEM, TYPES AND MATERIALS FOR ALL CONNECTIONS, FINISHES, THE EXACT RELATION OF THE ITEM TO ADJACENT MATERIALS AND EQUIPMENT IN THE COMPLETED STRUCTURE INCLUDING CLEARANCE, ANY NECESSARY ISOLATION AND FASTENING METHODS AND DEVICES AND MECHANICAL AND ELECTRICAL CONNECTIONS.

9. SUBMIT NEWLY PREPARED INFORMATION, DRAWN TO ACCURATE SCALE, HIGHLIGHT, ENCLOSE, OR OTHERWISE INDICATE DEVIATIONS FROM THE CONTRACT DOCUMENTS. DO NOT REPRODUCE CONTRACT DOCUMENTS OR COPY STANDARD INFORMATION AS THE BASIS OF SHOP DRAWINGS. STANDARD INFORMATION PREPARED WITHOUT SPECIFIC REFERENCE TO THE PROJECT IS NOT CONSIDERED SHOP DRAWINGS AND WILL BE CAUSE FOR REJECTION.

10. SHOP DRAWINGS AND PRODUCT DATA SHALL BE SUBMITTED AS FOLLOWS:

a. CONFORM TO SUBMITTAL REQUIREMENTS OUTLINED IN DIVISION 1 OF THESE SPECIFICATIONS.

b. WHERE CONTENTS OF SUBMITTAL LITERATURE INCLUDE DATA NOT PERTINENT TO THE SUBMITTAL, CLEARLY INDICATE WHICH PORTION OF CONTENT IS BEING SUBMITTED FOR REVIEW.

11. SHOP DRAWINGS SHALL INCLUDE FABRICATION AND INSTALLATION DRAWINGS, SETTING DIAGRAMS, SCHEDULES, PATTERNS, TEMPLATES AND SIMILAR DRAWINGS. ALSO, INCLUDE THE FOLLOWING INFORMATION:

- a. DIMENSIONS.
- b. IDENTIFICATION OF PRODUCTS AND MATERIALS INCLUDING:
- c. COMPLIANCE WITH SPECIFIED STANDARDS.
- d. NOTATION OF COORDINATION REQUIREMENTS.
- e. NOTATION OF DIMENSIONS ESTABLISHED BY FIELD MEASUREMENT.

12. WHERE ADDITIONAL INSTALLATION DRAWINGS, WIRING DIAGRAMS OR OTHER DRAWINGS ARE SPECIFIED AS A PART OF THE SUBMITTAL, THEY SHALL BE SUBMITTED AT THE SAME TIME WITH SHOP DRAWINGS AND PRODUCT DATA. PARTIAL SUBMITTALS ARE NOT ACCEPTABLE.

13. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL MATERIAL ITEMS AS OUTLINED IN THESE SPECIFICATIONS. ANY DEVIATIONS FROM CONTRACT REQUIREMENTS MUST BE CLEARLY INDICATED ON SHOP DRAWINGS AND JUSTIFICATION FOR THEIR CONSIDERATION MUST BE INCLUDED.

14. APPROVAL OF SUBMITTAL ITEMS SHALL NOT PRECLUDE REJECTION OF THOSE ITEMS UPON DISCOVERY OF DEFECTS IN THEIR PRIOR TO FINAL ACCEPTANCE OF COMPLETE WORK.

15. WHEN TWO OR MORE ITEMS OF THE SAME EQUIPMENT ARE REQUIRED (I.E. - LUMINAIRES, WIRING DEVICES, ETC.), EQUIPMENT ITEMS SHALL BE OF THE SAME MANUFACTURE.

16. SUBMIT A MINIMUM OF SIX (6) COPIES OF SHOP DRAWINGS TO THE ARCHITECT. THE ARCHITECT AND ENGINEER SHALL EACH RETAIN ONE (1) COPY AND RETURN THE REMAINDER TO THE CONTRACTOR WHO SHALL DISTRIBUTE COPIES AS REQUIRED TO PROPERLY CONDUCT THE WORK, INCLUDING REQUIREMENTS OF THE OPERATING MANUAL.

17. SHOP DRAWINGS AND PRODUCT DATA INCLUDES:

- a. WIRING DEVICES
 - b. LIGHTING CONTROL DEVICES
 - c. LUMINAIRES, LAMPS, AND BALLASTS
 - d. FIRE ALARM DEVICES AND SYSTEMS
18. THE CONTRACTOR SHALL MODIFY OR REVISE THE DRAWINGS DESIGNED AND STAMPED BY A STATE CERTIFIED FIRE ALARM SYSTEM DESIGNER, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- i. BATTERY CALCULATIONS
- ii. FLOOR PLANS INDICATING LOCATION OF ALL FIRE ALARM DEVICES.
- iii. VOLTAGE DROP CALCULATIONS FOR ALL WIRING AND WIRE TYPES.
- iv. MANUFACTURER MODEL NUMBER AND LISTING INFORMATION FOR ALL DEVICES AND WIRING BEING PROVIDED.
- v. LOCATION OF ALL REQUIRED SYNCHRONIZATION UNITS IF REQUIRED.
- vi. POWER EXTENDER PANELS, ADDRESSABLE MODULES, ETC.

B. DESIGN DRAWINGS

1. THE DESIGN DRAWINGS, AS SUBMITTED, ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW EXACT LOCATION OF EQUIPMENT, CONDUITS, ETC., NOR ARE THEY TO BE SCALED. ANY DEVIATIONS FROM THE DESIGN SHALL BE INSTALLED ALONG WITH THE DESIGN DRAWINGS SHOWN ON THE DRAWINGS, BUT KEEPING IN MIND ACTUAL BUILDING CONDITIONS WHICH MUST BE CONFERRED WITHIN THE ACTUAL WORK.

2. IF THIS CONTRACTOR PROPOSES TO INSTALL EQUIPMENT REQUIRING SPACE CONDITIONS OTHER THAN THOSE AS SPECIFIED AND/OR SHOWN ON THE DESIGN DRAWINGS, OR TO REARRANGE THE EQUIPMENT, HE SHALL ASSUME FULL RESPONSIBILITY FOR THE REARRANGEMENT OF THE SPACE AND SHALL OBTAIN THE FULL APPROVAL OF THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

C. COORDINATION DRAWINGS

1. BEFORE BEGINNING CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE TO THE MECHANICAL CONTRACTOR MARKED UP PRINTS INDICATING ALL ELECTRICAL WORK WHICH AFFECTS LOCATION OF HEATING, VENTILATING, AIR CONDITIONING, PLUMBING PIPING, FIRE PROTECTION, AND DUCTWORK. REFER TO DIVISION 1 AND DIVISION 15 FOR RELATED WORK.

2. COORDINATION DRAWINGS: REFLECTED CEILING PLANS DRAWN TO SCALE AND COORDINATING PENETRATIONS AND CEILING-MOUNTED ITEMS. SHOW THE FOLLOWING:

- a. CEILING SUSPENSION ASSEMBLY MEMBERS.
- b. METHOD OF ATTACHING HANGERS TO BUILDING STRUCTURE.
- c. CEILING-MOUNTED ITEMS INCLUDING LIGHTING FIXTURES, EXIT SIGNAGE, FIRE ALARM DEVICES, CCTV, SPEAKERS, ACCESS PANELS, ETC.

D. RECORD DRAWINGS

1. EACH CONTRACTOR OR SUBCONTRACTOR FOR ELECTRICAL WORK SHALL KEEP ONE COMPLETE SET OF THE CONTRACT WORKING DRAWINGS ON THE PROJECT SITE ON WHICH THEY SHALL RECORD ANY DEVIATIONS OR CHANGES FROM SUCH CONTRACT DRAWINGS MADE DURING CONSTRUCTION. THESE CHANGES SHALL BE ACCURATELY RECORDED IN RED INK ON THE PRINTS. RECORD DRAWINGS SHALL SHOW CHANGES IN:

- a. SIZE, TYPE, CAPACITY, ETC. OF ANY MATERIAL, DEVICE, OR PIECE OF EQUIPMENT.
- b. LOCATION OF ANY DEVICE OR PIECE OF EQUIPMENT.
- c. LOCATION OF ANY OUTLET OR DEVICE AND ASSOCIATED WIRING.
- d. ROUTING OF FEEDER CONDUITS.
- e. BRANCH CIRCUIT NUMBER ASSIGNMENTS.

2. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UN Damaged, AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS.

3. AFTER THE PROJECT IS COMPLETED, RECORD SETS OF DRAWINGS SHALL BE DELIVERED TO THE TENANT AND BUILDING MANAGEMENT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS CONSTRUCTED. ALL COSTS FOR PRODUCTION, PRINTING, ETC. SHALL BE BORNE BY THE CONTRACTOR AND SHALL BE INCLUDED IN THE BID.

REFER TO DIVISION 1 SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS RELATED TO RECORD DRAWINGS.

5. THIS CONTRACTOR SHALL RECORD ALL CHANGES FROM ORIGINAL DESIGN DRAWINGS WHICH WERE THE INSTALLATION OF THE WORK. THESE CHANGES SHALL BE RECORDED IN RED INK ON THE PRINTS. CHANGES SHALL BE ACCURATELY DIMENSIONED.

6. THIS CONTRACTOR SHALL KEEP AN UPDATED SET OF PRINTS, INCLUDING CHANGES, ON THE JOB SITE AT ALL TIMES AND SHALL SUBMIT ONE (1) SET OF UPDATED AND LEGIBLE "AS-BUILT" PRINTS TO THE ARCHITECT WHEN THE WORK IS COMPLETE.

7. PREPARE RECORD DOCUMENTS IN ACCORDANCE WITH THE REQUIREMENTS IN DIVISION 1 SECTION "PROJECT CLOSURE."

8. IN ADDITION TO THE REQUIREMENTS SPECIFIED IN DIVISION 1, INDICATE THE FOLLOWING INSTALLED CONDITIONS (ACCURATELY DIMENSIONED):

- a. CONCEALED EQUIPMENT, UNITS, DEVICES, ETC., REQUIRING PERIODIC MAINTENANCE OR REPAIR.
- b. APPROVED SUBSTITUTIONS, CONTRACT MODIFICATIONS AND ACTUAL EQUIPMENT AND MATERIALS INSTALLED. EQUIPMENT LOCATIONS (EXPOSED AND CONCEALED), DIMENSIONED FROM PROMINENT BUILDING LINES.

1.13 OPERATING/MAINTENANCE MANUALS

A. PREPARE FOUR (4) COMPLETE BOUND SETS OF OPERATING/MAINTENANCE MANUALS IN ACCORDANCE WITH DIVISION 1 SECTION "PROJECT CLOSURE," CONTAINING OPERATING AND MAINTENANCE INSTRUCTIONS, AND MANUFACTURER START-UP REPORTS FOR ALL ELECTRICAL EQUIPMENT AND CONTROLS.

B. SERVICE MANUALS SHALL BE ASSEMBLED INTO ONE VINYL COVERED THREE RING D TYPE BINDER WITH HARD COVER AND WITH WRITTEN INSTRUCTIONS FOR EACH SYSTEM LISTED IN THE SPECIFICATIONS.

C. WRITTEN OPERATING INSTRUCTIONS, SUBMITTAL DRAWINGS, WIRING DIAGRAMS, EQUIPMENT CATALOG DATA SHEETS AND MANUFACTURER'S INSTRUCTIONS SHALL BE ACCOMMODATED INTO 8-1/2" x 11" AND/OR 11" x 17" SIZE. EACH SECTION SHALL BE TABULATED AND INDEXED AS FOLLOWS:

1. FIRST PAGE ---- TITLE OF PROJECT, OWNER, ADDRESS, DATE OF SUBMITTAL, NAME OF CONTRACTOR, AND NAME OF ARCHITECT AND ENGINEER.
2. SECOND PAGE ---- INDEX

3. FIRST SECTION ---- WRITTEN DESCRIPTION OF SYSTEM CONTENTS WHERE ACTUALLY LOCATED IN BUILDING, HOW EACH PART FUNCTIONS INDIVIDUALLY, AND HOW SYSTEM WORKS AS A WHOLE. CONCLUDE WITH A LIST OF ITEMS REQUIRING SERVICE AND EITHER STATE THE SERVICE NEEDED OR REFER TO THE MANUFACTURER'S DATA IN THE BINDER THAT DESCRIBES THE PROPER SERVICE.

4. SECOND SECTION ---- A COPY OF EACH SUBMITTAL DRAWING WITH AN INDEX AT THE BEGINNING OF THE SECTION.

5. THIRD SECTION ---- A COPY OF EACH MANUFACTURER'S OPERATING INSTRUCTIONS WITH AN INDEX AT THE BEGINNING OF THE SECTION, AND A COPY OF EACH MANUFACTURER'S START UP REPORT FOR (FIRE ALARM, ETC.)

6. FOURTH SECTION ---- A COPY OF ALL TEST RESULTS, IN CHART FORM, PERFORMED BY THE CONTRACTOR

7. FIFTH SECTION ---- COPIES OF ALL WARRANTIES, APPROVALS, ETC.

D. SUBMIT ONE (1) COPY TO THE ENGINEER FOR APPROVAL. AFTER APPROVAL, SUBMIT THREE (3) COPIES TO THE ARCHITECT FOR DELIVERY TO THE OWNER.

1.14 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. DELIVER PRODUCTS TO THE PROJECT PROPERLY IDENTIFIED WITH NAMES, MODEL NUMBERS, TYPES, COMPLIANCE LABELS AND SIMILAR INFORMATION NEEDED FOR IDENTIFICATION. MATERIALS MUST BE ADEQUATELY PACKAGED OR PROTECTED TO PREVENT DETEIORATION DURING SHIPMENT, STORAGE AND HANDLING.

B. THE CONTRACTOR SHALL MAKE PROVISIONS FOR THE DELIVERY AND SAFE STORAGE OF HIS MATERIALS AND EQUIPMENT IN COORDINATION WITH THE WORK OF OTHERS. MATERIALS AND EQUIPMENT SHALL BE DELIVERED AT SUCH STAGES OF THE WORK AS WILL EXPEDITE THE WORK AS A WHOLE AND SHALL BE MARKED AND STORED IN SUCH A WAY AS TO BE EASILY CHECKED AND INSPECTED. THE ARRIVAL AND PLACING OF LARGE EQUIPMENT ITEMS SHALL BE SCHEDULED EARLY ENOUGH TO PERMIT ENTRY AND SETTING WHEN THERE IS NO RESTRICTION OR PROBLEM DUE TO SIZE AND WEIGHT.

C. MATERIALS SHALL BE STORED TO PROTECT THEM FROM INJURY PRIOR TO INSTALLATION. MATERIAL SHOULD NOT BE STORED DIRECTLY ON THE GROUND OR FLOOR AND SHALL BE KEPT AS CLEAN AND DRY AS POSSIBLE AND FREE FROM DAMAGE OR DETEIORATING ELEMENTS.

D. IN GENERAL, DO NOT DELIVER ITEMS OF ELECTRICAL EQUIPMENT TO THE PROJECT SUBSTANTIALLY BEFORE THE TIME OF INSTALLATION. LIMIT EACH SHIPMENT OF BULK AND MULTIPLE-USE MATERIALS TO THE QUANTITIES NEEDED FOR INSTALLATION WITHIN 3-WEEKS OF RECEIPT.

1.15 PROTECTION OF WORK AND PROPERTY

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING WORK, PROPERTY, AND FACILITIES AGAINST DAMAGE, BOTH HIS OWN AS WELL AS OTHERS, WITH WHICH HE MAY COME INTO CONTACT IN THE PERFORMANCE OF HIS WORK.

B. STORED MATERIALS SHALL BE PROTECTED AGAINST DAMAGE FROM WEATHER. PIPE AND DUCT OPENINGS SHALL BE CLOSED WITH CAPS OR PLUGS DURING INSTALLATION. ALL FIXTURES AND EQUIPMENT SHALL BE COVERED AND PROTECTED AGAINST DAMAGE. ANY MATERIALS OR EQUIPMENT DAMAGED BY THE CONTRACTOR SHALL BE REPLACED OR REPAIRED AND AT THE FINAL COMPLETION, ALL WORK SHALL BE IN A CLEAN, UNBLESHEISHED CONDITION.

C. FURNISH INFORMATION TO GENERAL CONTRACTOR AS TO SIZE AND LOCATION OF ALL BUILT-IN OPENINGS REQUIRED. DO NOT CUT, REMOVE OR PIERCE: GENERAL OR MECHANICAL INSULATION; FIRE RATED WALLS OR CEILINGS; OR STEEL WORK; WITHOUT PRIOR PERMISSION AND INSTRUCTION.

1.16 CUTTING AND PATCHING

A. GENERAL: ALL CUTTING AND PATCHING FOR THE INSTALLATION OF THIS BRANCH OF THE WORK SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.

B. PERFORM CUTTING AND PATCHING IN ACCORDANCE WITH DIVISION 1 SECTION "PROCEDURES, SEPARATE PRIMES." IN ADDITION TO THE REQUIREMENTS SPECIFIED IN DIVISION 1, PERFORM CUTTING, FITTING AND PATCHING OF MECHANICAL EQUIPMENT AND MATERIALS REQUIRED TO:

1. INSTALL NEW WORK.
2. UNCOVER WORK TO PROVIDE FOR INSTALLATION OF ALL-TIMED WORK.
3. REMOVE AND REPLACE DEFECTIVE WORK.
4. REMOVE AND REPLACE WORK NOT CONFORMING TO REQUIREMENTS OF THE CONTRACT DOCUMENTS.
5. INSTALL EQUIPMENT AND MATERIALS IN EXISTING STRUCTURE.
6. UPON WRITTEN INSTRUCTIONS FROM THE ENGINEER, UNCOVER AND RESTORE WORK TO PROVIDE FOR ENGINEER OBSERVATION OF CONCEALED WORK.
7. CUT, REMOVE AND LEGALLY DISPOSE OF SELECTED ELECTRICAL EQUIPMENT, COMPONENTS AND MATERIALS AS INDICATED, INCLUDING BUT NOT LIMITED TO REMOVAL OF CONDUITS AND CONDUCTORS, JUNCTION BOXES, LUMINAIRES AND TRIM, AND OTHER ELECTRICAL ITEMS MADE OBSOLETE BY THE NEW WORK.

C. PROTECTION OF INSTALLED WORK: DURING CUTTING AND PATCHING OPERATIONS, PROTECT ADJACENT INSTALLATIONS.

D. PROVIDE AND MAINTAIN TEMPORARY PARTITIONS OR DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT AREAS.

E. ALL OPENINGS REQUIRED FOR THIS BRANCH OF WORK SHALL BE ACCOMPLISHED IN TIME TO BE INCORPORATED IN, AND BE COMPATIBLE WITH THE CONSTRUCTION PROGRAM, OTHERWISE THIS CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR ALL CHARGES MADE NECESSARY FOR THE RATINGS TO DO SO. PIPE HOLES IN FLOORS AND WALLS SHALL BE CORE DRILLED.

F. PATCH EXISTING FINISHED SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS MATCHING EXISTING MATERIALS AND EXPERIENCED INSTALLERS. FOR INSTALLERS' QUALIFICATIONS, REFER TO THE MATERIALS AND METHODS REQUIRED FOR THE SURFACE AND BUILDING COMPONENTS BEING PATCHED.

1.17 FIRE STOPPING

A. ANY CORE DRILLING OR CUTTING OF FIRE RATED FLOORS, SHAFTS AND WALLS SHALL BE FIRE STOPPED PRIOR TO FINISH PATCHING. ALL FIRE STOPPING MATERIALS SHALL BE U.L. "CLASSIFIED" INTUBING COMPOUND, DEVICE, OR SHEET RATED TO FUNCTION FOR THIS PURPOSE. ACCORDING TO INSTRUCTIONS PROVIDED, ALL PENETRATIONS IN 1-HOUR, 2-HOUR, AND 3-HOUR FIRE RATED WALLS, FLOORS OR PARTITION ASSEMBLIES SHALL BE SEALED WITH 3M BRAND FIRE BARRIER CAULK, CP-25, OR COMPOSITE SHEET CS-195, OR EQUIVALENT. ALL PENETRATIONS SHALL BE SEALED IN ACCORDANCE WITH UL FIRE RESISTANCE VOLUME II.

1. CAULK 8-25 FILL MATERIAL TO COMPLETELY FILL THE ANNULAR SPACE BETWEEN THE INDIVIDUAL CONDUIT AND GYPSUM WALLBOARD WITH A MINIMUM 3/4" DIAMETER READ OF CAULK APPLIED TO THE PERIMETER OF CONDUIT (UL SYSTEM WL1001).

2. MULTIPLE CONDUITS SHALL BE CONTAINED WITHIN A 28 GAUGE STEEL SLEEVE. CAULK CP-25 FILL MATERIAL TO A DEPTH OF 1" COMPLETELY AROUND THE STEEL SLEEVE. A MINIMUM 3/4" DIAMETER READ SHALL BE APPLIED ON BOTH SIDES OF WALL ASSEMBLY. A MINIMUM 1" THICKNESS OF MINERAL WOOL BATT INSULATION SHALL BE PACKED FIRMLY INTO THE STEEL SLEEVE ON BOTH SIDES OF WALL ASSEMBLY AS A PERMANENT FORM. PACKING MATERIAL SHALL BE RECESSED 5/8" FROM SURFACE OF WALL ON BOTH SIDES OF WALL ASSEMBLY. FILL RECESSED CAVITY WITH 1" OF CP-25 CAULK (UL SYSTEM WL1010).

3. A MINIMUM 1" THICKNESS OF MINERAL WOOL BATT INSULATION SHALL BE PACKED FIRMLY INTO THE MAXIMUM 2" ANNULAR SPACE AS A PERMANENT FORM. A MINIMUM OF 1" OF CP-25 CAULK SHALL FILL THE RECESSED CAVITY, (FOR WALLS, THIS SHALL BE APPLIED ON BOTH SIDES OF THE WALL) (UL SYSTEM CA1044).

4. COORDINATE WITH THE ARCHITECT FOR ALL EXACT MATERIAL AND RATINGS AND EXACT DETAILS FOR FIRE STOPPING MATERIALS AND INSTALLATIONS PER ALL NFPA AND UL REQUIREMENTS.

1.18 INTERFERENCES

A. BEFORE INSTALLING ANY WORK, THIS CONTRACTOR SHALL SEE THAT IT DOES NOT INTERFERE WITH CLEARANCE REQUIRED FOR LIGHTS, CONDUIT, AND CEILINGS AND FOR FINISH ON BEAMS, COLUMNS, PLASTERS, WALLS OR OTHER STRUCTURAL OR ARCHITECTURAL MEMBERS, AS SHOWN ON CONTRACT DRAWINGS. IF ANY WORK IS SO INSTALLED AND IF LATER DEVELOPS THAT ORIGINAL DESIGN CANNOT BE FOLLOWED, THIS CONTRACTOR SHALL, AT HIS OWN EXPENSE, MAKE SUCH CHANGES IN HIS WORK AS ARCHITECT MAY DIRECT TO PERMIT COMPLETION OF WORK IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.

B. INSTALL ADDITIONAL OFFSETS ON PIPING OR DUCTWORK WHERE REQUIRED TO OBTAIN MAXIMUM HEADROOM OR TO AVOID CONFLICT WITH OTHER WORK WITHOUT ADDITIONAL COST TO OWNER.

1.19 INTERRUPTION OF SERVICE

A. WHEN WORK PROGRESS MAKES TEMPORARY SHUTDOWN OF SERVICES UNAVOIDABLE, SHUTDOWN SHALL BE COORDINATED WITH AND APPROVED BY OWNER SO AS TO CAUSE MINIMUM DISRUPTION TO ESTABLISHED OPERATING ROUTINE. ARRANGE TO WORK AS NECESSARY TO RE-ESTABLISH SERVICE WITHIN THE SHORTEST POSSIBLE DOWNTIME. IN THOSE INSTANCES WHERE THE LENGTH OF TIME REQUIRED FOR THE SERVICE INTERRUPTION IS NOT ACCEPTABLE TO THE OWNER, UNLESS OTHERWISE INDICATED, FURNISH AND INSTALL TEMPORARY CONNECTIONS AS REQUIRED TO REDUCE THE LENGTH OF TIME OF SERVICE INTERRUPTION TO AN ACCEPTABLE LEVEL.

1.20 WORKMANSHIP

A. WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE BEST PRACTICES OF THE TRADE AND IN A WORK LIKE MANNER AND SHALL NEAT AND RECTILINEAR TO FINISHES.

B. ELECTRICAL WORK SHALL BE INSTALLED BY JOURNEMEN ELECTRICIANS UNDER THE SUPERVISION OF A COMPETENT FOREMAN.

INSTALLATION

- A. WIRING DEVICES AND WALL PLATES
1. SINGLE AND COMBINATION TYPES TO MATCH CORRESPONDING WIRING DEVICES.
 - a. SMOOTH HIGH-IMPACT THERMOPLASTIC MATERIAL FOR FINISHED SPACES;
 - b. GALVANIZED STEEL MATERIAL FOR UNFINISHED SPACES;
 - c. VOICE/DATA JACKS SHALL UTILIZE THE SAME TYPE OF PLATE USED FOR RECEPTACLES
 - d. DEVICES PLATES SHALL BE BY THE SAME MANUFACTURER AS THE WIRING DEVICE.
 - e. DEVICE/PLATE COLOR SELECTED BY ARCHITECT.
 - B. RECEPTACLE ORIENTATION:
 1. INSTALL GROUND PIN OF VERTICALLY MOUNTED RECEPTACLES UP AND ON HORIZONTALLY MOUNTED RECEPTACLES TO THE RIGHT.
 - C. DO NOT USE OVERSIZED OR EXTRA-DEEP PLATES. REPAIR WALL FINISHES AND REMOUNT OUTLET BOXES WHEN STANDARD DEVICE PLATES DO NOT FIT FLUSH OR DO NOT COVER ROUGH WALL OPENING.
 - D. ARRANGEMENT OF DEVICES: UNLESS OTHERWISE INDICATED, MOUNT FLUSH, WITH LONG DIMENSION VERTICAL GROUP ADJACENT SWITCHES UNDER A SINGLE, MULTI-GANG WALL PLATE.

2.8 WIRING DEVICE PLATES

- A. PROVIDE TYPE AND COLOR AS DIRECTED BY ARCHITECT.
- B. VOICE/DATA OUTLET PLATES SHALL BE SAME AS USED FOR RECEPTACLES.
- C. DEVICE PLATES SHALL BE BY MANUFACTURER OF WIRING DEVICES.
- D. OUTLETS SHALL BE FLUSH TO SURFACE.

2.9 LUMINAIRES

- A. PROVIDE LUMINAIRES, EQUIPMENT, AND COMPONENTS WHERE SHOWN ON DRAWINGS, AS LISTED IN LUMINAIRE SCHEDULE, AND AS SPECIFIED, WIRED AND ASSEMBLED. PROVIDE APPROVED ALIGNERS, CANOPIES, HANGERS AND OTHER APPURTENANCES AS REQUIRED FOR A COMPLETE SYSTEM PER MANUFACTURER'S INSTRUCTIONS AND N.E.C. REQUIREMENTS.
- B. REFER TO LUMINAIRE SCHEDULE FOR SPECIFIC LAMP AND BALLAST TYPE AND MANUFACTURER REQUIREMENTS.
- C. PROVIDE POLYESTER COVERS TO PROTECT FLUORESCENT LUMINAIRES WITH LOUVERS, BASKETS, OR LENSES DURING CONSTRUCTION.

2.10 FUSIBLE SWITCHES

- A. MANUFACTURERS
1. CUTLER HAMMER
 2. GENERAL ELECTRIC
- B. QUICK-MAKE/QUICK-BREAK FUSIBLE SWITCHES
1. PROTECTIVE DEVICES SHALL BE QUICK-MAKE/QUICK-BREAK FUSIBLE SWITCHES AS MANUFACTURED BY CUTLER HAMMER TYPE FDP. FUSIBLE SWITCHES 30 AMPERES THROUGH 600 AMPERES FRAMES SHALL BE FURNISHED WITH REJECTION CLASS "T" OR "J" TYPE FUSE CLIPS UNLESS OTHERWISE SCHEDULED. FUSIBLE SWITCHES 800 AMPERES THROUGH 1200 AMPERES SHALL BE FURNISHED WITH CLASS "L" FUSE CLIPS. SWITCHES SHALL INCORPORATE SAFETY COVER INTERLOCKS TO PREVENT OPENING THE COVER WITH THE SWITCH IN THE "ON" POSITION OR PREVENT PLACING THE SWITCH IN THE "ON" POSITION WITH THE COVER OPEN. PROVIDE DEFATER FOR AUTHORIZED PERSONNEL. ANGLES SHALL HAVE PROVISIONS FOR PADLOCKING AND SHALL CLEARLY INDICATE THE "ON" OR "OFF" POSITION. FRONT COVER DOORS SHALL BE PADLOCKABLE IN THE CLOSED POSITION.
- C. WARNING LABEL
1. PROVIDE ARC-FLASH HAZARD WARNING LABEL FOR EACH SWITCH PER NATIONAL ELECTRIC CODE (N.E.C.) ARTICLE 110.16.

2.11 PANELBOARDS

- A. MANUFACTURERS
1. CUTLER HAMMER
 2. GENERAL ELECTRIC
 3. SQUARE D
 4. SIEMENS
- THE LISTING OF SPECIFIC MANUFACTURERS ABOVE DOES NOT IMPLY ACCEPTANCE OF THEIR PRODUCTS THAT DO NOT MEET THE SPECIFIED RATINGS, FEATURES AND FUNCTIONS. MANUFACTURERS LISTED ABOVE ARE NOT RELIED FROM MEETING THESE SPECIFICATIONS IN THEIR ENTIRETY. PRODUCTS IN COMPLIANCE WITH THE SPECIFICATION AND MANUFACTURED BY OTHERS NOT NAMED WILL BE CONSIDERED ONLY IF PRE-APPROVED BY THE ENGINEER TEN (10) DAYS PRIOR TO BID DATE.
- B. RATINGS
1. PANELBOARDS RATED 240V AC OR LESS SHALL HAVE SHORT-CIRCUIT RATINGS AS SHOWN ON THE DRAWINGS OR AS HEREIN SCHEDULED, BUT NOT LESS THAN 10,000 AMPERES RMS SYMMETRICAL.
 2. PANELBOARDS RATED 480V AC OR LESS SHALL HAVE SHORT-CIRCUIT RATINGS AS SHOWN ON THE DRAWINGS OR AS HEREIN SCHEDULED, BUT NOT LESS THAN 14,000 AMPERES RMS SYMMETRICAL.
 3. PANELBOARDS SHALL BE LABELED WITH A UL SHORT-CIRCUIT RATING. WHEN SERIES RATINGS ARE APPLIED WITH INTEGRAL OR REMOTE UPSTREAM DEVICES, A LABEL OR MANUAL SHALL BE PROVIDED. IT SHALL STATE THE CONDITIONS OF THE UL SERIES RATINGS INCLUDING:
 - a. SIZE AND TYPE OF UPSTREAM DEVICE
 - b. UL RECOGNIZED BRANCH DEVICES THAT CAN BE USED
 - c. UL SERIES SHORT-CIRCUIT RATING.
- C. CONSTRUCTION
1. INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED DEVICES. THEY SHALL BE DESIGNED SUCH THAT SWITCHING AND PROTECTIVE DEVICES CAN BE REPLACED WITHOUT DISTURBING ADJACENT UNITS AND WITHOUT REMOVING THE MAIN BUS CONNECTORS.
 2. TRIMS FOR BRANCH CIRCUIT PANELBOARDS SHALL BE SUPPLIED WITH A HINGED DOOR OVER ALL CIRCUIT BREAKER HANDLES. DOORS IN PANELBOARD TRIMS SHALL NOT UNCOVER ANY LIVE PARTS. DOORS SHALL HAVE A SEMI FLUSH CYLINDER LOCK AND CATCH ASSEMBLY. DOORS OVER 48 INCHES IN HEIGHT SHALL HAVE AUXILIARY FASTENERS.
 3. DISTRIBUTION PANELBOARD TRIMS SHALL COVER ALL LIVE PARTS. SWITCHING DEVICE HANDLES SHALL BE ACCESSIBLE.
 4. SURFACE TRIMS SHALL BE SAME HEIGHT AND WIDTH AS BOX. FLUSH TRIMS SHALL OVERLAP THE BOX BY 3/4 OF AN INCH ON ALL SIDES.
 5. A DIRECTORY CARD WITH A CLEAR PLASTIC COVER SHALL BE SUPPLIED AND MOUNTED ON THE INSIDE OF EACH DOOR.
 6. ALL LOCKS SHALL BE KEYED ALIKE.
- D. BUS
1. MAIN BUS BARS SHALL BE TIN-PLATED ALUMINUM SIZED IN ACCORDANCE WITH UL STANDARDS TO LIMIT TEMPERATURE RISE ON ANY CURRENT CARRYING PART TO A MAXIMUM OF 65 DEGREES C ABOVE AN AMBIENT OF 40 DEGREES C MAXIMUM.
 2. A SYSTEM GROUND BUS SHALL BE INCLUDED IN ALL PANELS.
 3. FULL-SIZE (100%-RATED) INSULATED NEUTRAL BARS SHALL BE INCLUDED FOR PANELBOARDS SHOWN WITH NEUTRAL. BUS BAR TAPS FOR PANELS WITH SINGLE-POLE BRANCHES SHALL BE ARRANGED FOR SEQUENCE PHASING OF THE BRANCH CIRCUIT DEVICES. NEUTRAL BUSING SHALL HAVE A SUITABLE LUG FOR EACH OUTGOING FEEDER AND/OR BRANCH CIRCUIT REQUIRING A NEUTRAL CONNECTION.
- E. DISTRIBUTION PANELBOARDS
1. DISTRIBUTION PANELBOARDS SHALL HAVE OVERCURRENT DEVICES AS INDICATED ON DRAWINGS.
 2. DISTRIBUTION PANELBOARDS WITH BOLT-ON DEVICES CONTAINED THEREIN SHALL HAVE INTERRUPTING RATINGS AS SPECIFIED HEREIN OR AS INDICATED ON THE DRAWINGS. PANELBOARDS SHALL BE FULLY RATED.
 3. MOLDED CASE CIRCUIT BREAKERS SHALL BE PROVIDED WITH INVERSE TIME AND INSTANTANEOUS TRIPPING CHARACTERISTICS. ADJUSTABLE MAGNETIC TRIP SETTINGS SHALL BE PROVIDED FOR CIRCUIT BREAKER FRAME SIZES 400 AMPERES AND LARGER.
 4. CIRCUIT BREAKERS SHALL BE OPERATED BY A TOGGLE-TYPE HANDLE AND SHALL HAVE A QUICK-MAKE, QUICK-BREAK OVER-CENTER SWITCHING MECHANISM THAT IS MECHANICALLY TRIP-FREE. AUTOMATIC TRIPPING OF THE BREAKER SHALL BE CLEARLY INDICATED BY THE HANDLE POSITION. CONTACTS SHALL BE NONWELDING SILVER ALLOY AND ARC EXTINCTION SHALL BE ACCOMPLISHED BY MEANS OF DE-ION ARC CHUTES.
 5. CIRCUIT BREAKERS INTERRUPTING CAPACITY SHALL MATCH THAT OF THE PANELBOARD INSTALLED.
 6. FUSIBLE SWITCHES SHALL BE AS INDICATED UNDER FUSIBLE SWITCHES.
- F. BRANCH CIRCUIT PANELBOARDS
1. THE MINIMUM SHORT-CIRCUIT RATING FOR BRANCH CIRCUIT PANELBOARDS SHALL BE AS SPECIFIED HEREIN OR AS INDICATED ON THE DRAWINGS. PANELBOARDS SHALL BE FULLY RATED.
 2. BOLT-ON TYPE, HEAVY-DUTY, QUICK-MAKE, QUICK-BREAK, SINGLE AND MULTI-POLE CIRCUIT BREAKERS OF THE TYPES SPECIFIED HEREIN, SHALL BE PROVIDED FOR EACH CIRCUIT WITH TOGGLE HANDLES THAT INDICATE WHEN UNIT HAS TRIPPED.
 3. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC TYPE WITH COMMON TYPE HANDLE FOR ALL MULTIPLE POLE CIRCUIT BREAKERS. CIRCUIT BREAKERS SHALL BE MINIMUM 100-AMPERE FRAME AND THROUGH 100-AMPERE TRIP SIZES SHALL TAKE UP THE SAME POLE SPACING. CIRCUIT BREAKERS SHALL BE UL LISTED AS TYPE "SDI" FOR LIGHTING CIRCUITS, AND UL LISTED AS TYPE "HACR" FOR HEATING, AIR-CONDITIONING AND REFRIGERATION CIRCUITS.
 - a. CIRCUIT BREAKER HANDLE LOOKS SHALL BE PROVIDED FOR ALL CIRCUITS THAT SUPPLY EXIT SIGNS, EMERGENCY LIGHTS, ENERGY MANAGEMENT, AND CONTROL SYSTEM (CMCS) PANELS AND FIRE ALARM PANELS.
 4. BRANCH CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING RATING OF 10,000 AMPERES SYMMETRICAL AT 240 VOLTS.
- H. ENCLOSURE
1. ENCLOSURES SHALL BE AT LEAST 20 INCHES WIDE MADE FROM GALVANIZED STEEL, PROVIDE MINIMUM GUTTER SPACE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, WHERE FEEDER CABLES SUPPLYING THE MAINS OF A PANEL ARE CARRIED THROUGH ITS BOX TO SUPPLY OTHER ELECTRICAL EQUIPMENT, THE BOX SHALL BE SIZED TO INCLUDE THE ADDITIONAL REQUIRED WIRING SPACE. AT LEAST FOUR INTERIOR MOUNTING STUDS WITH ADJUSTABLE NUTS SHALL BE PROVIDED.
 2. ENCLOSURES SHALL BE PROVIDED WITH BLANK ENDS.
 3. EXTERIOR MOUNTED PANELBOARD SHALL BE NEMA 3R AND RATED FOR EXTERIOR APPLICATIONS
- I. SERVICE ENTRANCE LABEL
1. EQUIPMENT WITH MAIN SERVICE DISCONNECT SWITCH(ES) SHALL BE UL LABELED FOR USE AS SERVICE ENTRANCE EQUIPMENT.

- J. FUTURE DEVICES
1. PANELBOARDS SHALL BE FULLY PROVISIONED WITH ALL NECESSARY MOUNTING BRACKETS, BUS CONNECTIONS AND APPURTENANCES REQUIRED FOR INSTALLATION OF FUTURE DEVICES.
- K. ACCESSORY COMPONENTS AND FEATURES
1. PROVIDE ACCESSORY SET INCLUDING TOOLS AND MISCELLANEOUS ITEMS REQUIRED FOR OVERCURRENT PROTECTIVE DEVICE TEST, INSPECTION, MAINTENANCE AND OPERATION.
- L. NAMEPLATES
1. PROVIDE AN ENGRAVED NAMEPLATE FOR EACH PANEL SECTION.
- M. WARNING LABEL
1. PROVIDE ARC-FLASH HAZARD WARNING LABEL FOR EACH PANEL SECTION PER NATIONAL ELECTRIC CODE (N.E.C.) ARTICLE 110.16.
- N. FINISH
1. SURFACES OF THE TRIM ASSEMBLY SHALL BE PROPERLY CLEANED, PRIMED, AND A FINISH COAT OF GRAY ANSI 61 PAINT APPLIED.

PART 3 – EXECUTION

3.1 TESTING, INSPECTION, AND CLEANING

- A. TEST WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS BEFORE EQUIPMENT IS CONNECTED; DEMONSTRATE INSULATION RESISTANCE BY MEGGER TEST AS REQUIRED. INSULATION RESISTANCE BETWEEN CONDUCTORS AND GROUNDS FOR SECONDARY DISTRIBUTIONS SYSTEMS SHALL MEET NEC REQUIREMENTS.
- B. VERIFY AND CORRECT AS NECESSARY: VOLTAGES, TAP SETTINGS, TRIP SETTINGS AND PHASING ON EQUIPMENT FROM SECONDARY DISTRIBUTION SYSTEM TO POINTS OF USE. TEST SECONDARY VOLTAGES AT BUS IN MAIN SWITCHBOARD, AT PANELBOARDS, AND AT OTHER LOCATIONS ON DISTRIBUTION SYSTEMS AS NECESSARY. TEST SECONDARY VOLTAGES UNDER NO-LOAD AND FULL-LOAD CONDITIONS.
- C. TEST LUMINAIRES WITH SPECIFIED LAMPS IN PLACE FOR 10 HOURS. DO NOT OPERATE LAMPS OTHER THAN FOR TESTING BEFORE FINAL INSPECTION BY ARCHITECT. REPLACE LAMPS THAT FAIL WITHIN 90 DAYS AFTER ACCEPTANCE BY ARCHITECT.
- D. PROVIDE NECESSARY TESTING EQUIPMENT AND TESTING.
- E. FAILURE OR DEFECTS IN WORKMANSHIP OR MATERIALS REVEALED BY TESTS OR INSPECTION SHALL BE CORRECTED PROMPTLY AND RETESTED. REPLACE DEFECTIVE MATERIAL.
- F. CLEAN PANELS AND OTHER EQUIPMENT. PANELBOARD INTERIORS SHALL BE CLEANED AND VACUUMED. EQUIPMENT WITH DAMAGE TO PAINTED FINISH SHALL BE REPAIRED TO ARCHITECT'S SATISFACTION.

3.2 NAMEPLATES

- A. PROVIDE NAMEPLATES ON SWITCHBOARDS, PANELBOARDS, JUNCTION BOXES AND CABINETS, AND FOR SPECIAL PURPOSE SWITCHES, MOTOR DISCONNECT SWITCHES, REMOTE CONTROL STATIONS, STARTERS OR OTHER CONTROLS FURNISHED OR INSTALLED UNDER THIS SECTION. NAMEPLATES SHALL DESIGNATE EQUIPMENT CONTROLLED AND FUNCTION.

3.3 ACCESS AND ACCESS PANELS

- A. PROVIDE PROPER ACCESS TO MATERIAL OR EQUIPMENT THAT REQUIRE INSPECTION, REPLACEMENT, REPAIR OR SERVICE AND COORDINATE THEIR DELIVERY WITH THE INSTALLING TRADE. IF PROPER ACCESS CANNOT BE PROVIDED, CONFER WITH ARCHITECT AS TO BEST METHOD OF APPROACH TO MINIMIZE EFFECTS OF REDUCED ACCESS.
- B. ACCESS PANELS SHALL HAVE SAME FIRE RATING CLASSIFICATION AS SURFACE PENETRATED.
- C. PANELS SHALL BE AT LEAST 12" X 12"; ACCESS PANELS AT EQUIPMENT SHALL BE 18" X 18".

3.4 WIRING METHODS

- A. ALL RACEWAYS, CABLE ASSEMBLIES, BOXES, CABINETS, FITTINGS, ETC. SHALL BE SECURED AND SUPPORTED IN ALL ASSEMBLIES AS REQUIRED PER N.E.C. ARTICLE 300.11.
- B. INSTALL WIRE AND CABLE AS SPECIFIED AND AS APPROVED BY AUTHORITIES HAVING JURISDICTION. ALL CONDUITS OR RACEWAYS SHALL BE CONCEALED WHERE POSSIBLE, EXCEPT FOR UNFINISHED AREAS, SUCH AS EQUIPMENT ROOMS. PROVIDE STAND-OFF CLIPS WHERE CONDUITS ARE INSTALLED ON MASONRY WALLS.
- C. RUN CONCEALED CONDUIT IN AS DIRECT LINES AS POSSIBLE WITH MINIMUM NUMBER OF BENDS OF LONGEST POSSIBLE RADIUS. RUN CONDUIT PARALLEL TO OR AT RIGHT ANGLES TO BUILDING LINES TIGHT TO BUILDING STRUCTURE.
- D. CONDUIT RUNS SHALL BE MECHANICALLY AND ELECTRICALLY CONTINUOUS FROM SERVICE ENTRANCE TO OUTLETS. CONDUIT SHALL ENTER AND BE SECURED TO CABINET, JUNCTION BOX, PULL BOX OR OUTLET BOX WITH LOOKOUT OUTSIDE AND BUSHING INSIDE.
- E. ALL RACEWAY SHALL BE 3/4" TRADE SIZE MINIMUM, AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE NEC AND SHALL CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR. PROVIDE INSERTS, HANGERS, ANCHORS AND STEEL SUPPORTS AS NECESSARY.
- F. INSTALL CONDUIT SYSTEMS COMPLETE BEFORE DRAWING IN CONDUCTORS. BLOW THROUGH AND SWAB AFTER PLASTER IS FINISHED AND DRY, AND BEFORE CONDUCTORS ARE INSTALLED.
- G. WIRE FROM POINT OF SERVICE CONNECTION TO RECEPTACLES, LUMINAIRES, DEVICES, EQUIPMENT, AND OTHER ELECTRICAL APPARATUS AS SHOWN ON DRAWINGS. PROVIDE SLACK WIRE FOR CONNECTIONS.
- H. CONDUCTORS 10-AWG AND SMALLER IN BRANCH CIRCUIT PANELBOARDS, SIGNAL CABINETS, SIGNAL CONTROL BOARDS, SWITCHBOARDS AND MOTOR CONTROL CENTERS SHALL BE BUNDLED. CONDUCTORS LARGER THAN 10-AWG IN SWITCHBOARDS, MOTOR CONTROL CENTERS, AND PULL BOXES SHALL BE CABLED IN INDIVIDUAL CIRCUITS.
- I. FOLLOW HOMERUN CIRCUIT NUMBERS SHOWN ON DRAWINGS TO CONNECT CIRCUITS TO PANELBOARDS. CONNECT EACH BRANCH CIRCUIT HOMERUN WITH TWO OR MORE CIRCUITS AND COMMON NEUTRAL TO CIRCUIT BREAKER OR SWITCH IN THREE-WIRE OR FOUR-WIRE BRANCH CIRCUIT PANELBOARD SO THAT NO TWO CIRCUITS ARE FED FROM SAME BUS WHERE PANELBOARD CABINETS ARE RECESSED. PROVIDE CONDUITS WITH SUFFICIENT CAPACITY FOR FUTURE CONDUCTORS FOR SPARE BRANCH CIRCUIT PROTECTIVE DEVICES AND SPACES IN PANELBOARD; STUB UP CONCEALED TO JUNCTION BOX. PROVIDE EXTENSIONS ABOVE CEILING.
- J. ELECTRICAL METALLIC TUBING (EMT) MAY BE USED FOR INTERIOR APPLICATIONS ABOVE GRADE, WHERE PERMITTED BY CODES, FOR LUMINAIRE AND RECEPTACLE CIRCUITS, TELECOMMUNICATIONS, SIGNAL AND INSTRUMENTATION CIRCUITS, AND FOR CONTROL CIRCUITS. EMT MAY BE USED ABOVE HUNG CEILINGS, IN EQUIPMENT ROOMS, IN MECHANICAL AND ELECTRICAL CHASES AND CLOSETS, IN EXPOSED LOCATIONS ALONG CEILINGS OR WALLS ABOVE NORMAL TRAFFIC LEVEL AND WHERE NOT SUBJECT TO ACCIDENTAL DAMAGE OR ABUSE.
- K. INSTALL CONNECTORS AND COUPLINGS AS RECOMMENDED BY MANUFACTURERS. COMPRESSION FITTINGS SHALL BE USED IN AREAS SUBJECT TO MOISTURE.
- L. FLEXIBLE METAL CONDUIT (FMC) SHALL BE USED FOR CONNECTIONS TO ELECTRICAL EQUIPMENT AND TO EQUIPMENT FURNISHED UNDER DIVISIONS 14 AND 15 THAT ARE SUBJECT TO MOVEMENT AND VIBRATION. FMC SHALL BE LIMITED TO LENGTHS OF 6 FEET AND SHALL CONTAIN GROUNDING CONDUCTOR.
- N. ALL LOW VOLTAGE CABLE NOT IN CONDUIT AND INSTALLED IN RETURN AIR PLENUM SHALL BE UL LISTED PLENUM TYPE CABLE.
- O. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANT RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRESTOPPED USING U.L. APPROVED METHODS PER MANUFACTURERS GUIDELINES (BUILT FIRE STOP SYSTEMS OR 3M FIRE PROTECTION PRODUCTS) TO MAINTAIN THE FIRE RESISTANCE RATING OF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATINGS REQUIREMENTS TO BE MAINTAINED.

3.5 INSTALLATION OF LUMINAIRES

- A. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL CEILING CONSTRUCTION TYPES, HEIGHTS, CEILING SPACE CLEARANCES, ETC. WITH THE ARCHITECT, MECHANICAL PLUMBING, MECHANICAL AND FIRE PROTECTION PLANS, ELEVATIONS, AND DETAILS. PROVIDE PROPER FRAMES, ROUGH-IN KITS, TRIM RINGS, MOUNTING HARDWARE, N.E.C. REQUIRED ACCESS, ANCILLARY ACCESSORIES, ETC. FOR A COMPLETE N.E.C. AND U.L. LISTED INSTALLATION PER ALL MANUFACTURER'S REQUIREMENTS.
- B. COORDINATE INSTALLATION OF ALL LUMINAIRES WITH ALL TRADES AND THE INSTALLATION OF CEILING MATERIALS AND SUSPENSION SYSTEMS PRIOR TO ANY ROUGH-INS.
- C. DO NOT INSTALL LUMINAIRES UNTIL WORK OF OTHER TRADES THAT MAY DAMAGE LUMINAIRES IS COMPLETED.
- D. INVESTIGATE LUMINAIRE LOCATIONS AND SUPPORTS TO ENSURE THAT NO INTERFERENCE EXISTS WITH HANGERS, DUCTS, SPRINKLERS, PIPES AND ALL OTHER EQUIPMENT.
- E. PROVIDE PROPER PLASTER FRAMES FOR LUMINAIRES RECESSED IN GYPSUM BOARD OR PLASTER CEILING.
- F. DO NOT SUSPEND OR SUPPORT LUMINAIRES OR SAFETY CHAINS FROM HUNG CEILING, CONDUIT OR DUCT. SUPPORT LUMINAIRES FROM STRUCTURAL BUILDING MEMBERS ONLY.
- G. FRAMING MEMBERS OF SUSPENDED CEILING SYSTEMS USED TO SUPPORT LUMINAIRES SHALL BE SECURELY FASTENED TO EACH OTHER AND SHALL BE SECURELY ATTACHED TO THE BUILDING STRUCTURE AT APPROPRIATE INTERVALS. LUMINAIRES SHALL BE SECURELY FASTENED TO THE CEILING FRAMING MEMBER BY MECHANICAL MEANS SUCH AS BOLTS, SCREWS, OR RIVETS. LISTED CLIPS IDENTIFIED FOR USE WITH THE TYPE OF CEILING FRAMING MEMBER(S) AND LUMINAIRE(S) SHALL ALSO BE PERMITTED PER N.E.C. ARTICLE 410.36(D).
- H. PROVIDE STRUT BELOW DUCTS WHERE LUMINAIRE LOCATIONS COINCIDE WITH DUCT RUNS. PROVIDE A COMPLETE THREADED ROD SYSTEM TO SUPPORT STRUT.
- I. PATCH ALL EXISTING SPRAY-ON FIREPROOFING DAMAGED DURING INSTALLATION.
- J. SUPPORT SURFACE-MOUNTED LUMINAIRES AT LEAST TWO CONCEALED POINTS TO PREVENT ROTATION.
- K. LOCATE CEILING AND WALL MOUNTED LUMINAIRES AS SHOWN ON ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS.

3.6 GROUNDING

- A. PROVIDE EQUIPMENT GROUNDING SYSTEM AS SHOWN ON DRAWINGS. EQUIPMENT GROUNDING SYSTEM SHALL BE DESIGNED SO METALLIC STRUCTURES, ENCLOSURES, RACEWAYS, JUNCTION BOXES, CABINETS, MACHINE FRAMES, PORTABLE EQUIPMENT AND OTHER CONDUCTIVE ITEMS IN CLOSE PROXIMITY WITH ELECTRICAL CIRCUITS OPERATE CONTINUOUSLY AT GROUND POTENTIAL AND PROVIDE LOW IMPEDANCE PATH FOR POSSIBLE GROUND FAULT CURRENTS.
- B. SYSTEM SHALL MEET NEC REQUIREMENTS, MODIFIED AS SHOWN ON DRAWINGS AND AS SPECIFIED.
- C. PROVIDE SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR EACH BRANCH CIRCUIT. INSTALL GROUNDING CONDUCTOR IN COMMON CONDUIT WITH RELATED PHASE OR NEUTRAL CONDUCTORS, OR BOTH. PARALLEL FEEDERS INSTALLED IN MORE THAN ONE RACEWAY SHALL HAVE INDIVIDUAL FULL SIZE GREEN INSULATED EQUIPMENT GROUND CONDUCTORS.
- D. DETERMINE NUMBERS AND SIZES OF SCREW TERMINALS FOR EQUIPMENT GROUNDING BARS IN PANELBOARDS AND OTHER ELECTRICAL EQUIPMENT. PROVIDE SCREW TERMINALS FOR ACTIVE CIRCUITS, SPARES AND SPACES.
- E. PROVIDE GREEN INSULATED GROUNDING CONDUCTOR IN NONMETALLIC CONDUITS OR DUCTS UNLESS SPECIFIED OTHERWISE.

3.7 TELECOMMUNICATIONS CONDUIT SYSTEM

- A. PROVIDE SYSTEM OF EMPTY CONDUIT, OUTLETS AND MOUNTING BOARDS, AS SPECIFIED AND AS SHOWN ON DRAWINGS.
- B. NYLON PULL-IN WIRE SHALL BE INSTALLED IN TELECOMMUNICATIONS CONDUITS FOR USE BY OWNER.

3.8 TEMPORARY ELECTRIC SERVICE

- A. FURNISH AND INSTALL (AND REMOVE AS REQUIRED) ALL TEMPORARY POWER AND LIGHTING IN ALL AREAS WHERE NEEDED BY ALL TRADES IN THE PERFORMANCE OF THEIR WORK. PROVIDE A MINIMUM OF 20 FOOT CANDLES OF ILLUMINATION FOR TEMPORARY LIGHTING. TEMPORARY ELECTRIC SERVICE(S) SHALL CONFORM TO ALL FEDERAL, OSHA, STATE, INCLUDING THE NATIONAL ELECTRIC CODE.
- 3.9 MAIN ELECTRICAL SERVICE
- A. CONTACT AND FULLY COORDINATE NEW ELECTRIC SERVICE WITH THE LOCAL ELECTRIC UTILITY COMPANY. PROVIDE NECESSARY CONDUITS, CONDUCTORS, METERING CABINETS AND EQUIPMENT IN ACCORDANCE WITH UTILITY CO. STANDARDS.
- B. SCHEDULE NEW SERVICE AND INCLUDE ELECTRIC UTILITY COMPANY CHARGES IN BID.
- C. PROVIDE A GROUNDING ELECTRODE SYSTEM IN FULL COMPLIANCE WITH N.E.C. 250.52 TO INCLUDE BONDING ITEMS 1 THOUGH 6 WHERE AVAILABLE, ie: METAL UNDERGROUND WATER PIPE, METAL FRAME OF THE BUILDING OR STRUCTURE, CONCRETE-ENCASED ELECTRODE, GROUND RING, ROD AND PIPE ELECTRODES, PLATE ELECTRODES. SIZED PER NEC TABLE 250.66.

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LANDSCAPE COMPANY	
MEP ENGINEER NY ENGINEERS	
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ELECTRICAL SPECIFICATIONS SHEET 2 OF 2	
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PLUMBING SPECIFICATIONS

1.1 SUMMARY: PROVIDE PLUMBING WHERE SHOWN ON THE DRAWING, AS SPECIFIC HEREIN, AND AS NEEDED FOR A COMPLETE AND PROPER INSTALLATION INCLUDING BUT NOT NECESSARIL LIMITED TO:

DOMESTIC HOT AND COLD WATER PIPING SYSTEMS
DRAIN WASTE AND VENT SYSTEMS
PLUMBING FIXTURES AND TRIM AS SHOWN ON THE DRAWINGS
FUEL GAS PIPING SYSTEM
STORM DRAINAGE SYSTEMS

DOCUMENTS AFFECTING WORK OF THIS SECTION INCLUDE, BUT ARE NOT NECESSARIL LIMITED TO GENERAL CONDITIONS SUPPLEMENTAR CONDITIONS AND SECTIONS IN DI ISION OF THE ARCHITECTURAL SPECIFICATIONS.

1.2 SUBMITTALS: COMPLY WITH PERTINENT PROVISION OF DIVISION 1 AND THE ARCHITECTURAL SCOPE

PRODUCT DATA: WITHIN 30 CALENDAR DAYS AFTER THE CONTRACTOR HAS RECEIVED THE OWNER'S NOTICE TO PROCEED SUBMIT:

MATERIALS LIST OF ITEMS PROPOSED TO BE PRO IDED UNDER THIS SECTION

MANUFACTURER S SPECIFICATIONS CATALOG CUTS AND OTHER DATA NEEDED TO PROVE COMPLIANCE WITH THE SPECIFIED REQUIREMENTS.

SHOP DRAWINGS AND OTHER DATA AS REQUIRED TO INDICATE METHOD OF INSTALLING AND ATTACHING EQUIPMENT EXCEPT WHERE SUCH DETAILS ARE FULL SHOWN ON THE DRAWINGS

STERILIZATION CERTIFICATE: UPON COMPLETION OF DOMESTIC WATER PIPING SYSTEM THE ADDED PORTION OF THE SYSTEM SHALL BE STERILIZED. UPON COMPLETION THE CONTRACTOR SHALL DELIVER TO THE ARCHITECT TWO COPIES OF AN ACCEPTABLE CERTIFICATE OF PERFORMANCE FOR THIS ACTIVITY.

UPON COMPLETION OF THE WORK OF THIS SECTION DELIVER TO THE ARCHITECT FOUR(4) COPIES OF ALL SHOP DRAWINGS EQUIPMENT AND FIXTURE SUBMITTALS), OPERATION AND MAINTENANCE MANUAL AND AS BUILT RECORD DRAWINGS ALL MANUALS SHALL INCLUDE A MAINTENANCE SCHEDULE FOR ALL REQUIRED EQUIPMENT (I.E PUMPS WATER FILTER). ALL MANUAL SHALL BE COMPILED IN ACCORDANCE WITH THE PROVISIONS OF DIVISION OF THESE SPECIFICATIONS

1.3 QUALITY ASSURANCE: USE ADEQUATE NUMBERS OF WORKERS WHO ARE THOROUGHL TRAINED AND E PERIENCED IN THE NECESSAR CRAFTS AND WHO ARE COMPLETEL FAMILIAR WITH THE SPECIFIED RE IREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION

CODES AND REGULATIONS: IN ADDITION TO COMPLYING WITH THE SPECIFIED REQUIREMENTS COMPLY WITH THE PERTINENT REGULATIONS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION INCLUDING THE INTERNATIONAL BUILDING PLUMBING FUEL GAS AND ENERGY CONSERVATION CODE AND AMENDMENTS TO ABOVE CODES REQUIRED BY THE LOCAL AUTHORITIES IN THE EVENT OF CONFLICT BETWEEN OR AMONG SPECIFIED REQUIREMENTS AND PERTINENT REGULATIONS THE MORE STRINGENT REQUIREMENT WILL GOVERN WHEN SO DIRECTED BY THE ARCHITECT

1.4 DELIVERY, STORAGE, AND HANDLING: COMPLY WITH THE PERTINENT PRO ISIONS OF DIVISION 1

1.5 GENERAL REQUIREMENTS: WHERE REQUIRED BY CODE, ALL WORK MUST BE INSPECTED AND APPRO ED B LOCAL AUTHORITIES PRIOR TO FINAL ACCEPTANCE FURNISH THE ARCHITECT OWNER WITH CERTIFICATES OF INSPECTION AND APPRO ALS B LOCAL AUTHORITIES BEFORE ACCEPTANCE AND FINAL PAYMENT, DEMONSTRATE THAT ALL APPARATUS ARE FUNCTIONING PROPERL AND EFFICIENTL S TEM MATERIAL AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE EAR AFTER THE COMPLETION AND ACCEPTANCE ALL DEFECT E WORKMANSHIP U IPMENT AND MATERIALS WITHOUT ADDITIONAL CHARGES INCLUDING REFRIGERANT THAT IS LOST DURING RELATED REPAIRS

PART 2- PRODUCTS

2.1 PIPE SCHEDULE:

DRAIN WASTE AND VENT SYSTEM: PVC PIPE ASTM D2665 SOLID WALL DRAIN WASTE AND VENT PIPING WITH PVC SOCKET FITTINGS COMPLYING WITH ASTM D2665, SOCKET TYPE, MADE TO ASTM F1866, DRAIN, WASTE AND VENT PATTERNS SCHEDULE 40 CAST IRON PIPING SHALL BE PROVIDED FOR ALL WASTE AND VENT PIPING WITHIN A RETURN OR SUPPLY AIR PLENUM

WATER PIPING: ABOVE GROUND: PROVIDE TYPE L HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS JOINED WITH LEAD FREE SOLDER CROSS LINKED, HIGH DENSITY POLYETHYLENE (PEX) OR CPVC IS ACCEPTABLE AS AN APPROVED ALTERNATE WHERE ALLOWED BY CODE APPROVED BY THE OWNER AND ALLOWED BY THE AUTHORITY HAVING JURISDICTION AND INSTALLED PER MANUFACTURER REQUIREMENTS BELOW GROUND: PROVIDE TYPE K SOFT ANNEALED COPPER WITH NO SOLDERED JOINTS WHERE ALTERNATES SUCH AS PEX OR CPVC IS USED THE OWNER MUST SPECIFIC ALL AGREE TO IT IN WRITING WHERE THERE IS A PLENUM CARE MUST BE TAKEN TO ENSURE THE INSTALLATION UTILIZED PLENUM RATED AND ACCEPTED MATERIALS AND INSTALLATION METHODS UTILIZE ONLY PLENUM RATED MATERIALS WHEN USING PEX PROVIDE COLOR CODING BY USING BLUE FOR COLD WATER AND RED FOR HOT WATER PIPING

INDIRECT DRAINS: PROVIDE TYPE L COPPER WITH WROUGHT COPPER FITTINGS JOINED WITH 95/5 TIN- ANTIMONY OR LEAD FREE SOLDER WHEN SIZE ALLOWS PROVIDE DWV TYPE FITTINGS PROVIDE LINES FULL SIZE OF AN EQUIPMENT CONNECTIONS

NATURAL GAS PIPING: PROVIDE SHUT OFF VALVE DOWNSTREAM OF AND AS CLOSE AS PRACTICAL TO EACH GAS METER PROVIDE SCHEDULE BLACK IRON PIPE WITH MALLEABLE IRON FITTINGS PIPING AND UNDER SHALL HA E SCREWED FITTINGS, 2-1/2" AND LARGER AND ALL CONCEALED GAS PIPING SHALL BE WELDED. VALVES UP TO SHALL BE BRASS PROVIDE DIRT LEG SHUT OFF VALVE PRESSURE REDUCING VALVE AND UNION AT EACH APPLIANCE CONNECTION UNDERGROUND PIPING SHALL BE PROTECTED AGAINST CORROSION

STORM DRAINAGE PIPING: HUBLESS CAST IRON SOIL PIPE PITCH HORIZONTAL LEADERS AT 1/8" PER FOOT FALL IN DIRECTION OF FLOW UNLESS OTHERWISE NOTED

2.2 MATERIALS: CAST IRON SOIL PIPE AND FITTINGS:

FOR COPPER PIPING PROVIDE WROUGHT COPPER OR DWV TYPE FITTINGS FOR THE APPROPRIATE PIPING SYSTEM ALL EXPOSED PIPING IN KITCHENS AND OTHER FOOD PREPARATION AREAS SHALL BE COPPER

2.3 VALVES: GATE VALVE: EQUAL TO WATTS GV SERIES, BRONZE, 200--PSI WOG GLOBE VALVES: EQUAL TO WATTS GLV SERIES BRONZE 200--PSI WOG, BALL VALVES: EQUAL TO WATT B-600 SERIES STANDARD PORT, BRONZE, 1/4"-2" VALVES SHALL BE 600 PSI WOG. 2-1/2"-4" SHALL BE PSI WOG

2.4 FLASHING: WHERE PIPE OF THIS SECTION PASS THROUGH THE ROOF, FLASH WITH SEMCO #1100-4 SEAMLESS 4 LB. FLASHING, WITH STEEL REINFORCED "VARI-PITCH" BOOT AND CAST IRON COUNTER FLASHING SLEEVE.

2.5 PIPE HANGERS:

WATER PIPING: PRO IDE FEE AND MASON #212 SPLIT RING HANGERS WITH SUPPORTING RODS PROVIDE SEMCO "TRISOLATORS"

SOIL AND WASTE PIPING: PROVIDE FEE AND MASON #212 ADJUSTABLE RING HANGERS WITH SUPPORTING RODS USE FEE AND MASON #212 RISER CLAMPS AS REQUIRED

2.6 CLEANOUTS: ZURN Z-1400 "LEVEL-TROL" ADJUSTABLE FLOOR CLEANOUT, DURA COATED CAST IRON BODY WITH GAS AND WATERTIGHT ABS TAPERED THREAD PLUG AND ROUND SCORATED SECURED TOP ADJUSTABLE TO THE FINISHED FLOOR FINISHED FLOORS: PROVIDE ZURN ZN-1400 WITH APPROPRIATE SUFFIX FOR FLOOR FINISH FLOORS WITH WATERPROOFING MEMBRANE: PROVIDE FLUSH WITH FLOOR TYPE CLEANOUTS WITH ADJUSTABLE WATERTIGHT COVERS AND INTEGRAL ANCHORING FLANGE WITH CLAMPING COLLAR FINISHED WALLS: PROVIDE ZURN ZS-1469 WITH STAINLESS STEEL ACCESS PLATE AND SCREW

2.7 TRAP: FOR LAVATORIES AND SINK, EXCEPT SERVICE, PROVIDE LOSS ANGELES PATTERN CAST BRASS TRAPS WITH BRASS NUTS

2.8 WATER HAMMER ARRESTORES: PROVIDE WHERE REQUIRED BY CODE

2.9 FIXTURES AND EQUIPMENT: PROVIDE PLUMBING FIXTURES TRIM AND EQUIPMENT AS INDICATED ON THE PLUMBING PLANS.

2.10 INSULATION: INSULATE HOT, COLD AND RECIRCULATED HOT WATER PIPING FROM SUPPLYING LOCATION DEVICE TO THE TERMINATION OF THE WATER FIXTURE SUPPLY PIPE WITH A MINIMUM OF 1-IN THICK FIBERGLASS INSULATION WITH PLENUM RATED JACKET INSULATION SHALL BE EQUAL TO JOHNS MANVILLE MICO-LOK, WITH A MAXIMUM CONDUCTIVITY OF 0.27 BTU PER IN HR SF °F. COLD WATER PIPING INSULATION SHALL HAVE VAPOR BARRIER AT ALL HANGER AND SUPPORT LOCATIONS PROVIDE 8-IN LONG 20 GAUGE GALVANIZED IRON INSULATION GUARDS INSULATION AT THESE LOCATIONS SHALL BE RIGID IECC TABLE 403.3.1.3

PROTECT EXPOSED PIPING FOR ALL ADA ACCESSIBLE FIXTURES WITH INSULATION EQUAL TO TRU BRO.

STORM DRAINAGE PIPING SHALL BE INSULATED WITH 1-1/2" THICK FIBERGLASS INSULATION WITH VAPOR BARRIER AND PLENUM RATED PVC JACKET. INSULATION SYSTEM SHALL BE EQUAL TO JOHNS MANVILLE MICRO LOK WITH ZESTON PVC JACKING, 30MIL THICKNESS. VAPOR BARRIER SHALL BE PROVIDED WITH A MASTIC COMPATIBLE WITH PVC AND TWO LA ERS OF HI LO TEMP INSULATION INSERTS SHALL BE UTILIZED TO MAINTAIN THE INTEGRITY OF THE VAPOR BARRIER INSERTS AND JACKET SHALL MEET ASTM E84 FOR MAXIMUM FLAME SPREAD AND SMOKE DEVELOPED RATING OF 25/50 EXPOSED VERTICAL STORM DRAINAGE PIPING SHALL NOT BE INSULATED.

2.11 SLEEVES: WHERE PIPES PASS THROUGH CONCRETE, MASONARY OR STUD WALLS OR PASS THROUGH CEILINGS PROVIDE "RUSTPROOF GRETLE SLEEVE" OF THE SIZE REQUIRED WHERE PIPES PASS THROUGH FIRE RATED PARTITIONS AS DESIGNATED ON THE ARCHITECTURAL PLANS PROVIDE FIRE SEALS AROUND PIPES WHICH ARE EITHER UL LISTED OR FM APPROVED.

2.12 OTHER MATERIAL: PROVIDE OTHER MATERIAL NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE AND PROPER INSTALLATION AS SELECTED BY THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE ARCHITECT.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS: EXAMINE THE AREAS AND CONDITIONS UNDER WHICH WORK OF THIS SECTION WILL BE PERFORMED CORRECT CONDITIONS DETRIMENTAL TO TIMELY AND PROPER COMPLETION OF THE WORK DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.

3.2 INSTALLATION OF PIPING AND EQUIPMENT:

PROCEED AS RAPIDLY AS THE BUILDING CONSTRUCTION WILL PERMIT THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE CUT PIPE ACCURATELY, AND WORK INTO PLACE WITHOUT SPRINGING OR FORCING PROPERLY CLEARING WINDOWS AND OTHER OPENINGS EXCESSIVE CUTTING OR OTHER WEAKENING OF THE BUILDING WILL NOT BE PERMITTED SHOW NO TOOL MARKS OR THREADS ON EXPOSED PLATED POLISHED OR ENAMELED CONNECTIONS FROM FIXTURES TAPE ALL FINISHED SURFACES TO PREVENT DAMAGE DURING CONSTRUCTION MAKE CHANGES IN DIRECTION WITH FITTINGS MAKE CHANGES IN MAIN SIZES WITH ECCENTRIC REDUCING FITTINGS UNLESS OTHERWISE NOTED INSTALL WATER SUPPLY AND RETURN PIPING WITH FLAT SIDE OF ECCENTRIC FITTINGS FACING UP RUN HORIZONTAL SANITARY PIPING AT A UNIFORM GRADE OF 1/4" PER FOOT, UNLESS OTHERWISE NOTED RUN HORIZONTAL WATER PIPING WITH AN ADEQUATE PITCH UPWARDS IN DIRECTION OF FLOW TO ALLOW COMPLETE DRAINAGE PROVIDE SUFFICIENT SWING JOINTS BALL, JOINTS EXPANSION LOOPS AND DEVICES NECESSARY FOR A FLEXIBLE PIPING SYSTEM EVEN IF NOT SPECIFICALLY SHOWN ON THE DRAWINGS SECURELY BOLT ALL EQUIPMENT ISOLATORS HANGERS AND SIMILAR ITEMS IN PLACE SUPPORT EACH ITEM INDEPENDENTLY FROM THE STRUCTURE DO NOT USE WIRE FOR HANGING OR STRAPPING PIPES PROVIDE COMPLETE DIELECTRIC ISOLATION BETWEEN FERROUS AND NONFERROUS METALS FOR INSULATED PIPE PROVIDE SLEEVES OF ADEQUATE SIZE TO ACCOMMODATE THE FULL THICKNESS OF PIPE COVERING WITH CLEARANCE FOR PACKING AND CAULKING CAULK THE SPACE BETWEEN SLEEVE AND PIPE OR PIPE COVERING USING A NON COMBUSTIBLE PERMANENTLY PLASTIC WATERPROOF NON STAINING COMPOUND WHICH LEAVES A SMOOTH FINISHED APPEARANCE OR PACK WITH NON COMBUSTIBLE NON ASBESTOS COTTON ROPE OR FIBERGLASS TO WITHIN 1/2" OF BOTH WALL FACES AND PROVIDE THE WATERPROOF COMPOUND DESCRIBED ABOVE

3.3 FINISH AND ESCUTCHEONS: SMOOTH UP ROUGH EDGES AROUND SLEEVES WITH PLASTER OR SPACKLING COMPOUND PROVIDE 1" WIDE CHROME OR NICKEL PLATED ESCUTCHEONS ON ALL PIPES E POSED TO VIEW WHERE PASSING THROUGH WALLS FLOORS PARTITIONS CEILINGS OR SIMILAR LOCATION. SIZE THE ESCUTCHEONS TO FIT PIPE AND COVERING HOLD ESCUTCHEONS IN PLACE WITH SET SCREW.

3.4 CLEANOUT: SECURE THE ARCHITECT'S APPROVAL OF LOCATIONS FOR CLEANOUTS IN FINISHED AREAS PRIOR TO INSTALLATION PROVIDE CLEANOUTS OF SAME NOMINAL SIZE AS THE PIPES THEY SERVE EXCEPT WHERE CLEANOUTS ARE REQUIRED IN PIPES LARGER THAN 4". PROVIDE 4" CLEANOUTS. MAKE CLEANOUTS ACCESSIBLE AFTER PRESSURE TESTS ARE MADE AND APPROVED THOROUGHLY GRAPHITE THE CLEANOUT THREADS PROVIDE CLEANOUTS IN ALL LOCATIONS NOT NECESSARILY INDICATED ON DRAWINGS REQUIRED BY THE APPLICABLE CODES.

3.5 VALVES: PROVIDE VALVE IN DOMESTIC WATER SUPPLY SYSTEM. LOCATE AND ARRANGE SO AS TO GIVE COMPLETE REGULATION OF FIXTURES PROVIDE VALVES IN AT LEAST THE FOLLOWING LOCATIONS: IN BRANCHES AND OR HEADERS OF WATER PIPING SERVING A GROUP OF FIXTURES FOR SHUTOFF OF BRANCH MAINS FOR FLUSHING AND STERILIZING THE SYSTEM WHERE SHOWN ON THE DRAWINGS LOCATE VALVES FOR EASY ACCESSIBILITY AND MAINTENANCE.

3.6 WATER HAMMER ARRESTOR: PROVIDE WATER ARRESTOR ON HOT WATER LINES AND COLD WATER LINES INSTALL IN UPRIGHT POSITION AT ALL QUICK CLOSING VALVES SOLENOIDS ISOLATED PLUMBING FIXTURES AND SUPPLY HEADERS AT PLUMBING FIXTURE GROUPS LOCATE AND SIZE IN ACCORDANCE WITH THE PLUMBING AND DRAINAGE INSTITUTE STANDARD WH-201. INSTALL WATER HAMMER ARRESTOR BEHIND ACCESS PANELS

3.7 BACKFLOW PREVENTION: PROTECT PLUMBING FIXTURES AND FAUCETS AGAINST POSSIBLE BACK SIPHONAGE ARRANGE FOR TESTING OF BACKFLOW DEVICES AS REQUIRED BY THE GOVERNMENTAL AGENCY HAVING JURISDICTION

3.8 PLUMBING FIXTURE INSTALLATION: SET FIXTURES LEVEL AND IN PROPER ALIGNMENT WITH RESPECT TO WALLS AND FLOORS AND WITH FIXTURES EQUALLY SPACED PROVIDE SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES AND WITH EACH OTHER PROVIDE FLUSH VALVES IN ALIGNMENT WITH THE FIXTURE WITHOUT VERTICAL OR HORIZONTAL OFFSETS. GROUT WALL AND FLOOR MOUNTED FIXTURES WATERTIGHT WHERE THE FIXTURES ARE IN CONTACT WITH WALLS AND FLOORS.

3.9 DISINFECTION OF POTABLE WATER POTABLE WATER S TEMS SHALL BE PURGED OF DELETERIOUS MATTER AN DISINFECTED PRIOR TO UTILIZATION. THE METHOD TO BE FOLLOWED SHALL BE THAT PRESCRIBED BY THE HEALTH AUTHORITY OR WATER PRUVEYOR HAVING JURISDICTION.

3.10 OTHER TESTING AND ADJUSTING: PROVIDE PERSONNEL AND EQUIPMENT AND ARRANGE FOR AND PA THE COSTS OF ALL REQUIRED TESTS AND INSPECTIONS REQUIRED BY GOVERNMENTAL AGENCIES HAVING JURISDICTION WHERE TESTS SHOW MATERIALS OR WORKMANSHIP TO BE DEFICIENT REPLACE OR REPAIR AS NECESSARY AND REPEAT THE TESTS UNTIL THE SPECIFIED STANDARDS ARE ACHIEVED ADJUST THE SYSTEM TO OPTIMUM STANDARDS OF OPERATION.

CODE COMPLIANCE STATEMENT

THIS PROJECT SHALL COMPLY WITH THE FOLLOWING CODES:

- a) MICHIGAN BUILDING CODE 2015
- b) MICHIGAN PLUMBING CODE 2018
- c) MICHIGAN MECHANICAL CODE 2015
- d) NATIONAL ELECTRICAL CODE 2017
- e) INTERNATIONAL FUEL GAS CODE 2015
- f) MICHIGAN ENRGY CODE 2015 (IECC 2015)

ABBREVIATIONS

AFF ABOVE FINISHED FLOOR	HB HOSE BIBB
CLG CEILING	INL INLET
CI CAST IRON	INV INVERT
DF DRINKING FOUNTAIN	MH MANHOLE
EL ELEVATION	PC PLUMBING CONTRACTOR
ETR EXISTING TO REMAIN	SS SERVICE SINK
FD FLOOR DRAIN	UR URINAL
GC GENERAL CONTRACTOR	VIR VENI IHRU ROOF
	WC WATER CLOSET

PLUMBING LEGEND

SYMBOL	DESCRIPTION
— SAN —	SANITARY WASTE
— — SAN — —	SANITARY SEWER (UNDERFLOOR)
— — GSAN — —	GREASE SANITARY (UNDERFLOOR)
— — EX.SAN — —	EXISTING SANITARY SEWER (UNDERFLOOR)
— — — — —	VENT PIPING
— — — — —	COLD WATER
— — — — —	HOT WATER
— — — — —	RECIRCULATING HOT WATER
— G —	GAS
— X —	SHUT-OFF VALVE
— Z —	CHECK VALVE
— [S] —	BALANCING VALVE
— [SINK] —	FLOOR SINK WITH HALF GRATE
— [DRAIN] —	FLOOR DRAIN
— [UP/DOWN] —	PIPE UP OR DOWN
— [UNION] —	PIPE UP UNION
— [SHUT-OFF] —	SHUT-OFF VALVE IN RISER
— [CAP] —	CAP ON END OF PIPE
— [CLEANOUT] —	CLEANOUT
— [DOUBLE CHECK] —	DOUBLE CHECK VALVE ASSEMBLY
— [REDUCED PRESSURE] —	REDUCED PRESSURE BACKFLOW PREVENTER
— [SOLENOID] —	SOLENOID VALVE
— [POINT] —	POINT OF NEW CONNECTION

FIXTURE UNIT CALCULATOR FOR WATER DEMAND						
FIXTURE	OCCUPANCY	TYPE OF SUPPLY CTRL	WSFU	QTY	TOTAL	
WAREWASHER	PRIVATE	AUTOMATIC	1.4	1	1.4	
KITCHEN SINK	HOTEL/RESTAURANT	FAUCET	4	2	8	
LAVATORY(E)	PUBLIC	FAUCET	2	2	4	
HAND SINK	PRIVATE	FAUCET	0.5	2	1.4	
SERVICE SINK	OFFICES, ETC.	FAUCET	2.25	1	3	
URINAL(E)	PUBLIC	3/4" FLUSH VALVE	5	1	5	
WATER CLOSET(E)	PUBLIC	FLUSH TANK	5	2	10	
MISCELLANEOUS	PRIVATE	FAUCET	0.25	6	1.5	
TOTAL					34.3	

NOTE: BASED UPON THE MPC 2018 PROPOSED WATER SIZE 1-1/4" TABLE E103.3(2)

KITCHEN EQUIPMENT PLUMBING CONNECTION SCHEDULE												
MARK	QTY	DESCRIPTION	WATER CONNECTIONS			DRAIN		G	CONN.	NOTES		
			CW	HW	FW	DD	ID					
101	1	PIZZA OVEN	—	—	—	—	—	100MBH	3/4"			
102	1	GAS RANGE	—	—	—	—	—	224MBH	1-1/4"			
150	2	HAND SINK	1/2"	1/2"	—	—	1-1/2"	—	—			
201	1	3 COMP SINK	3/4"	3/4"	—	—	2"	—	—			
202	1	WAREWASHER	—	1/2"	—	—	2"	—	—			
300	1	SODA DISPENSER	—	—	1/2"	—	3/4"	—	—			
302	1	TEA BREWER	1/2"	—	—	—	3/4"	—	—			
302.1	2	TEA DISPENSER	1/2"	—	—	—	1/2"	—	—			
400	1	1 COMP SINK	1/2"	1/2"	—	—	2"	—	—			
402	1	MIXER	1/2"	—	—	—	—	—	—			
801	1	DIPPERWELL	—	—	—	—	1/2"	—	—			

PLUMBING FIXTURE SCHEDULE									
MARK S	DESCRIPTION	MANUFACTURER	MODEL NO	CW	HW	WASTE	VENT	REMARKS	
WATER HEATERS, EXPANSION TANKS, RECIRCULATION PUMPS									
WH-1	WATER HEATERS	RINNAI CU199i		1"	1"		3"	WALL MOUNTED TANKLESS CONDENSING TANKLESS GAS FIRED WATER HEATER. CAPACITY PROVIDED 3.8GPM @ 100 °F TEMPRETURE RISE	
ET-1	EXPANSION TANK	STATE MODEL ETC-2		3/4"	-	-	-	1.96 GALLON, 150PSIG, 210°F RATED, NSF BLADDER, 5YR WARRANTY	
CP-1	RECIRCULATION PUMP	TACO MODEL 066		3/4"	-	-	-	CATRIDGE CIRCULAR. BALANCE TO PROVIDE 2.5GPM AGAINST 7FEET OF H2O. TIME CLOCK TO CONTROL DURING OCCUPIED HOURS. PROVIDE TACO TEMP. CONTROLLED AQUASTAT TO CONTROL PUMP	
TOILETS AND URINALS									
WC(E)	WATER CLOSET/ADA	EXISTING TO REMAIN		E	-	E	E	E	
LAVATORIES									
LAV(E)	LAVATORY, WALL MOUNT	EXISTING TO REMAIN		E	-	E	E	E	
URINAL									
UR(E)	URINAL, WALL MOUNTED	EXISTING TO REMAIN		E	E	E	E	E	
FLOOR DRAINS & SINKS, TRENCH DRAINS, PRIMERS									
FS	FLOOR SINK	ZURN MODEL FD-2376		-	-	3"	2"	12"x12"x8" DEEP CAST IRON BODY MEDIUM DUTY, ACID RESISTING PORCELAIN ENAMEL INTERIOR, DEEP SEAL TRAP.	
SERVICE SINKS									
MS-1	MOP SINK	FIAT MSB2424		3/4"	3/4"	3/4"	2"	THE MSB 2424 SHALL HAVE OVERALL OUTSIDE DIMENSIONS OF 24" X 24" X 10". SERVICE FAUCET (830-AA): CHROME PLATED WITH VACUUMBREAKER, INTEGRAL STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK AND 3/4" HOSE THREAD ON SPOUT.	
GREASE INTERCEPTOR									
GI-1	GREASE INTERCEPTOR	SCHIER GB-50		-	-	4"	2"	50 GPM GREAT BASIN INDOOR/OUTDOOR GREASE INTERCEPTOR DIMENSION OF 37" X 32-1/4" X 28-1/2" FLOW RATE/GREASE CAPACITY- 50GPM/439.5LBS, 60GALLON WEIGHT- 148 LBS.	

ENERGY CONSERVATION NOTES:

- AS PER 2015 MICHIGAN ENERGY CODE (IECC 2015) PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE OF MINIMUM PIPE INSULATION THICKNESS.

MINIMUM PIPE INSULATION THICKNESS							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU ·IN./ (H·FT² ·°F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	>8
141-200	0.25-0.29	125	1.5	1.5	2	2	2
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

- HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER MICHIGAN ENERGY CODE (IECC 2015). THE HOT WATER VOLUME FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.

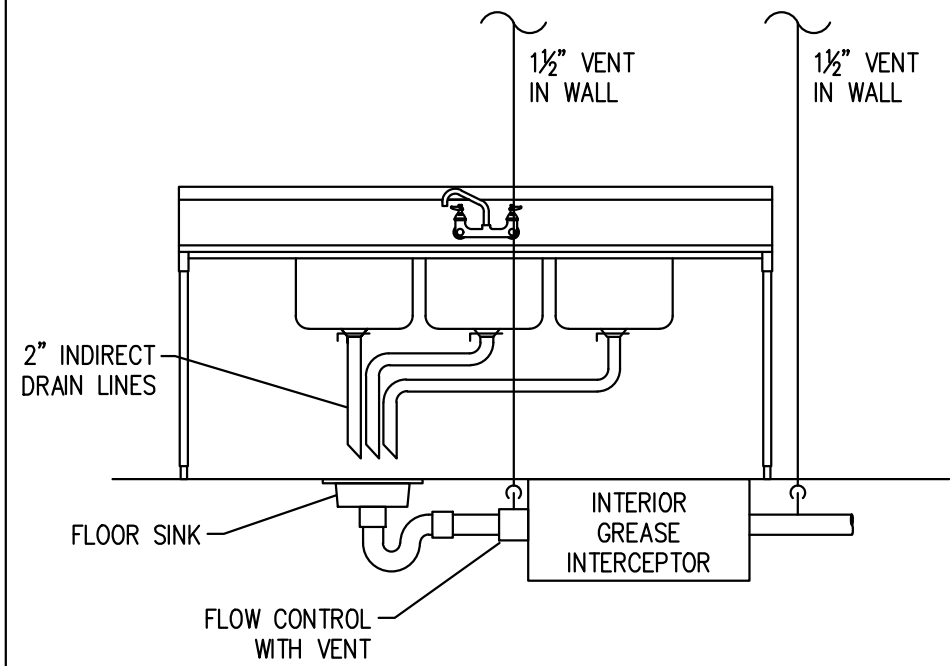
- AS PER 2015 MICHIGAN ENERGY CODE (IECC 2015) AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RE-CIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE.

- AS PER 2015 MICHIGAN ENERGY CODE (IECC 2015) THE CONTROLS ON PUMPS THAT CIRCULATE WATER BETWEEN A WATER HEATER AND A HEATED-WATER STORAGE TANK SHALL LIMIT OPERATION OF THE PUMP FROM HEATING CYCLE STARTUP TO NOT GREATER THAN 5 MINUTES AFTER THE END OF THE CYCLE.

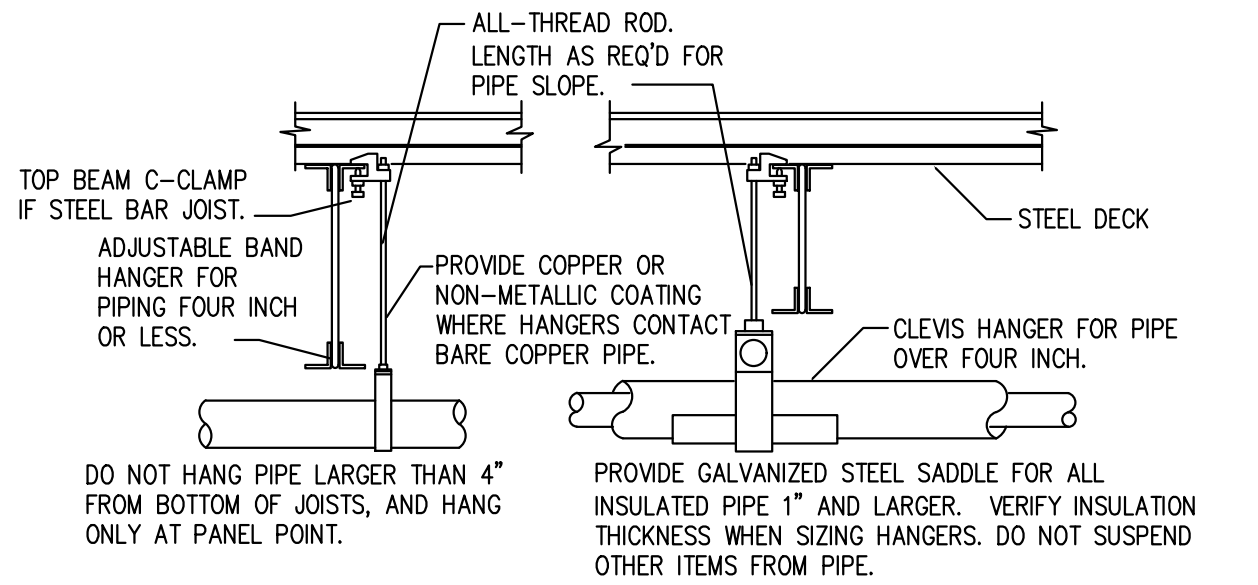
- AS PER 2015 MICHIGAN ENERGY CODE (IECC 2015) PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:

- THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
- THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).

MAXIMUM PIPING LENGTH	
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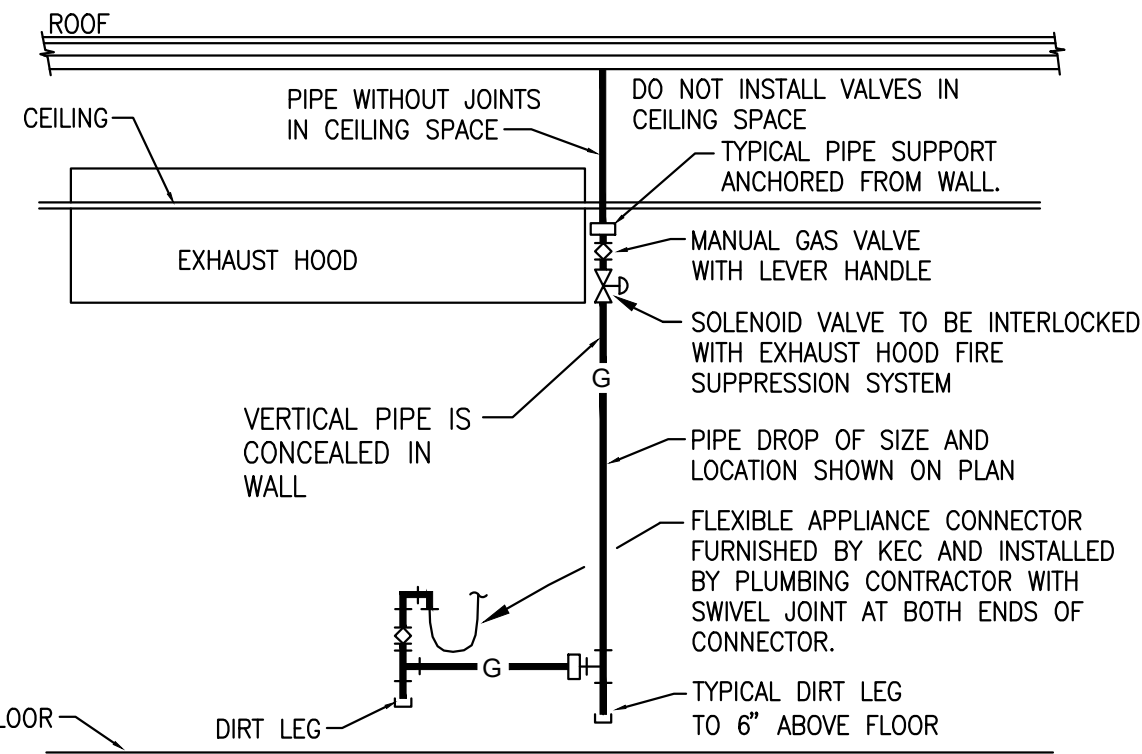
3 COMPARTMENT SINK DETAIL
NO SCALE



COMMENTS:
1. PROVIDE UPPER ATTACHMENT AS REQUIRED FOR CASES NOT SHOWN HERE. DO NOT INSTALL HANGER INSIDE INSULATION OR OTHERWISE PENETRATE VAPOR BARRIER. DO NOT HANG ONE PIPE FROM ANOTHER EXCEPT IN CHASES. TRAPEZE HANGERS MAY BE USED FOR MULTIPLE PARALLEL PIPES. SLOPE ALL WATER PIPING SLIGHTLY TOWARD DRAINABLE LOCATIONS. HANGER SPACING FOR PIPE SIZE: COPPER: 2"=9' 1 1/2"=8' 1 1/4"=7' 1"=6' 3/4"=6' 3/4"=5'. CAST IRON: 10' AND ONE NEAR ALL JOINTS. STEEL: 3"=12' 2 1/2"=11' 2"=10' 1 1/2"=9' 1"=7' 3/4"=6' 1/2"=5'. LOCATE HANGERS AS CLOSE AS POSSIBLE TO TURNS AND TEES OF PIPE. PROVIDE SUPPLEMENTARY STEEL STRUTS BETWEEN JOISTS IF REQUIRED. LOCATE HANGERS TO TAKE LOAD OFF OF EQUIPMENT CONNECTIONS. ANCHOR WATER PIPE AGAINST SWAYING DUE TO CHANGES IN WATER VELOCITY. PROVIDE SEISMIC BRACING AS REQUIRED BY LOCAL AUTHORITIES. CHAINS OR PERFORATED STRAP IRON OR STEEL IS NOT ACCEPTABLE. DO NOT SUSPEND PIPE FROM JOIST BRACING MEMBERS. REFER TO CODES AND SPECIFICATIONS FOR FURTHER INFORMATION.

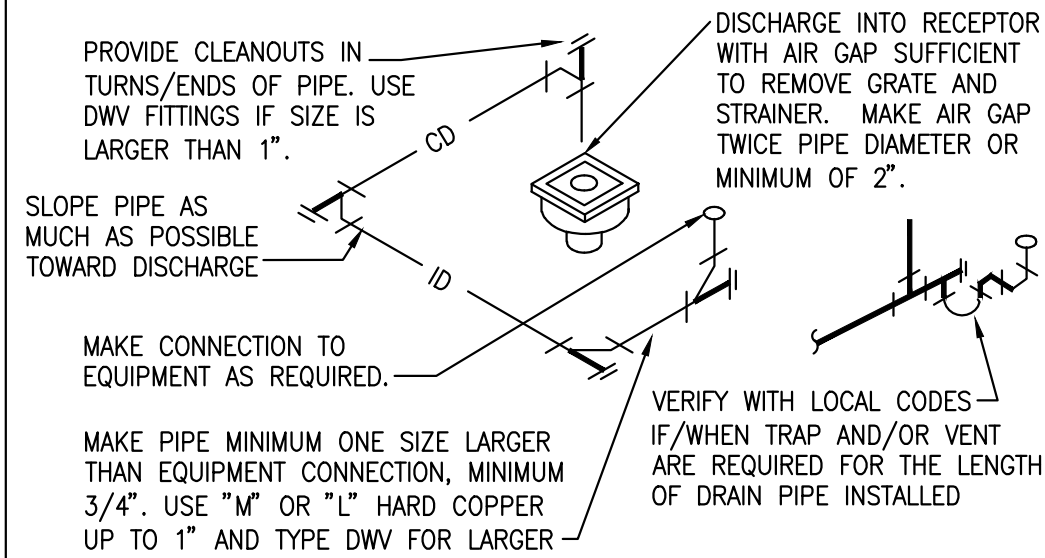
PIPE HANGERS DETAIL

NOT TO SCALE



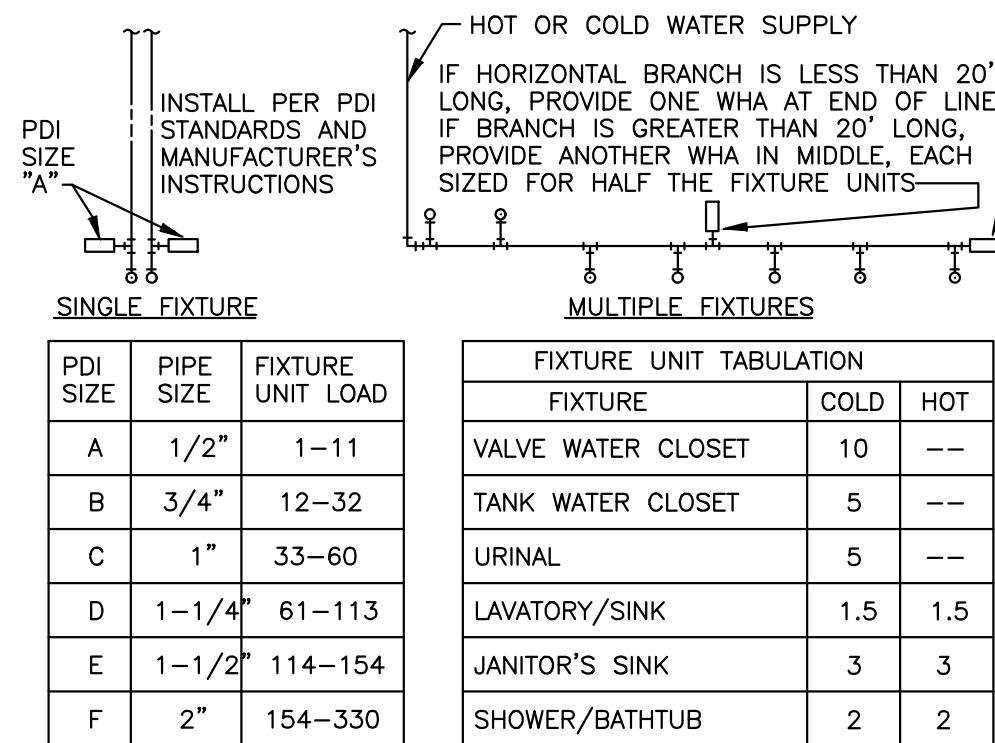
COOKING APPLIANCE GAS PIPE DETAIL

NOT TO SCALE



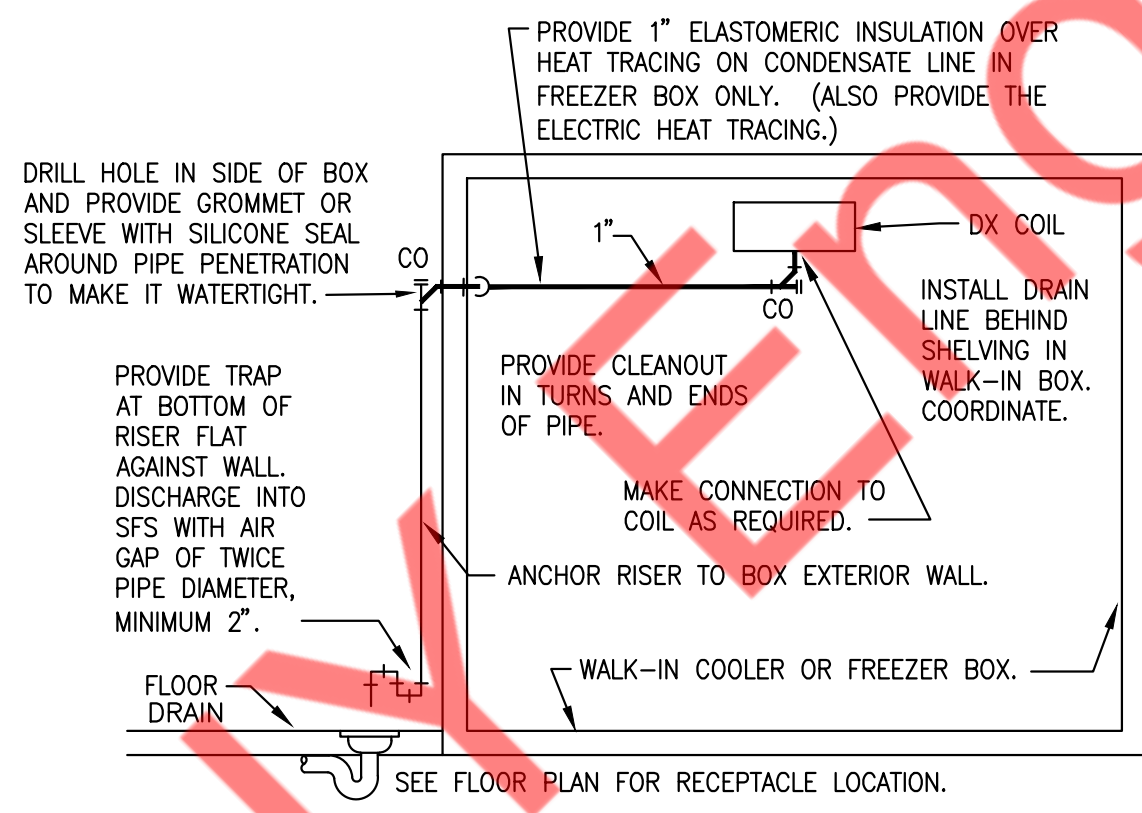
INDIRECT/CONDENSATE DRAIN

NOT TO SCALE



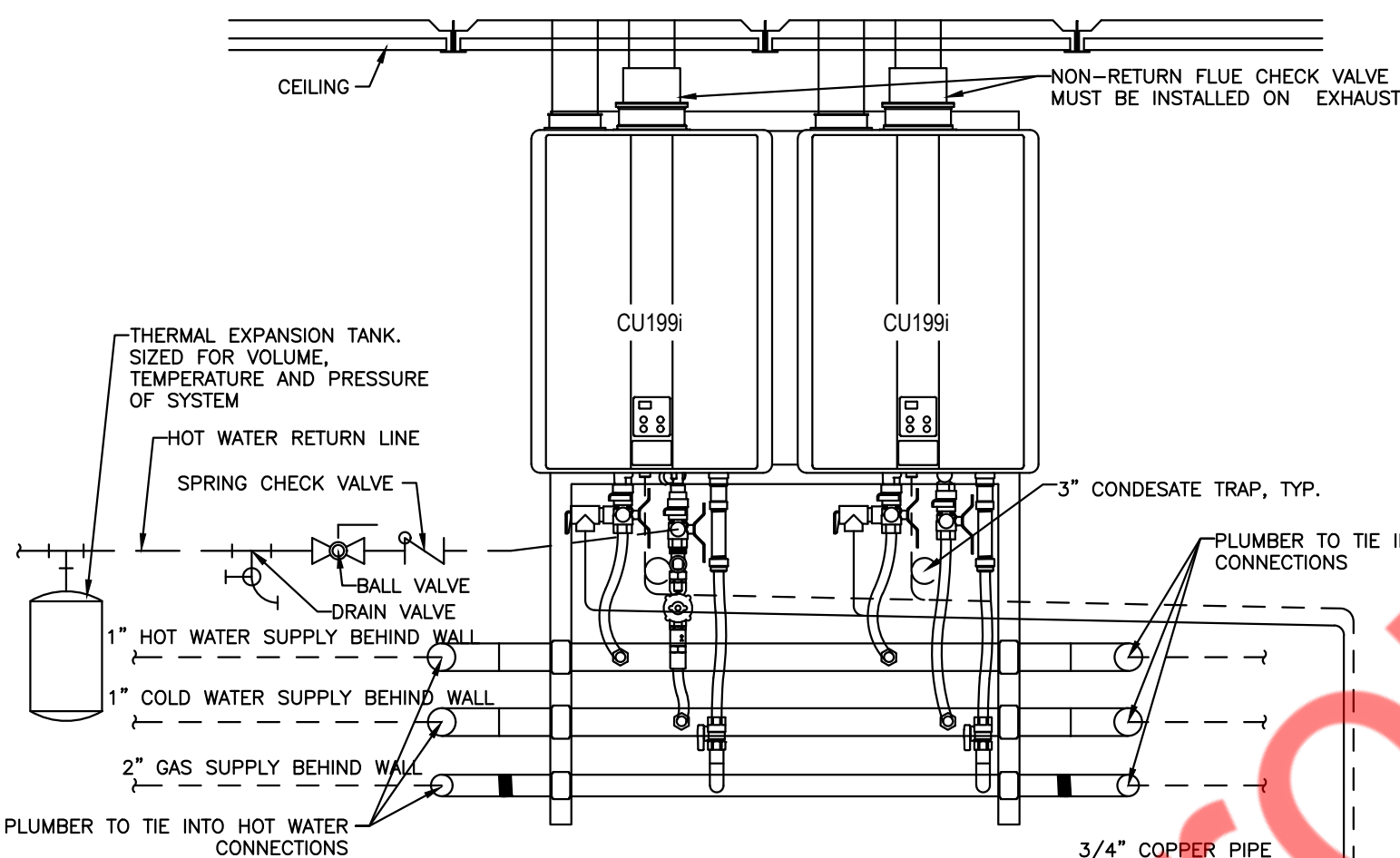
WATER HAMMER ARRESTORS

NOT TO SCALE



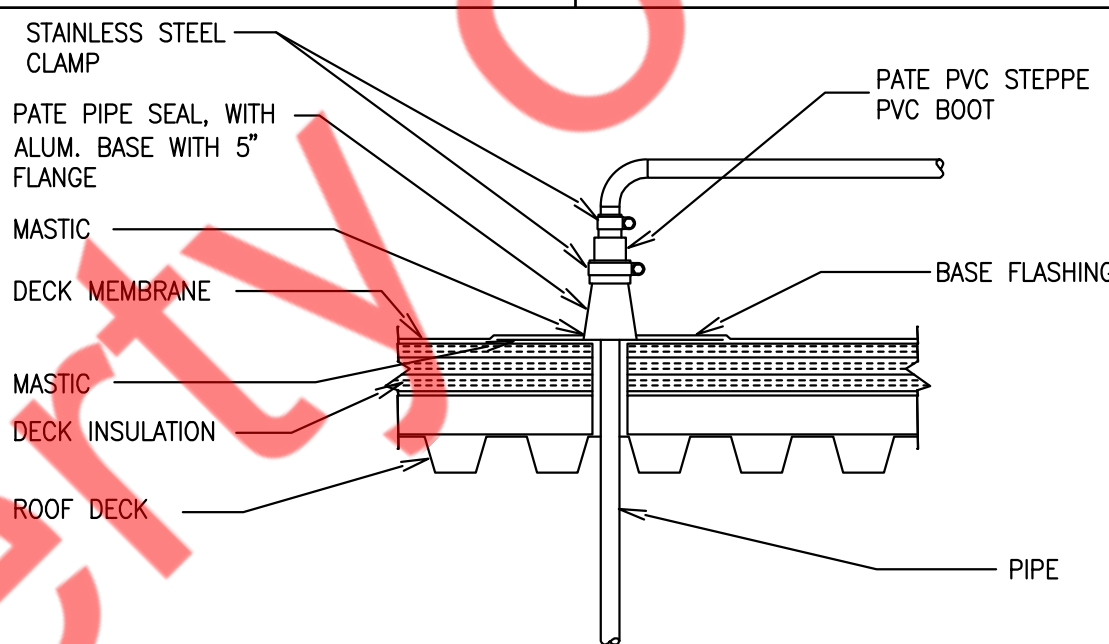
WALK-IN BOX CONDENSATE DRAIN

NOT TO SCALE



WATER HEATER DETAIL

NOT TO SCALE



PIPE ROOF PENETRATION DETAIL

NO SCALE

Architect

CIVIL ENGINEER

STRUCTURAL ENGINEER

LANDSCAPE COMPANY

MEP ENGINEER

NY ENGINEERS

DEVELOPER

PROJECT:

MICI ITALIAN
INTERIOR TENANT BUILD-OUT

Drawing Issue

Description	Date
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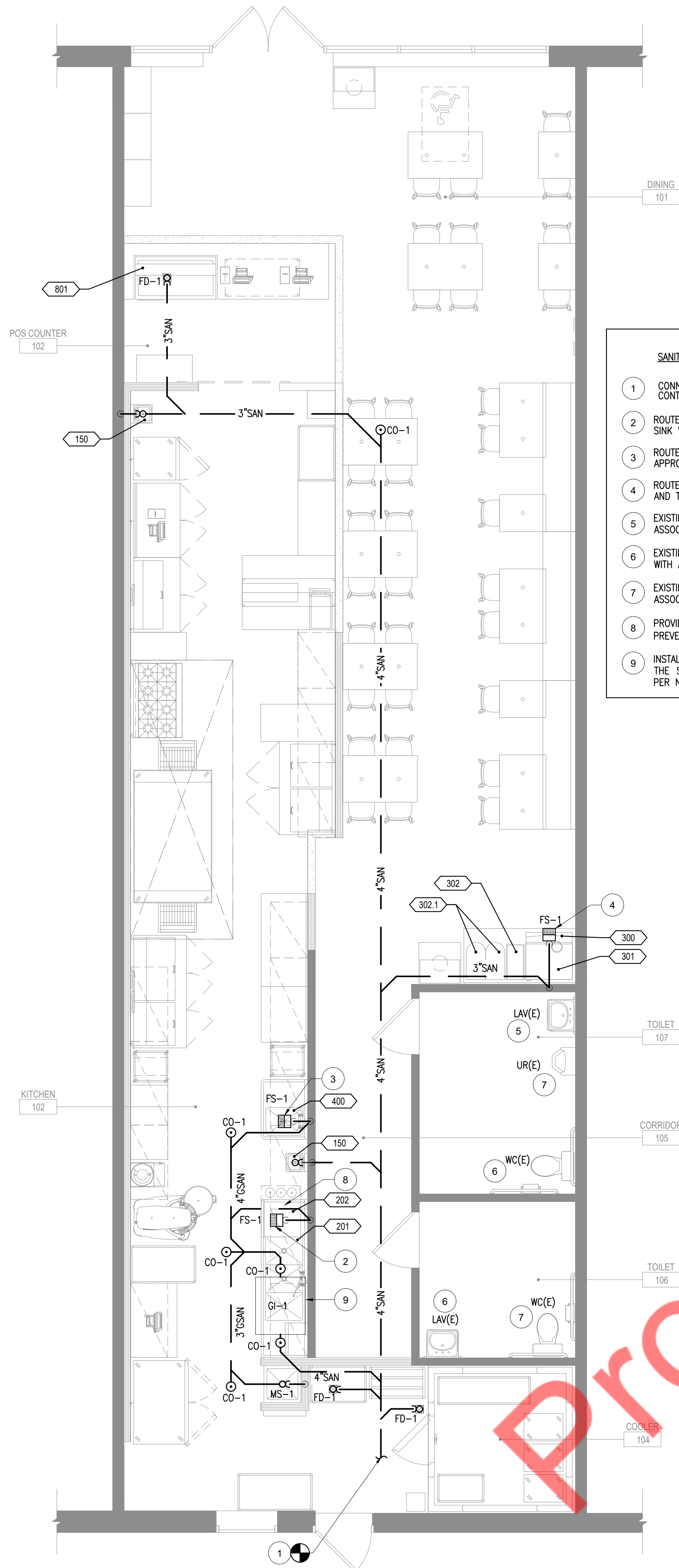
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PLUMBING DETAILS

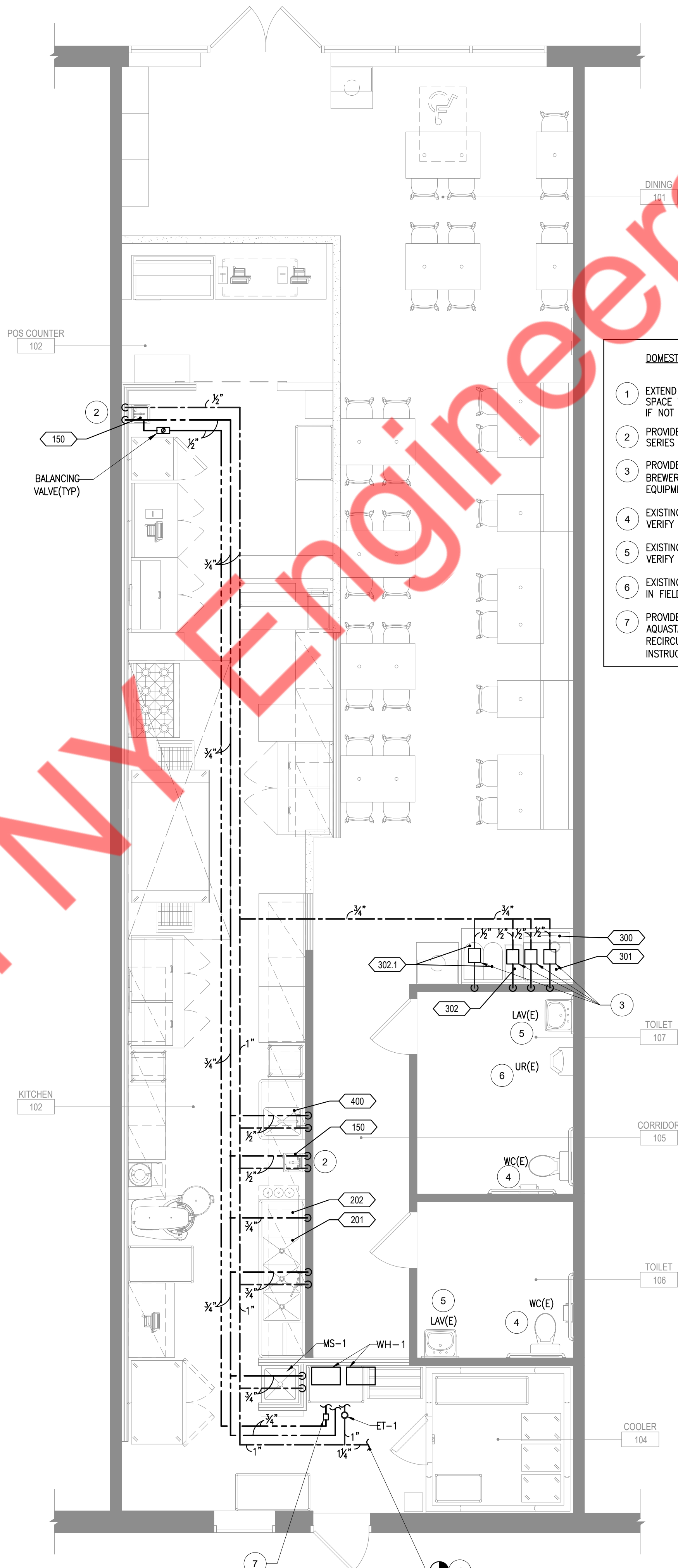
Sheet No.

P-0.2

Kolbrook Job No. 0000.000 Consultant Job No. -



2 SANITARY PLUMBING PLAN
SCALE: 1/4" = 1'-0"



1 DOMESTIC WATER PLUMBING PLAN
SCALE: 1/4" = 1'-0"

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PLUMBING PLANS

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P-1.1

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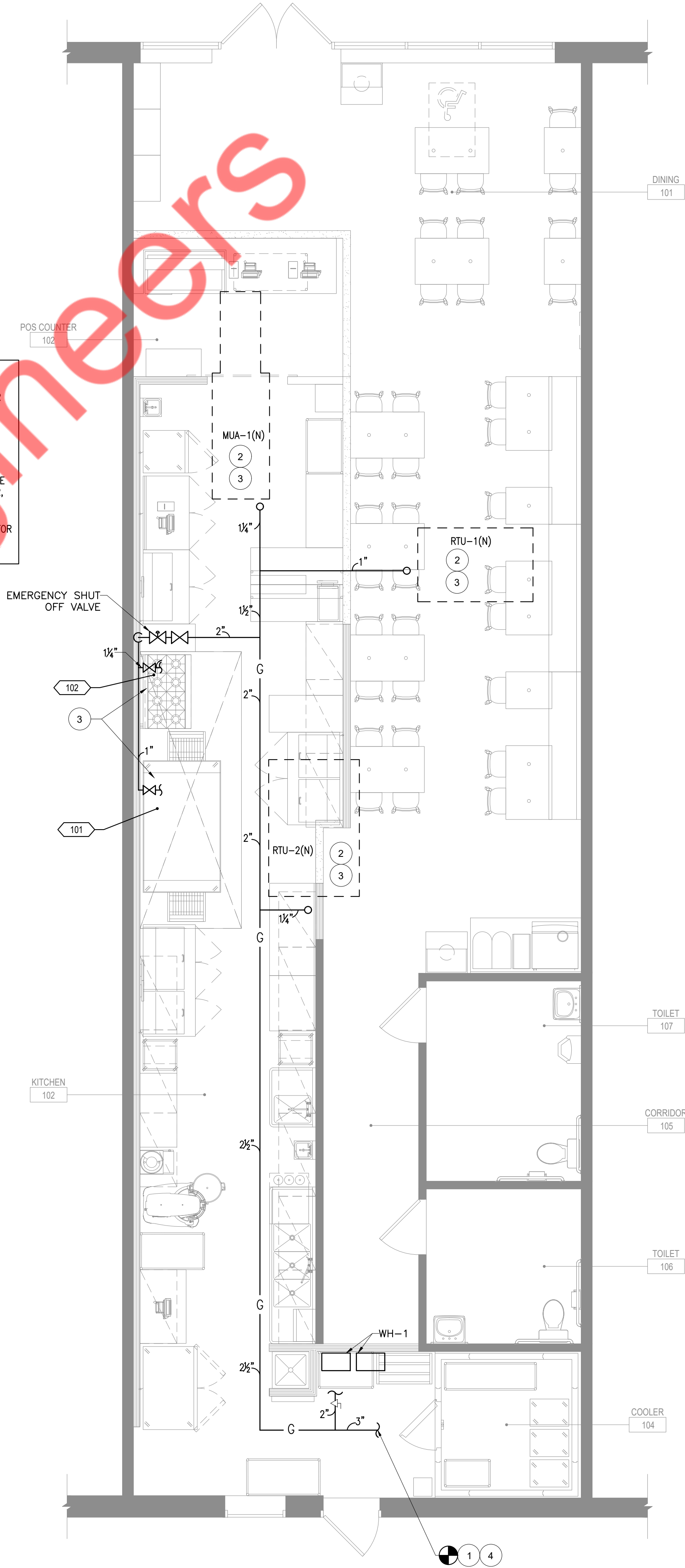
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GAS LOAD SUMMARY	
EQUIPMENT TAG	CFH LOAD
RTU-1(N)	110
RTU-2(N)	180
MUA-1(N)	198
TANKLESS WATER HEATER(X2)	398
GAS RANGE	224
PIZZA OVEN	100
TOTAL LOAD	1210

MAXIMUM EQUIVALENT LENGTH
OF PIPE=250 FT
PRESSURE DROP= 0.5IN.W.C
SPECIFIC GRAVITY= 0.60
GAS PIPE SIZING AS PER IFGC
2015, TABLE 402.4(2)

GAS PIPING PLAN NOTES:

- CONTRACTOR TO VERIFY IF NEW GAS METER'S CAPACITY IS EQUAL TO OR GREATER THAN 1210 CFH. COORDINATE ALL WORK WITH UTILITY COMPANY AND LANDLORD. EXTEND NEW GAS PIPING UP TO ROOFTOP TO EQUIPMENT AS SHOWN.
- EXTEND GAS LINE TO MAKEUP AIR UNIT, RTU-1(N), RTU-2(N). PROVIDE SHUTOFF VALVE, UNION AND DIRTLEG.
- CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR GAS FIRED WATER HEATER, RTU-1(N), RTU-2(N) MUA-1(N), PIZZA OVEN AND GAS RANGE.
- EXTEND AND CONNECT NEW 3" GAS PIPING TO NEW GAS METER. CONTRACTOR SHALL VERIFY EXACT LOCATION, SIZE ON FIELD.



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PLUMBING PLANS

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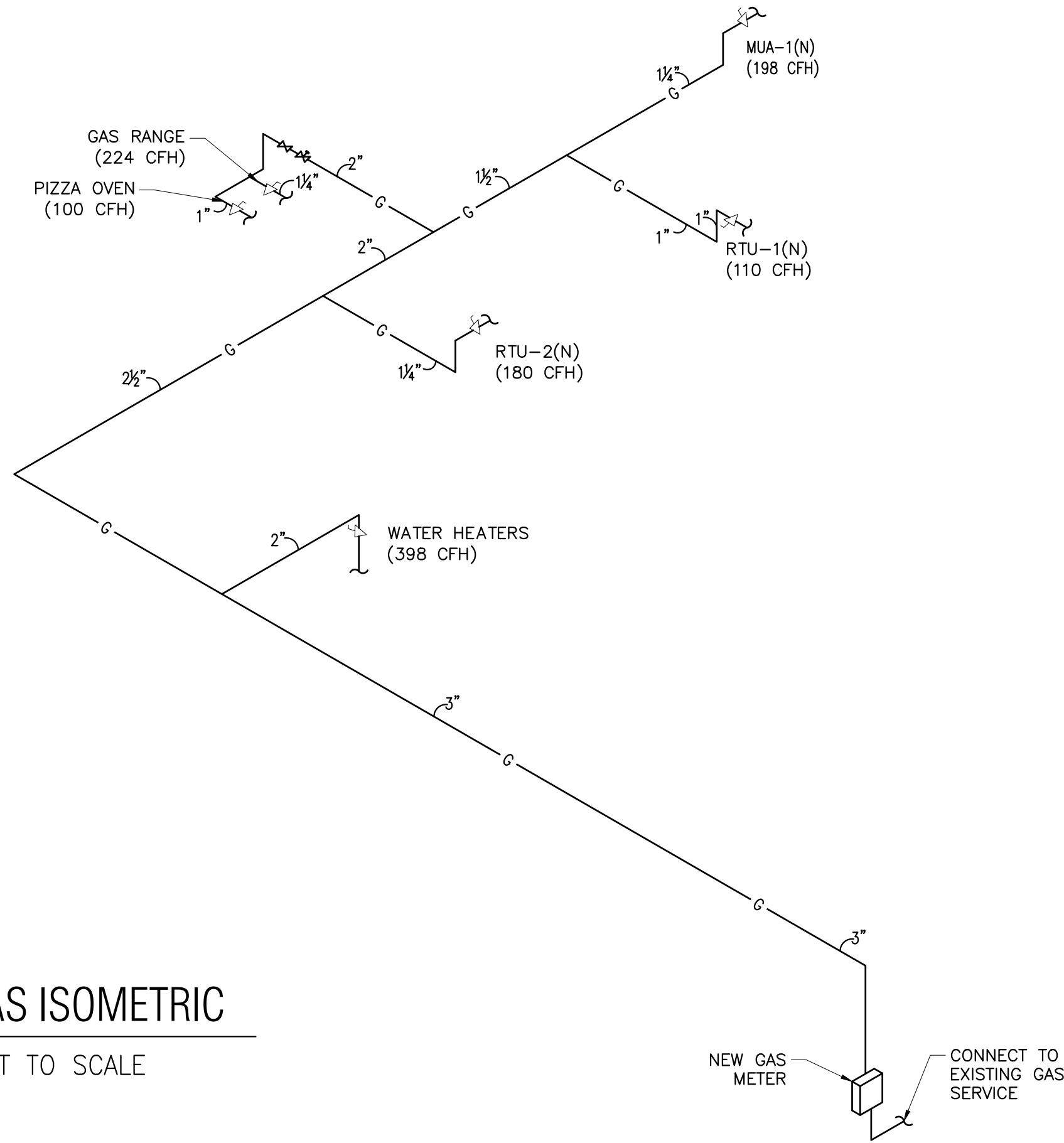
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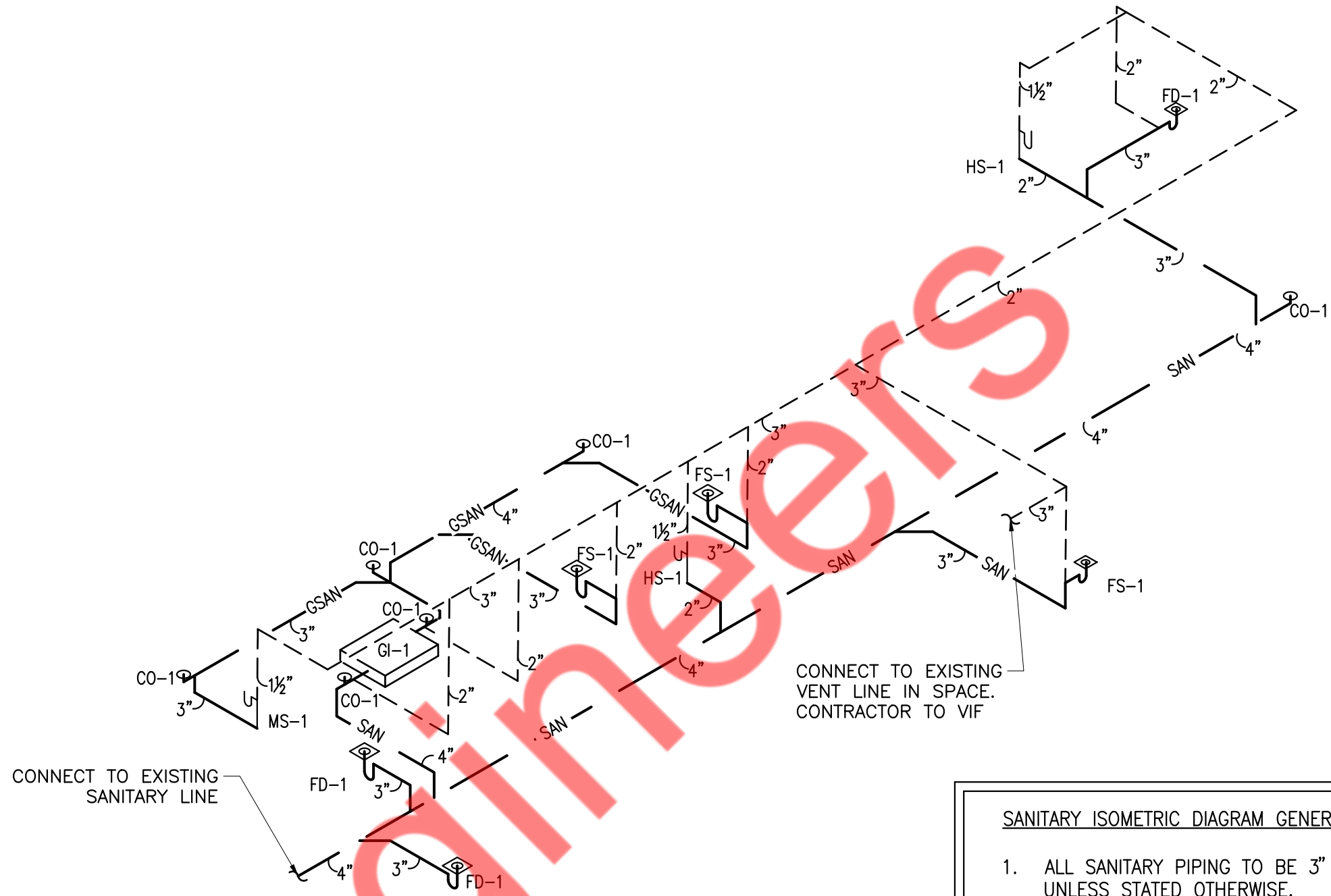
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GAS ISOMETRIC
NOT TO SCALE

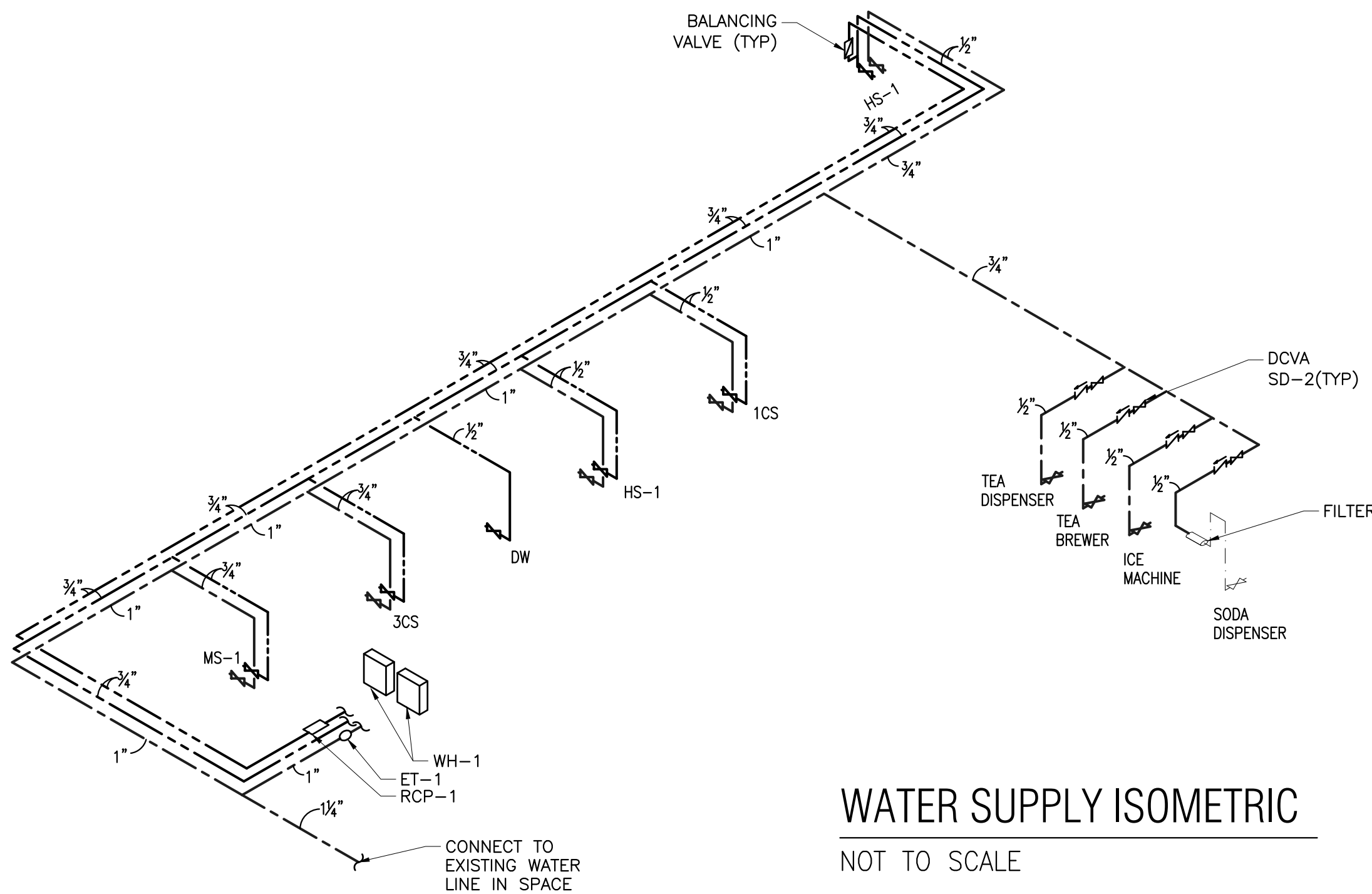


SANITARY ISOMETRIC
NOT TO SCALE



- SANITARY ISOMETRIC DIAGRAM GENERAL NOTES**
1. ALL SANITARY PIPING TO BE 3" DIAMETER UNLESS STATED OTHERWISE.
 2. ALL VENT PIPING TO BE 1-1/2" DIAMETER UNLESS STATED OTHERWISE.
 3. CONNECT SANITARY & VENT PIPING TO EXISTING PIPING IN AREA. FIELD VERIFY EXACT TIE-IN LOCATIONS.

WATER SUPPLY ISOMETRIC
NOT TO SCALE



SPACE INTENTIONALLY LEFT BLANK FOR CITY
APPROVAL / STAMPS

Architect

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STRUCTURAL ENGINEER

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MEP ENGINEER

NY ENGINEERS

DEVELOPER

PROJECT:

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INTERIOR TENANT BUILD-OUT

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PLUMBING RISERS

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