

HVAC SPECIFICATIONS

NOTE: MANUFACTURERS' NAMES ON WHICH THIS SPECIFICATION IS BASED INDICATE THE MINIMUM QUALITY OF PRODUCT REQUIRED. SUBSTITUTION MAY BE MADE TO THOSE SPECIFIED IF DEEMED EQUIVALENT BY THE OWNER'S REPRESENTATIVE THRU A SUBMITTAL PROCESS. ALL WORK AND PRODUCTS SHALL MEET THE REQUIREMENTS OF THE OWNER AND 2022 CALIFORNIA MECHANICAL CODE.

- ALL WORK SHALL BE PERFORMED IN CONFORMANCE WITH ALL APPLICABLE CODES AND THE OWNER'S MINIMUM REQUIREMENTS AS STATED HEREIN OR OTHERWISE INDICATED BY THE OWNER.
- SEE ARCHITECTURAL GENERAL AND SPECIAL CONDITIONS. ALL CONDITION REQUIREMENTS SHALL APPLY UNLESS OTHERWISE NOTED.
- ALL WORK SHALL BE PERFORMED AS INDICATED ON DRAWINGS UNLESS FIELD CONDITIONS REQUIRE MINOR CHANGES BE MADE. MINOR CHANGES SHALL BE MADE WITH NO ADDITIONAL COST.
- ALL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE WORK BY THE OWNER.
- CONTRACTOR SHALL PREPARE AND SUBMIT AS-BUILT DRAWINGS TO THE OWNER IF REQUESTED. AS-BUILT DRAWINGS SHALL INDICATE THE ACTUAL MANUFACTURER OF THE EQUIPMENT THAT WAS INSTALLED, THE EXACT LOCATION OF THE EQUIPMENT AND PERTINENT CAPACITIES FOR HEATING, COOLING, ETC.
- EQUIPMENT, FIXTURES, AND ACCESSORIES SHALL NOT BE SUP-PORTED FROM CEILING, SOFFIT, NEUTRAL PIERS, PIPING, DUCT-WORK, METAL ROOF DECK, LATERAL BRACING, BRIDGING OR CONDUIT. ITEMS SHALL ONLY BE SUPPORTED FROM STRUCTURE WHICH HAS BEEN APPROVED BY THE ARCHITECT FOR SUPPORT.
- ALL ROOF WORK PENETRATIONS AND REPAIRS SHALL BE TOTALLY PERFORMED BY ONLY THOSE ROOFING CONTRACTORS APPROVED BY THE OWNER/LANDLORD.
- INSTALLATION OF ROOF MOUNTED EQUIPMENT SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND OTHER TRADES.
- DEFICIENCIES AND NON-CONFORMING ITEMS SHALL BE CORRECTED BY THE CONTRACTOR. FAILURE TO CORRECT SUCH ITEMS SHALL PERMIT THE LANDLORD TO CORRECT SAME AT A COST TO THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL PERMITS AND PAYING FOR SAME. HE SHALL INCLUDE IN HIS BID CHARGES FOR ALL FEES ASSOCIATED WITH THE CONSTRUCTION OF THE SPACE INCLUDING BUT NOT LIMITED TO LOCAL, COUNTY, OR STATE SERVICE CHARGES AND PERMIT FEES, AND UTILITY AND/OR EQUIPMENT CHARGES.
- THE SCOPE OF WORK OF THIS CONTRACT INCLUDES, BUT SHALL NOT BE LIMITED TO:

PROVIDE AND INSTALL ALL EQUIPMENT, APPLIANCES, CONTROL DEVICES, ACCESSORIES, MATERIAL AND LABOR.

PROVIDE AND INSTALL ALL DUCTWORK, INSULATION, AIR DEVICES, DUCT ACCESSORIES, MATERIAL AND LABOR.

PROVIDE AND INSTALL ALL PIPING, FITTINGS, VALVES, INSULATION, ACCESSORIES, MATERIAL AND LABOR.

PROVIDE AND INSTALL EXHAUST SYSTEM(S) INDICATED.

PROVIDE AND INSTALL ALL ROOF WORK, INCLUDING EQUIPMENT SUPPORTS, ROOF PENETRATIONS, PATCHING AND WATERPROOFING OF ROOF.

PROVIDE ALL EQUIPMENT SUPPORTS AND HANGERS INCLUDING ANY AUXILIARY STEEL REQUIRED. ANY STRUCTURAL MODIFICATION TO THE BUILDING STRUCTURE SHALL BE MADE ONLY WITH THE WRITTEN APPROVAL OF THE LANDLORD.

PROVIDE LOW VOLTAGE CONTROLS WIRING BETWEEN THERMOSTATS, SENSORS AND ROOF MOUNTED EQUIPMENT.

CLEAN, TEST AND PUT INTO SERVICE ALL SYSTEMS SPECIFIED.

PROVIDE A BALANCE REPORT PREPARED BY AN INDEPENDENT AABC OR NEBB CERTIFIED AIR BALANCE CONTRACTOR.

WARRANTY ALL WORK AND MATERIALS HEREIN SPECIFIED FOR A PERIOD OF NOT LESS THAN ONE YEAR.

12. MATERIALS

- ALL MATERIALS SHALL BE NEW AND OF RECOGNIZED COMMERCIAL QUALITY. USED MATERIALS WILL NOT BE PERMITTED.

12.2. DUCTWORK:

SHALL BE GALVANIZED SHEET METAL FABRICATED, SEALED, AND INSTALLED IN STRICT ACCORDANCE WITH THE LATEST EDITION OF ANSI/SMACNA 006-2006 HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, OR ANOTHER APPROVED DUCT CONSTRUCTION STANDARDS SHALL MEET THE REQUIREMENTS OF ALL JURISDICTIONS CODES.

FLEXIBLE AIR DUCT FOR CONNECTIONS BETWEEN S.M. DUCT AND DIFFUSER SHALL BE AIR DUCT LISTED BY UNDERWRITERS LABORATORIES UNDER UL STANDARD 181 AS A CLASS 1 FLEXIBLE AIR DUCT AND COMPLYING WITH NFPA STANDARDS 90A AND 90B. DUCT SHALL BE FACTORY MADE AND COMPOSED OF A CPE LINER DUCT PERMANENTLY BOUNDED TO A COATED SPRING STEEL WIRE HELIX AND SUPPORTING A FIBER GLASS INSULATING BLANKET.

DUCTWORK 18" WIDTH AND LARGER SHALL BE CROSS-BROKEN OR RIBBED AND STIFFENED SO THAT IT WILL NOT "BREATHE", RATTLE, VIBRATE OR SAG.

ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK MUST BE SECURELY SEALED USING WELDMENTS, MECHANICAL FASTENERS WITH SEALS, GASKETS, OR TAPES. TAPES MUST BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B. ALL LONGITUDINAL AND TRANSVERSE JOINTS, SEAMS AND CONNECTIONS OF SUPPLY AND RETURN DUCTS OPERATING AT STATIC PRESSURES LESS THAN OR EQUAL TO 2" W.G. SHALL BE SECURELY FASTENED AND SEALED WITH WELDS GASKETS OR TAPES INSTALLED IN ACCORDANCE WITH MANUFACTURERS' INSTALLATION AND ANSI/SMACNA 006-2010 HVAC DUCT CONSTRUCTION STANDARDS.

12.3. FLEXIBLE DUCTWORK:

SHALL HAVE AN IMPERVIOUS INNER CORE WITH WIRE REIN-FORCEMENT. THE INNER DUCT SHALL BE COVERED WITH 1.5" THICK FIBERGLASS DUCT INSULATION WITH A POLY-ETHYLENE VAPOR-PROOF JACKET. FLEXIBLE DUCT SHALL BE UL-181 LISTED, CLASS 1, AND SHALL MEET ALL APPLICABLE CODES AND THE REQUIREMENTS OF THE LANDLORD.

FITTINGS TO CONNECT THE FLEX DUCT TO THE TRUNK DUCT SHALL BE OF THE 45° LEAD-IN TYPE PER THE LATEST OF SMACNA STANDARDS AND SHALL HAVE AN OPPOSED BLADE VOLUME DAMPER, SQUARE-TO-ROUND TRANSITION AND SHALL HAVE THE SAME FREE AREA AS THE SPECIFIED FLEX DUCT.

FLEX DUCT SHALL BE THE PRODUCT OF AN ESTABLISHED MANUFACTURER OF SUCH PRODUCTS AND EQUIVALENT TO CERTAINTIED MODEL G-25, WIREMOLD WGC, OR PPG GOSSFLEX.

12.4. DUCT INSULATION :

ALL SUPPLY, MAKE-UP AND RETURN AIR DUCTWORK (EXCEPT FLEXIBLE DUCTS) SHALL BE INSULATED EXTERNALLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.

EXTERNAL DUCT INSULATION (DUCT WRAP) SHALL BE FIBERGLASS DUCT WRAP WITH VINYL FSK FACING. SEE DUCT CONSTRUCTION SCHEDULE FOR REQUIRED INSULATION VALUES. DUCT WRAP SHALL HAVE A DENSITY OF .75 LB./C.F.

ALL DUCT INSULATION SHALL BE UL LABELED FOR FIRE AND SMOKE RATINGS. DUCT INSULATION SHALL BE EQUAL TO PRODUCTS MANUFACTURED BY JOHNS MANVILLE AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

12.5. DUCT SEALANT

PROVIDE DUCT SEALANT OF 2" WIDE, WOVEN-FIBER TAPE IMPREGNATED WITH GYPSUM MINERAL COMPOUND AND MODIFIED ACRYLIC/SILOXANE ACTIVATOR TO REACT EXOTHERMICALLY WITH TAPE TO FORM HARD, DURABLE, AIRTIGHT SEAL. AT THE CONTRACTOR'S OPTION, PROVIDE SEALANT SIMILAR TO CARLSLE HARDCAST FLEX-GRIP 550 WATER BASED DUCT SEALANT. SEALANT SHALL BE UL LISTED 94PF WITH 0 FLAME SPREAD AND 0 SMOKE DEVELOPED AND SHALL BE EPA, USDA AND FDA APPROVED.

12.6. PIPING AND FITTINGS:

CONDENSATE DRAIN PIPING SHALL BE TYPE L COPPER WITH SOLDERED JOINTS AND WROUGHT COPPER FITTINGS.

12.7. CONTROLS :

PROVIDE CONTROLS AND WIRING TO PERFORM THE SEQUENCES DESCRIBED ON THE PLANS. WIRING SHALL BE MINIMUM 18 AWG, NON-SHEELED, BUNDLED CABLES. INSTALL ALL WIRING IN EMT CONDUITS AND JUNCTION BOXES CONFORMING TO 2020 NEC.

13. EQUIPMENT:

HVAC EQUIPMENT SHALL BE AS SCHEDULED ON THE DRAWINGS AND/OR SPECIFIED HEREIN. EQUIVALENT EQUIPMENT AND/OR COMPONENTS THEREOF MAY BE SUBSTITUTED FOR SPECIFIED EQUIPMENT ONLY AS APPROVED BY THE OWNER AND/OR THE PROJECT ENGINEER.

14. EXECUTION

14.1. GENERAL:

GENERAL ACCESSIBILITY - ALL EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER THAT ALL COMPONENTS REQUIRING ACCESS ARE LOCATED AND INSTALLED THAT THEY MAY BE SERVICED, RESET, REPLACED, OR RECALIBRATED, ETC., BY SER-VICE PEOPLE WITH NORMAL SERVICE TOOLS AND EQUIPMENT.

WORK BY OTHER TRADES - FOR THE WORK REQUIRED BY OTHER TRADES FOR CHANGES MADE BY THIS CONTRACTOR IN TYPE OR SIZE OF EQUIPMENT PURCHASED, ANY CUTTING, PATCHING, FURRING, PAINTING, ELECTRICAL OR PLUMBING WORK SHALL BE DONE BY THE AFFECTED TRADE AT THIS CONTRACTOR'S EXPENSE.

WORK NOT INCLUDED - POWER WIRING, INCLUDING FINAL CONNECTIONS, SHALL BE BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL FURNISH THE STARTING EQUIPMENT TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION. CONTROL WIRING, INCLUDING 115V FROM POWER SOURCE, CONDUIT AND SWITCHES SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR. CONTROL DEVICES, THERMOSTATS, INTERLOCKS, ETC. SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR. WIRING DIAGRAMS AND INSTALLATION INSTRUCTIONS SHALL BE FURNISHED TO THE OWNER UPON PROJECT COMPLETION.

EARLY START-UP - THIS CONTRACTOR SHALL ENSURE THAT ALL MECHANICAL EQUIPMENT IS CONNECTED WITH ELECTRICAL POWER AS EARLY AS POSSIBLE SO THAT BALANCING AND TESTING CAN BEGIN AT THE EARLIEST DATE AVAILABLE.

CLEANING AND PAINTING - THOROUGHLY CLEAN ALL EQUIPMENT AND REMOVE ALL TRASH, CARTONS, ETC., FROM THE WORK AREA. MAKE ANY NECESSARY CORRECTIONS OR REPAIR/REPLACE ANY DAMAGED MATERIALS OR EQUIPMENT. LEAVE THE ENTIRE LEASE SPACE IN A THOROUGHLY CLEAN AND ORDERLY MANNER. ANY FINISHED SURFACES THAT HAVE BEEN SCRATCHED OR DISCOLORED SHALL BE TOUCHED UP OR REPAINTED TO MATCH THE ORIGINAL COLOR. IF ANY PART HAS BEEN BENT, BROKEN OR OTHERWISE DAMAGED, IT SHALL BE REPLACED PRIOR TO PROJECT CLOSEOUT. ALL METAL ITEMS INSIDE THE BUILDING SUBJECT TO RUSTING, AND ALL FERROUS METAL EXPOSED TO THE WEATHER SHALL BE GIVEN ONE COAT OF RUST PREVENTIVE PRIMER AS SOON AS INSTALLED.

14.2. EQUIPMENT INSTALLATION:

ALL EQUIPMENT AND RELATED PIPING, DUCTWORK, CONTROL WIRING AND ACCESSORIES SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BUILDING LINES AND, IF INSTALLED WITHIN THE BUILDING ENVELOPE SHALL BE INSTALLED AS HIGH AS POSSIBLE TO ALLOW THE MAXIMUM AMOUNT OF HEADROOM. EQUIPMENT THAT REQUIRES ROUTINE MAINTEN-ANCE SUCH AS FILTER REPLACEMENT SHALL BE INSTALLED AND ARRANGED TO BE ACCESSIBLE. PROVIDE ACCESS PANEL(S) AS REQUIRED AND/OR AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER. ALL EQUIPMENT SHALL BE INSTALLED WITH THE REQUIRED CLEARANCES AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER OR AS REQUIRED BY GOVERNING CODES, WHICHEVER IS GREATER.

14.3. DUCTWORK :

LOW PRESSURE DUCTWORK AND FITTINGS SHALL BE MADE TIGHT FOR MINIMUM AIR LEAKAGE. DUCT TAPE SHALL NOT BE USED TO SEAL JOINTS, TO MAKE TRANSITIONS OR FOR ANY OTHER REASON ON THE OUTSIDE OF WRAPPED INSULATION.

INSTALL DUCTWORK AS HIGH AS POSSIBLE.

PROVIDE TURNING VANES AT ALL CHANGES IN DIRECTION.

PROVIDE VANED TEES AT BRANCH CONNECTIONS SERVING SERVING MORE THAN ONE DIFFUSER.

PROVIDE VOLUME CONTROL DAMPERS AND BALANCING DE-VICES AS REQUIRED TO DISTRIBUTE THE AIR AND AS INDICATED ON THE DRAWINGS.

DUCT DIMENSIONS INDICATED ON THE DRAWINGS ARE INSIDE CLEAR, OR "FREE AREA" DIMENSIONS. CONTRACTOR SHALL MAKE ALLOWANCE FOR INTERNAL DUCT LINER (WHERE SPECIFIED) WHEN ORDERING PRE-FABRICATED DUCTWORK OR WHEN FABRICATING DUCTS IN THE FIELD.

DUCT WRAP SHALL BE INSTALLED IN A NEAT AND COMPETENT MANNER WITH ALL EDGES NEATLY COVERED WITH AN APPROVED METALLIC DUCT TAPE TO VAPOR-PROOF THE ENTIRE DUCT. LAPS AND JOINTS SHALL BE SECURED WITH INSULATION STAPLES AND THEN COVERED WITH APPROVED TAPE.

14.4. FLEXIBLE DUCTWORK :

DUCTWORK SHALL BE LIMITED IN LENGTH TO THAT NECESSARY TO MAKE CONNECTIONS BETWEEN TRUNK OR BRANCH DUCTS AND AIR DEVICES.

FLEX DUCT LENGTH SHALL NOT EXCEED 5'-0". FLEXIBLE DUCTS SHALL NOT BE USED IN LIEU OF RIGID ELBOW. ALL FLEX DUCT SHALL BE FULLY STRETCHED OUT TO REDUCE AIR RESISTANCE.

CONNECTIONS TO FITTINGS OR AIR DEVICES SHALL BE MADE WITH TWO (2) STAINLESS STEEL BANDS. THE INNER LINER SHALL BE CLAMPED TIGHT WITH THE FIRST BAND, THEN THE INSULATION AND VAPOR-PROOF JACKET PULLED TO BE TIGHT AGAINST THE DUCT FITTING OR AIR DEVICE AND SECURED WITH THE SECOND BAND.

INSTALLATION SHALL BE AS RECOMMENDED BY THE DUCT MANUFACTURER AND SMACNA. SUPPORT THE FLEXIBLE DUCT WITH ADEQUATE HANGERS TO RELIEVE STRAIN ON ANY FITTING. UNNECESSARY BENDS, SAGS, TWISTS, ETC. WILL NOT BE ALLOWED.

14.5. ROUND AND FLAT OVAL DUCTWORK

ALL ROUND AND FLAT OVAL SUPPLY, RETURN AND EXHAUST DUCTWORK SHALL BE UNLAP, UNITED MCGILL OR SEMCO DUCT SYSTEMS CONSISTING OF FITTINGS THAT ARE FACTORY FITTED WITH A SEALING GASKET AND SPIRAL DUCT WHICH, WHEN INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS, WILL SEAL THE DUCT JOINTS WITHOUT THE USE OF DUCT SEALER.

MATERIAL: ALL DUCT AND FITTINGS SHALL BE G-90 OR G-60 GALVANIZED STEEL IN ACCORDANCE WITH ASTM A-643 AND A-424.

CONSTRUCTION: ALL DUCT AND FITTINGS SHALL BE CONSTRUCTED PER SMACNA'S DUCT CONSTRUCTION STANDARDS +10 IN W.G. FITTINGS.

ALL FITTING ENDS SHALL COME FACTORY EQUIPPED WITH A SEALING GASKET. GASKET SHALL BE CLASSIFIED BY UNDERWRITER'S LABORATORIES TO CONFORM TO ASTM E84-91A AND NFPA 90A FLAMESPREAD AND SMOKE DEVELOPED RATINGS OF 25/50.

ALL FITTINGS SHALL BE CONTINUOUSLY STITCH WELDED OR SHALL BE STANDING SEAM GORELOCK CONSTRUCTION AND INTERNALLY SEALED. THE RADIUS OF ALL 90° AND 45° ELBOWS SHALL BE 1.5 TIMES THE ELBOW DIAMETER. THE RADIUS OF ALL 15°, 30° AND 60° ELBOWS SHALL BE 1.0 TIMES THE ELBOW DIAMETER. ALL FITTINGS THAT ARE OF EITHER SPOT WELDED OR BUTTON PUNCHED WELDED OR BUTTON PUNCHED CONSTRUCTION SHALL BE INTERNALLY SEALED.

WHEN CONTRACT DOCUMENTS REQUIRE DIVIDED FLOW FITTINGS ONLY FULL BODY FITTINGS WILL BE ACCEPTED.

ALL BRANCH CONNECTIONS SHALL BE MADE AS A SEPARATE FITTING. FIELD INSTALLATION OF TAPS INTO SPIRAL DUCT SHALL NOT BE ALLOWED.

ALL VOLUME DAMPERS SHALL BE FITTING SIZED TO SLIP INTO SPIRAL DUCT. RUSKIN MD15 SERIES, OR EQUAL BY AMB, DAMPER SHALL HAVE THE FOLLOWING FEATURES:

LOCKING QUADRANT WITH BLADE.

POSITION INDICATOR.

2" SHEET METAL INSULATION STAND-OFF INTEGRAL SHAFT/BLADE ASSEMBLY.

SHAFT MOUNTED, LOAD BEARING BUSHINGS.

GASKETED SHAFT PENETRATIONS TO MINIMIZE LEAKAGE.

PERFORMANCE: SELF SEALING DUCT SYSTEM PERFORMANCE SHALL MEET SMACNA'S LEAKAGE CLASS 3 REQUIREMENTS AT -10 IN W.G. TO +10 IN W.G.

14.6. DUCT LINER

ALL DUCTWORK DESIGNATED TO RECEIVE DUCT LINER SHALL BE COMPLETELY COVERED WITH LINER. TRAVERSE JOINTS SHALL BE NEATLY BUTTED AND THERE SHALL BE NO INTER-RUPTIONS OR GAPS.

DUCT LINER SHALL BE CUT AS REQUIRED TO ENSURE OVER-LAPPED AND COMPRESSED LONGITUDINAL CORNER JOINTS.

FASTENERS SHALL START WITHIN 3" OF THE UPSTREAM TRAVERSE EDGES OF THE LINER AND 3" FROM THE LONG-ITUDINAL JOINTS AND SHALL BE SPACED AT A MAXIMUM OF 12" o.c. AROUND THE PERIMETER OF THE DUCT. ELSE-WHERE THEY SHALL BE SPACED AT A MAXIMUM OF 18" o.c., EXCEPT THAT THEY SHALL BE PLACED NOT MORE THAN 6" FROM A LONGITUDINAL JOINT OF THE LINER OR 12" FROM A CORNER BREAK.

14.7. AIR DEVICES

INSTALL ALL GRILLES AND DIFFUSERS TO BE FLUSH WITH THE PENETRATED SURFACE AND LEVEL OR STRAIGHT WITH WITH SURROUNDING FEATURES. ALL CEILING MOUNTED AIR DEVICES SHALL BE LOCATED IN THE CEILING TILE INDICATED ON THE DRAWINGS. SUPPORT CEILING MOUNTED GRILLES AND DIFFUSERS AT THE PROPER HEIGHT TO HOLD IT SNUG AGAINST THE CEILING.

14.8. DUCT SEALANT

SEAL SUPPLY AND RETURN DUCT TRAVERSE JOINTS FOR PRESSURE CLASS C, LESS THAN 2" W.G. PRESSURE. SEAL TOILET EXHAUST DUCT JOINTS FOR -2" W.G.

14.9. RANGE HOOD EXHAUST DUCTS

FABRICATE RANGE HOOD EXHAUST DUCTS AND GREASE DUCTS WITH 0.0598-INCH-THICK CARBON-STEEL SHEET FOR CONCEALED DUCTS AND 0.0500-INCH-THICK STAINLESS STEEL FOR EXPOSED DUCTS. WELD AND FLANGE SEAMS AND JOINTS. COMPLY WITH NFPA 96.

ALL SEAMS, JOINTS, PENETRATIONS, AND DUCT-TO-HOOD COLLAR CONNECTIONS SHALL HAVE A LIQUID-TIGHT CONTINUOUS EXTERNAL WELD.

14.10. RANGE HOOD EXHAUST AND GREASE DUCT INSTALLATION

INSTALL DUCTS TO ALLOW FOR THERMAL EXPANSION THROUGH 2000 DEG.F TEMPERATURE RANGE.

INSTALL DUCTS WITHOUT DIPS OR TRAPS THAT MAY COLLECT RESIDUES.

INSTALL ACCESS OPENINGS AT EACH CHANGE IN DIRECTION AND AT 10-FOOT INTERVALS. LOCATE ON SIDES OF DUCT A MINIMUM OF 1-1/2 INCHES FROM BOTTOM AND FIT WITH GREASE-TIGHT COVERS OF SAME MATERIAL AS DUCT. A SIGN SHALL BE PLACED ON ALL ACCESS PANELS STATING THE FOLLOWING: "ACCESS PANEL - DO NOT OBSTRUCT"

DO NOT PENETRATE FIRE-RATED ASSEMBLIES.

PITCH DUCTS TOWARD KITCHEN HOOD TO ALLOW DRAINAGE A MINIMUM OF 1/4" PER LINEAL FOOT.

THE GREASE DUCT SHALL BE TESTED BY AN INDEPENDENT THIRD PARTY AIR BALANCE CONTRACTOR FOR THE GREASE DUCT SYSTEM WHICH WILL BE REVIEWED, APPROVED AND SIGNED OFF BY THE MECHANICAL ENGINEER OF RECORD ON ALL PROJECTS. THE GENERAL CONTRACTOR SHALL PROVIDE PROVIDE AN INDEPENDENT THIRD PARTY AABC OR NEBB CERTIFIED AIR BALANCE REPORT FOR THE GREASE DUCT PRESSURE TEST FOR THE PURPOSES OF WELD INTEGRITY CERTIFICATION.

- INSTALL ROOF MOUNTED EQUIPMENT SUPPORT RAILS OR ROOF CURB AS REQUIRED FOR THE JOB CONDITIONS, AND AS RECOMMENDED BY THE MANUFACTURER FOR THE INSTALLATION OF ROOF MOUNTED EQUIPMENT. THE EXACT LOCATION OF ALL ROOF MOUNTED EQUIPMENT IS SUBJECT TO SITE CONDITIONS AND THE APPROVAL OF THE GENERAL CONTRACTOR. COORDINATE THE ENTIRE INSTALLATION WITH THE GENERAL CONTRACTOR AND OTHER TRADES.

CONTRACTOR SHALL PROVIDE A TEMPORARY PLYWOOD WORK PLATFORM THAT COMPLETELY SURROUNDS THE AREA WHERE NEW ROOF MOUNTED EQUIPMENT AND/OR DUCTS ARE TO BE INSTALLED. THE ENTIRE WORK AREA SHALL REMAIN ON THE ROOF DURING THE ENTIRE PERIOD OF INSTALLATION AND SHALL BE REMOVED FROM THE ROOF AND THE SITE BY THIS CONTRACTOR UPON COMPLETION OF THE INSTALLATION.

ALL ROOF PENETRATIONS FOR POWER AND CONTROL WIRING CONDUITS AND GAS, CONDENSATE, OR REFRIGERANT PIPING SHALL BE MADE WITH WATERPROOF PIPE SLEEVES.

- THIS CONTRACTOR SHALL ENGAGE THE SERVICES OF INDEPENDENT AGENT, CONTRACTED DIRECTLY BY THE OWNER. A RE-TEST IS MANDATORY FOR A FALSE START (I.E. NO POWER UPON AGENTS ARRIVAL, EQUIPMENT NOT WIRED, ETC.) AND SHALL BE A COST INCURRED BY THE G.C. IN THE EVENT A SYSTEMSTORE RECEIVES AN UNACCEPTABLE GRADE AS A RESULT OF THE HVAC SYSTEM PERFORMANCE OR OPERATIONAL DEFICIENCIES, OWNER WILL REQUEST A RE-TEST AND THE COST FOR SAME SHALL BE ALSO INCURRED BY THE GENERAL CONTRACTOR. CONTRACTOR SHALL PROVIDE THE OWNER AND THE ARCHITECT A COPY OF THE CERTIFIED AIR BALANCE REPORT SHOWING DESIGN AND MEASURED AIR QUANTITIES, STATIC PRESSURES, FAN MOTOR RPM AND MOTOR CURRENT. DEVIATION BETWEEN DESIGN AND MEASURED QUANTITIES SHALL NOT BE GREATER THAN 5%.

- ALL MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE. FOR THE SAME PERIOD, THIS CONTRACTOR SHALL BE RESPON- SIBLE FOR ANY DAMAGE CAUSED TO THE PREMISES BY DEFECTS IN HIS WORKMANSHIP OR WORK AND/OR EQUIPMENT INSTALLED BY OTHERS UNDER HIS CONTRACT.

18. TESTING AND ADJUSTING

CONTRACTOR SHALL DEMONSTRATE OPERATION OF THE COMPLETE SYSTEM TO FULL SATISFACTION OF TENANT.

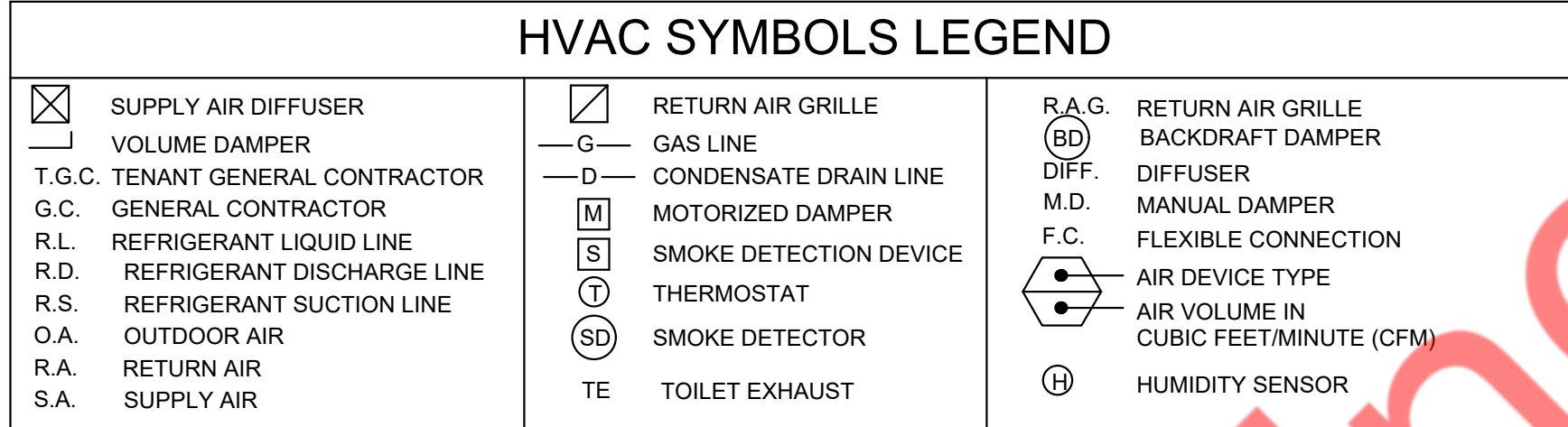
OPERATION AND MAINTENANCE DOCUMENTATION MUST BE PROVIDED TO THE OWNER THAT INCLUDES AT LEAST THE FOLLOWING INFORMATION:

A. EQUIPMENT CAPACITY (INPUT AND OUTPUT) AND REQUIRED MAINTENANCE ACTIONS.

B. EQUIPMENT OPERATION AND MAINTENANCE MANUALS.

C. HVAC SYSTEM CONTROL MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS; DESIRED OR FIELD-DETERMINED SET POINTS MUST BE PERMANENTLY RECORDED ON CONTROL DRAWINGS, AT CONTROL DEVICES, OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS.

D. COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE. ALL PIPING SHALL WITHSTAND AIR PRESSURE TESTING PER GOVERNING PLUMBING CODE.



1. THE MECHANICAL CONTRACTOR SHALL VERIFY THAT ALL EQUIPMENT, AS SHOWN ON THESE DRAWINGS, WILL NOT CONFLICT WITH ANY DRAINS, SCUTTLERS, JOINTS, VENTS, PIPING OR EQUIPMENT.
2. ALL ROOFTOP EQUIPMENT SHALL HAVE MANUFACTURER SUPPLIED ROOF CURBS AND PIPE SEALS.
3. THE MECHANICAL CONTRACTOR SHALL PROVIDE COMPLETE INFORMATION AND COOPERATION TO THE OTHER CONTRACTORS AND TRADES AS REQUIRED FOR COMPLETION AND COORDINATION OF THE COMPLETE PROJECT.
4. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ADMINISTERING ALL WARRANTIES ON EQUIPMENT INSTALLED BY THE CONTRACTOR. THIS INCLUDES, BUT IS NOT LIMITED TO REFRIGERANT LINES, FLUES, TENANT FURNISHED EQUIPMENT, ETC.
5. ALL OUTSIDE AIR INTAKES SHALL BE A MINIMUM OF 10'-0" FROM ANY EXHAUST FAN, FLUE OR PLUMBING VENT.
6. PROVIDE VIBRATION ISOLATION DEVICES AND FLEXIBLE CONNECTIONS TO ALL MOVING MACHINERY, EXCEPT EXHAUST FANS (UNLESS OF NOTES).
7. ALL FLEXIBLE DUCTS SHALL BE SUPPORTED EVERY 4'-0" WITH 2" WIDE GALVANIZED STEEL BANDS WITH A MINIMUM OF ONE PER EACH SECTION OF FLEXIBLE DUCT. NO FLEXIBLE DUCTWORK SHALL BE ALLOWED ABOVE INACCESSIBLE CEILINGS.
8. ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS IN INCHES.
9. THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL DUCT AND DIFFUSER LOCATIONS WITH LIGHTING LAYOUTS AS REQUIRED.
10. THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR AND OTHER TRADES, ALL REQUIRED OPENINGS AND EXCAVATIONS.
11. ALL REQUIRED OPENINGS IN FOUNDATIONS, FLOORS, WALLS AND ROOF SHALL BE CONSTRUCTED INTO THE STRUCTURE WITH THE USE OF SLEEVES, CURBS, ETC. CUTTING AND PATCHING SHALL BE HELD TO A MINIMUM.
12. FLEXIBLE DUCT MAX LENGTH IS 5'-0" AND NOT IN PLACE OF ELBOWS.

NOTE:  
REFER TO SHEET MEP100 FOR HVAC  
ROOFTOP EQUIPMENT.

1	EXISTING KITCHEN EXHAUST HOOD WITH ACCESSORIES TO REMAIN & TO BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT LOCATION & WORKING CONDITION OF EXISTING KITCHEN EXHAUST HOOD.
2	DENOTES DUCT DROP DOWN THRU ROOF FROM ROOF MOUNTED EQUIPMENT. REFER TO SHEET MEP100 FOR CONTINUATION. FOR RTU-1(E) & MAU-1(N). VERIFY EXACT LOCATION OF ROOF PENETRATION IN FIELD.
3	REUSE EXISTING SMOKE DETECTOR, IF EXISTING SMOKE DETECTOR IS NOT IN GOOD CONDITION TO REUSE, REPLACE WITH SIMILAR KIND. SMOKE DETECTOR SHALL BE FURNISHED/INSTALLED IN SUPPLY AIR DUCT BY MECHANICAL CONTRACTOR AND WIRED BACK BY ELECTRICAL CONTRACTOR TO SHUT DOWN CORRESPONDING RTU UNDER ALARM CONDITIONS.
4	REUSE & RELOCATE EXISTING THERMOSTAT AS SHOWN ON PLAN. IF EXISTING THERMOSTAT IS NOT IN GOOD CONDITION TO REUSE, THEN INSTALL NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
5	REUSE EXISTING REMOTE TEMP. SENSOR MOUNTED IN RETURN AIR DUCT. PROVIDE NEW IF EXISTING TEMP. SENSOR IS DAMAGED OR NOT WORKING PROPERLY. CONTRACTOR TO FIELD VERIFY.
6	EXISTING REMOTE ANNUNCIATION TO REMAIN & RELOCATED AS SHOWN. VERIFY FUNCTIONALITY. RECERTIFY AND REBALANCE FOR TURN OVER. 
7	NEW MAKE-UP AIR SUPPLY AIR DUCT WITH EXTERNAL DUCT INSULATION IN AREAS ABOVE CEILING SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR. SEE DUCT INSULATION SCHEDULE. PROVIDE TRANSITIONS AS REQUIRED. DUCT DIMENSIONS ARE CLEAR INTERNAL AIR PATH DIMENSIONS.
8	EXISTING SUPPLY/RETURN DIFFUSERS TO REMAIN & TO BE RELOCATED AS SHOWN. VERIFY SIZE, LOCATION, TYPE OF DIFFUSERS AND COORDINATE WITH ARCHITECTURAL SHEETS INCLUDING REFLECTED CEILING PLAN FOR RELOCATIONS. CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. EXTEND/MODIFY DUCTWORK AS/IF REQUIRED AT RELOCATED DIFFUSERS. PROVIDE VOLUME DAMPER OR COLLAR DAMPER AT ALL DUCT BRANCH TAKE-OFFS. SEE DETAIL ON SHEET MA00 (TYPICAL). VERIFY IN FIELD PRIOR TO BID.
9	EXISTING SUPPLY/RETURN DUCTWORK TO REMAIN. CONTRACTOR SHALL CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. VERIFY EXACT LOCATION AND SIZE IN FIELD. BALANCE CFMS. PROVIDE A VOLUME DAMPER OR COLLAR DAMPER IF THE EXISTING ONE IS DAMAGED, PATCH AND SEAL DUCTWORK AIRTIGHT. INSPECT, PATCH, REPAIR, AND/OR REPLACE INSULATION AS REQUIRED. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.
10	CONNECT & BALANCE MAKE-UP AIR DUCT TO PLENUM OF EXISTING KITCHEN EXHAUST HOODS. CONTRACTOR TO FIELD VERIFY.
11	SEE STRUCTURAL PLANS AND DETAILS FOR ROOF TOP UNITS' FRAMINGS.
12	EXISTING DUCTWORK FROM THE HOOD TO REMAIN. EXTEND/MODIFY DUCTWORK AS NEEDED UP TO THE NEW EXHAUST FAN (KEF-1(N)) & (KEF-2(N)). CONTRACTOR SHALL CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. VERIFY EXACT LOCATION AND SIZE IN FIELD. INSPECT, PATCH, REPAIR, AND/OR REPLACE INSULATION AS REQUIRED. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.
13	EXISTING DUCTWORK FROM THE HOOD TO REMAIN. EXTEND/MODIFY DUCTWORK AS NEEDED UP TO THE NEW EXHAUST FAN (KEF-3(N)). CONTRACTOR SHALL CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. VERIFY EXACT LOCATION AND SIZE IN FIELD. INSPECT, PATCH, REPAIR, AND/OR REPLACE INSULATION AS REQUIRED. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.
14	IF THE EXISTING DIFFUSER IS NOT PERFORATED TYPE, REPLACE IT WITH NEW PERFORATED TYPE DIFFUSER (MODEL: TITUS PAS-AA).
15	CONTRACTOR TO FIELD VERIFY WHETHER THE EXISTING RTU IS RECEIVING TOTAL OUTSIDE AIR MENTIONED IN THE VENTILATION TABLE ON SHEET M300. 
16	G/C/SUBCONTRACTOR IS RESPONSIBLE TO VERIFY CONDITION, IF EQUIPMENT IS WORKING PROPERLY AND UP TO LOCAL JURISDICTION CODE. CLEAN AND SERVICE AS NEEDED.

## HVAC SYSTEM T&B SCOPE OF WORK

ALL THIRD PARTY AIR BALANCE COMPANIES USED ON HABIT PROJECTS TO BE EITHER NEBB OR AABC CERTIFIED AND HAVE CURRENT CERTIFICATION AND APPLICABLE LICENSING. NOTE THAT THE COMPLETE AND FULL AIR BALANCE APPLIES TO ALL EQUIPMENT SERVICING HABITS TI SPACE INCLUDING HVAC, MAU, EXHAUST HOODS AND FANS, RESTROOM EXHAUST FANS AND PCU UNITS (WHERE OCCURS), REGARDLESS OF WHO SUPPLIES EQUIPMENT.

- INSPECTION
  - INSPECT GENERAL CONDITIONS OF HVAC SYSTEMS AND INSTALLATION. RECORD EQUIPMENT DATA AND COMPARE WITH DESIGN REQUIREMENTS
- TESTING: TEST HVAC SYSTEMS FOR PROPER OPERATION
  - INSPECT ROOFTOP UNITS FOR PROPER OPERATION:
  - VERIFY FAN ROTATION
  - MEASURE/RECORD MOTOR AMPERAGE
  - MEASURE/RECORD VOLTAGE
  - VERIFY SEQUENCE OF OPERATION (TEST HEATING/COOLING MODES)
  - SET T-STATS TO HABIT STANDARDS:
    - OCCUPIED - 7:30 AM TO 11:30 PM - 74 DEGREES COOL 68 DEGREES HEAT - FAN SETTING - ON
    - UNOCCUPIED - 11:30 PM TO 7:30 AM - 80 DEGREES COOL 60 DEGREES HEAT - FAN SETTING - AUTO
  - VERIFY THAT ALL UNITS HAVE SPARE FAN BELT LOCATED INSIDE UNIT.
  - VERIFY DUCT SMOKE DETECTORS ARE INSTALLED AND CONNECTED (RESETS TO BE LOCATED IN OFFICE).
  - VERIFY AND SET ECONOMIZERS' TO ENGINEERED DRAWING SPECIFICATIONS. SEE MECHANICAL SHEETS FOR DATA.
- MAKEUP AIR UNIT
  - INSPECT MAU UNIT FOR PROPER OPERATION:
  - VERIFY FAN ROTATION
  - MEASURE/RECORD MOTOR AMPERAGE
  - MEASURE/RECORD VOLTAGE
  - VERIFY SEQUENCE OF OPERATION (TEST HEATING/COOLING MODES)
  - SET EVAPORATOR THERMOSTAT ADJUSTMENT PER CAPTIVE AIRE'S SPECIFICATIONS
- BALANCE AND VERIFY:
  - BALANCE THE KITCHEN EXHAUST SYSTEM FOR PROPER HEAT AND SMOKE CAPTURE REMOVAL.
  - VERIFY PROPER PERFORMANCE WITH SMOKE EMITTER TESTS.
  - BALANCE THE AIR CONDITIONING & HEATING UNITS FOR OPTIMAL AIR DISTRIBUTION AND COMFORT.
  - CORRECT FAN ROTATION, BELT TENSION, SHEAVE ALIGNMENT, DAMPER POSITION ON ALL UNITS. CHECK FOR CLEAN FILTERS AND COILS.
  - BALANCE THE BUILDING FOR PROPER FRESH AIR QUANTITIES AND PRESSURIZATION IN ALL AREAS OF THE STORE.
- MEASUREMENTS:
  - MEASURE AND RECORD AIRFLOW, MOTOR SPEED, MOTOR AMP DRAW, AND COMPARE TO NAMEPLATE DATA AND SPECIFICATIONS.
- ADJUSTMENTS:
  - REDUCE FAN SPEEDS WHEN POSSIBLE TO SAVE FAN ENERGY AND CONDITIONED AIR, AND REDUCE NOISE LEVELS, WHILE MAINTAINING COMFORT
  - BALANCED SYSTEM NEEDS TO MAINTAIN POSITIVE BUILDING PRESSURE ONCE COMPLETE.
- TOLERANCE :
  - HVAC SYSTEM AIRFLOWS TO BE BALANCED WITHIN +/- 5% OF DESIGN.
- PERFORMANCE VERIFICATION :
  - UPON COMPLETION OF THE BALANCE, VERIFY HVAC PERFORMANCE VIA SLIGHT POSITIVE BUILDING PRESSURE, OCCUPANT COMFORT, AND CAPTURE AND CONTAINMENT OF KITCHEN HOODS.
- DOCUMENTATION AND CLARIFICATIONS :
  - SUBMIT A NEBB OR AABC CERTIFIED TEST AND BALANCE REPORT WITH FINDINGS INCLUDING THE EQUIPMENT DATA, MEASUREMENTS, LIST OF DEFICIENCIES, AND RECOMMENDATIONS. THIS INFORMATION TO BE SUBMITTED DIRECTLY TO THE ARCHITECT OF RECORD FOR REVIEW, COMMENT AND APPROVAL BY THEIR RESPECTIVE MECHANICAL ENGINEER. HABIT TO BE COPIED ON THESE CORRESPONDENCES
  - PROVIDE EQUIPMENT COMMISSIONING REPORTS TO ARCHITECT OF RECORD. HABIT TO BE COPIED ON THESE CORRESPONDENCES.
  - INSTALLING HVAC CONTRACTOR CANNOT SELF CERTIFY OR BE THE PERFORMING AGENT OF T&B
  - IF T&B REPORT IS INCOMPLETE OR FAILS REVIEW, HABIT AT ITS OWN DISCRETION MAY CHOOSE TO HAVE THE ENTIRE SYSTEM RETESTED BY AN ACCREDITED AIR BALANCE COMPANY OF OUR CHOOSING. THE COST OF SAID RE-TEST WILL COME AT THE DIRECT EXPENSE OF THE CONTRACTED GC OF THE PROJECT.



## GREEN BUILDING NOTES

- CONSTRUCTION TO CONFORM TO CALIFORNIA ENERGY COMMISSION MANDATORY BUILDING STANDARDS.
- PROVIDE TEMPORARY VENTILATION DURING CONSTRUCTION IN ACCORDANCE WITH SECTION 5.504.1 OF CALIFORNIA GREEN BUILDING STANDARDS CODE.
- IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, USE RETURN AIR FILTERS WITH A MERV OF 13, BASED ON ASHRAE 52.2-1999, OR AN AVERAGE EFFICIENCY OF 30% BASED ON ASHRAE 52.1-1999. REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY.
- AT THE TIME OF ROUGH INSTALLATION OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL START-UP OF THE HEATING AND COOLING EQUIPMENT, ALL DUCTS AND OTHER RELATED AIR DISTRIBUTION COMPONENT EQUIPMENT SHALL BE COVERED WITH TAPE, PLASTIC, SHEETMETAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST OR DEBRIS WHICH MAY COLLECT IN THE SYSTEM. CGBC 5.504.3.
- ADHESIVES, ADHESIVE BONDING PRIMERS, ADHESIVE PRIMERS, SEALANTS, SEALANT PRIMERS AND CAULKS SHALL COMPLY WITH LOCAL OR REGIONAL AIR POLLUTION CONTROL OR AIR QUALITY MANAGEMENT DISTRICT RULES WHERE APPLICABLE OR SCAQMD RULE 1168 VOC LIMITS, AS SHOWN IN TABLES 5.504.4.1 AND 5.504.4.2 AEROSOL ADHESIVES AND SMALLER UNIT SIZED OF ADHESIVES AND SEALANT OR CAULKING COMPOUNDS (IN UNITS OF PRODUCT, LESS PACKAGING WHICH DO NOT WEIGH MORE THAN ONE POUND AND DO NOT CONSIST OF MORE THAN 16 FLUID OUNCES) SHALL COMPLY WITH STATEWIDE VOC STANDARDS AND OTHER REQUIREMENTS, INCLUDING PROHIBITIONS ON USE OF CERTAIN TOXIN COMPOUNDS, OF CALIFORNIA CODE OF REGULATIONS, TITLE 17, COMMENCING WITH SECTION 94507.
- IN MECHANICAL VENTILATION BUILDING, PROVIDE REGULARLY OCCUPIED AREAS OF THE BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR OCCUPANCY THAT PROVIDES AT LEAST A MERV 13. MERV 13 FILTERS SHALL BE INSTALLED PRIOR TO OCCUPANCY, AND RECOMMENDATIONS FOR MAINTENANCE WITH FILTERS OF THE SAME VALUE SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL.
- MECHANICAL VENTILATION CALCULATED PER SECTION 120.1 OF THE CALIFORNIA ENERGY CODE, TITLE 24, SECTION 6.
- INSTALL HVAC, REFRIGERATION EQUIPMENT THAT DOES NOT CONTAIN CFCs OR HALONS.
- BUILDINGS SHALL MEET OR EXCEED THE PROVISIONS OF THE CALIFORNIA BUILDING CODE, CHAPTER 12 (VENTILATION) AND CHAPTER 14 (EXTERIOR WALL) FOR INDOOR MOISTURE CONTROL. 2022 CGC 5.505.
- BUILDINGS MUST MEET THE MINIMUM REQUIREMENTS OF THE CALIFORNIA BUILDING CODE, CHAPTER 12 (VENTILATION) FOR MECHANICALLY OR NATURALLY VENTILATED SPACES. 2022 CGC 5.506.1.

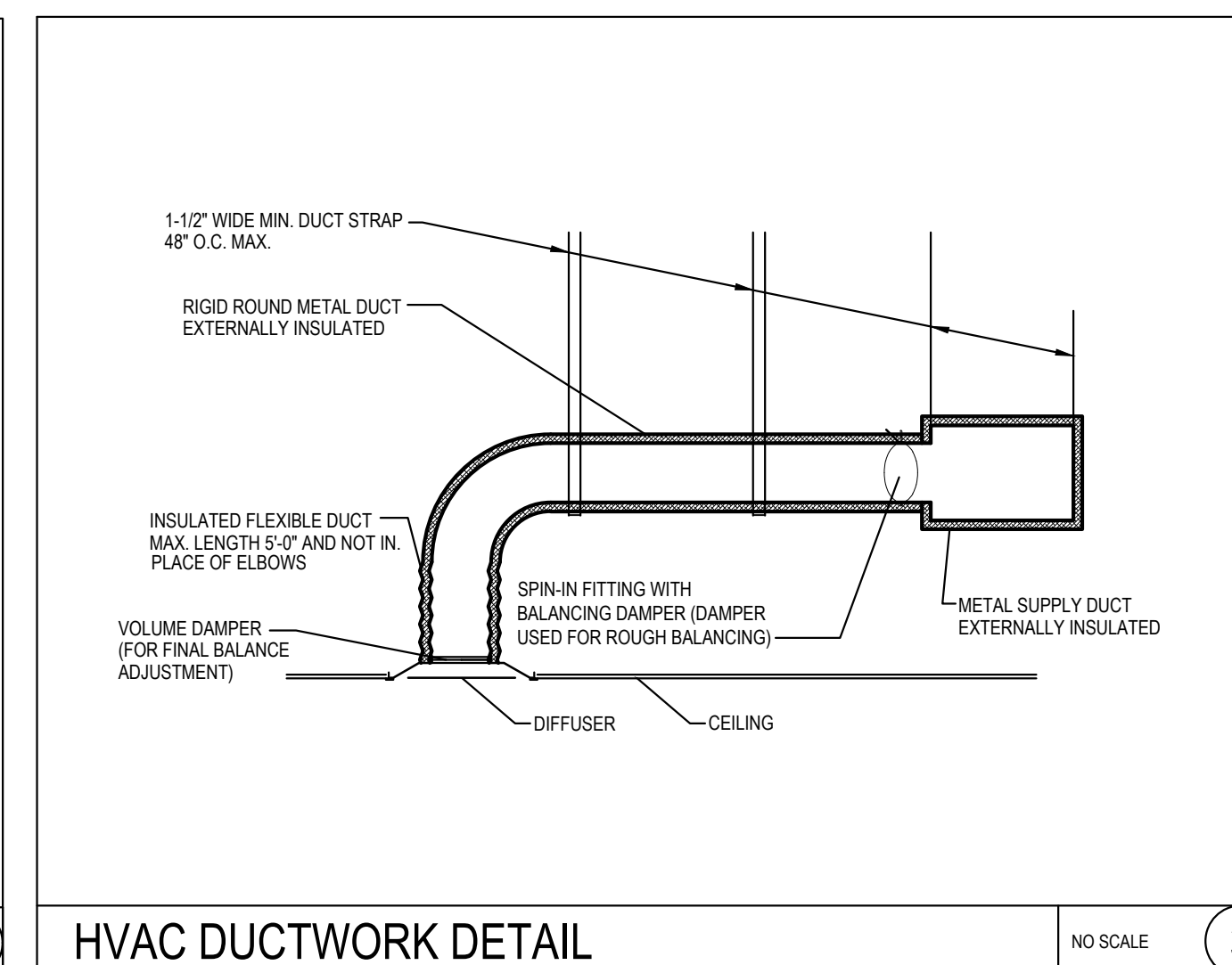
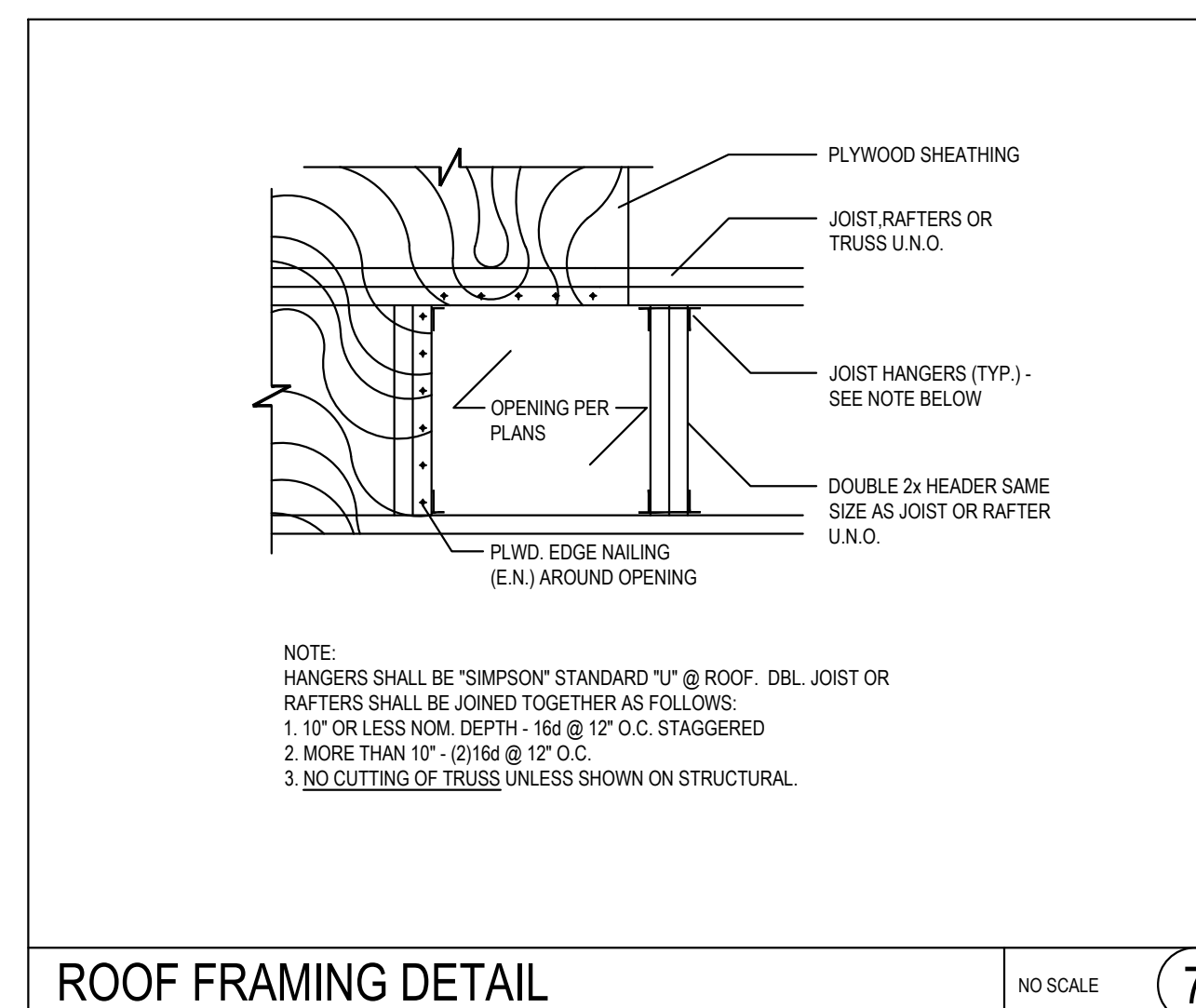
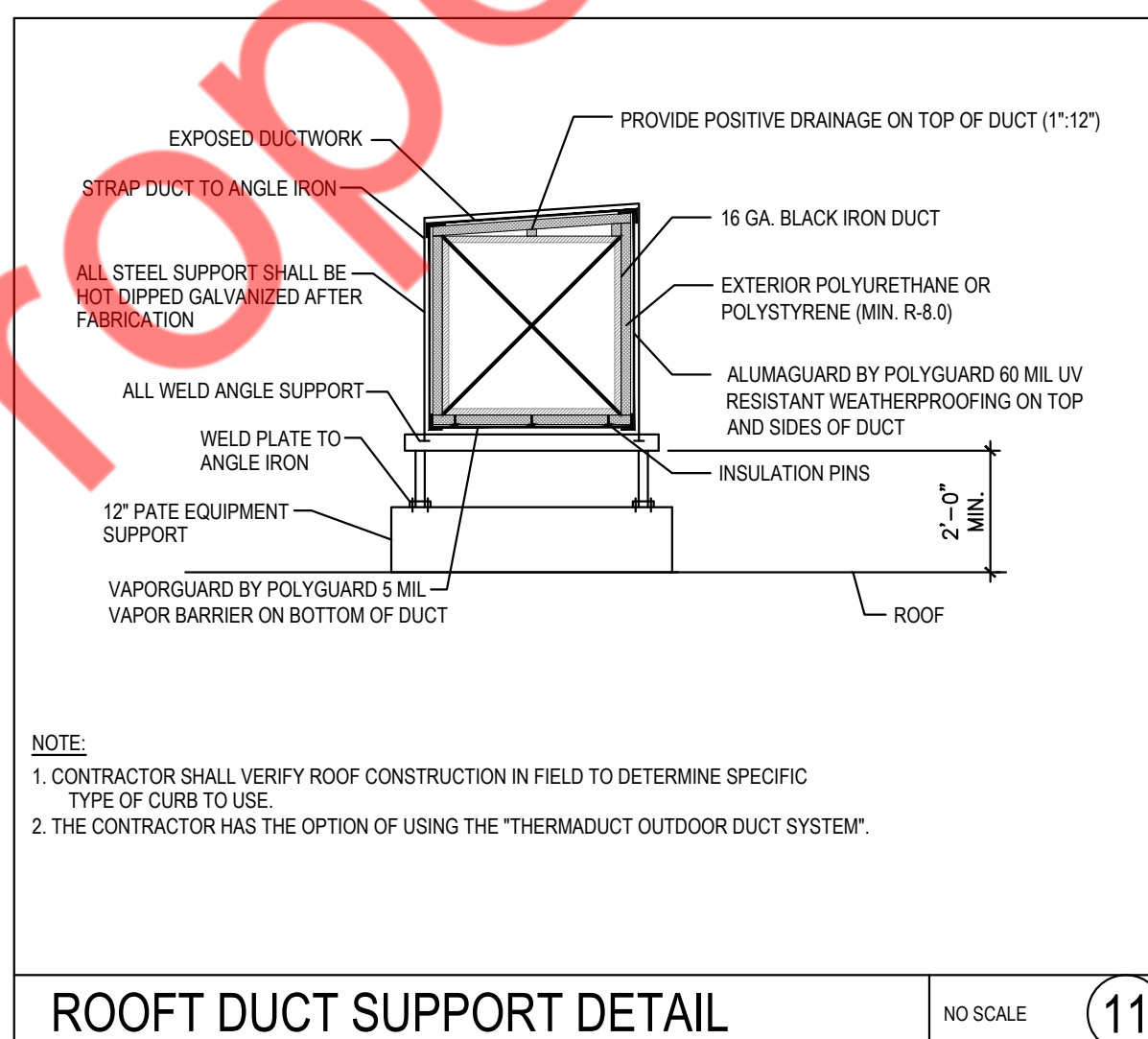
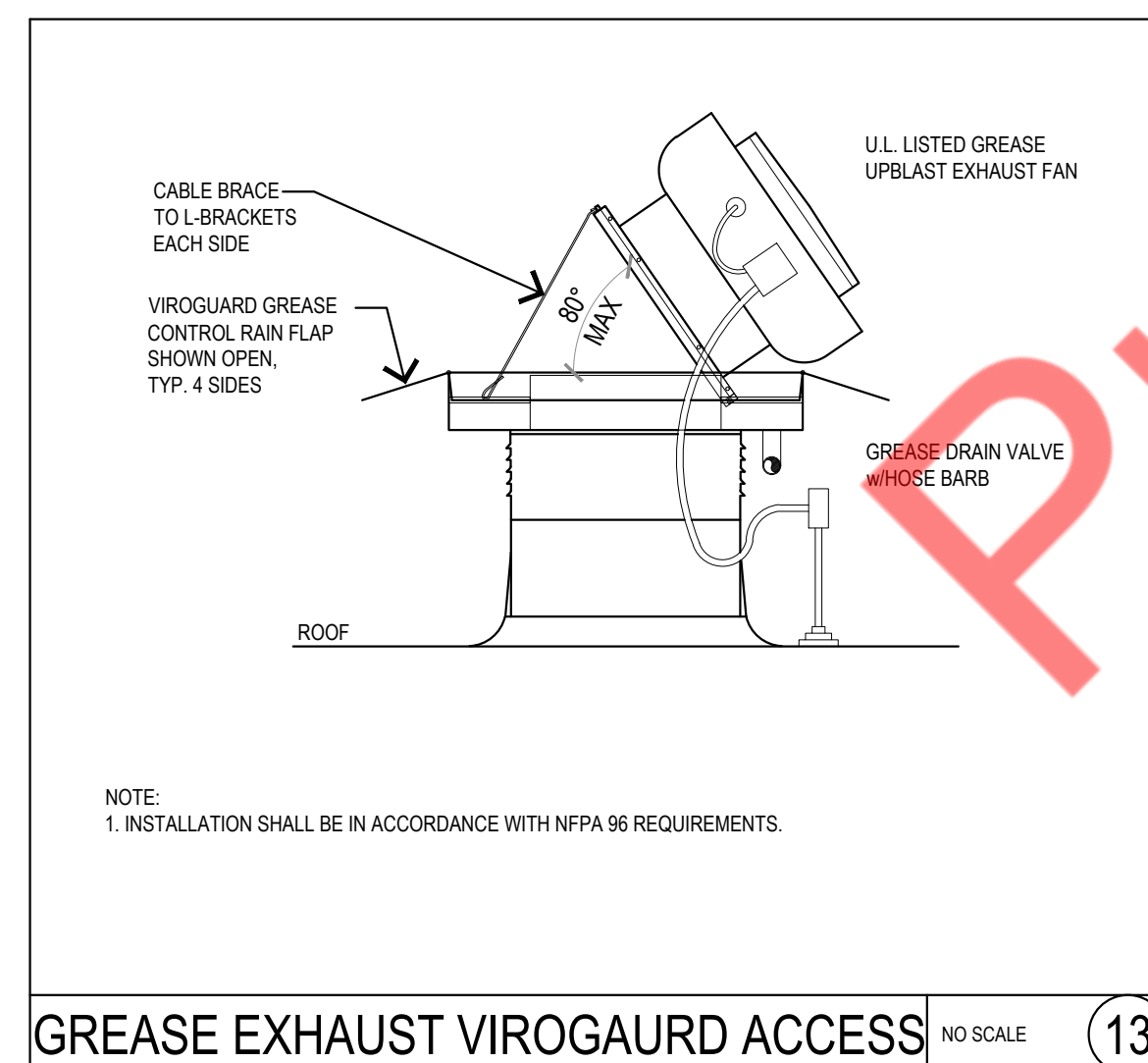
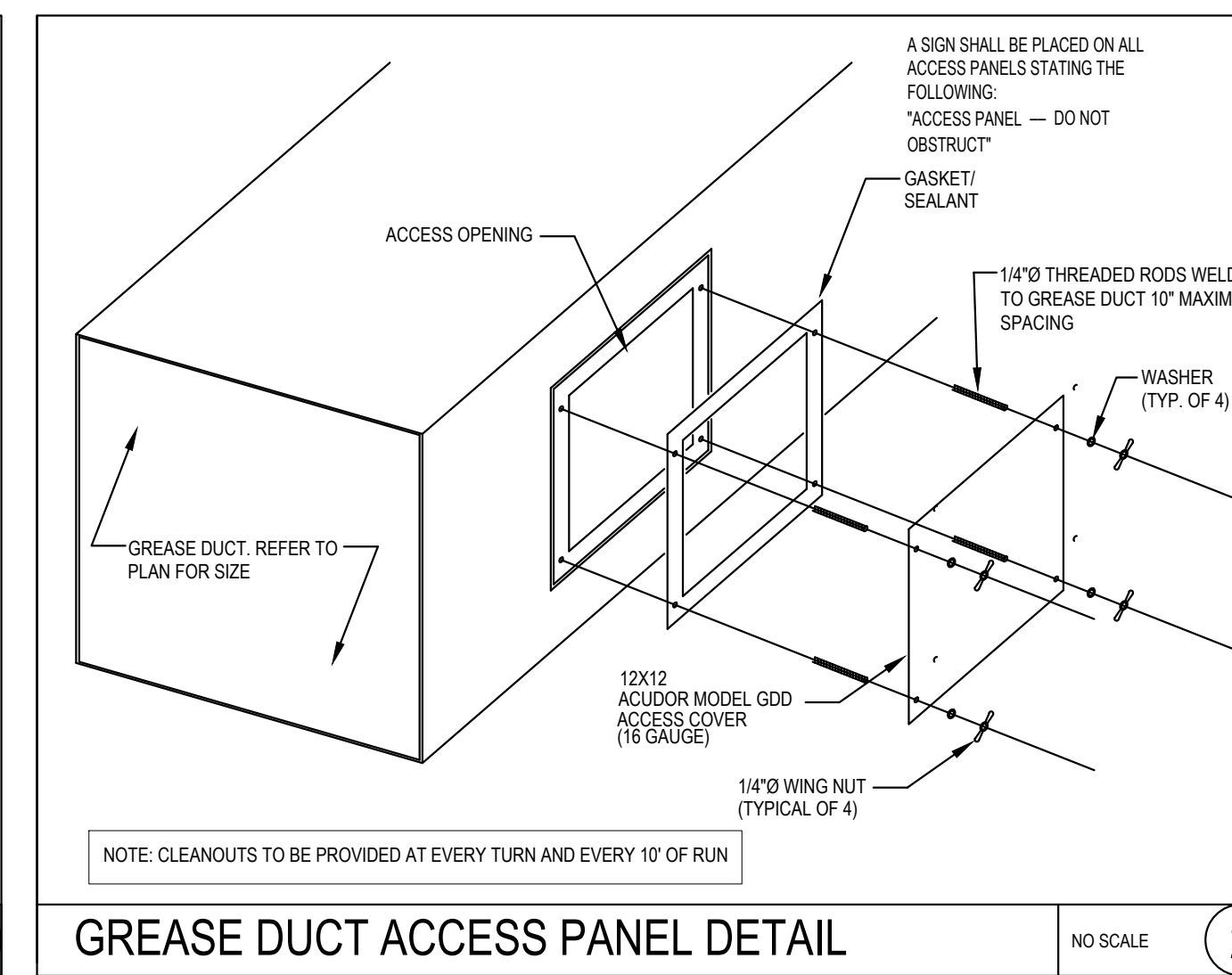
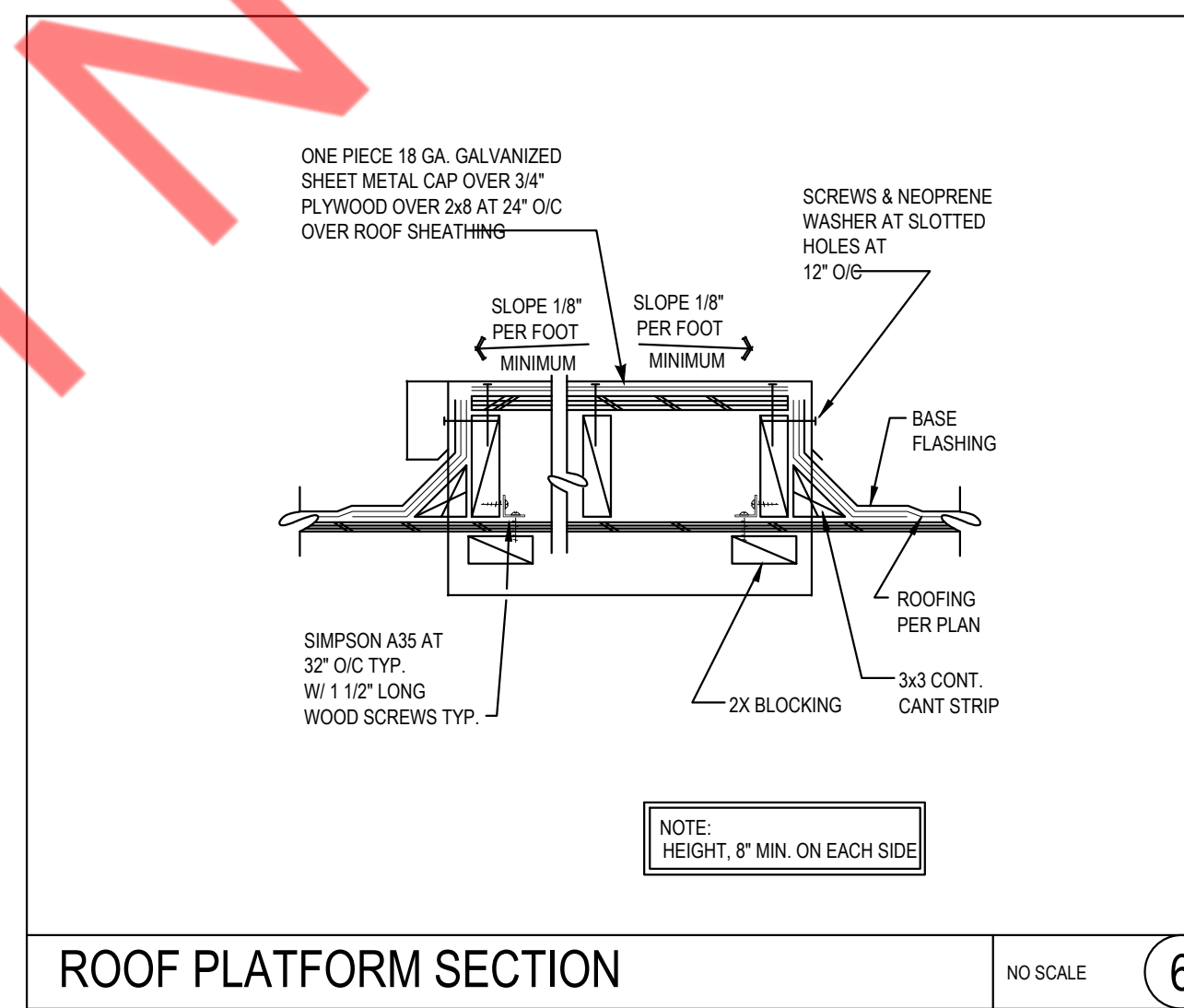
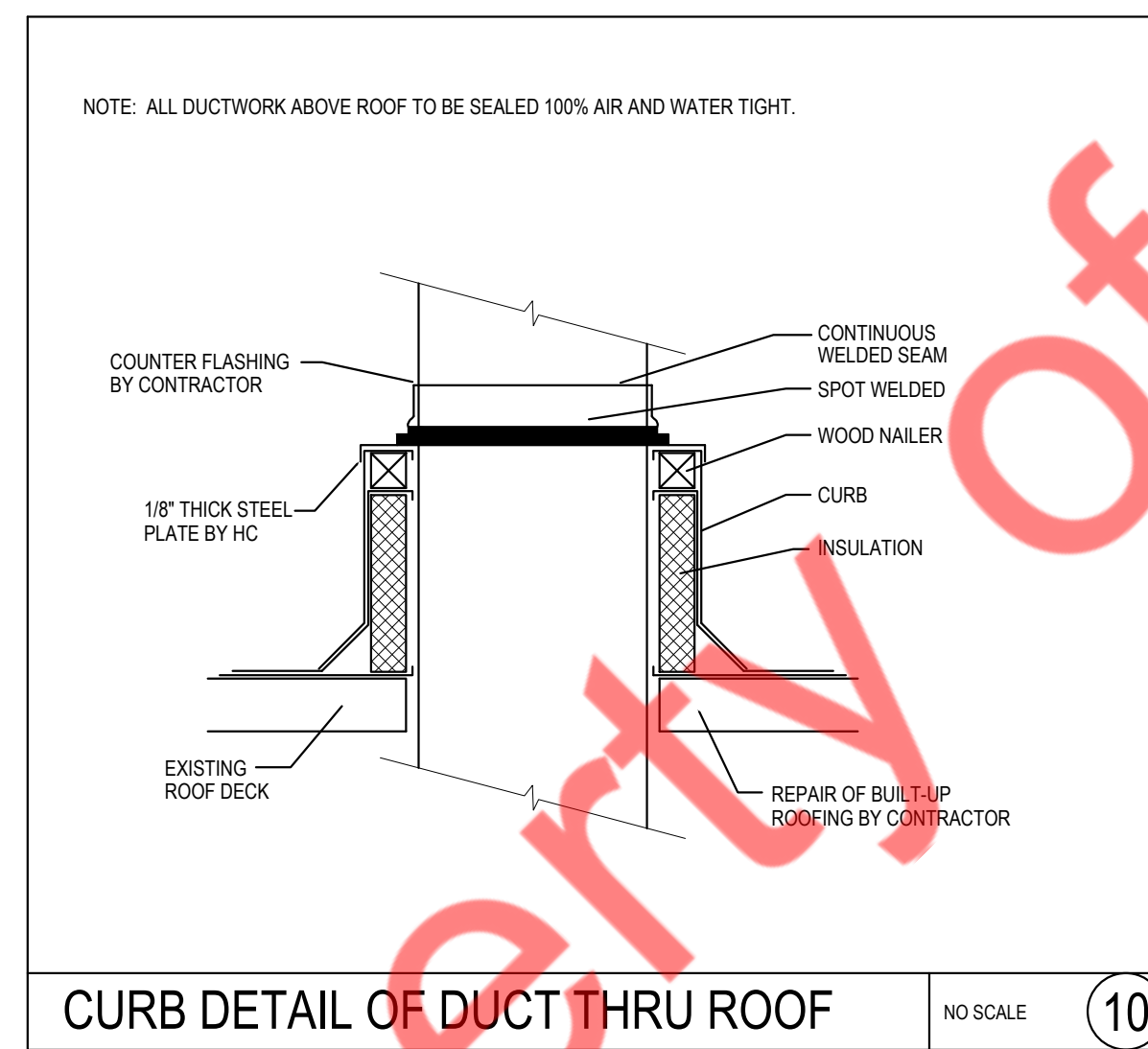
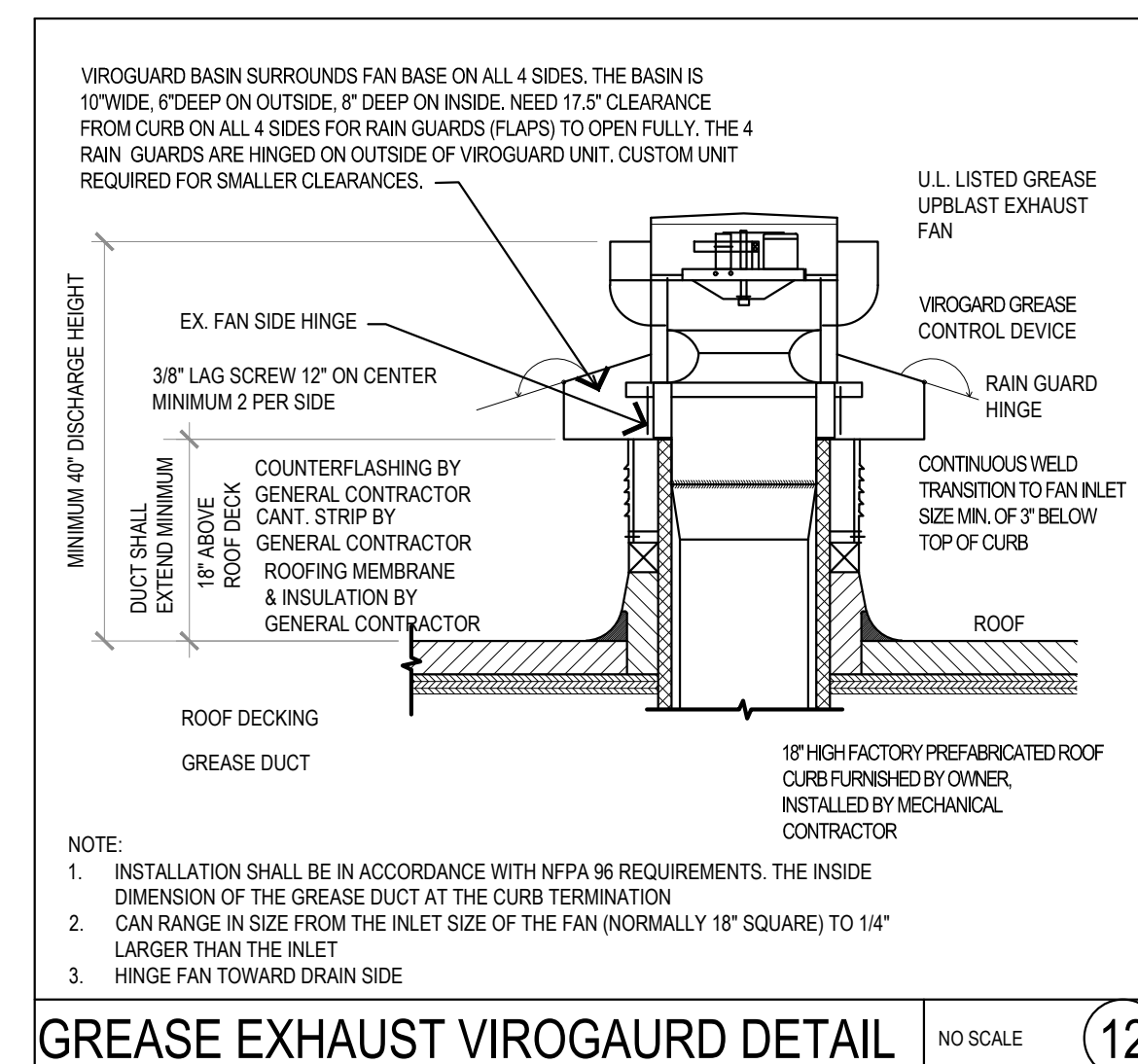
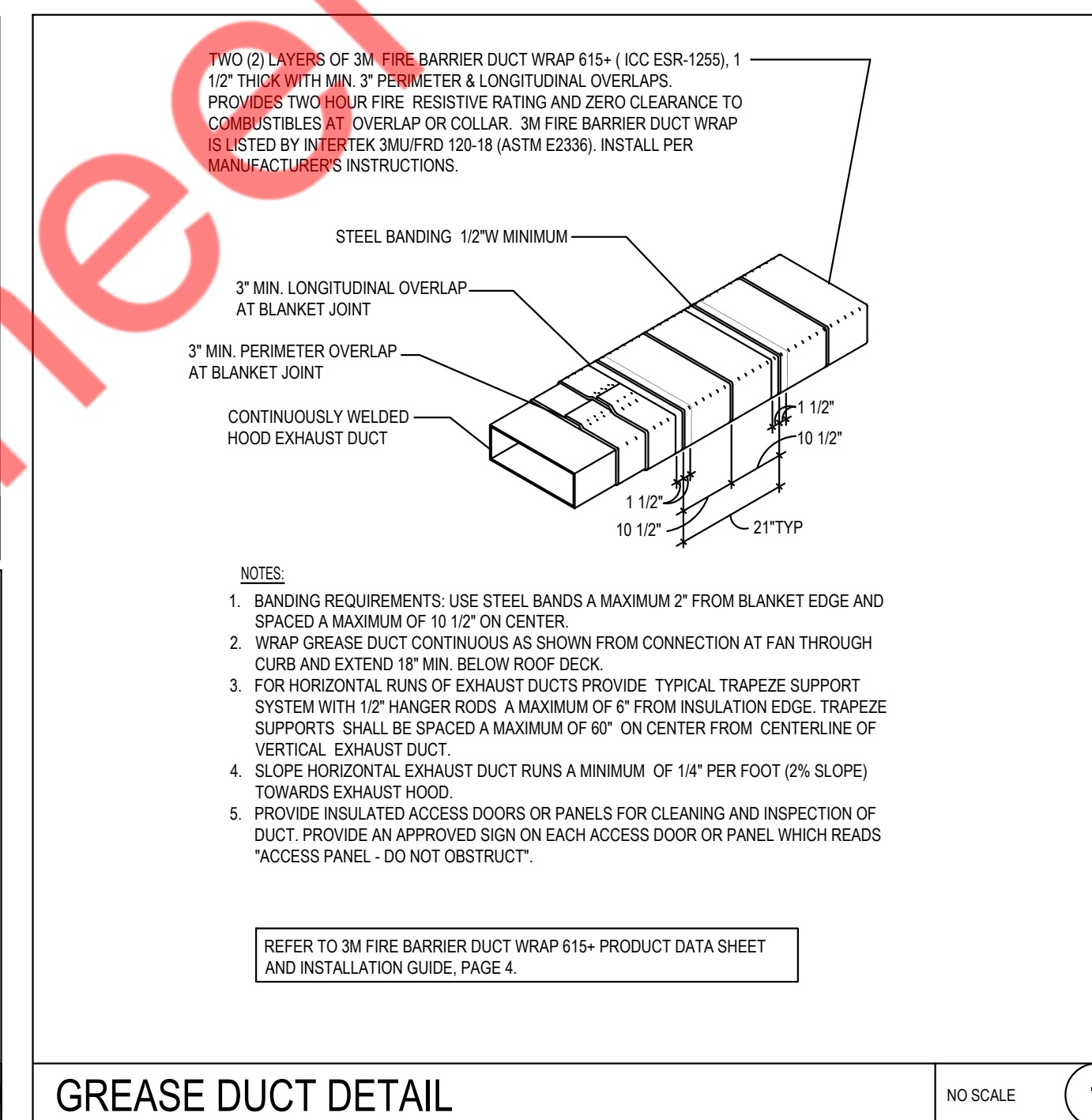
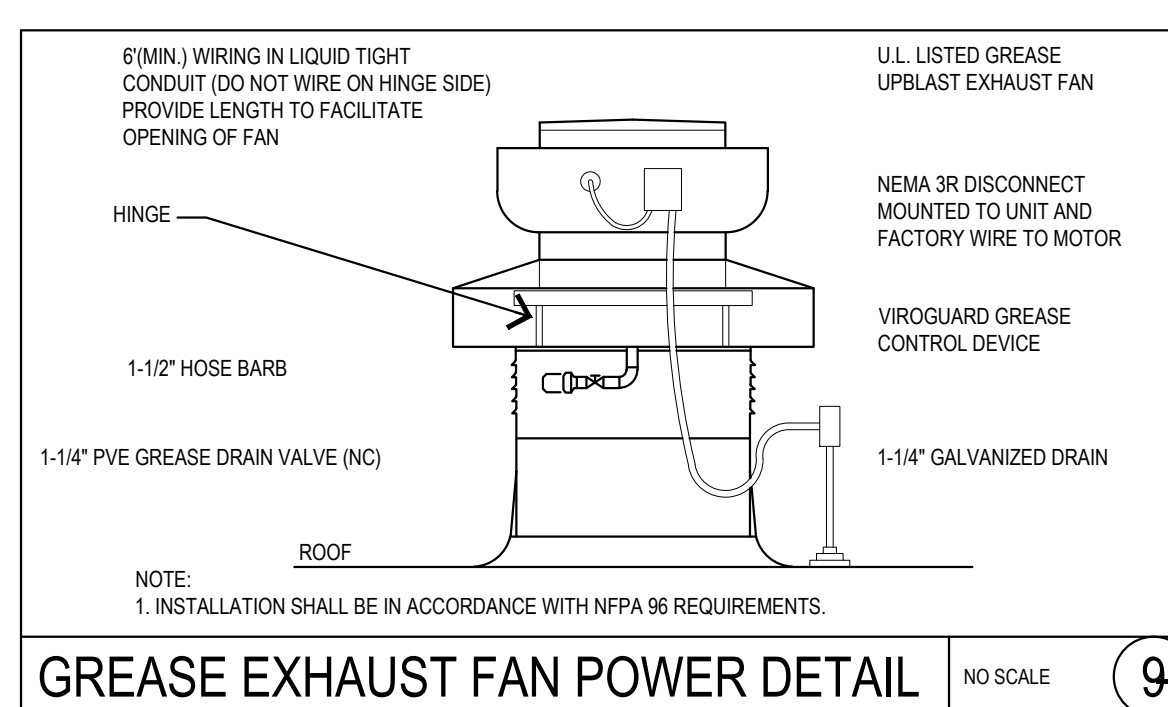
## LOAD COMPONENT SUMMARY

System Checksums																	
By Trial						Single Zone											
RTU		COOLING COIL PEAK				CLG SPACE PEAK				HEATING COIL PEAK				TEMPERATURES			
Peaked at Time:		Moist: 7.13				Moist: Sum of				Moist: Heating Design							
Outside Air:		OADB/WBHR: 63 / 64 / 61				OADB: Peaks				OADB: 45							
Space	Sens. + Lat.	Plenum	Net	Percent	Space	Percent	Space	Percent	Space	Coil Peak	Percent						
Btu/h	Btu/h	Btu/h	Total	(%)	Btu/h	(%)	Btu/h	(%)	Btu/h	Btu/h	(%)						
Envelope Loads																	
Skyline Solar	0	0	0	0	0	0	0	0	Skyline Solar	0	0	0	0	0	0		
Skyline Cond	0	0	0	0	0	0	0	0	Skyline Cond	0	0	0	0	0	0		
Roof Cond	0	2,959	2,959	5	0	0	0	0	Roof Cond	-1,252	1.41						
Glass Solar	1,404	0	1,404	2	2,056	5	0	0	Glass Solar	0	0	0	0	0	0		
Glass/OA Cond	137	0	137	0	103	0	103	0	Glass/OA Cond	-585	0.66						
Wall Cond	2,314	517	2,831	5	2,630	6	0	0	Wall Cond	-1,250	1.72						
Partition/OA	0	0	0	0	0	0	0	0	Partition/OA	-1,530	0.00						
Floor	0	0	0	0	0	0	0	0	Floor	-709	0.80						
Adjacent Floor	0	0	0	0	0	0	0	0	Adjacent Floor	0	0	0	0	0	0		
Infiltration	1,480	0	1,480	2	994	2	994	2	Infiltration	-4,990	-4,990	5.62					
Sub Total ==>	5,334	3,476	8,810	15	5,782	14	5,782	14	Sub Total ==>	-7,534	-6,987	10.22					
Internal Loads																	
Lights	3,878	969	4,847	8	3,833	9	3,833	9	Lights	0	0	0	0	0	0		
People	6,006	0	6,006	10	2,827	7	2,827	7	People	0	0	0	0	0	0		
Misc	20,753	0	20,753	34	20,686	50	20,686	50	Misc	0	0	0	0	0	0		
Sub Total ==>	30,637	969	31,606	52	27,345	66	27,345	66	Sub Total ==>	0	0	0	0	0	0		
Cooling Load																	
Ventilation Load	550	-550	0	0	482	1	482	1	Cooling Load	-187	0	0	0	0	0		
Adj Air Trans Heat	0	0	0	0	0	0	0	0	Adj Air Trans Heat	0	-43,856	49.43					
Dehumid. On Staging	0	0	0	0	0	0	0	0	Dehumid. On Staging	0	-36,728	41.40					
On/Under-Sizing	8,108	-2,861	8,108	13	8,108	19	8,108	19	On/Under-Sizing	927	-1,04						
Exhaust Heat	0	0	0	0	0	0	0	0	Exhaust Heat	0	0	0	0	0	0		
Sup. Fan Heat	0	0	0	0	0	0	0	0	Sup. Fan Heat	0	0	0	0	0	0		
Rel. Fan Heat	0	0	0	0	0	0	0	0	Rel. Fan Heat	0	0	0	0	0	0		
Duct Heat Plup	0	0	0	0	0	0	0	0	Duct Heat Plup	0	0	0	0	0	0		
Underfrr Sup Ht Plup	0	0	0	0	0	0	0	0	Underfrr Sup Ht Plup	0	0	0	0	0	0		
Supply Air Leakage	0	0	0	0	0	0	0	0	Supply Air Leakage	0	0	0	0	0	0		
Grand Total ==>	44,629	1,214	60,467	100.00	41,717	100.00	Grand Total ==>	-44,449	-88,724	100.00							
COOLING COIL SELECTION																	
Total Capacity	Sens Cap.	Coil Airflow	Enter DB/WBHR	Leave DB/WBHR	AREAS						HEATING COIL SELECTION						
ton	MBH	cfm	F	F	Gross Total	Glass	IR (%)	Capacity	Coil Airflow	Ent	Lvg						
			in	gr/s													
Main Clg	5.7	68.3	63.7	2,255	81.3	63.1	58.7	56.1	52.6	54.7							
Aux Clg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0							
Opt Vent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0							
Total	5.7	68.3															
AREAS																	
Floor	1,166				Part	0											
Roof	469				Roof	1,166											
Ext Door	57				Ext Door	57	60	11									
Ext Door	0				Ext Door	0	0	0									
HEATING COIL SELECTION																	
Main Htg	-110.9	2,255	54.1	90.0													
Aux Htg	0.0	0.0	0.0	0.0													
Opt Vent	0.0	0.0	0.0	0.0													
Total	-110.9	2,255	54.1	90.0													
Project Name:																	
Dataset Name:																	
TRACE700 v6.3.3 calculated at 05:44 PM on 07/24/2024																	
Alternative - 1 System Checksums Report Page 1 of 1																	

## WEATHER

SAN DIEGO			
Location			
Building owner			
Program user			
Company			
Comments			
By		Trial	
Dataset name			
Calculation time		09:34 PM on 07/26/2024	
TRACE® 700 version		6.3.3	
Location			
Latitude	32.0	deg	
Longitude	117.0	deg	
Time Zone	8		
Elevation	477	ft	
Barometric pressure	29.4	in. Hg	
Air density	0.0747	lb/cu ft	
Air specific heat	0.2444	Btu/lb-°F	
Density-specific heat product	1.0950	Btu/h-cfm-°F	
Latent heat factor	4.520.2	Btu-min/h-cu ft	
Enthalpy factor	4.4798	lb-min/h-cu ft	
Summer design dry bulb	84.8	°F	
Summer design wet bulb	64.4	°F	
Winter design dry bulb	45.3	°F	
Summer clearness number	1.05		
Winter clearness number	0.95		
Summer ground reflectance	0.20		
Winter ground reflectance	0.20		
Carbon Dioxide Level	400	ppm	
Design simulation period	January - December		
Cooling load methodology	TETD-TA1		
Heating load methodology	UATD		
			

VENTILATION CALCULATION							
AIR AS PER 2022.0.2	REQ. OA (CFM)	PROVIDED OA (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT OR /FIXT.)	TOTAL EXHAUST (CFM)	PROVIDED EXHAUST (CFM)		
2.0	100	1050	0	0	0		
6	33		0.7	160	5300		
6	40		0	0	0		
6	35		0	0	0		
6	27		0	0	0		
6	15		0	0	0		
6	5		0	0	0		
245	1050	-	160	5300			



DIVISION 16 - ELECTRICAL SPECIFICATIONS

SECTION 16100

ELECTRICAL SPECIAL CONDITIONS

1. GENERAL
- A. APPLICABLE PROVISIONS OF AIA DOCUMENT A201, "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION", AND DIVISION 1 GENERAL CONDITIONS GOVERN WORK UNDER THIS SECTION AND ALL OTHER SECTIONS OF DIVISION 16.
- B. APPLICABLE PROVISIONS OF THIS SECTION GOVERN WORK UNDER ALL OTHER SECTIONS OF DIVISION 16. WORK COVERED BY THIS SECTION SHALL CONSIST OF PROVIDING ALL MATERIAL, LABOR, EQUIPMENT AND SERVICES NECESSARY FOR A COMPLETE, TESTED, CODE COMPLIANT, AND ADJUSTABLE ELECTRICAL INSTALLATION READY FOR OPERATION AS SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS.
- C. THE TERM CONTRACTOR AS USED IN THIS SECTION SHALL MEAN ANY CONTRACTOR OR SUBCONTRACTOR WHO HAS CONTRACTED TO PERFORM WORK INCLUDED IN AND DEFINED BY THIS SECTION AND ALL OTHER SECTIONS OF DIVISION 16.
2. CONTRACTOR'S RESPONSIBILITY
- A. PRIOR TO SUBMITTING HIS BID, CONTRACTOR SHALL CAREFULLY EXAMINE THESE CONSTRUCTION DOCUMENTS, THE DEVELOPER'S EXHIBITS, AND THE SITE, TO INQUIRE FULLY INTO DIFFICULTIES AND COSTS OF WORK, AND TO DETERMINE THE SCOPE AND CHARACTER OF WORK TO BE DONE. CONTRACTOR SHALL INCLUDE ALL NECESSARY COSTS TO LOCATE AND/OR EXTEND ALL UTILITIES INCLUDING LIGHTING PANELS, POWER PANELS, ELECTRICAL SERVICE, PHONE SERVICE AND/OR MODIFY EQUIPMENT TO MEET THE INTENT OF THE CONTRACT DOCUMENTS. THE OWNER, OWNER'S AGENT, ARCHITECT, ENGINEER OR DESIGNER SHALL NOT BE RESPONSIBLE FOR FAILURE OF THE CONTRACTOR TO DETERMINE DIFFICULTIES AND COSTS IN THE PROJECT OR FOR HIS OVERLOOKING OF THE REQUIREMENTS.
- B. IF THIS CONTRACTOR DOES NOT CLEARLY UNDERSTAND THE PLANS AND SPECIFICATIONS, OR IF THERE ARE ANY REQUIREMENTS WHICH ARE AMBIGUOUS IN THE CONTRACTOR'S OPINION, HE SHOULD CALL THIS TO THE ATTENTION OF THE ARCHITECT PRIOR TO BIDDING, SINCE THIS CONTRACTOR WILL BE HELD RIGIDLY TO THE INTERPRETATIONS OF THE ARCHITECT AND ENGINEER.
- C. CONTRACTOR SHALL SCHEDULE HIS WORK IN COOPERATION WITH OTHER TRADES INSTALLING INTERRELATED WORK. ALL WORK SHALL BE SCHEDULED TO MAINTAIN SERVICE TO ALL REQUIRED AREAS DURING THE COURSE OF THE CONSTRUCTION EXCEPT FOR SHORT TERM PLANNED SHUTDOWNS, ANY OF WHICH SHALL BE PRE-SCHEDULED WITH THE OWNER'S AGENT AND THE LANDLORD.
3. WORKMANSHIP AND GUARANTEE
- A. IN ENTERING INTO A CONTRACT COVERING THIS WORK, THE CONTRACTOR ACCEPTS THE SPECIFICATIONS, AND GUARANTEES THAT THE WORK WILL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR FURTHER GUARANTEES THAT THE WORKMANSHIP AND MATERIAL WILL BE OF THE BEST PROCURABLE AND THAT NONE BUT EXPERIENCED WORKMEN EXPERIENCED IN EACH PARTICULAR CLASS OF WORK WILL BE EMPLOYED. CONTRACTOR FURTHER GUARANTEES TO REPLACE AND MAKE GOOD AT HIS OWN EXPENSE ANY DEFECTS DUE TO FAULTY WORKMANSHIP OR MATERIAL WHICH MAY DEVELOP WITHIN ONE (1) YEAR AFTER FINAL PAYMENT AND ACCEPTANCE OF THE WORK.
4. CODES AND STANDARDS
- A. CONTRACTOR WILL COMPLY IN ALL RESPECTS WITH THE ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AND ALL BUILDING CODES, APPLICABLE LAWS, ORDINANCES, AND REGULATIONS AS MAY APPLY ACCORDING TO THE RULING OF THE CONTROLLING PUBLIC OFFICIAL. SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE LAWS, ORDINANCES AND REGULATIONS, OR WHICH DOES NOT RECEIVE THE APPROVAL OF THE CONTROLLING PUBLIC OFFICIAL, HE SHALL BEAR ALL COSTS ARISING IN CORRECTING THE DEFICIENCIES. ALL ELECTRICAL EQUIPMENT SHALL BE UL LISTED AND SHALL BEAR THE UNDERWRITER'S LABORATORY LABEL.
5. FEES ON PERMITS
- A. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAKING PAYMENT FOR ALL FEES, PERMITS AND INSPECTIONS RELATING TO HIS WORK.
6. CONTRACT DRAWINGS
- A. THE DRAWINGS SHOW THE GENERAL ARRANGEMENT AND INTENT OF THE DESIGN AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONDITIONS AND THE WORK OF OTHER TRADES WILL PERMIT. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, AND ACCESSORIES WHICH MAY BE REQUIRED. NOR IS IT IMPLIED THAT ALL CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE SYSTEMS OR BUILDING COMPONENTS HAVE BEEN INDICATED. THE CONTRACTOR SHALL INVESTIGATE ALL EXISTING CONDITIONS AFFECTING THE WORK AND ARRANGE HIS WORK ACCORDINGLY, PROVIDING SUCH FITTINGS, OFFSETS, ACCESSORIES AND DEVICES AS MAY BE REQUIRED. THE DRAWINGS AND SPECIFICATIONS ARE MUTUALLY COMPLEMENTARY, AND ANY WORK REQUIRED BY ONE BUT NOT BY THE OTHER SHALL BE PERFORMED. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MATERIALS AND SERVICES REQUIRED FOR A COMPLETE AND WORKING PROJECT AT NO ADDITIONAL COST EVEN THOUGH EACH AND EVERY NECESSARY ELEMENT THEREOF IS NOT SPECIFICALLY IDENTIFIED HEREIN.
- B. CONTRACTOR SHALL NOT SCALE FROM THE DRAWINGS BUT SHALL FOLLOW THE ARCHITECTURAL DRAWINGS OR EXISTING BUILDING CONDITIONS WHERE APPLICABLE, IN ESTABLISHING DIMENSIONS AND LINES OR RUN, SINCE DIMENSIONS ON THE FINAL ARCHITECTURAL DRAWINGS OR AT THE SITE MAY NOT COINCIDE WITH THOSE SHOWN ON THE ELECTRICAL DRAWINGS. THE CONTRACTORS SHALL VERIFY WITH THE DIMENSIONED ARCHITECTURAL DRAWINGS OR THE SITE CONDITIONS THE EXACT MATERIAL, QUANTITIES AND LENGTHS NECESSARY.
- C. SIGNIFICANT DEVIATIONS OR CHANGES FROM THE DRAWINGS WHICH ARE REQUIRED TO ACCOMPLISH THE INTENT OF THE CONTRACT DOCUMENTS MUST BE REVIEWED WITH THE ARCHITECT AND APPROVED BEFORE PROCEEDING.
7. SHOP DRAWINGS
- A. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, FOUR (4) COPIES MINIMUM, FOR ALL MANUFACTURED PRODUCTS. EACH SHOP DRAWING SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMITTAL TO ASSURE THAT ALL DIMENSIONS, QUANTITIES, CONNECTIONS, CAPACITIES AND ACCESSORIES SHOWN ARE IN CONFORMANCE WITH THE CONTRACT DOCUMENTS, AND SHALL BE MARKED OR STAMPED TO CONFIRM THAT SUCH REVIEW WAS MADE AND COMPLIANCE WAS CONFIRMED.
- B. APPROVAL OF SHOP DRAWINGS BY THE OWNER, OWNER'S AGENT, ARCHITECT, ENGINEER OR DESIGNER, WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF COMPLYING WITH ALL TERMS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PERFORMANCE OF ALL EQUIPMENT PURCHASED, FOR PROPER FIT, AND OTHER DIMENSIONAL REQUIREMENTS.
8. RECORD DRAWINGS
- A. CONTRACTOR SHALL MAINTAIN AT THE JOB SITE ONE SET OF DOCUMENTS AS "RECORD DRAWINGS" FOR THE PURPOSE OF DAILY MARKING OF ALL SUBSTANTIAL REVISIONS TO THE DOCUMENTS INCLUDING BUT NOT LIMITED TO ELECTRICAL CHANGES, AND LOCATIONS OF UTILITIES, PANELBOARDS, DISCONNECTS, STARTERS AND OTHER DEVICES REQUIRING PERIODIC OPERATIONAL ATTENTION, ADJUSTMENT, OR SERVICE INCLUDING ACCESS THERETO, AT THE COMPLETION OF THE PROJECT. THIS SET SHALL BE RETURNED TO THE ARCHITECT.
9. EQUIPMENT SUBSTITUTION
- A. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL TERMS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PERFORMANCE OF ALL EQUIPMENT PURCHASED, FOR PROPER FIT, AND OTHER DIMENSIONAL REQUIREMENTS.
- B. IF THIS CONTRACTOR SUBSTITUTES FOR SPECIFIED EQUIPMENT ANY OTHER EQUIPMENT WHICH REQUIRES ANY CHANGES TO THE DESIGN, ALL COST OF REDESIGN AND RECONFIGURATION RESULTING FROM SAID SUBSTITUTION SHALL BE BORNE BY THE CONTRACTOR.
10. EQUIPMENT INSTALLATION AND SUPPORT
- A. CONTRACTOR SHALL SUPPORT PLUMB, RIGID AND TRUE-TO-LINE ALL WORK AND EQUIPMENT INSTALLED. THIS CONTRACTOR SHALL DETERMINE HOW EQUIPMENT, FIXTURES, ETC., ARE TO BE SUPPORTED, MOUNTED, OR SUSPENDED AND SHALL PROVIDE ACCESSORIES REQUIRED FOR PROPER SUPPORT WHETHER SHOWN ON THE DRAWINGS OR NOT. IF SUPPORTS ARE REQUIRED, CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ARCHITECT FOR APPROVAL.
- B. PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS PRINTED INSTALLATION AND MAINTENANCE LITERATURE. COMPONENTS REQUIRING PERIODIC MAINTENANCE OR ADJUSTMENTS SHALL BE LOCATED OR INSTALLED AS TO PERMIT ACCESS WITHOUT DAMAGE TO STRUCTURE, FINISHES OR OTHER EQUIPMENT.
- C. ALL CONDUIT CONNECTING TO SWITCHGEAR, PANELS, MOTORS, AND OTHER EQUIPMENT SHALL BE INSTALLED WITHOUT STRAIN AT THE CONNECTIONS. THE CONTRACTOR MAY BE REQUIRED, AS DIRECTED, TO DISCONNECT CONDUITS TO DEMONSTRATE THAT THEY HAVE BEEN SO CONNECTED.
11. DEMOLITION
- A. ALL EXISTING EQUIPMENT, NOT INDICATED TO BE INCORPORATED INTO THE NEW SYSTEM SHALL BE DISCONNECTED BY THIS CONTRACTOR AND MADE SAFE FOR REMOVAL BY OTHERS FROM THE JOB SITE. CARE SHALL BE USED SO THAT NO DAMAGE IS DONE TO EXISTING BUILDING, PIPING, DUCTWORK, AND/OR ELECTRICAL EQUIPMENT. ANY DAMAGE ATTRIBUTED TO THIS CONTRACTOR SHALL BE REPAIRED OR REPLACED BY THIS CONTRACTOR.
12. CUTTING AND PATCHING
- A. ALL CUTTING THAT MAY BE NECESSARY FOR THE INSTALLATION OF THE WORK OR ANY REQUIRED PATCHING THAT RESULTS THEREFROM SHALL BE PERFORMED BY THE PROPER TRADE INVOLVED AND SHALL BE INCLUDED AS PART OF THIS CONTRACT. PATCH TO DUPLICATE UNDISTURBED ADJACENT FINISHES, COLORS, TEXTURES AND PROFILES. COLUMNS, BEAMS, GIRDERS OR JOISTS SHALL NOT BE CUT.
- B. ALL WORK AFFECTING ROOF OR STRUCTURES SHALL BE PERFORMED BY LANDLORD'S CONTRACTOR AT TENANT'S EXPENSE.

13. CLEANING
- A. COMPLETION AS IT PERTAINS TO THE CONTRACT COMPLETION DATE IS DEFINED AS THE DAY THE PROJECT IS TURNED OVER TO THE OWNER IN THOROUGHLY CLEAN CONDITION, READY FOR THE OWNER TO TAKE POSSESSION. ALL FIXTURES, MOTORS, EQUIPMENT AND ALL OTHER ELECTRICAL EQUIPMENT FURNISHED OR INSTALLED BY THE CONTRACTOR SHALL BE THOROUGHLY CLEANED.
14. TESTS
- A. PROVIDE THE STATUS AS OUTLINED HEREINAFTER AND OTHER TESTS NECESSARY TO ESTABLISH THE ADEQUACY, QUALITY, SAFETY, COMPLETED STATUS AND SUITABLE OPERATION OF EACH SYSTEM. CORRECT PROMPTLY ANY FAILURE OR DEFECTS REVEALED BY THESE TESTS AND RECONDUCT TEST ON THE CORRECTED ITEMS.
- B. TEST THE GROUNDS WITH A GROUND RESISTANCE DIRECT READING SINGLE-TEST MEGGER.
- C. INSULATION RESISTANCE BETWEEN PHASE CONDUCTORS AND GROUND NOT LESS THAN 1,000,000 OHMS.
- D. THE PANELBOARDS SHALL HAVE PHASE CURRENTS BALANCED TO WITHIN +/- 10% VARIATION BETWEEN AVERAGE PHASE CURRENT AND MEASURED INDIVIDUAL PHASE.
- E. AN OPERATIONAL TEST OF THE EMERGENCY LIGHTS AND THE EXIT LIGHTS SHALL BE PERFORMED FOR THE OWNER TO DEMONSTRATE CONFORMANCE TO THE SPECIFICATIONS.
- F. THE EC SHALL INCLUDE IN THEIR BID ACCEPTANCE TESTING FOR COMPLIANCE. CERTIFICATION TESTING TO BE PERFORMED BY A ACCEPTANCE TEST TECHNICIAN (ATT).
15. TEMPORARY ELECTRICAL SERVICE
- A. TEMPORARY ELECTRICAL SERVICE SHALL BE IN ACCORDANCE WITH THE BUILDING CODE. TEMPORARY LIGHTING SHALL BE PROVIDED BY A LAMP LOCATED FOR EVERY 625 SQUARE FEET OF BUILDING AREA WITH A MINIMUM OF ONE PER ROOM. THE LAMP TO BE 100 WATT AND SHALL BE MAINTAINED BY THE GENERAL CONTRACTOR.
- B. TEMPORARY POWER DISTRIBUTION SHALL BE SUFFICIENT TO ACCOMMODATE THE TEMPORARY LIGHTING AND CONSTRUCTION OPERATIONS, INCLUDING THE USE OF POWER TOOLS (BUT NOT INCLUDING HEAVY-DUTY ELECTRICAL WELDING UNITS), ELECTRICAL HEATING UNITS, AND START-UP OF SPECIFIED BUILDING EQUIPMENT, WHICH IS TO BE TESTED, STARTED OR PLACED INTO USE PRIOR TO COMPLETION OF ITS PERMANENT POWER CONNECTIONS.

16. EXCAVATION AND BACKFILL
- A. CONTRACTOR SHALL PERFORM ALL EXCAVATION REQUIRED AS SHOWN ON PLANS OR REQUIRED FOR PROPER OPERATION. EXCESS EXCAVATION BELOW THE REQUIRED LEVEL SHALL BE BACKFILLED WITH EARTH AND THOROUGHLY TAMPED. UTILITY SERVICES, SHALL BE INSPECTED AND APPROVED BY THE PROPER INSPECTION AUTHORITY BEFORE BACKFILLING.

SECTION 16200  
ELECTRICAL POWER AND LIGHTING

1. RELATED DOCUMENTS
- A. APPLICABLE PROVISIONS OF AIA DOCUMENT A201, "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION", DIVISION 1 GENERAL CONDITIONS AND SECTION 16100 ELECTRICAL, SPECIAL CONDITIONS GOVERN WORK UNDER THIS SECTION.
- B. REFER TO SECTION 16100 ELECTRICAL SPECIAL CONDITIONS REGARDING REGULATIONS AND REQUIREMENTS AFFECTING ALL WORK DESCRIBED IN THIS SECTION.
2. POWER SERVICE
- A. POWER SERVICE FOR THIS PROJECT SHALL BE PROVIDED AS SHOWN ON DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MANAGEMENT TO ENSURE THAT ALL WORK AND MATERIALS ARE IN CONFORMANCE WITH THE LANDLORD'S REQUIREMENTS AND THE REQUIREMENTS OF THE LOCAL UTILITY COMPANY.
3. NAMEPLATES
- A. ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, PANELBOARDS, DISCONNECTS, CONTROLS, ETC., SHALL BE IDENTIFIED WITH THREE PLY LAMINATED PLASTIC. THE OUTSIDE LAMINATIONS SHALL BE WHITE. ENGRAVING SHALL EXTEND THROUGH THE FRONT LAMINATION SO THAT THE BLACK LETTERS APPEAR IN A WHITE FIELD. NAMEPLATES SHALL BE PERMANENTLY ATTACHED WITH SCREWS.
- B. CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN (HANDWRITTEN IS NOT ACCEPTABLE) AND SHALL IDENTIFY CIRCUIT AS TO TYPE AND LOCATION AS FOLLOWS:  
"L1G" - FOR LIGHTING CIRCUIT FOLLOWED BY AREA IN WHICH CIRCUIT APPEARS, I.E., "STOCKROOM", "CASH WRAP", ETC.  
"RECEPT" - FOR RECEPTACLE CIRCUIT FOLLOWED BY AREA IN WHICH RECEPTACLE APPEARS, "STOREFRONT", "CASH REGISTER", ETC.  
"MOTOR" - FOR MOTOR FOLLOWED BY THE EQUIPMENT IDENTIFICATION AND AREA IN WHICH MOTOR IS LOCATED, I.E. "EXH FAN TOILET", "AHU-ROOF", ETC.
4. CONDUIT
- A. ALL WIRING SHALL BE INSTALLED WITHIN CONDUIT. ALL CONDUIT RUNS CONCEALED IN WALLS SHALL BE EMT FOR 3/4" THROUGH 2-1/2". ALL CONDUITS LARGER THAN 2-1/2" SHALL BE GALVANIZED RIGID STEEL. CONDUITS INSTALLED UNDERGROUND OR ENCASED IN CONCRETE SLABS SHALL BE SCHEDULE 40 PVC. FLEXIBLE STEEL CONDUIT (SEALITE) SHALL BE USED IN WET AREAS AND ON ALL MOTORIZED EQUIPMENT. UNSUPPORTED FLEXIBLE CONDUIT MAY ONLY BE USED FOR FINAL CONNECTIONS, AT A MAXIMUM LENGTH OF 6 FEET, WHERE NOT CONCEALED IN A WALL.
- B. WHERE INSTALLED OUTDOORS AND ABOVE GROUND, IN POURED CONCRETE OR SUBJECT TO STRESS FROM COLLISION OR IMPACT, CONDUIT SHALL BE GALVANIZED RIGID STEEL, WHERE RIGID CONDUIT IS NOT REQUIRED, CONDUCTORS SHALL BE INSTALLED IN ELECTRICAL METALLIC TUBING WITH ELECTRO-GALVANIZED OUTSIDE ENAMEL. INSIDE, WHERE CONDUIT IS INSTALLED UNDERGROUND, CONDUIT SHALL BE SCHEDULE 40 PVC AS PERMITTED BY LOCAL AUTHORITIES.
1. ALL OPENINGS IN FIRE AND SMOKE WALLS, PARTITIONS, FLOORS AND OTHER SIMILAR PENETRATIONS FOR ELECTRICAL CONDUITS, CABLE OR EQUIPMENT, WHETHER CUT OR IN PLACE, SHALL BE CLOSED WITH A UL APPROVED FIRE RESISTANT SILICONE FOAM SEALANT TO MAINTAIN THE FULL RATING AND INTEGRITY OF THE PARTITIONS, WALLS OR FLOOR.
2. O.Z. TYPE DX, TX, OR AX CONDUIT EXPANSION DEFLECTION FITTINGS ARE REQUIRED IN ALL CONDUIT RUNS WHERE MOVEMENT MAY BE ENCOUNTERED. ALL EMT COUPLINGS SHALL BE COMPRESSION TYPE.
3. EXPOSED CONDUIT SHALL BE SECURELY SUPPORTED IN PLACE PER CODE BUT ON A MAXIMUM OF 10 FOOT INTERVALS, WITHIN THREE FEET OF EACH BEND, AT EVERY OUTLET OR JUNCTION BOX AND AT THE END OF EACH STRAIGHT RUN TERMINATING AT A BOX OR CABINET. CONDUIT SHALL NOT BE SUPPORTED FROM DUCTWORK OR PIPE WORK. CONDUITS SHALL BE INSTALLED PARALLEL TO AND AT RIGHT ANGLES TO THE BUILDING LINES. GENERALLY, CONDUIT SHALL BE INSTALLED IN CONTACT WITH STRUCTURAL PARTS OF THE BUILDING SO AS TO AVOID SUSPENDED LENGTHS OF CONDUIT. CONDUIT SHALL BE INSTALLED AS TO BE ACCESSIBLE FOR REPLACEMENT AND MAINTENANCE AND GENERALLY CONDUIT SHALL BE INSTALLED TO PERMIT DRAINAGE.
5. WIRE AND CABLE
- A. ALL WIRE AND CABLE SHALL BE INSTALLED IN CONDUIT. ALL WIRE AND CABLE FEEDERS AND BRANCH CIRCUITS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE APPLICABLE EDITION OF THE N.E.C. AND SHALL MEET ALL ASTM SPECIFICATIONS. WIRE AND CABLE SHALL BE NEW, SHALL HAVE SIZE, GRADE OF INSULATION VOLTAGE, AND MANUFACTURER'S NAME PERMANENTLY MARKED ON OUTER COVERING AT REGULAR INTERVAL AND SHALL BE DELIVERED IN COMPLETE COILS OR REELS WITH IDENTIFYING SIZE AND INSULATION TAGS.
- B. NO BX, AC OR NM ALLOWED. MC MAY BE USED ABOVE ACCESSIBLE CEILING. EXPOSED CONDUIT WHICH IS NOT HIDDEN FROM VIEW IN THE DINING AREA SHALL BE EMT, NO EXCEPTIONS. HOME RUNS TO PANELS SHALL BE EMT.
- C. THE ELECTRICAL CONTRACTOR SHALL CALCULATE VOLTAGE DROP ON CONDUCTORS WITH LENGTHS GREATER THAN 75 FEET FROM THE PANELBOARD AND PROPERLY ADJUST THE SIZE THE CONDUCTORS PER CODES.
- D. POWER CONDUCTORS: NO WIRE LESS THAN NO. 12 SHALL BE USED EXCEPT FOR CONTROL CIRCUITS OR LOW VOLTAGE WIRING. WIRE SIZES NO. 12 TO NO.10 SHALL BE SOLID EXCEPT WHERE OTHERWISE INDICATED. WIRE SIZES NO. 8 AND LARGER SHALL BE STRANDED. ALL WIRE SIZES SHOWN ARE AMERICAN WIRE GAUGE SIZES. SIZES NO. 12 AWG THROUGH NO. 8 AWG SHALL BE DUAL-RATED TYPE "THIN THWN" INSULATION. SIZE 4 AWG AND LARGER SHALL BE "THW."
- E. CONTINUITY: ALL WIRES SHALL BE CONTINUOUS FROM OUTLET TO OUTLET.
- F. ACCEPTABLE MANUFACTURERS: CABLE AND WIRE SHALL BE STANDARD TYPE AS MANUFACTURED BY GENERAL CABLE COMPANY, CAROL ANACONDA, ROME, SOUTHWIRE OR ITT ROYAL.
6. COLOR CODING
- A. A COLOR CODING SYSTEM AS LISTED BELOW SHALL BE FOLLOWED THROUGHOUT FOR FEEDERS AND BRANCH CIRCUITS AND USED AS A BASIS FOR BALANCING LOAD.
- 120/208V: PHASE A-BLACK, PHASE B-BRED, PHASE C-BLUE, NEUTRAL-WHITE, GROUND-GREEN, ISOLATED GROUND CONDUCTOR - GREEN WITH YELLOW STRIPES.

7. BOXES AND FITTINGS
- A. ALL OUTLETS SHALL BE PROVIDED WITH GALVANIZED OR SHERARDIZED BOXES SUITABLE IN DESIGN TO THE SPACE THEY OCCUPY AND THE PURPOSE THEY SERVE. WALL MOUNTED OUTLET BOXES, EXCEPT FOR 2" PARTITIONS SHALL BE AT LEAST 4" SQUARE BY 1-1/2" DEEP AND/OR DEEPER IF REQUIRED BY THE DEVICE THEY HOLD OR CODES.
- B. ALL PULLBOXES SHALL BE MADE OF GALVANIZED STEEL, OF METAL GAUGE AND PHYSICAL SIZE AS REQUIRED BY THE N.E.C. FOR THE NUMBER AND SIZE OF RACEWAYS AND CONDUCTORS INVOLVED.
- C. FIXTURE OUTLET BOXES IN OR ON CEILINGS SHALL NOT BE LESS THAN 1-1/2" DEEP OR LESS THAN 4" SQUARE. ALL OUTLET BOXES INTENDED TO SUPPORT FIXTURES SHALL BE EQUIPPED WITH 3/8" FIXTURE STUDS FASTENED THROUGH THE BOTTOM OF THE BOX WITH FOUR BOLTS.
8. CIRCUIT BREAKER PANELBOARDS
- A. PANELS SHALL BE LIGHTING AND APPLIANCE, DEAD FRONT, SAFETY TYPE, FURNISHED WITH BRANCH CIRCUIT PROTECTING DEVICES, EQUIPMENT GROUNDING BUS, MAIN BUS AND CABLE LUGS FACTORY ASSEMBLED, WITH ALL COMPONENTS IN PLACE, READY FOR INSTALLATION.
- B. CURRENT CARRYING CONTACT SURFACES SHALL BE SILVER OR TIN PLATED. THE CIRCUIT BREAKERS SHALL BE OF THE MOLDED CASE, BOLT-ON TYPE SUITABLE FOR VOLTAGE AND AMPERE RATINGS INDICATED ON DRAWINGS AND IN SCHEDULES. MINIMUM INTERRUPTING CAPACITY AS SHOWN IN THE PANEL SCHEDULES ON THE DRAWINGS.
- C. MAIN BUSES AND CONNECTORS SHALL BE HARD DRAWN COPPER OF 98% CONDUCTIVITY, WITH CURRENT CARRYING CAPACITY TO MAINTAIN ESTABLISHED RISE TESTS AS DEFINED IN UL STANDARD UL 67.
- D. CABINET SIZES ARE BASED UPON A 20" WIDE BY 8" DEEP PANEL UNLESS OTHERWISE NOTED. PANELBOARDS SHALL BE EQUIPPED WITH FLUSH TYPE LOCK AND CATCH. ALL LOCKS SHALL BE KEYS ALIKE, AND TWO KEYS ARE TO BE SUPPLIED WITH EACH LOCK.
- E. FURNISH AND INSTALL AS SHOWN ON PLANS. LIGHTING PANELBOARDS BY SCHNEIDER TYPE "NQ", WITH BOLT-ON CIRCUIT BREAKERS OR AN APPROVED EQUAL AS BY ABB, SIEMENS AND EATON.
- F. PROVIDE (3) 1" EMPTY CONDUITS FROM EACH FLUSH MOUNTED PANEL TO ABOVE ACCESSIBLE CEILING.

9. TOGGLE SWITCHES
- A. TOGGLE SWITCHES SHALL MATCH DECOR (COLOR AS DIRECTED BY ARCH/OWNER), AND SHALL BE RATED 20 AMPERES 120/277 VOLT AC TYPE AS MANUFACTURED BY HUBBELL AND SHALL BE AS FOLLOWS:  
  
SINGLE POLE -1221-1  
THREE WAY -1223-1
- B. TOGGLE SWITCHES SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR TO TOP OF OPERATING MECHANISM AND AT DOORS, INSTALLED ADJACENT TO THE TRIM ON THE STRIKING SIDE OF THE DOOR, REGARDLESS OF THE LOCATION INDICATED ON THE DRAWINGS; THEREFORE, CHECK ALL DOOR SWINGS BEFORE INSTALLATION OF CONDUIT OUTLETS.
- C. EQUIVALENT EQUIPMENT AS MANUFACTURED BY LEGRAND AND LEVITON, SHALL BE ACCEPTABLE.
- D. ALL 20AMP/120/277V SWITCHES SHALL BE SPECIFICATION GRADE.
- E. WHERE MORE THAN ONE SWITCH OCCURS AT THE SAME LOCATION, THEY SHALL BE SET IN GANGS WITH ONE COVER PLATE, INSTALLED IN BOXES IN UNIFORM POSITION, SET TO OPEN AND CLOSE CIRCUITS BY MOVING IN THE SAME DIRECTION THROUGHOUT THE JOB.
10. RECEPTACLES
- A. RECEPTACLES SHALL MATCH DECOR (COLOR AS DIRECTED BY ARCH/OWNER), MANUFACTURED BY HUBBELL AND SHALL BE AS FOLLOWS:
- B. DUPLEX RECEPTACLE -20A-120 VOLT 5362-1, NEMA 5-20R, GROUND TYPE.
- C. RECEPTACLES SHALL BE MOUNTED CENTERLINE 18" ABOVE THE FINISHED FLOOR UNLESS OTHERWISE NOTED. OUTLET IS MEASURED FROM CENTER OF BOX TO FINISHED FLOOR.
- D. EQUIVALENT EQUIPMENT AS MANUFACTURED BY LEGRAND AND LEVITON WILL BE ACCEPTABLE.
- E. ALL RECEPTACLES SHALL BE SPECIFICATION GRADE.
- F. ALL ISOLATED GROUND (I.G.) RECEPTACLES SHALL BE ORANGE IN COLOR.
- G. ALL 120V DUPLEX AND QUAD RECEPTACLES SHALL BE "DECORA" STYLE.
- H. ALL DUPLEX RECEPTACLES IN PUBLIC AREAS (I.E. - ENTRY QUEUE, DINING ROOM, HALLWAY, RESTROOMS, AND PATIO AREAS) SHALL BE TAMPER RESISTANT TYPE RECEPTACLES.
- I. ALL ENTRY QUEUE, DINING ROOM, AND HALLWAY DUPLEX RECEPTACLES SHALL BE GRAY IN COLOR.
- J. ALL SHOW WINDOW RECEPTACLE SHALL BE WHITE IN COLOR.
- K. ALL RESTROOMS DUPLEX RECEPTACLE SHALL BE WHITE IN COLOR.
- L. ALL RECEPTACLES IN FOOD PREP AND KITCHEN AREAS SHALL BE GFCI TYPE OR PROVIDED GFCI PROTECTED AT CIRCUIT BREAKER (WHERE REQUIRED BY CODE).

11. DEVICE PLATES
- A. DEVICE PLATES SHALL BE STAINLESS STEEL UNLESS OTHERWISE NOTED. COMPARABLE EQUIPMENT AS MANUFACTURED BY LEGRAND, HUBBELL, INC., AND LEVITON WILL BE ACCEPTABLE.
- B. ALL KITCHEN/EXPO/FOOD-PREP SWITCHDIMMER AND RECEPTACLE COVER PLATES SHALL BE BRUSHED STAINLESS STEEL.
- C. ALL ENTRY QUEUE, DINING ROOM, AND HALLWAY DUPLEX RECEPTACLE COVER PLATES BE GRAY IN COLOR (TO MATCH RECEPTACLE COLOR).
- D. ALL SHOW WINDOW RECEPTACLE COVER PLATES SHALL BE WHITE IN COLOR (TO MATCH RECEPTACLE COLOR).
- E. ALL RESTROOM DUPLEX RECEPTACLE COVER PLATES SHALL BE WHITE IN COLOR (TO MATCH WITH RECEPTACLE COLOR).

12. DISCONNECT SWITCHES
- A. PROVIDE DISCONNECT SWITCHES AS REQUIRED BY CODE AND AS NOTED ON THE DRAWINGS. DISCONNECT SWITCHES SHALL BE NEMA HEAVY DUTY TYPE AND UNDERWRITERS LABORATORIES LISTED, MANUFACTURED BY SCHNEIDER CORPORATION, SIEMENS, ABB, OR EATON.
- B. SAFETY SWITCHES SHALL BE PROVIDED AT ALL LOCATIONS INDICATED ON PLANS OR REQUIRED BY CODES. ALL SWITCHES SHALL BE HEAVY DUTY TYPE AND SHALL HAVE CLIPS FOR FUSE AND SHALL BE SQUARE-D, G.E. OR AN APPROVED EQUAL BY ONE OF THE OTHER SPECIFIED MANUFACTURERS, FOR THE VOLTAGE AND LOAD INVOLVED. PROVIDE A COMPLETE SET OF FUSES IN ALL FUSED SWITCHES. FUSES SHALL BE CLASS RK-1 (BUSSMAN "LOW-PEAK") FOR CIRCUITS UP TO 600 AMPS AND CLASS L (BUSSMAN "HI-CAP" KRP-Q) FOR CIRCUITS ABOVE 600 AMP.
13. GROUNDING
- A. CONTRACTOR SHALL INSTALL A SYSTEM GROUNDING SYSTEM AND AN EQUIPMENT GROUNDING SYSTEM AND SHALL USE ONLY APPROVED GROUNDING CLAMPS AND CONNECTORS AS MANUFACTURED BY PEN-UNION, BURNIDY, OR O-Z MFG. COMPANY.
- B. THE SYSTEM GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE ELECTRICAL CODES AND THE UTILITY COMPANY REGULATIONS. CONTRACTOR SHALL CONNECT THE GROUNDING ELECTRODE CONDUCTORS TO THE NEUTRAL BAR INSIDE THE MAIN PANEL. WHEN TRANSFORMERS ARE USED TO PROVIDE A SEPARATELY DERIVED SYSTEM, THE CONTRACTOR SHALL CONNECT THE GROUNDING ELECTRODE CONDUCTOR TO THE NEUTRAL BAR INSIDE THE SECONDARY SYSTEM PANEL, OR SERVICE RATED DISCONNECT SWITCH, DO NOT CONNECT THE GROUNDING ELECTRODE CONDUCTOR TO THE NEUTRAL LUG INSIDE THE TRANSFORMER.
- C. THE EQUIPMENT GROUNDING SYSTEM SHALL CONSIST OF A CONTINUOUS CONDUIT INSTALLATION AND A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR. THIS EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN EVERY CONDUIT OR RACEWAY WITH THE FEEDER OR BRANCH CIRCUIT CONDUCTORS. THIS GROUNDING SHALL BE EXTENDED FROM THE HOUSING OF EVERY ELECTRICAL LOAD, THROUGH PANELBOARD STATIC GROUNDING BUSES, TO THE STATIC GROUNDING BUS IN THE MAIN PANEL. THE GROUNDING BUS SHALL BE BONDED TO THE GROUNDING NEUTRAL BAR INSIDE THE MAIN PANEL.

14. LIGHTING FIXTURES
- A. ALL LIGHTING FIXTURES AND LAMPS/DRIVERS SHALL BE FURNISHED BY G.C., UNLESS NOTED OTHERWISE. THIS CONTRACTOR SHALL INSTALL LIGHTING FIXTURES AND LAMPS/DRIVERS AS INDICATED ON THE DRAWINGS AND AS SPECIFIED BELOW. COMPLETE WITH HANGERS, PLASTER FRAMES AND ALL OTHER NECESSARY ACCESSORIES.
- B. THIS CONTRACTOR SHALL VERIFY THE FINAL CEILING AND FINISH SCHEDULES TO INSURE THE PROPER INSTALLATION AND MOUNTING OF FIXTURES AND SHALL COORDINATE BEFORE MAKING SUBMITTALS.
- C. AIM ALL ADJUSTABLE LIGHT FIXTURES AS DIRECTED BY ARCHITECT/ENGINEER/OWNER.
- D. PROVIDE AN UNSWITCHED, CONSTANT ON CIRCUIT TO ALL EMERGENCY LIGHTING BATTERY PACK CHARGING CIRCUITS.

15. TIMECLOCKS
- A. TIMECLOCKS SHALL BE MANUFACTURED BY INTERMATIC, OR OWNER AND ENGINEER APPROVED EQUAL, AND AS SPECIFIED ON THE DRAWINGS.
- B. TIMECLOCK PROGRAMMING SHALL CONSIST OF (2) ZONES. ZONE 1 INTERIOR, SHALL BE PROGRAMMED BY THE EC AS DIRECTED BY THE STORE MANAGER. ZONE 2 EXTERIOR, SHALL BE PHOTOCELL ON AND TIMED OFF. THE TIMED OFF SCHEDULE SHALL BE PROGRAMMED BY THE EC AS DIRECTED BY THE STORE MANAGER.
- C. TRAINING OF THE TIMECLOCK OPERATION AND PROGRAMMING SHALL BE PROVIDED BY THE EC TO THE STORE MANAGER OR ANOTHER REPRESENTATIVE OF HABIT BURGER UPON PROJECT CLOSEOUT.
- D. TIMECLOCK TO BE INSTALLED AT 5'-0" A.F.F. VERIFY LOCATION WITH PROJECT MANAGER.
16. TELEPHONE SERVICE
- A. THIS CONTRACTOR SHALL INSTALL A TELEPHONE SERVICE CONDUIT AS SHOWN ON THE DRAWINGS AND FURNISH AND INSTALL (1) 2" X 2" X 3/4" FIRE-RATED PLYWOOD PANEL MOUNTED ON THE WALL AT LOCATION SHOWN ON PLANS. PROVIDE #6 GROUND CONDUCTOR BACK TO THE EXISTING ELECTRICAL SERVICE GROUND IN ACCORDANCE WITH N.E.C. 800.100.
17. PROVIDE A POWER SYSTEM STUDY TO DETERMINE THE AVAILABLE FAULT CURRENT AND THE ARC FLASH HAZARD AT THE PANELS.

GENERAL NOTES

1. THE SCOPE OF THE ELECTRICAL WORK SHALL INCLUDE FURNISHING, INSTALLING, CONNECTING AND TESTING ALL ELECTRICAL SYSTEMS FOR A COMPLETE AND FULLY OPERABLE INSTALLATION COMPLY WITH APPLICABLE VERSION OF ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES AND IN ACCORDANCE WITH THE APPLICABLE EDITION ON THE N.E.C. AS ADOPTED AND ENFORCED BY THE AUTHORITY HAVING JURISDICTION.
2. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND SHALL IMMEDIATELY NOTIFY THE OWNER'S PROJECT MANAGER OF ANY DISCREPANCIES.
3. COORDINATE LOCATIONS AND ROUTING OF FEEDERS TO PANELBOARDS WITH LANDLORD AND PROVIDE ALL NECESSARY APPOINTANCES AS REQUIRED BY LANDLORD AND OWNER.
4. WHERE THE WORD "PROVIDE" IS USED, THE WORD IS UNDERSTOOD TO MEAN "THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND MAKE FINAL CONNECTION TO THE EQUIPMENT", UNLESS OTHERWISE NOTED.
5. REFER TO ALL DISCIPLINES, INCLUDING ARCHITECTURAL AND KITCHEN PLANS FOR ADDITIONAL INFORMATION, REQUIREMENTS AND WORK REQUIRED BY E.C., PROVIDE ALL LABOR AND MATERIAL AS REQUIRED.
6. ALL CONDUITS ARE TO BE CONCEALED IN WALLS OR ABOVE CEILINGS. CONDUITS IN EXPOSED CEILING AREAS SHALL EXIT WALLS AS CLOSE TO ROOF/FLOOR STRUCTURAL DECK AS POSSIBLE.
7. ANY PENETRATIONS THROUGH FIRE RATED ASSEMBLY SHALL BE APPROPRIATELY FIRE STOPPED TO RETAIN THE ASSEMBLY'S RATING. THROUGH PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PROTECTED BY AN APPROVED THROUGH-PENETRATION FIRE-STOP SYSTEM INSTALLED AND TESTED IN ACCORDANCE WITH ASTM 814 OR UL1479 WITH A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCH OF WATER (2.49Pa). THE SYSTEM SHALL HAVE AN "F" RATING AND A "T" RATING OF NOT LESS THAN 1-HOUR, BUT NOT LESS THAN THE REQUIRED RATING OF THE WALL PENETRATED.
8. THE DIRECTIVE, IF ANY, OF THE BUILDING OFFICIAL SHALL TAKE PRECEDENCE OVER THIS DRAWING REGARDING LOCATION AND NUMBER OF EXIT LIGHTS.
9. ALL WIRING SHALL BE COPPER. MINIMUM WIRE AND CONDUIT SIZE SHALL BE #12 THN/THWN IN 3/4" CONDUIT OR AS REQUIRED BY CODE.
10. ALL OPERABLE CONTROL DEVICES, SHALL HAVE OPERABLE PARTS OF THE CONTROLS LOCATED NO HIGHER THAN 48" AND NO LOWER THAN 18" ABOVE THE FLOOR PER A.D.A REQUIREMENTS. RESOLVE ANY CONFLICT IN MOUNTING HEIGHT WITH ARCHITECT/OWNER PRIOR TO ROUGH IN.
11. SUSPENDED ELECTRICAL CONDUITS AND OUTLET BOXES ARE TO BE SUPPORTED FROM THE STRUCTURE USING METAL BRACES.
12. RIGID CONDUIT REQUIRED IN DINING TO BE GALVANIZED FINISH.
13. G.C. SUBCONTRACTOR IS RESPONSIBLE TO VERIFY CONDITION, IF EQUIPMENT IS WORKING PROPERLY AND UP TO LOCAL JURISDICTION CODE. CLEAN AND SERVICE AS NEEDED.

NOTES

ALL ELECTRICAL EQUIPMENT TO BE UL LISTED DEVICES.

NOTES

ALL "LIKE" EQUIPMENT/DEVICES SHALL BE SINGLE MANUFACTURER, I.E.: ALL SWITCHGEARS/PANELBOARDS = ONE MANUFACTURER, ALL WIRING DEVICES = ONE MANUFACTURER, ALL LIGHTING SWITCHES/DIMMERS = ONE MANUFACTURER, ETC.).

ABBREVIATIONS

A	- AMPERE	P.C.	- PLUMBING CONTRACTOR	20AF	- 20 AMP FUSE
AFB	- ABOVE FINISHED FLOOR	STUB-UP	- SERVICE UP FROM FINISHED FLOOR	G	- GROUND WIRE
CB	- CIRCUIT BREAKER	WP	- WEATHER PROOF	C	- CONDUIT
E.C.	- ELECTRICAL CONTRACTOR	INCAN.	- INCANDESCENT	EF	- EXHAUST FAN
FLA	- FULL LOAD AMPS	N.E.C.	- NATIONAL ELECTRICAL CODE	MAU	- MAKE-UP AIR UNIT
F.S.E.C.	- FOOD SERVICE EQUIPMENT CONTRACTOR	C.E.C.	- CALIFORNIA ELECTRICAL CODE	RTU	- ROOF-TOP UNIT
G.C.	- GENERAL CONTRACTOR	TI	- TENANT IMPROVEMENT	KVA	- KILO-VOLT AMPERE
K.E.C.	- KITCHEN EQUIPMENT CONTRACTOR	MLV	- MAGNETIC LOW VOLTAGE	T/C	- TIMECLOCK
GFI	- GROUND FAULT INTERRUPTER	T.G.C.	- TENANT'S GENERAL CONTRACTOR	ELV	- ELECTRONIC LOW VOLTAGE
HP	- HORSEPOWER	V	- VOLT	IG	- ISOLATED GROUND
KW	- KILOWATT	P.O.S.	- POINT OF SALE	LL	- LANDLORD
N.I.F.S.C.	- NOT IN FOOD SERVICE CONTRACT	INCL	- INCLUDED	TR	- TAMPER RESISTANT
A.I.C.	- AMPERE INTERRUPTING CAPACITY	20AS	- 20 AMP SWITCH		

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	EQUIPMENT CALLOUT - SEE EQUIPMENT AND PANEL SCHEDULES FOR MORE INFORMATION
	SIMPLEX RECEPTACLE MOUNTED AT 15" BOTTOM OF BOX A.F.F. UNLESS NOTED OTHERWISE
	DUPLEX RECEPTACLE MOUNTED AT 15" BOTTOM OF BOX A.F.F. UNLESS NOTED OTHERWISE
	GFI DUPLEX RECEPTACLE MOUNTED AT 15" BOTTOM OF BOX A.F.F. UNLESS NOTED OTHERWISE
	QUAD PLEX RECEPTACLE MOUNTED AT 15" BOTTOM OF BOX A.F.F. UNLESS NOTED OTHERWISE
	DUPLEX GFCI PROTECTED RECEPTACLE MOUNTED AT 15" BOTTOM OF BOX A.F.F. UNLESS NOTED OTHERWISE
	QUAD PLEX GFCI PROTECTED RECEPTACLE MOUNTED AT 15" BOTTOM OF BOX A.F.F. UNLESS NOTED OTHERWISE
	DUPLEX CONTROLLED RECEPTACLE IN OFFICE AREA
	CEILING MOUNTED OR WALL MOUNTED ABOVE SHOW WINDOW RECEPTACLE
	CEILING MOUNTED GFCI RECEPTACLE
	JUNCTION BOX
	MOTOR CONNECTION
	DISCONNECT SWITCH
	SINGLE SECTION PANELBOARD
	CIRCUIT HOME RUN - 3/4"C. 2#12-1#12S, U.O.N.
	SPECIAL VOLTAGE. VERIFY NEMA CONFIGURATION REQUIRED WITH EQUIPMENT SUPPLIER
	TELEPHONE, DATA LINE OR DATACOM MOUNTED AT 15" BOTTOM OF BOX A.F.F. UNLESS NOTED OTHERWISE.
	TELEPHONE, DATA LINE OR DATACOM CEILING MOUNTED.
	WALL MOUNTED TOGGLE SWITCH OR DIMMER SWITCH
	3-WAY WALL MOUNTED TOGGLE SWITCH OR DIMMER SWITCH
	MOTOR RATED SWITCH
	TIMECLOCK AND LIGHTING CONTROLS
I.G.	ISOLATED GROUND



ELECTRICAL  
SPECIFICATIONS  
AND NOTES

Plan Check Number:

11/27/2024	65% SUBMITTAL SET
12/23/2024	95% SUBMITTAL SET

S H E E T

E100

GENERAL LIGHTING NOTES

- A. LIGHT FIXTURES SHALL BE SUPPLIED BY HABIT BURGER.
- B. ALL LIGHTING TO BE CONTROLLED BY AUTOMATIC LIGHTING CONTROL. COORDINATE WITH OWNER FOR LIGHTING CONTROL SCHEDULES.
- C. ALL LIGHTING FIXTURES SHALL HAVE PROTECTIVE COVERS OR SHATTERPROOF BULBS IN KITCHEN, FOOD PREPARATION AREAS, FRONT SERVICE AREAS AND DISHWASHING AREAS.
- D. SEE ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION ON FIXTURE LOCATIONS. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REVIEWING ARCHITECTURAL ELEVATIONS FOR ANY ADDITIONAL POWER REQUIREMENTS INCLUDING SIGNS AND BUILDING LIGHTING.
- E. INSTALL LIGHT FIXTURES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE APPLICABLE EDITION OF THE ELECTRICAL CODE ENFORCED BY THE AUTHORITY HAVING JURISDICTION.
- F. ALL FIXTURES TO BE RECEIVED, STORED BY THE G.C. AND INSTALLED AND CONNECTED BY THE E.C. ALL FIXTURE LAMPS SHALL BE SUPPLIED BY THE G.C. AND INSTALLED AND CONNECTED BY THE E.C.
- G. TESTING FOR EMERGENCY LIGHTING SYSTEM IS REQUIRED. CONTRACTOR SHALL TEST THE SYSTEM PRIOR TO FINAL INSPECTION (TESTING MUST BE BY DISCONNECTING THE MAIN).
- H. EXIT PATH ILLUMINATION TO BE PROVIDED WITH EMERGENCY BACK-UP POWER SUPPLY. CONTRACTOR TO PROVIDE ADDITIONAL (AS SPECIFIED HEREIN) EMERGENCY EGRESS FIXTURES AS DIRECTED BY THE AHJ TO COMPLY WITH APPLICABLE CODES.
- I. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LIGHTING FIXTURES. VERIFY CEILING TYPE AND PROVIDE NECESSARY MOUNTING HARDWARE TO ACCOMMODATE LIGHT FIXTURES USED. PROVIDE SLOPE CEILING ADAPTERS WHERE REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ARCHITECTURAL DRAWINGS FOR ANY ADDITIONAL POWER REQUIREMENTS.
- J. ALL PENDANT MOUNTED FIXTURES SHALL BE SUPPORTED DIRECTLY FROM STRUCTURE ABOVE WITH No.9 GAGE WIRE OR APPROVED ALTERNATE SUPPORT WITHOUT USING CEILING SUSPENSION SYSTEM FOR DIRECT SUPPORT.
- K. ALL GRID FIXTURES MUST BE SUPPORTED BY #12 GAUGE WIRE ATTACHED TO THE GRID MEMBERS WITHIN 3" OF EACH CORNER OF EACH FIXTURE.
- L. EXIT FIXTURES TO BE CIRCUITED BY UN-SWITCHED LEG AND PROVIDE CONTINUOUS ILLUMINATION PER ELECTRICAL CODE AND NFPA 101, LIFE SAFETY CODE.
- M. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY AND EXIT LIGHT FIXTURE LOCATIONS/QUANTITIES MAY BE REQUIRED BY AHJ UPON FINAL INSPECTION.
- N. ALL EMERGENCY AND EXIT LIGHT FIXTURES SHALL BE CONNECTED AHEAD OF SWITCHED LIGHTING CIRCUIT.
- O. UNLESS OTHERWISE NOTED, LIGHT SWITCHES SHALL BE GANGED TOGETHER UNDER A COMMON FACEPLATE.
- P. CURRENT LIMITER, COORDINATE WITH VENDOR AND PROVIDE CURRENT LIMITERS ACCORDINGLY.
- Q. E.C. SHALL VERIFY THE OPERABLE CONDITION OF MANUAL AND AUTOMATIC LIGHTING CONTROLS IN THE FIELD. PROVIDE NEW MANUAL AND AUTOMATIC LIGHTING CONTROLS AS REQUIRED TO COMPLY WITH THE 2022 CALIFORNIA ENERGY CODE (TITLE 24, PART 6) AND SAN DIEGO CITY REQUIREMENTS.
- R. E.C. SHALL VERIFY AND ADJUST LIGHT FIXTURES AS REQUIRED TO ALIGN WITH THE CEILING GRID. PROVIDE NECESSARY WIRING AND MAKE ADJUSTMENTS TO LIGHT FIXTURES IN THE FIELD.
- S. E.C. SHALL VERIFY THE AVAILABILITY AND OPERABLE CONDITION OF THE DISCONNECT SWITCH AND CIRCUIT FOR FRONT SIGNAGE IN THE FIELD. IF THE EXISTING DISCONNECT OR CIRCUIT IS INOPERABLE OR UNAVAILABLE, PROVIDE A NEW DISCONNECT AND CIRCUIT. BASE BID ACCORDINGLY. COORDINATE WITH THE ARCHITECT/OWNER TO CONFIRM THE LOCATION IN THE FIELD.

LIGHTING PLAN KEYED NOTES

#	
1	E.C. SHALL PROVIDE AND CONNECT THE LIGHT FIXTURE TO THE NEAREST EXISTING LIGHT FIXTURE FOR CIRCUITING AND CONTROL. THE NEW LIGHT FIXTURE SHALL BE MANUFACTURED BY CREE AND MODEL IS RC6-12W-GU24. COORDINATE FINAL SELECTION BY ARCHITECT.
2	E.C. SHALL VERIFY THE LOCATION AND OPERABLE CONDITION OF EXISTING LIGHT FIXTURES, CIRCUIT AND CONTROL. PROVIDE NEW LIGHT FIXTURE, CIRCUIT AND CONTROL. IF EXISTING IS INOPERABLE. BASE BID ACCORDINGLY.
3	E.C. SHALL VERIFY THAT ALL THE LIGHTING CONTROLS HAVE BEEN PROVIDED IN ACCORDANCE WITH THE ENERGY CODE 130.1(A TO C). INFORM EOR OF ANY DISCREPANCY PRIOR TO BID.

ALL THE LIGHTING  
FIXTURES AND  
CONTROLS IN THIS  
AREA ARE EXISTING  
AND SHALL REMAIN

ELECTRICAL  
LIGHTING PLAN

Plan Check Number:

11/27/2024 65% SUBMITTAL SET  
12/23/2024 95% SUBMITTAL SET

S H E E T

E200

#	POWER PLAN KEYED NOTES
1	EXISTING ELECTRICAL PANEL TO REMAIN FOR THE PROJECT SPACE. PROVIDE AND MAINTAIN REQUIRED CODE CLEARANCES FOR ELECTRICAL PANELS.
2	SOFT SERVE MACHINE REQUIRES (2) CONNECTIONS (2POLE/3-WIRE), (2) DEDICATED CIRCUITS. CONTRACTOR TO PROVIDE (2) 30 AMP RECEPTACLES FOR THE SOFT SERVE SIDE(EQUIPMENT PROVIDED WITH FACTORY INSTALLED CORDS AND PLUGS). SEE PANEL SCHEDULES, SHEET E300 FOR MORE INFORMATION.
3	CONTRACTOR SHALL VERIFY OPERABLE CONDITION OF EXISTING SHUNT TRIP. IF INOPERABLE, PROVIDE NEW "SHUNT-TRIP" CIRCUIT BREAKER FOR EQUIPMENT LOCATED UNDER THE HOOD INCLUDING HOOD LIGHTS. EQUIPMENT SHUNT-TRIP SHALL BE WIRED THRU HOOD FIRE SUPPRESSION SYSTEM CONTROL. SYSTEM CONTROLS SHALL TRIP BREAKERS OFF IN THE EVENT OF FIRE. SEE PANEL SCHEDULES, SHEET E300 FOR MORE INFORMATION.
4	E.C. SHALL VERIFY OPERABLE CONDITION OF EXISTING OUTLETS ALONG THEIR CIRCUIT IN THE FIELD. PROVIDE NEW OUTLETS AND CIRCUIT AS PER REQUIREMENTS.
5	EXISTING (E) MECHANICAL UNITS TO REMAIN. E.C. TO VERIFY THE OPERABLE CONDITION OF THE ELECTRICAL CIRCUIT AND CONTROLS IN THE FIELD. REROUTE THE WIRING TO THE INDICATED CIRCUIT. BASE BID ACCORDINGLY.
6	E.C. SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE HVAC UNIT IN THE FIELD. PROVIDE CIRCUIT AND CONTROLS AS REQUIRED.

EQUIPMENT SCHEDULE								
ITEM NUMBER	DESCRIPTION	QTY	PROVIDED BY	MANUFACTURER	MODEL NUMBER	VOLT	PHASE	AMP
22	27" WORKTOP FREEZER	1	KEC	DELFIELD	403P-ES	120	1	4.5
24	36" CHARBROILER W/ SPLASH GUARD	1	OWN	MAGIKITCHEN	CM-SMB-636			
25	48" COUNTER TOP GRIDDLE	1	OWN	JADE	JGT-2448.MOD			
34	60" SANDWICH MAKEUP TABLE 1   DOORS	1	KEC	RANDELL	NPR1L2-HAB60-DD	120	1	6
34B	60" SANDWICH MAKEUP TABLE 2   DRAWERS	1	KEC	RANDELL	NPR1L2-HAB60-DDR	120	1	6
40	UNDERCOUNTER REFRIGERATOR WITH 3" CASTERS	1	OSV	BEVERAGE AIR	UCR27AHC	120	1	2
41	SOFT SERVE MACHINE	1	OSV	TAYLOR	C717	208	1	22 & 19
52	P.O.S. ORDER TERMINAL	1	OSV			120	1	8
53	P.O.S. HOME TERMINAL	1	OSV			120	1	8
NOTE: - CONTRACTOR TO COORDINATE WITH MANUFACTURER FOR EXACT POWER REQUIREMENTS AND CONNECTION TYPE OF THE EQUIPMENT AND PROVIDE ACCORDINGLY.								
E.C. TO PROVIDE SHUNT TRIP BREAKERS WHEREVER THEY ARE REQUIRED.								

#### GENERAL POWER NOTES

- A. VERIFY ELECTRICAL REQUIREMENTS FOR ALL SPECIAL EQUIPMENT PRIOR TO ANY WORK BEING PERFORMED. PROVIDE ISOLATED GROUND WIRE PER EQUIPMENT MANUFACTURER'S INSTALLATION REQUIREMENTS. PROVIDE ALL ELECTRICAL REQUIREMENTS FOR MECHANICAL CONTROLS AS MAY BE REQUIRED BY CODE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR AS TO LOCATION OF A/C UNITS AND EXHAUST FANS.
- B. ALL ELECTRICAL WORK SHALL BE INSTALLED BY AN ELECTRICAL CONTRACTOR LICENSED IN THE JURISDICTION OF THE PROJECT.
- C. E.C. TO PROVIDE ALL ELECTRICAL JUNCTION BOXES, PULL BOXES AND DEVICE BOXES. SIZE IN ACCORDANCE WITH N.E.C.
- D. E.C. TO PROVIDE ALL NECESSARY POWER AND FINAL CONNECTIONS TO ROOF MOUNTED EQUIPMENT. COORDINATE ROOF PENETRATION REQUIREMENTS WITH LANDLORD.
- E. E.C. SHALL PROVIDE PHENOLIC LABELS INDICATING ELECTRICAL PANEL AND CIRCUIT NUMBER(S) FOR ALL RECEPTACLES, JUNCTION BOXES (USED FOR HARDWIRED CONNECTION), EQUIPMENT DISCONNECT SWITCHES, ETC. FROM WHICH THE DEVICE IS SERVED.
- F. ALL ELECTRICAL WORK REQUIRED FOR THE CONSTRUCTION AND FULL OPERATION OF THIS PROJECT SHALL BE PROVIDED BY THE E.C.
- G. STARTER AND RELATED WIRING SHALL BE PROVIDED BY E.C. OVERLOAD LIMITS SHALL BE INSTALLED PER GIVEN NAMEPLATE DATA ON EQUIPMENT. STARTERS SHALL BE INSTALLED AS PER REQUIREMENTS.
- H. E.C. TO PROVIDE ELECTRICAL OUTLET FIRE PROTECTION "PUTTY PAD" FOR ALL RECEPTACLES IN RATED WALL AS MANUFACTURED BY PFP PARTNERS. APPLY TO BOXES AS INSTRUCTED BY MFR. TO PROVIDE RATING TO MEET RATING OF CORRESPONDING WALL.
- I. WHERE PORTIONS OF A CABLE RACEWAY OR SLEEVE ARE KNOWN TO BE SUBJECTED TO DIFFERENT TEMPERATURES AND WHERE CONDENSATION IS KNOWN TO BE AN ISSUE, AS IN COLD STORAGE AREAS OF BUILDINGS OR WHERE PASSING FROM THE INTERIOR TO THE EXTERIOR OF A BUILDING, THE RACEWAY OR SLEEVE SHALL BE FILLED WITH AN APPROVED MATERIAL TO PREVENT THE CIRCULATION OF WARM AIR TO COLDER SECTION OF THE RACEWAY OR SLEEVE PER CODES.
- J. VERIFY EXACT LOCATION, MOUNTING HEIGHT AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT PROVIDED BY OTHERS (INCLUDING HVAC EQUIPMENT) PRIOR TO ROUGH-IN AND PROVIDE ALL REQUIRED FUSIBLE SWITCHES, TRANSFORMERS, STARTERS, ETC. NECESSARY FOR PROPER OPERATION OF EQUIPMENT.
- K. ALL RECEPTACLES READILY ACCESSIBLE IN PUBLIC SPACES SHALL BE LISTED TAMPER-RESISTANT.
- L. ALL LOW VOLTAGE WIRING IN CEILING PLENUM (INCLUDING TELEPHONE, DATA, ALARM AND TEMP. CONTROL WIRING) SHALL BE UL LISTED TEFLON PLENUM CABLE.
- M. ALL OUTLETS AND ROUGH-INS SHOWN RELATE TO FOOD SERVICE FIXTURES AND EQUIPMENT ONLY. SEE ARCHITECTURAL/FOOD SERVICE EQUIP PLANS FOR ADDITIONAL ELECTRICAL REQUIREMENTS.
- N. THIS ELECTRICAL PLAN IS INTENDED TO SHOW LAYOUT AND LOAD REQUIREMENTS. VERIFY EXACT LOCATIONS WITH ELECTRICAL ROUGH-IN AND OTHER DISCIPLINES AND THE APPROVED FOOD SERVICE SHOP DRAWINGS.
- O. SEE DRAWING FOOD SERVICE PLANS, SHEET FS205 FOR KITCHEN EQUIPMENT SCHEDULE.
- P. VERIFY AND COORDINATE HEIGHTS AND EXACT LOCATIONS FOR ALL ELECTRICAL OUTLETS WITH KITCHEN EQUIPMENT SUPPLIER PRIOR TO ANY WORK.
- Q. E.C. TO VERIFY ALL REQUIREMENTS OF P.O.S. STATIONS, PRINTERS, OVERHEAD KITCHEN COMPUTERS, AUDIO/VIDEO EQUIPMENT, MANAGER'S OFFICE COMPUTER STATIONS, NETWORK RACK AND TELECOM EQUIPMENT PRIOR TO ROUGH-IN.
- R. POS COMPUTERS, POS PRINTERS, OVERHEAD KITCHEN COMPUTERS, AUDIO/VIDEO EQUIPMENT, MANAGER'S OFFICE COMPUTER STATIONS, NETWORK RACK AND TELECOM EQUIPMENT ELECTRICAL I.G. RECEPTACLES SHALL BE ORANGE IN COLOR. ORANGE RECEPTACLES SHOULD NOT BE USED FOR ANY OTHER OUTLETS.
- S. CONTRACTOR TO PROVIDE ALL CONDUITS AND BOXES FOR ALL AUDIO/VIDEO EQUIPMENT POS DATA OUTLETS, TELEPHONE OUTLETS, TV OUTLETS, CAMERAS OUTLETS, SECURITY SYSTEM OUTLETS, AND ANY OTHER LOW VOLTAGE SYSTEM OUTLETS AS REQUIRED. COORDINATE WITH SYSTEM VENDORS FOR ALL REQUIREMENTS.
- T. UNLESS OTHERWISE NOTED, ALL ELECTRICAL WORK FOR FABRICATED FOOD SERVICE EQUIPMENT SHALL BE COMPLETELY PROVIDED BY KITCHEN EQUIPMENT DIVISION TO A JUNCTION BOX OR PULL BOX MOUNTED ON THE EQUIPMENT IN AN ACCESSIBLE LOCATION. FINAL CONNECTIONS TO EQUIPMENT JUNCTION BOX OR PULL BOX AND ALL ELECTRICAL WORK FROM PANEL BOARDS TO BE BY THE ELECTRICAL DIVISION.
- U. FINAL CONNECTIONS TO ALL EQUIPMENT TO BE PROVIDED BY ELECTRICAL CONTRACTOR, INCLUDING MATERIALS.
- V. E.C. TO CONFIRM UTILITY REQUIREMENTS FOR ALL OWNER/VENDOR/EXISTING EQUIPMENT PRIOR TO ROUGH-IN.
- W. ELECTRICAL CONTRACTOR TO PROVIDE THE FOLLOWING:
- W.A. ALL JUNCTION BOXES, ELECTRICAL OUTLETS, COVER PLATES, SWITCHES, ETC., NOT BUILT INTO FIXTURES OR EQUIPMENT. ALL OUTLETS, JUNCTION BOXES, COVER PLATES, ETC., IN DISH ROOMS OR AS INDICATED ON SCHEDULES MUST BE VAPOR PROOF.
- W.B. ALL PLUGS AND CORDS AS NOTED ON SCHEDULE. ALL CORDS SHALL BE N.E.M.A.-RATED AND U.L.-APPROVED FOR MANUFACTURED AND/OR FABRICATED EQUIPMENT.
- W.C. SHUNT-TRIP CIRCUIT BREAKERS/CONTACTORS OR DISCONNECTS FOR FIRE CONTROL SYSTEM TO SHUT-OFF EQUIPMENT BELOW HOODS/VENTILATORS AS REQUIRED BY ADOPTED N.F.P.A. LOCAL CODES AND AS REQUIRED BY AUTHORITY HAVING JURISDICTION.
- W.D. DISCONNECTS OR OTHER DEVICES AS REQUIRED BY CODES.
- X. WHEN APPLICABLE, ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT AND WIRING. INSTALL ELECTRICAL COMPONENTS (PROVIDED BY E.C.) AND INTER-WIRE BETWEEN THE FOLLOWING:
- X.A. CONTROL PANELS TO WATER-TYPE, VENTILATORS AND EXHAUST SUPPLY FANS PER MANUFACTURER'S INSTRUCTIONS.
- X.B. KITCHEN EXHAUST HOOD/VENTILATORS TO FIRE CONTROL SYSTEM AND SHUT-OFFS.
- Y. VERIFY MOUNTING HEIGHT OF POWER/DATA FOR MONITORS WITH EQUIPMENT SUPPLIER(S) PRIOR TO ROUGH-IN.
- Z. E.C. SHALL VERIFY AVAILABILITY AND OPERABLE CONDITION OF NETWORK RACK IN THE FIELD. PROVIDE NEW NETWORK RACK IF NOT AVAILABLE OR INOPERABLE. BASE BID ACCORDINGLY.
- AA. E.C. SHALL VERIFY THE LOCATION AND OPERABLE CONDITION OF THE EXISTING MECHANICAL/PLUMBING UNITS IN THE FIELD. PROVIDE NEW CIRCUIT, DISCONNECT/SWITCH IF EXISTING IS INOPERABLE.
- AB. THE DISCONNECT SWITCHES FOR THE BRANCH CIRCUIT SHOWN ON THE PLAN SHALL BE RATED EQUAL TO OR HIGHER THAN THE BREAKER RATING. REFER BREAKER RATING IN THE PANEL SCHEDULE AND PROVIDE DISCONNECT AS NEEDED.
- AC. A 125-VOLT, SINGLE-PHASE, 15- OR 20-AMPERE-RATED RECEPTACLE OUTLET SHALL BE INSTALLED AT AN ACCESSIBLE LOCATION WITHIN 7.5 M (25 FT) OF THE EQUIPMENT AS SPECIFIED IN 210.63(A) AND (B) AS PER NEC 210.63.

#### KITCHEN RECEPTACLE NOTES

- A. ALL KITCHEN SINGLE-PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 50 AMPERES OR LESS AND THREE PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 100 AMPERES OR LESS INSTALLED SHALL HAVE GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL PER N.E.C.
- B. ALL GFCI RECEPTACLES SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION, OR A GFCI DEAD FRONT DEVICE INSTALLED IN A READILY ACCESSIBLE LOCATION, OR A GFCI CIRCUIT BREAKER SHALL BE USED TO FEED THE CIRCUIT NOTED.
- C. ALL 120V, 15A AND 20A CIRCUITS TO KITCHEN EQUIPMENT SHALL BE FED WITH A DEDICATED NEUTRAL WIRE.

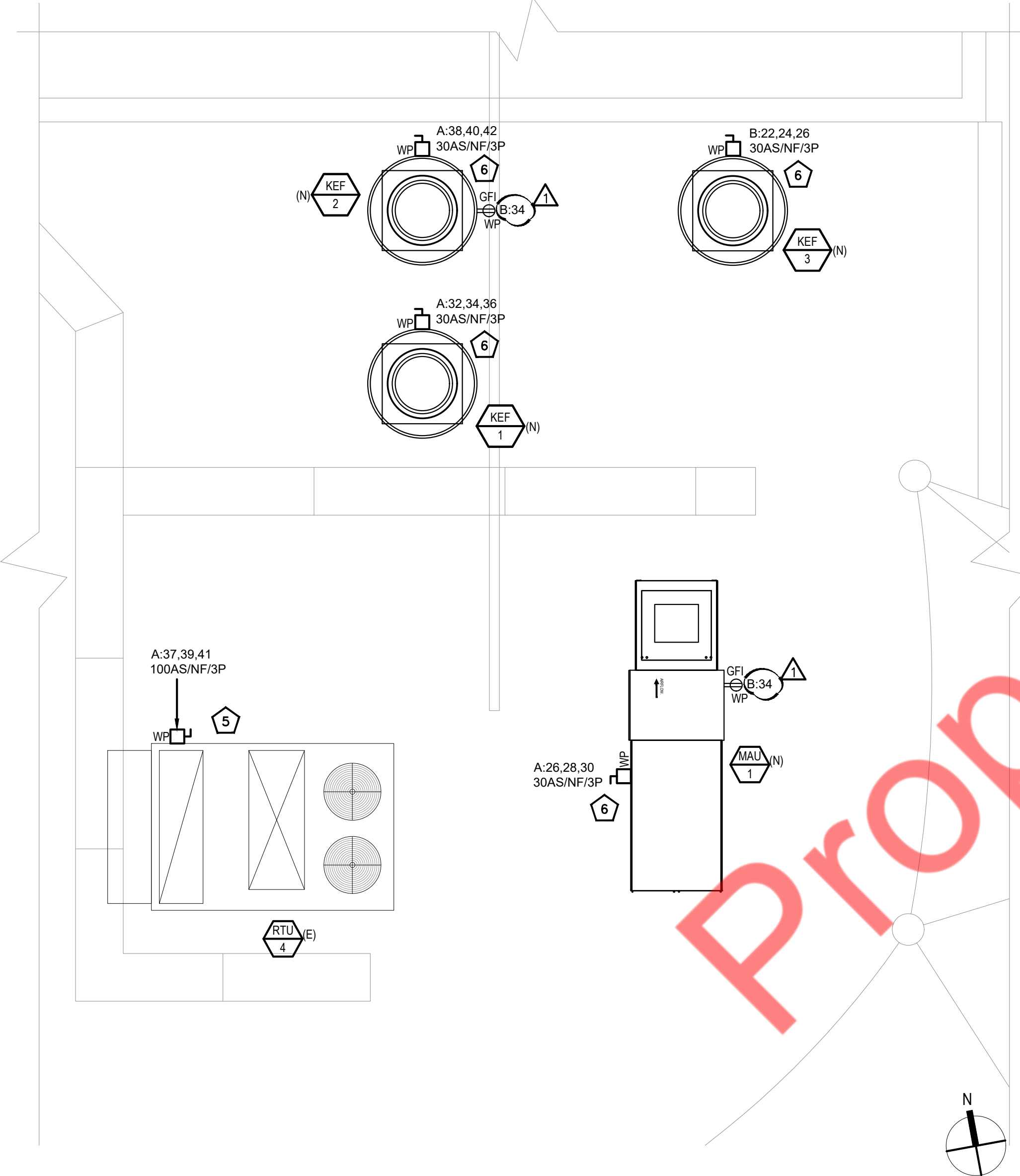
#### DATA RECEPTACLE REQUIREMENTS

GENERAL CONTRACTOR TO PROVIDE 3/4" CONDUIT WITH TELEPHONE AND DATA/CAT-5E WIRING. CONDUIT TO EXTEND 6" ABOVE ACCESSIBLE CEILING FROM EACH TELEPHONE DATA LINE OR DATACOM DEVICE LOCATION. CONDUIT TO HAVE INSULATING BUSHING AT TOP AND LOW VOLTAGE BOX/MUD RING AT DEVICE. PROVIDE SWEEPING 90° ELBOWS AT ALL TURNS.

#### EQUIPMENT MOUNTING HEIGHT NOTE

REFER TO EQUIPMENT SCHEDULE ON KITCHEN PLAN FOR EQUIPMENT REQUIREMENTS. ALL RECEPTACLE/DEVICES TO BE ROUGHED-IN PER THE HEIGHTS SHOWN IN THE KITCHEN FOOD SERVICE ELECTRICAL PLAN SHEET FS205, UNLESS OTHERWISE NOTED ON THIS SHEET. SEE KITCHEN ELECTRICAL PLAN, SHEET FS200 AND THIS PLAN FOR DIMENSIONS OF ALL LOCATIONS.

EQUIPMENT TAG  
KEY NOTE  
N = NEW



ELECTRICAL ROOF POWER PLAN

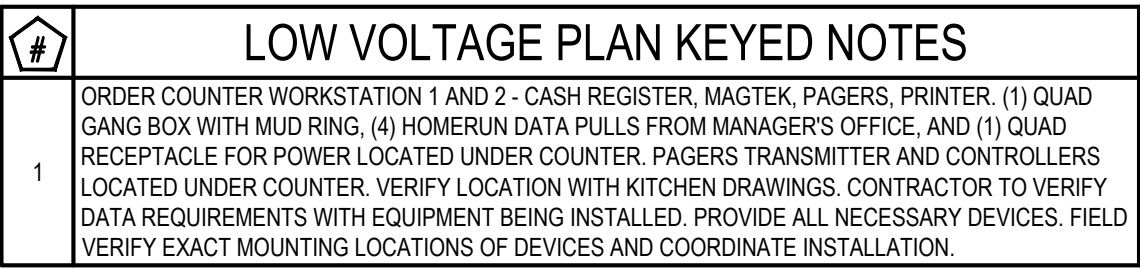
1/4"=1'-0"

1

ELECTRICAL FLOOR POWER PLAN

1/4"=1'-0"

2



GENERAL CONTRACTOR TO PROVIDE 3/4" CONDUIT WITH TELEPHONE AND DATA/CAT-5E WIRING. CONDUIT TO EXTEND 6" ABOVE ACCESSIBLE CEILING FROM EACH TELEPHONE DATA LINE OR DATA/COM DEVICE LOCATION. CONDUIT TO HAVE INSULATING BUSHING AT TOP AND LOW VOLTAGE BOX/MUD RING AT DEVICE. PROVIDE SWEEPING 90° ELBOWS AT ALL TURNS.

REFER TO EQUIPMENT SCHEDULE ON KITCHEN PLAN FOR EQUIPMENT REQUIREMENTS. ALL RECEPTACLE/DEVICES TO BE ROUGH-IN PER THE HEIGHTS SHOWN IN THE KITCHEN FOOD SERVICE ELECTRICAL PLAN SHEET FS220, UNLESS OTHERWISE NOTED ON THIS SHEET. SEE KITCHEN ELECTRICAL PLAN, SHEET FS220 AND THIS PLAN FOR DIMENSIONS OF ALL LOCATIONS.

PART 1 - GENERAL

1.01 SUMMARY

A. THE SCOPE OF THIS DOCUMENT IS TO PROVIDE (FURNISH, INSTALL, AND CONNECT) THE HARDWARE, INFRASTRUCTURE, CABLING AND TERMINATIONS AND ASSOCIATED COMPONENTS, TRIM, BACKING, FIRESTOPPING AND ACCESSORIES FOR COMPLETE AND OPERATIONAL DATA NETWORK AND POS SYSTEM AT A 'NEW CONSTRUCTION' HABIT BURGER GRILL.

## 1.02 SUBMITTALS

- A. SHOP DRAWINGS: DIMENSIONED PLANS AND ELEVATIONS SHOWING MINIMUM CLEARANCES AND INSTALLED FEATURES AND DEVICES FOR SYSTEM COMPONENTS. INCLUDE A DIAGRAM SHOWING INTERCONNECTION OF MAJOR SYSTEM COMPONENTS INDICATING CONNECTIONS AT EVERY INTERVAL, POS TO BOH, FOH TO PERIPHERAL AREAS. PROVIDE WIRING DIAGRAMS FOR POWER, DATA, AND CONTROL WIRING INCLUDING ANY REQUIRED STANDS, MOUNTS OR OTHER DEVICES.

A. **INSTALLER QUALIFICATIONS: AN EXPERIENCED INSTALLER TRAINED AND CERTIFIED ON DATA CABLING CERTIFICATION TOOLS**

- B. TESTING/CERTIFICATION - ALL CABLING SHALL BE TESTED AND CERTIFIED USING A LEVEL 3 TESTER SUCH AS A FLUKE DTX-1800. TEST RESULTS SHALL BE PROVIDED TO HBG PROJECT MANAGER IN .PDF FORMAT ON THE DAY OF CERTIFICATION.
- C. QUALIFICATION DATA: INSTALLERS MUST OWN OR PROVIDE OWN TOOLS INCLUDING TESTING EQUIPMENT!
- D. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED, LABELED AND TESTED. SIGN OFF OF LOCATIONS AND FOR EACH SITE MUST BE COMPLETED BY HABIT BURGER GRILL PROJECT MANAGER.

A. COORDINATE INSTALLATION OF CABLING WITH HABIT BURGER GRILL PROJECT MANAGER.

- B. CABLING AND FINAL INSTALLATION SHALL BE BY HABIT BURGER VENDOR.

## 2.01 DATA CABLING - INSTALLATION

- A. SUMMARY: NEW CONSTRUCTION AT HABIT BURGER GRILL WILL INCLUDE CAT-5E. THIS CABLING WILL SUPPORT NUMEROUS SYSTEMS INCLUDING VOIP, POS DEVICES AND WIRELESS INFRASTRUCTURE. ALL CABLING WILL BE DIRECT HOME RUN FROM THE STATION LOCATION AND TO TERMINATE ON A CAT- 5E PATCH PANEL ON THE WALL IN MANAGER'S OFFICE.

CABLING SHALL BE A BLUE COLOR-CODED CAT-5E AND TO BE LABELED CLEARLY ON BOTH ENDS TO CORRESPOND WITH THE INTENDED USE. ALL MODULES SHALL BE A WHITE CAT-5E RATED RJ-45. THESE COLORS AS WELL AS THE LABELING SCHEME WILL HELP TO MAKE THIS A USER-FRIENDLY NETWORK FOR OUR OPERATORS AND OUR SUPPORT TEAM.

- B. DESIGN: ALL CABLING WILL BE INSTALLED AS PER THE ATTACHED DOCUMENT "HABIT BURGER NSO NEW CONSTRUCTION LINE DROPS"

- C. SPECIFICS: CABLE TYPE - CABLE SHALL BE PLENUM RATED CAT-5E 350 MHZ 4-PAIR. PROVIDE WET LOCATION CABLE FOR UNDERGROUND INSTALLATIONS.

CABLE SUPPORT SYSTEM - CABLING SHALL BE PROPERLY SUPPORTED USING A CADDY J-HOOK. THIS SUPPORT SYSTEM SHALL CONSIST OF APPROPRIATELY SIZED AND PLACED J-HOOKS TO COMPLY WITH ALL CODES AND MANUFACTURER SUGGESTED INSTALLATION PRACTICES.

MODULES - CABLE SHALL BE TERMINATED ON WHITE CAT-5E RJ-45 MODULE.

PATCH PANELS - CABLE SHALL BE TERMINATED ON CAT-5E - 48 PORT RACK MOUNT PATCH PANELS. PATCH PANELS SHALL BE MANUFACTURED BY ICC, LEVITON, ORTRONICS, PANDUIT, OR SIMILAR MAJOR MANUFACTURER.

LABELING - ALL CABLING, PATCH PANELS AND JACKS SHALL BE PROPERLY LABELED. LABELING SHALL BE MACHINE PRINTED ON BOTH ENDS RESPECTIVELY.

### 3.01 WIRING METHODS

- A. WIRING METHOD: INSTALL CABLES ALL TOGETHER IN NEAT PATHWAY (AS MUCH AS POSSIBLE) INSTALL ALL CABLES TO EXISTING CONDUITS (PROVIDED BY OTHERS) AND COIL IN BOX OR COIL UP AND ZIP TIE. IN MANAGER'S OFFICE PLEASE COIL AND LEAVE ENOUGH CABLE TO HIT FLOOR (15FT) IN CASE.

- B. WIRING WITHIN ENCLOSURES: BUNDLE, LACE, AND TRAIN CABLES TO TERMINAL POINTS WITH NO EXCESS AND WITHOUT EXCEEDING MANUFACTURER'S LIMITATIONS ON BENDING OR DISTANCE.

### 3.02 INSTALLATION OF CABLES

- A. GENERAL REQUIREMENTS:

- 1.1. DO NOT INSTALL BRUISED, KINKED, SCORED, DEFORMED, OR ABRADED CABLE. DO NOT SPLICE CABLE BETWEEN TERMINATION, TAP, OR JUNCTION POINTS. REMOVE AND DISCARD CABLE IF DAMAGED DURING INSTALLATION AND REPLACE IT WITH NEW CABLE

Plan Check Number:

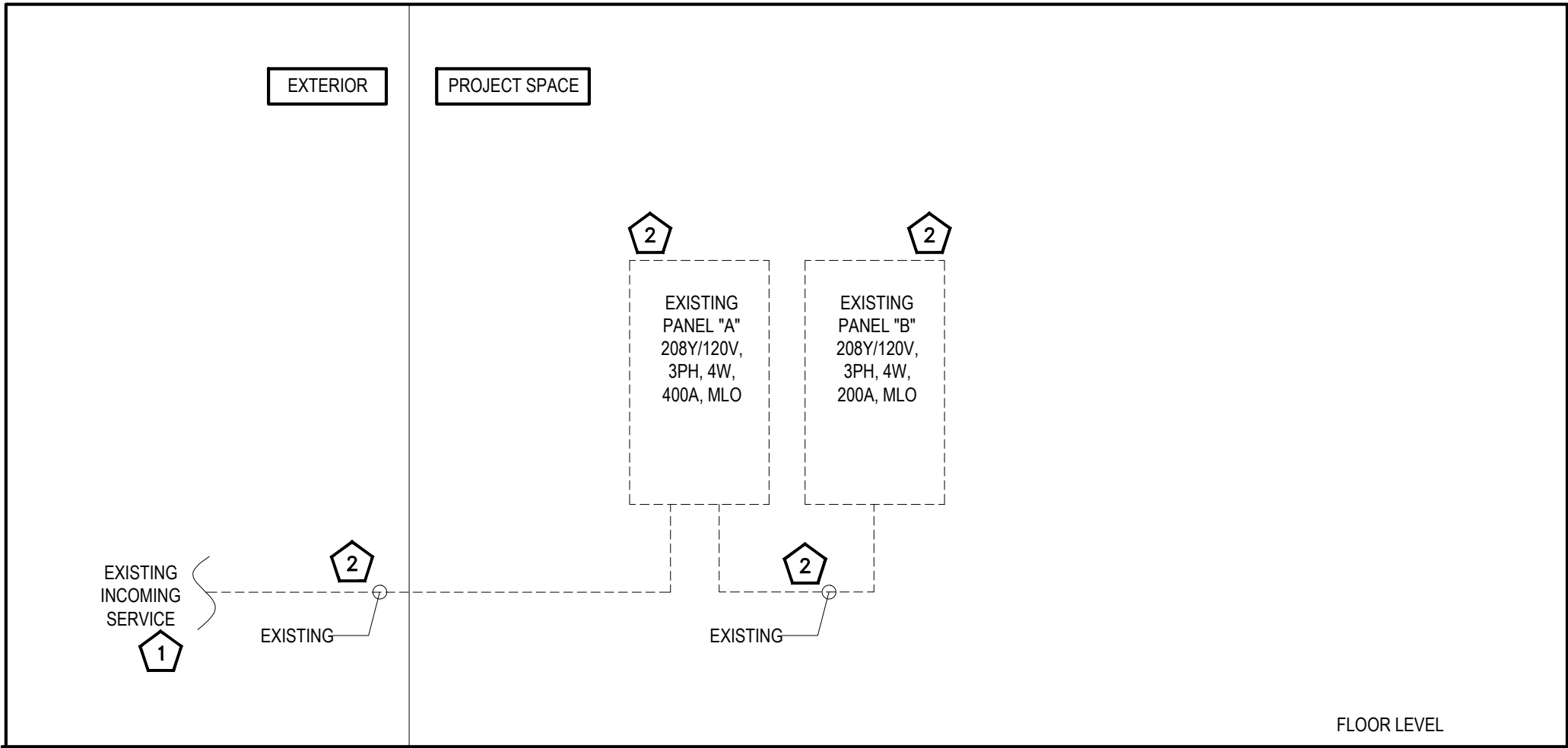
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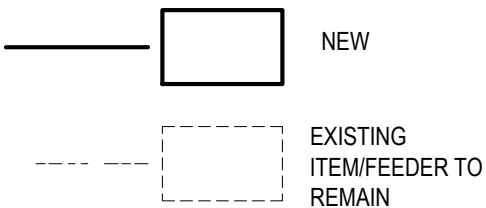
# E211



ELECTRICAL RISER DIAGRAM KEYED WORK NOTES:

- E.C. TO VERIFY THE AVAILABILITY OF THE EXISTING METER AND DISCONNECT SWITCH FOR THE PROJECT SPACE. VERIFY THE LOCATION, RATING, AND OPERABLE CONDITION IN THE FIELD. OTHERWISE, PROVIDE NEW IF REQUIRED. INFORM EOR OF ANY DISCREPANCY BEFORE THE BID.
- E.C. SHALL VERIFY THE EXACT LOCATION, RATING AND OPERABLE CONDITION OF EVERY EQUIPMENT MARKED EXISTING IN THE FIELD. INFORM THE ENGINEER OF RECORD OF ANY DISCREPANCY, BEFORE BIDDING.

RISER DIAGRAM SYMBOLS



ELECTRICAL RISER DIAGRAM GENERAL NOTES:

- E.C. SHALL VERIFY/COORDINATE THE FOLLOWING INFORMATION IN THE FIELD WITH THE UTILITY/LANDLORD/OWNER AND INFORM THE ENGINEER ON RECORD OF ANY DISCREPANCY.
- THE EXACT POWER DISTRIBUTION AND SCOPE OF WORK WITH THE LANDLORD/OWNER BEFORE BID.
- THE ELECTRICAL WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE NEC, LOCAL CODES AND AHJ.
- ENSURE THE COMBINED VOLTAGE DROP OF THE FEEDER AND BRANCH CIRCUIT SHALL NOT EXCEED 5% PER CODE.
- PROVIDE GEC AND EGC AS PER 250.66 & 250.122 RESPECTIVELY, AS NEEDED. PROVIDE SEPARATE GROUND CONDUCTORS IN ALL CONDUITS.
- THE PART OF RISER MARKED AS EXISTING IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY THE RISER IN THE FIELD. INFORM THE ENGINEER ON RECORD OF ANY DISCREPANCY FOUND.
- SPARE AMPS AVAILABLE IN THE EXISTING ELECTRICAL SERVICE ARE MORE THAN THE NEWLY ADDED DEMAND AMPS.
- VERIFY THE LOCATION, RATING, AND OPERABLE CONDITION OF ALL THE EXISTING COMPONENTS BEING REUSED. REPLACE IF FOUND INOPERABLE (WITHIN THE SCOPE OF WORK). BASE BID ACCORDINGLY.
- PLEASE REFER POWER PLAN FOR THE LOCATION OF THE ELECTRICAL PANELS INFORM THE ENGINEER ON RECORD OF ANY DISCREPANCY.
- ADDITION OR ALTERATION TO THE EXISTING SYSTEM SHALL NOT BE DONE WITHOUT THE WRITTEN CONSENT OF THE OWNER.
- RISER DIAGRAM ONLY FOR REFERENCE PURPOSE. E.C. SHALL VERIFY IN FIELD EXACT POWER DISTRIBUTION AND VERIFY OPERABLE CONDITION OF EXISTING ELECTRICAL EQUIPMENTS. INFORM ENGINEER ON RECORD ANY DISCREPANCY. BASE BID ACCORDINGLY.
- THE VOLTAGE AND FREQUENCY FLUCTUATION IN THE ELECTRICAL UTILITY SERVICE AT THE SERVICE ENTRY SHALL NOT BE MORE THAN +/- 5% AND +/- 1% RESPECTIVELY. PROVIDE THE REGULATORS IF SUCH CASE IS OBSERVED.
- ENSURE THE COMBINED VOLTAGE DROP OF THE FEEDER AND BRANCH CIRCUIT SHALL NOT EXCEED 5% PER CODE.
- REUSE OF THE EXISTING EQUIPMENT IS SUBJECT TO THE VERIFICATION OF THE LOCATION, RATING, OPERABLE CONDITION AND FAULT CURRENT IN THE FIELD. REPLACE THE EXISTING EQUIPMENT WITH A NEW ONE IF THE EXISTING EQUIPMENT CAN NOT BE REUSED DUE TO ANY OF THE REASONS MENTIONED EARLIER.

PANEL SCHEDULE GENERAL NOTES:

- CONTRACTOR SHALL VERIFY BREAKER AND BRANCH CIRCUIT REQUIREMENTS FOR THE EQUIPMENT IN THE FIELD.
- THE ELECTRICAL LOAD IS BALANCED WITHIN 10% FOR ALL 3 PHASES.
- THE VOLTAGE DROP FOR THE BRANCH CIRCUIT SHALL NOT EXCEED 2% OR 5% IN COMBINATION WITH THE FEEDER CIRCUIT.
- GFI MARKED ON THE PLAN INDICATES THAT THE CIRCUIT SHALL BE GFI PROTECTED. E.C. SHALL PROVIDE A GFCI BREAKER IN THE PANEL FOR THE INDICATED CIRCUIT IF EITHER THE RECEPTACLE IS NOT AVAILABLE OR NOT READILY ACCESSIBLE.
- PROVIDE BREAKER LOCKING DEVICES IN THE PANELS. WHERE EVER REQUIRED BY CODE. INCLUDING BUT NOT LIMITED TO EMERGENCY LIGHTING, FIRE ALARM CIRCUITS, AND HARD-WIRED EQUIPMENT.
- THE BREAKER FEEDING HVAC UNITS SHALL BE HACR TYPE.
- THE CONTRACTOR SHALL MODIFY THE BREAKERS OF THE EXISTING PANEL (WHEREVER REQUIRED) TO BE IN LINE WITH THE PANEL SCHEDULE.
- REPLACE THE EXISTING OR PROVIDE A NEW BREAKER IF THE EXISTING IS INOPERABLE.
- ALL EXISTING CIRCUITS SHOWN ON THE EXISTING ELECTRICAL PANELS ARE FOR REFERENCE PURPOSE ONLY. E.C. TO FIELD VERIFY AND INFORM ENGINEER OF RECORD BEFORE BID.
- THE CONTRACTOR IS TO PROVIDE A CIRCUIT DIRECTORY FOR EACH PANEL BOARD.
- E.C. SHALL REVISE PANEL SCHEDULE CIRCUITING AS NECESSARY.

PANEL SCHEDULE ABBREVIATIONS:

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

\* = VERIFY OPERABLE CONDITION OF EXISTING SHUNT TRIP. IF INOPERABLE, PROVIDE NEW SHUNT-TRIP.

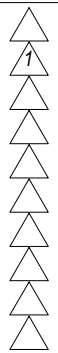
\*\* = VERIFY AVAILABILITY & VERIFY RATING, POLES AND OPERABLE CONDITION. IF NOT AVAILABLE OR INOPERABLE, PROVIDE NEW BREAKER AS MARKED IN THE PANEL SCHEDULE.

PANEL:	A	(EXISTING)							MOUNTING: RECESSED						
208Y/120	VOLTS	PHASE		3	-		-		DEMAND LOAD		75.69	PANEL LOCATION: BOH			
400A	MLO	WIRE		4	NEMA RATING		1		DEMAND CURRENT		210.35	FED FROM: EXISTING			
NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL)															
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	25**	FRYER STATION	E	2.20	2#10 + 1#10G, 3/4"C	2.38			EXISTING	0.18	R	RCPT - MUSIC	20	2	
3	25**	FRYER STATION	E	2.20	2#10 + 1#10G, 3/4"C	2.74			2#12 + 1#12G, 3/4"C	0.54	R	POWER SOAK	15/2P**	4	
5	20	SPARE				0.54				0.54	R				
7	20	24 - 36" CHARBROILER W/ SPLASH GUARD	E	0.50	2#12 + 1#12G, 3/4"C	1.00			2#12 + 1#12G, 3/4"C	0.50	E	25 - 48" COUNTER TOP GRIDDLE	20	8	
9	20	SPARE				0.00			2#12 + 1#12G, 3/4"C	0.72	E	SPARE	20	10	
11	20	HOOD	O	1.00	EXISTING							34 - 60" SANDWICH MAKEUP TABLE 1   DOORS	20	12	
13	20	MUSIC RACK	O	0.18	EXISTING	0.90			2#12 + 1#12G, 3/4"C	0.72	E	34B - 60" SANDWICH MAKEUP TABLE 2   DRAWERS	20	14	
15	30/2P**	41 - SOFT SERVE MACHINE	E	2.29	2#10 + 1#10G, 3/4"C	4.26			2#10 + 1#10G, 3/4"C	1.98	E	41 - SOFT SERVE MACHINE	30/2P**	16	
17			E	2.29		4.26				1.98	E				
19	20/2P**	COOLER COMPRESSOR	E	1.53	2#12 + 1#12G, 3/4"C	2.33			EXISTING	0.80	L	BUG LIGHT	20	20	
21			E	1.53		2.07			2#12 + 1#12G, 3/4"C	0.54	E	22 - 27" WORKTOP FREEZER	20**	22	
23	20	HEAT TAPE	O	0.20	EXISTING	0.20			3#12 + 1#12G, 3/4"C	1.54	H	SHUNT TRIP		24	
25	20**	WATER BOOSTER	O	0.84	2#12 + 1#12G, 3/4"C	2.38									1.54
27	20**	SPARE				1.54			3#12 + 1#12G, 3/4"C	1.54	H	MAU-1 (N)	20/3P**	28	
29	20**	GAS SOLENOID	O	0.20	2#12 + 1#12G, 3/4"C	1.74				1.54	H				
31	20**	SPARE				0.90			3#12 + 1#12G, 3/4"C	0.90	H	KEF-1 (N)	20/3P**	32	
33	20**	RCPT - RTU	R	0.36	2#12 + 1#12G, 3/4"C	1.26				0.90	H				
35	20**	SPARE				0.90			3#12 + 1#12G, 3/4"C	0.90	H	KEF-2 (N)	20/3P**	34	
37			H	6.48		7.38				0.90	H				
39	70/3P**	RTU-4 (E)	H	6.48	3#4 + 1#8G, 1"C	7.38			3#12 + 1#12G, 3/4"C	0.90	H		20/3P**	38	
41			H	6.48		7.38				0.90	H				
200/3P		PANEL-B SUB-FEED	O	9.62	EXISTING	9.62									
			O	9.62		9.62									
			O	9.62		9.62									
			O	9.62		9.62									
						26.89	28.87	26.36							

PANEL:	B	(EXISTING)											MOUNTING: RECESSED		
208Y/120	VOLTS		PHASE	3			-	-				DEMAND LOAD	28.86	PANEL LOCATION: BOH	
200A	MLO		WIRE	4								DEMAND CURRENT	80.20	FED FROM: PANEL-A	
NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, O : OTHER/MISC. (TYPICAL)															
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	STOREFRONT SIGN	L	1.20	EXISTING	2.20			EXISTING	1.00	L	COOLER LTG/HEAT TRACE	20	2	
3	20	DINING AREA/EM LTG	L	0.80	EXISTING		1.32		EXISTING	0.52	E	FOOD PREP TABLE	15	4	
5	20	TIME SWITCH	O	1.50	EXISTING			2.50	EXISTING	1.00	O	WATER FILTRATION	20	6	
7	20	DINING LTG	L	0.30	EXISTING	0.66			EXISTING	0.36	E	SANDWICH WRAP TABLE	20	8	
9	20	PREP/EM LTG	L	0.35	EXISTING		0.65		EXISTING	0.30	O	PRINTER	20	10	
11	20	RCPT - CONV	R	0.36	EXISTING			1.32	2#12 + 1#12G, 3/4"C	0.96	R	52 - P.O.S. ORDER TERMINAL	20	12	
13	20	EF3	M	0.60	EXISTING	1.00			2#12 + 1#12G, 3/4"C	0.40	R	DIGITAL MENU BOARD	20	14	
15	20	KITCHEN/EM LTG	L	0.68	EXISTING		1.64		2#12 + 1#12G, 3/4"C	0.96	R	53 - P.O.S. HOME TERMINAL	20	16	
17								1.65	EXISTING	0.30	O	PRINTER	20	18	
19	15/2P	ICE MACHINE	E	1.35	EXISTING		2.55		EXISTING	1.20	R	MANAGER POS STATION	20	20	
21	20	SOUND SYSTEM	O	0.80	EXISTING		1.70			0.90	H			22	
23	20	STATION ATM	O	1.20	EXISTING			2.10	3#12 + 1#12G, 3/4"C	0.90	H	KEF-3 (N)	20/3P**	24	
25	20	SECURITY SYSTEM	O	1.20	EXISTING	2.10				0.90	H			26	
27	20	GWH/PUMP	M	1.20	EXISTING		1.44		2#12 + 1#12G, 3/4"C	0.24	E	40 - UNDERCOUNTER REFRIGERATOR WITH 3" CASTERS	20	28	
29	20	MANAGER DESK	R	0.76	EXISTING		1.96		EXISTING	1.20	L	OPEN SIGN	20	30	
31	20	TRACK/RR LTG	L	0.25	EXISTING	1.25			EXISTING	1.00	L	HOOD LIGHT	20	32	
33							0.36		2#12 + 1#12G, 3/4"C	0.36	R	ROOF SERVICE RECEPTACLES	20	34	
35	20/2P	SPARE						0.00				SPARE	20	36	
37	20	SHOW WINDOW LTG	L	0.54	EXISTING	0.54						SPARE	20	38	
39	20	SPARE					1.15		EXISTING	1.15	L	DINING AREA LTG	20	40	
41	20	SPARE						0.00				SPARE	20	42	
						10.29	8.26	9.53							

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PLUMBING SPECIFICATIONS

GENERAL

- A. THE GENERAL CONDITIONS OF THE GENERAL SPECIFICATIONS, ALONG WITH ALL APPLICABLE INSTRUCTIONS TO BIDDERS SHALL FORM A PART OF THIS SECTION OF THE SPECIFICATIONS.
- B. REFERENCE IS MADE TO REQUISITES FOR BIDDERS AND CONTRACTORS UNDER OTHER SECTIONS OF THESE SPECIFICATIONS, WHICH SHALL BE CONSIDERED BINDING, UNLESS OTHERWISE NOTED UNDER THIS SECTION.

SCOPE

EACH CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE CONSTRUCTION DETAILS, BOTH AS ON TENANT CONSTRUCTION DRAWINGS AND LANDLORD'S AS REFERRED TO, BEFORE SUBMITTING HIS BID AS NO ALLOWANCES WILL BE MADE BECAUSE OF THE CONTRACTORS UNFAMILIARITY WITH THESE DETAILS. ALL PERFORMANCE OF CONSTRUCTION SHALL BE AS REQUIRED BY THE PACE OF THE GENERAL CONSTRUCTION.

INSPECTION OF SITE

ALL PROPOSALS SHALL PRECLUDE THAT CONTRACTOR IS FAMILIAR WITH JOB SITE CONDITIONS AND UTILITY LOCATIONS AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

PERMITS

ALL PERMITS AND LICENSES NECESSARY FOR THE PROPER EXECUTION OF THE WORK SHALL BE SECURED AND PAID FOR BY THE SUBCONTRACTOR INVOLVED.

CODE REQUIREMENTS

ALL WORK UNDER THIS CONTRACT SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS, DRAWINGS OR AS DIRECTED BY THE OWNER, AND SHALL SATISFY ALL APPLICABLE CODES, ORDINANCES, OR REGULATIONS OF THE GOVERNING BODIES, WHETHER SO SHOWN OR NOT, AND ALL MODIFICATIONS REQUIRED BY SUCH AUTHORITIES SHALL BE MADE BY THE CONTRACTOR WITHOUT ANY ADDITIONAL COST TO THE OWNER.

MATERIALS AND WORKMANSHIP

- A. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED AS RECOMMENDED BY THE MANUFACTURERS, AND UNLESS OTHERWISE SPECIFIED SHALL BE NEW, AND FREE FROM ANY DEFECTS. ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURE AND QUALITY UNLESS OTHERWISE SPECIFIED.
- B. ALL WORK UNDER THIS CONTRACT SHALL BE PERFORMED BY COMPETENT WORKMEN AND EXECUTED IN A NEAT AND WORKMANLIKE MANNER. WORK SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION, AND ON COMPLETION, THE INSTALLATION SHALL BE THOROUGHLY CLEANED AND ALL DEBRIS PRESENT AS A RESULT OF THIS CONTRACT SHALL BE REMOVED FROM THE PREMISES. DO NOT JUST ABANDON

CODES AND REGULATIONS

EACH SUBCONTRACTOR SHALL COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN OR SPECIFIED. IF A SUBCONTRACTOR OBSERVES THAT THE DRAWINGS AND SPECIFICATIONS ARE AT A VARIANCE, HE SHALL PROMPTLY NOTIFY THE GENERAL CONTRACTOR AND THE TENANT IN WRITING. IF ANY SUBCONTRACTOR PERFORMS ANY WORK KNOWING IT TO BE CONTRARY TO LAWS, ORDINANCES, RULES AND REGULATIONS AND WITHOUT GIVING SUCH NOTICE, THE SUBCONTRACTOR SHALL BEAR ALL COSTS ARISING THEREFROM.

PROTECTION OF WORK AND PROPERTY

- A. EACH SUBCONTRACTOR SHALL CONTINUOUSLY MAINTAIN ADEQUATE PROTECTION OF ALL HIS WORK FROM DAMAGE AND SHALL PROTECT THE OWNER'S PROPERTY FROM INJURY OR LOSS ARISING FROM HIS WORK. HE SHALL MAKE GOOD ANY SUCH DAMAGE, INJURY, OR LOSS, EXCEPT SUCH AS MAY BE DIRECTLY DUE TO CAUSES BEYOND HIS CONTROL AND NOT TO HIS FAULT OR NEGLIGENCE. HE SHALL ADEQUATELY PROTECT ADJACENT PROPERTY AS WELL.
- B. EACH SUBCONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF THEIR EMPLOYEES ON THE WORK AND SHALL COMPLY WITH ALL PROVISIONS OF FEDERAL, STATE AND LOCAL BUILDING CODES AND SAFETY LAWS TO PREVENT ACCIDENTS OR INJURY TO PERSONS ON OR ADJACENT TO THE PREMISES WHERE THE WORK IS BEING PERFORMED. EACH SUBCONTRACTOR SHALL MAINTAIN ALL INSURANCE REQUIRED TO PROTECT HIMSELF, OWNER AND TENANT FOR THE DURATION OF THE WORK AGAINST PROPERTY DAMAGE AND PUBLIC LIABILITY.

CHANGES IN THE WORK

THE TENANT, WITHOUT INVALIDATING THE CONTRACT, MAY ORDER EXTRA WORK OR MAKE CHANGES BY ALTERING, ADDING TO OR DEDUCTING FROM THE WORK, THE CONTRACT SUM BEING ADJUSTED ACCORDINGLY.

COOPERATION

ALL WORK UNDER THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN CONJUNCTION WITH OTHER CONTRACTORS AND TRADES OF THIS PROJECT IN A MANNER WHICH WILL ALLOW EACH CONTRACTOR AND TRADE ADEQUATE TIME AT THE PROPER STAGE OF CONSTRUCTION TO FULFILL HIS CONTRACTS. REFERENCE SHALL BE MADE TO THE OWNER FOR INSTRUCTIONS SHOULD ANY QUESTIONS ARISE BETWEEN TRADES AS TO THE PLACING OF LINES, DUCTS, CONDUITS, FIXTURES, OR EQUIPMENT, OR SHOULD IT APPEAR DESIRABLE TO REMOVE ANY GENERAL CONSTRUCTION WHICH WOULD AFFECT THE APPEARANCE OR STRENGTH OF THE STRUCTURE.

SUBSTITUTION OF MATERIALS

MANUFACTURER'S NAMES ARE LISTED HEREIN TO ESTABLISH A STANDARD. THE PRODUCTS OF OTHER MANUFACTURERS WILL BE ACCEPTABLE, IF IN THE OPINION OF THE OWNER OR OWNERS REPRESENTATIVE THRU A SUBMITTAL PROCESS, THE SUBSTITUTE MATERIAL IS OF A QUALITY AS GOOD OR BETTER THAN THE MATERIAL SPECIFIED, AND WILL SERVE WITH EQUAL EFFICIENCY AND DEPENDABILITY, THE PURPOSE FOR WHICH THE ITEMS SPECIFIED WERE INTENDED.

SHOP DRAWINGS

SHOP DRAWINGS AND CATALOG DATA ON ALL MAJOR ITEMS OF EQUIPMENT AND SYSTEMS, AND SUCH OTHER ILLUSTRATIVE MATERIAL AS MAY BE CONSIDERED NECESSARY BY THE TENANT, SHALL BE SUBMITTED BY THIS CONTRACTOR IN ADEQUATE TIME TO PREVENT DELAY AND CHANGES DURING CONSTRUCTION.

DRAWINGS AND SPECIFICATIONS

- A. THE DRAWINGS SHOW DIAGRAMMATICALLY THE LOCATIONS OF THE VARIOUS LINES, DUCTS, CONDUITS, FIXTURES, AND EQUIPMENT AND THE METHOD OF CONNECTING AND CONTROLLING THEM. IT IS NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL AND ALL FITTINGS REQUIRED FOR A COMPLETE SYSTEM.
- B. SHOULD ANY CHANGES BE DEEMED NECESSARY BY THE CONTRACTOR IN ITEMS SHOWN ON CONTRACT DRAWINGS, THE SHOP DRAWINGS, DESCRIPTIONS, AND THE REASON FOR THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.

RESPONSIBILITY

- A. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE SATISFACTORY AND COMPLETE EXECUTION OF ALL WORK INCLUDED IN HIS CONTRACT. HE SHALL PRODUCE COMPLETE FINISHED OPERATING SYSTEMS AND PROVIDE ALL INCIDENTAL ITEMS REQUIRED AS PART OF HIS WORK, REGARDLESS OF WHETHER SUCH ITEM IS PARTICULARLY SPECIFIED OR INDICATED.

GENERAL PROVISIONS

1. SCOPE: PROVIDE ALL LABOR, MATERIAL, AND EQUIPMENT IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE ACCOMPANYING DRAWINGS TO PROVIDE A COMPLETE AND PROPERLY OPERATING PLUMBING SYSTEM FOR THE BUILDING.

OBTAIN WATER, SEWER, GAS TAPS, AND ANY OTHER REQUIRED UTILITIES AND EXTEND SERVICE FROM SAME TO BUILDING AS SHOWN ON DRAWINGS. VISIT THE SITE FOR UNDERSTANDING OF THE WORK TO BE DONE BEFORE SUBMITTING BID.

COORDINATE THIS WORK WITH THE WORK OF THE OTHER TRADES ON THE PROJECT. ALL PLUMBING IS TO BE ROUGHED IN WHILE THE BUILDING IS BEING CONSTRUCTED AT SUCH TIMES AS NOT TO DELAY THE GENERAL CONTRACTOR ON THE BUILDING.

2. GENERAL REQUIREMENTS: COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS, CODES, RULES, AND ORDINANCES GOVERNING WORK OF THIS CHARACTER. PAY FOR AND OBTAIN NECESSARY CONSTRUCTION PERMITS AND CERTIFICATES OF INSPECTION.

- A. DRAWINGS: THE LOCATION OF THE PIPING RUNS ARE APPROXIMATE AND THE CONTRACTOR MUST MAKE ANY NECESSARY CHANGES IN THE PIPING RUNS, ETC., AT NO ADDITIONAL COST TO THE OWNER. OUTLET LOCATIONS ARE CRITICAL AND MUST BE LOCATED EXACTLY ACCORDING TO THE PLUMBING PLAN. COORDINATE THIS WORK WITH THE INSTALLERS OF EQUIPMENT FURNISHED AND INSTALLED BY OTHERS. REFER TO THE OTHER DRAWINGS FOR DETAILS OF THE BUILDING CONSTRUCTION AND THE OTHER MECHANICAL, ELECTRICAL, AND EQUIPMENT FEATURES.

- B. COORDINATION AND WORKMANSHIP: SCHEDULE THIS WORK SO THAT IT WILL BE PROPERLY COORDINATED WITH ALL OTHER TRADES. WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE BEST PRACTICE FOR THE CLASS OF WORK INVOLVED. WORKMANSHIP SHALL ALLOW THE APPLIANCE TO OPERATE AS INTENDED AND BE INSTALLED TO BEST PROTECT THE PUBLIC AND OPERATORS FROM INJURY OR DAMAGE, AND TO PRESENT A NEAT, PLEASING, AND ORDERLY APPEARANCE.

MATERIALS AND PERFORMANCE

1. MATERIALS: ALL MATERIALS SHALL BE NEW AND OF THE QUALITY INDICATED BY THE SPECIFIED BRAND NAMES. SUBSTITUTIONS OF MATERIAL OF EQUAL QUALITY BY OTHER FIRST-NAME MANUFACTURERS MAY BE ACCEPTABLE PROVIDED A LIST OF SUCH SUBSTITUTIONS IS APPROVED IN WRITING. A SUBSTITUTIONS LIST SHALL BE SUBMITTED IN TRIPLICATE WITHIN FIVE (5) DAYS AFTER THE CONTRACT IS LET.

2. BACKFILLING: PERFORM ALL NECESSARY EXCAVATING AND BACKFILLING REQUIRED FOR THIS INSTALLATION. PREPARE A PROPER BED OF SAND OR GRAVEL, OR EQUIVALENT IN ROCK SCREENINGS SO AS TO ELIMINATE SHIMMING AND VOID SPACES UNDER ANY OF THE UTILITY SERVICE PIPES. BENDING OF ANY HARD PIPE WILL NOT BE PERMITTED. WHERE A CHANGE IN DIRECTION IS NECESSARY ON PRESSURE PIPES, "COMPATIBLE" COUPLINGS OR EQUAL SHALL BE USED AND BENDS MAY NOT EXCEED 90 DEGREES. ALL EXCAVATION BELOW THE BOTTOM OF FOOTINGS SHALL BE BACKFILLED WITH STRUCTURAL ENGINEER-APPROVED CONCRETE. OTHER BACKFILL SHALL CONSIST OF 2-3" OF SAND OR ROCK SCREENINGS AND FILL TO A FINISH LEVEL EQUAL TO ITS ORIGINAL CONDITION. IN THE EVENT THE BACKFILL SHOULD SETTLE BEFORE THE FINAL TOP SURFACE IS APPLIED, APPLY ADDITIONAL BACKFILL TO SUSTAIN THE ORIGINAL LEVEL. CARE SHOULD BE TAKEN TO MINIMIZE THE DUST LEVEL WHEN EXCAVATING AND BACKFILLING SO AS TO COMPLY WITH FEDERAL AND STATE E.P.A. REGULATIONS RELATING TO THIS TYPE OF WORK (FUGITIVE DUST). SOIL REPORT IF AVAILABLE.

3. PIPING INSTALLATION: CLEAN-OUTS MUST BE INSTALLED ON MINIMUM DROP LINES EVEN THOUGH NOT SHOWN ON THE BLUEPRINTS. USE REDUCING FITTINGS IN MAKING REDUCTIONS IN SIZE OF PIPE. REAM ALL PIPE AFTER CUTTING, THEN TURN PIPES ON END AND KNOCK OUT ALL LOOSE DIRT AND SCALE BEFORE INSTALLING. MAKE CHANGES IN HORIZONTAL DIRECTION OF SOIL AND WASTE PIPES WITH LONG RADIUS FITTINGS OR WITH "Y" BRANCHES AND 1/8 OR 1/16 BENDS. CONNECT SOIL STACKS AT BASE TO HORIZONTAL RUNS WITH "Y" CONNECTIONS. WATER SUPPLY PIPES TO FIXTURES AND WASTE PIPES FROM FIXTURES SHALL BE CENTERED IN THE PROPER PLACE RELATIVE TO THE CENTER LINE OF THE FIXTURE. NO OFFSETS WILL BE ALLOWED. ALL PIPES SHALL BE RUN MECHANICALLY STRAIGHT AND SQUARE WITH BUILDING LINES, EXCEPT FOR REQUIRED PITCH ON HORIZONTAL LINES, AND ALL CHANGES IN DIRECTION SHALL BE MADE WITH FITTINGS. WATER PIPING TO BE ROUTED IN WALLS, UNDER THE FLOOR SLAB, AND ABOVE SUSPENDED CEILINGS AS NOTED. WHERE WATER LINES ARE ROUTED UNDER THE FLOOR SLAB, NO MECHANICAL JOINTS SHALL BE MADE UNDER THE SLAB EXCEPT AS LISTED BELOW. WATER PIPING SHALL BE INSTALLED NOT TO EXERT VERTICAL NOR HORIZONTAL STRESSES ON THE SEATING OF UNIONS. UNIONS SHALL BE COPPER TYPE NIBCO # 733 OR EQUAL. PROVIDE AIR CHAMBER TYPE WATER HAMMER ARRESTORS OR ACCEPTABLE FACTORY MANUFACTURED SUBSTITUTES AT ALL WATER ROUGH-IN LOCATIONS NO WAX, PUTTY, OR VARNISH WILL BE PERMITTED. CRACKED FITTINGS SHALL BE REMOVED AND REPLACED WITH NEW FITTINGS. MAKE THREADED JOINTS IN BRASS PIPE AND FITTINGS WITH PIPE THREADING TO THE SHOULDER OF THE FITTINGS. NO SLIP JOINTS OR COUPLING JOINTS IN BRASS PIPE WILL BE PERMITTED, EXCEPT ON THE FIXTURE SIDE OF THE TRAP.

4. NATURAL GAS PIPING: FOR ABOVEGROUND INSTALLATIONS, ALL FITTINGS TO BE JOINED WITH TEFLON TAPE SEAL OR OTHER SUITABLE SEAL AND MADE IN CONFORMANCE WITH THE BEST PRACTICES OF AGA AND NFPA 54. UNIONS SHALL BE CAST BLACK IRON AND INSTALLED IN A MANNER SUCH THAT NO STRESS WILL BE PLACED ON THE MALE/FEMALE SEALING SURFACES. PROPER ALIGNMENT WILL BE MADE AT TIME OF INSTALLATION. ALL JOINTS AND CONNECTIONS SHALL BE THOROUGHLY CLEANED OF OIL, THREAD CUTTINGS AND RESIDUALS TO ACCEPT ENAMEL PAINT. ROUGH OR SHARP EXPOSED THREAD SURFACES SHALL BE FILED SMOOTH.
5. WATER PIPE: JOINTS SHALL BE CLEANED AND DEBURRED AS RECOMMENDED BY THE MANUFACTURER AND FEDERAL, STATE, AND LOCAL CODES AND SOLDERED AS LISTED BELOW. FLUX SHALL BE NON-CORROSIVE.

ABOVE GRADE - WHERE FITTINGS ARE SOLDERED BOTH FITTINGS AND TUBING SHALL BE CLEANED AS DESCRIBED ABOVE. UNDER NO CIRCUMSTANCES SHALL DISSIMILAR METALS COME INTO DIRECT CONTACT WITH COPPER TUBING; E.G., GALVANIZED STRAPPING, HANGERS, OR CLAMPS TO SECURE THE TUBING.

BELOW GRADE, OR FLOOR SLAB ON EARTH OR STONE FILL - HIGH TEMPERATURE, SOLDER, 1200 DEG. F OR GREATER MELTING POINT.

NOTE: WATER PIPE TO BE PROPERLY SECURED AND ALIGNED SO AS NOT TO EXERT VERTICAL OR HORIZONTAL STRESSES ON THE SEATING OF THE MATING (MALE AND FEMALE) SURFACES OF THE UNIONS.

- A. MATERIALS - UNDERGROUND: TYPE "L" COPPER TUBE, SOFT TEMPER, AND PEX.
- B. MATERIALS - ABOVEGROUND: TYPE "L" COPPER TUBE, HARD DRAWN, AND PEX.
- C. INSULATION: INSULATION FOR HOT AND COLD WATER, PIPING SHALL BE 1/2" (1" ON 1ST & 8" FROM HEATER) THICK ARMAFLEX UL LABELED OR FIBERGLASS 25 WITH ASJ/SSL FOIL/VINYL JACKET OR EQUAL. INSULATE ALL PIPING FITTINGS AND WATER LINES.

6. GAS PIPING
- A. UNDERGROUND GAS PIPING: ASTM A53, SCHEDULE 40 BLACK STEEL PIPE WITH LONG RADIUS STEEL WELDING FITTINGS INCLUDING CATHODIC PROTECTION OR POLYETHYLENE AS APPROVED BY LOCAL GAS COMPANY AND AUTHORITY HAVING JURISDICTION.
- B. GAS PIPING ABOVE GROUND: ASTM A53, SCHEDULE 40 BLACK STEEL WITH 125 POUND BLACK MALLEABLE IRON SCREWED FITTINGS. INSTALL MOISTURE TRAPS ON HVAC UNITS, WATER HEATER, AND KITCHEN EQUIPMENT.
- C. GAS PIPING COMPOUND AT JOINTS: IN COMPLIANCE WITH NFPA BULLETIN #54 AND LOCAL APPLICABLE CODES AND SUITABLE FOR NATURAL GAS SERVICE.

7. WASTE PIPING: INSTALL HORIZONTAL DRAIN AND WASTE PIPES WITH 1/4"FT. SLOPE.

MATERIALS: SOIL, WASTE AND VENT PIPING SHALL BE PVC SCH. 40 PIPING FOR SANITARY WASTE IN LIEU OF CAST IRON WHERE ALLOWED BY AUTHORITY HAVING JURISDICTION. PIPING SHALL NOT BE EXPOSED IN PLENUMS OR THE OPEN CEILING AREA IN THE DINING ROOM. CAST IRON - HUB TYPE WITH NEOPRENE JOINTS - WITH STAINLESS STEEL CONNECTORS WHEN PVC IS NOT ALLOWED PER LOCAL CODE. ALTERNATE BID ITEM CAST IRON NO HUB AND FITTINGS, WRAPPED WITH 3 MIL. PLASTIC, OR A.B.S. PIPING, BELOW SLAB OR GRADE ONLY, IF APPROVED BY LOCAL ADMINISTRATIVE AUTHORITY. INDIRECT WASTE PIPING TO BE IN COOLER/FREEZER, 3 COMPARTMENT SINK, AND PREP SINK TO BE COPPER LINES FOR INDIRECT CONNECTION TO FLOOR SINK, CONDENSATE PIPING TO BE PVC.

8. PIPE SLEEVES/ESCUTCHEONS: PROVIDE CHROME-PLATED ESCUTCHEONS ON ALL PIPES PASSING THROUGH WALLS, FLOORS, OR CEILINGS OF FINISHED ROOMS. ESCUTCHEONS TO BE BEATON & CADWELL #10, 40, 60 OR EQUIVALENT WITH SET SCREWS. PROVIDE ESCUTCHEONS ON ALL WASTE LINES FROM PLUMBING FIXTURES, WHETHER THROUGH WALLS, FLOORS, AND WHETHER CONCEALED BEHIND COUNTERS OR EXPOSED. PIPE SLEEVES SHALL BE PROVIDED WHEN PIPES PENETRATE FOUNDATION AND SHALL BE 1" LARGER THAN PIPE. SEAL SLEEVE W/Caulking.

9. PLUMBING FIXTURES: FURNISH AND INSTALL PLUMBING FIXTURES AS SHOWN ON DRAWINGS WITH ALL ACCESSORIES AND TRIM AS LISTED. ALL FIXTURES SHALL BE PROTECTED THROUGH THE COURSE OF THE CONSTRUCTION. ANY FIXTURE DAMAGED SHALL BE REPLACED WITHOUT ADDITIONAL EXPENSE TO THE OWNER.

10. CONNECTION TO OTHER FIXTURES: CONNECT BUILDING SERVICE PIPING, INCLUDING BUT NOT LIMITED TO WATER, DRAIN, AND GAS PIPES TO FOOD SERVICE EQUIPMENT AS INDICATED IN EQUIPMENT SPECIFICATIONS. PROVIDE BACKFLOW PROTECTION ON ICE MACHINES AND BEVERAGE EQUIPMENT SUPPLY CONNECTIONS.

11. TESTS:
- A. DRAINAGE AND VENT PIPING: DRAINAGE AND VENT PIPING SHALL BE TESTED BEFORE THE PLUMBING FIXTURES ARE INSTALLED BY CAPPING THE OPENINGS AND FILLING THE ENTIRE SYSTEM WITH WATER AND ALLOWING IT TO STAND THUS FILLED NOT LESS THAN ONE (1) HOUR. INSPECT WATER LEVEL TO DETERMINE IF PIPING IS TIGHT.
- B. WATER PIPING: THE WATER SUPPLY PIPING LINES SHALL BE TESTED BEFORE THE PLUMBING FIXTURES ARE CONNECTED BY FILLING THE ENTIRE SYSTEM WITH POTABLE WATER AND APPLYING HYDROSTATIC PRESSURE OF 100 PSI AND ALLOWING TO STAND FOR NOT LESS THAN FOUR (4) HOURS AT THIS PRESSURE TO PROVE PLUMBING INTEGRITY.
- C. GAS PIPING: IN LIEU OF LOCAL REQUIREMENTS, GAS PIPING SHALL BE FILLED WITH COMPRESSED AIR TO 65 PSI AND HELD FOR A PERIOD OF FOUR (4) HOURS. EACH JOINT SHALL BE CHECKED BY LIQUID SOAP OR SPECIAL LIQUID CHEMICAL FOR LEAKS. NOTE: REMOVE ALL GAS VALVES AND PROTECT FROM DAMAGE BEFORE TESTING SYSTEM.

12. CLEANUP: CLEAN ALL PLUMBING FIXTURES AND EQUIPMENT THOROUGHLY BEFORE FINAL INSPECTION, LEAVING ALL READY FOR USE.

13. GUARANTEE: MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. DEFECTIVE WORK AND ALL DAMAGES CAUSED THEREBY WHICH MAY OCCUR DURING THE TERM OF THE AFOREMENTIONED GUARANTEE WILL BE REPAIRED AND/OR REPLACED AT NO EXPENSE TO THE OWNER.

14. OWNER'S MANUAL: PROVIDE THE OWNER, AT THE COMPLETION OF THIS CONTRACT, WITH AN "OWNER'S MANUAL" SO LABELED. THE MANUAL SHALL CONSIST OF A THREE-RING LOOSE-LEAF BINDER CONTAINING ALL PRINTED MATTER SUCH AS: GUARANTEE CARDS, CLEANING INSTRUCTIONS, NOTICES TO OWNER, OPERATING MANUALS, AND MAINTENANCE INSTRUCTIONS THAT MAY BE CONTAINED IN THE SHIPPING CARTONS OR EQUIPMENT HOUSINGS.

NOTE: THE STATE OF CALIFORNIA MANDATES THAT ALL EXISTING WATER SERVICES ON A COMMERCIAL PARCEL WILL BE REQUIRED TO BE EQUIPPED WITH AN APPROVED REDUCED PRESSURE BACKFLOW PREVENTION DEVICE. THE DEVICE SHALL BE TESTED AND A BACKFLOW PREVENTER CERTIFICATION PERFORMED BY AN AIWWA LICENSED TESTER SHALL BE SUBMITTED TO THE PUBLIC WORKS DEPARTMENT.

LOCAL APPROVED CHEMICAL INJECTION SYSTEMS ARE SUPPLIED BY CG AND THEY UTILIZE ENMESHED AIR GAPS AS A MEANS OF BACKFLOW PREVENTION. IF PRESSURE REQUIRES, GC WILL SUPPLY A SEPARATE VALVE TO ADJUST THE PRESSURE AS REQUIRED.

CONTRACTOR NOTE: WATER HEATER, EXPANSION TANK AND DOMESTIC HOT WATER RECIRCULATION PUMP TO BE FURNISHED BY OWNER AND INSTALLED BY THE CONTRACTOR. CONTRACTOR TO FURNISH AND INSTALL ALL PIPING, FITTINGS AND VALVING REQUIRED FOR A COMPLETE AND WORKING SYSTEM.

ENERGY CONSERVATION NOTES

1. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDENT, FACTORY APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH CALIFORNIA STATE ENERGY CODE 2022, SECTION 150.0.
2. AS PER CALIFORNIA STATE ENERGY CODE 2022, SERVICE WAEER HEATING EQUIPMENT SHALL BE EQUIPED WITH AUTOMATIC TEMPERATURE CONTROLS CAPABLE OF ADJUSTING FROM THE LOWEST TO THE HIGHEST ACCEPTABLE TEMPERATURE SETTING FOR THE INTENDED USE AS PER TABLE 613.1 OF THE CALIFORNIA STATE PLUMBING CODE.
3. AS PER CALIFORNIA STATE ENERGY CODE 2022, SYSTEMS DESIGNED TO MAINTAIN USAGE TEMPERATURES IN HOT WATER PIPES, SUCH AS RECIRCULATING HOT WATER SYSTEM SHALL BE EQUIPED WITH AUTOMATIC TIME SWITCHES OR OTHER CONTROLS THAT CAN BE SET TO SWITCH OF THE USAGE TEMPERATURE MAINTAINANCE SYSTEM DURING EXTENDED PERIOD WHEN HOT WAEER IS NOT REQUIRED.
4. AS PER CALIFORNIA STATE ENERGY CODE 2022, SECTION 613.5, TEMPERATURE CONTROL VALVE SHALL BE PROVIDED TO AUTOMATICALLY REGULATE THE TEMPERATURE OF HOT WATER DELIVERED TO PLUMBING FIXTURE TO A RANGE OF 105°F (41°C) MINIMUM TO 120°F (49°C) MAXIMUM.
5. INSULATION REQUIREMENT SHOULD COMPLY WITH CALIFORNIA STATE ENERGY CODE 2022. REFER BELOW TABLE FOR MINIMUM PIPE INSULATION THICKNESS ACC. TO CALIFORNIA PLUMBING CODE 2022 SECTION 605.10, 2022 CALIFORNIA ENERGY CODE 2022 SECTION 120.3

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
141-200	0.25-0.29	125	1.5	1.5
105-140	0.22-0.28	100	1.0	1.5

EQUIPMENT & FIXTURE SCHEDULE - PLUMBING					
MARK	DESCRIPTION	CW	HW	WASTE	GAS
EX-3 CS	3 COMPARTMENT SINK	E	E	E	
EX-4 CS	4 COMPARTMENT SINK	E	E	E	
EX-HS	HAND SINK	E	E	E	
EX-MS	MOP SINK	E	E	E	
EX-WH	WATER HEATER	E	E	E	E
24	36" CHARBROILER				105 MBH
25	48" COUNTER TOP GRIDDLE				120 MBH

Plan Check Number:		
11/27/2024	▲	65% SUBMITTAL SET
12/23/2024	▲	95% SUBMITTAL SET
	▲	
	▲	
	▲	
	▲	
	▲	
	▲	
	▲	
	▲	



SANITARY AND GREASE WASTE PLAN

1/4"=1'-0" 1

NOTES

1. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE-FOOT CLEAR AND UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, PULL-BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR TO THE LOCATION OF THE HOOK-UP. THE CONSTRUCTION SHALL NOT BE WITHIN TEN FEET OF ANY POWER LINES-WHETHER OR NOT THE LINES ARE LOCATED ON THE PROPERTY. FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS AND/OR ADDITIONAL EXPENSES.
2. AN APPROVED SEISMIC GAS SHUT OFF VALVE OR EXCESS FLOW SHUT OFF VALVE WILL BE INSTALLED ON THE FUEL GAS LINE ON THE DOWN-STREAM SIDE OF THE UTILITY METER AND BE RIGIDLY CONNECTED TO THE EXTERIOR OF THE BUILDING OR STRUCTURE CONTAINING THE FUEL GAS PIPING. (PER ORDINANCE 170,158 AND 180,670) (INCLUDES COMMERCIAL ADDITIONS AND TI WORK OVER \$10,000.) SEPARATE PLUMBING PERMIT IS REQUIRED.
3. PROVIDE ULTRA-FLUSH WATER CLOSETS FOR ALL NEW CONSTRUCTION. EXISTING SHOWER HEADS AND TOILETS MUST BE ADAPTED FOR LOW WATER CONSUMPTION.
4. PROVIDE (70) (72) INCH HIGH NON ABSORBENT WALL ADJACENT TO SHOWER AND APPROVED SHATTER RESISTANT MATERIALS FOR SHOWER ENCLOSURE. (1209.2.2, 2406.4.5, R307.2, R308.4)
5. CONDENSATE PIPING FOR ROOFTOP UNITS AND MAU IS RUN ON ROOF AS SHOWN AND DOWN THRU ROOF TO DRAIN INTO FS2. SEAL ANY PENETRATIONS WATER TIGHT. PROVIDE ANY REQUIRED SUPPORT FOR PIPING.

NOTE:  
18" DRAINBOARD TO FOOD PREPARATION SINK SHALL NOT BE BLOCKED, AND ACCESSIBLE AT ALL TIMES.

GREASE WASTE LINE TO BE USED ONLY BY HABIT BURGER, NOT A SHARED GREASE CONTAINMENT SYSTEM.

ALL ROOF TOP EQUIPMENT, GAS LINES, CONDENSATE, CURBS, POWER, ETC. BY TENANT.

ALL CONCRETE TO BE CUT NEAT. ALL EXCAVATION/BACKFILL TO BE TESTED. SECTION PUT BACK TO EQUAL WHAT WAS ORIGINALLY INSTALLED WITH BASE, SAND, VISQUEEN AND REBAR DOWELS AT 24"O.C. MINIMUM WITH 2 #4 BARS IN LENGTH OF SAWCUT OVERLAPPING DOWELS INTO EXISTING. CONCRETE TO BE POURED BACK FLUSH WITH EXISTING CONCRETE SURFACE.

EXISTING CONDITIONS NOTE:

SANITARY SEWER PIPING SHOWN ON DRAWINGS IS DIAGRAMMATIC AND MAY DIFFER SLIGHTLY FROM ACTUAL FIELD CONDITIONS. PLUMBING CONTRACTOR (PC) SHALL COORDINATE WITH EXISTING FIELD CONDITIONS TO DETERMINE THE LOCATION AND CONNECTION TO EXISTING PLUMBING SERVICES PRIOR TO BID/CONSTRUCTION. IF ACTUAL FIELD FINDINGS VARY SIGNIFICANTLY FROM THOSE AS INDICATED ON PLANS, PC SHALL NOTIFY GENERAL CONTRACTOR (GC) IMMEDIATELY PRIOR TO STARTING ANY WORK. THE OWNER SHALL NOT BE RESPONSIBLE FOR ADDITIONAL COSTS INCURRED BY FAILED COORDINATION AFTER CONSTRUCTION HAS BEGUN. PC SHALL BE RESPONSIBLE FOR UTILIZING A REPUTABLE UTILITY LOCATING SERVICE PRIOR TO ANY EXCAVATION.

VENT NOTES

1. EACH VENT SHALL RISE VERTICALLY TO A POINT NOT LESS THAN (6) SIX INCHES ABOVE THE FLOOD LEVEL RIM OF THE FIXTURE SERVED BEFORE OFFSETTING HORIZONTALLY OR BEFORE BEING CONNECTED TO ANY OTHER VENT.
2. VENTS LESS THAN (6) SIX INCHES ABOVE THE FLOOD LEVEL RIM OF THE FIXTURE SHALL BE INSTALLED WITH APPROVED DRAINAGE FITTINGS, MATERIAL, AND GRADE TO THE DRAIN.

GENERAL NOTES

1. EXACT LOCATION OF PLUMBING FIXTURES SHALL BE DETERMINED FROM ARCHITECTURAL DRAWINGS.
2. CONTRACTOR SHALL VERIFY AND COORDINATE LOCATION OF ALL PLUMBING LINES WITH DUCTWORK AND ELECTRICAL SERVICES.
3. CONTRACTOR SHALL ROUGH-IN ALL WASTES AND SUPPLIES TO SPECIAL EQUIPMENT ACCORDING TO MANUFACTURERS SHOP DRAWINGS AND MAKE FINAL CONNECTIONS. ALL SUPPLIES SHALL BE VALVED.
4. DRAIN PIPES UNDER ACCESSIBLE LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE BE CONFIGURED TO PROTECT AGAINST CONTACT. PROTECTORS, INSULATORS OR BOTH SHALL COMPLY WITH ASME A112.18.9 OR ASTM C1822, IPC 403.3.
5. REFER RISERS FOR PIPE SIZES.
6. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUTS, & SHUT-OFF VALVES AS REQUIRED.
7. PROVIDE TRAP PRIMER/ SEAL ON FLOOR DRAIN AS PER LOCAL JURISDICTION.
8. ANY UNUSED PLUMBING PIPING MUST BE COMPLETELY REMOVED OR CAPPED. DO NOT ABANDON IN PLACE.

KEY NOTES

1. EXISTING 4 COMPARTMENT SINK WITH EXISTING SANITARY AND VENT PIPING WITH ASSOCIATED ACCESSORIES AND FITTING TO REMAIN. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.
2. EXISTING 3 COMPARTMENT SINK WITH EXISTING SANITARY AND VENT PIPING WITH ASSOCIATED ACCESSORIES AND FITTING TO REMAIN. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.
3. EXISTING HAND SINK WITH EXISTING SANITARY AND VENT PIPING WITH ASSOCIATED ACCESSORIES AND FITTING TO REMAIN. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.
4. EXISTING MOP SINK WITH EXISTING SANITARY AND VENT PIPING WITH ASSOCIATED ACCESSORIES AND FITTING TO REMAIN. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.
5. CONTRACTOR TO PROTECT ALL FLOOR DRAIN AND FLOOR SINK IN PLACE.
6. EXISTING PLUMBING EQUIPMENT WITH EXISTING SANITARY AND VENT PIPING WITH ASSOCIATED ACCESSORIES AND FITTING TO REMAIN. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.
7. EXISTING WALK-IN COOLER/FREEZER TO BE REMAIN WITH EXISTING CONDENSATE DRAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDENSATE DRAIN CONDITION. REPLACE IF REQUIRED.

PLUMBING SYMBOLS

— SAN —	SANITARY WASTE LINE	T.P.	TRAP PRIMER
— GSAN —	GREASE WASTE LINE	T.M.V.	THERMOSTATIC MIXING VALVE
— V —	VENT LINE	T.P.R.V.	TEMP. PRESSURE RELIEF VALVE
— G —	GAS LINE	P.O.C.	POINT OF CONNECTION
— C.W. —	COLD WATER LINE	B.F.P.	BACK FLOW PREVENTER
— H.W. —	HOT WATER LINE	G.I./T.	GREASE INTERCEPTOR/TRAP
— H.W. RECIRC. —	HOT WATER RECIRC. LINE	LAV.	LAVATORY
— F.W. —	FILTERED WATER LINE	UR.	URINAL
— S.O.V. —	SHUT-OFF VALVE	W.C.	WATER CLOSET
— B.F.P. —	BACKFLOW PREVENTER	G.R.	GLASS RACK
V.T.R.	VENT THRU ROOF	A.F.F.	ABOVE FINISHED FLOOR
C.I.	CAST IRON	B.F.F.	BELOW FINISHED FLOOR
C.W.	COLD WATER	W.H.	WATER HEATER
H.W.	HOT WATER	E.C.O.	EXTERIOR CLEAN-OUT
T.W.	TEMPERED WATER	F.C.O.	FLOOR CLEAN-OUT
F.W.	FILTER WATER	W.C.O.	WALL CLEAN-OUT
F.S.	FLOOR SINK	M.S.	MOP SINK
F.D.	FLOOR DRAIN	S.S.	SCULLERY SINK
H.D.	HUB DRAIN	F.E.S.	FABRICATED ECONOMY SINK
F.F.D.	FUNNEL FLOOR DRAIN	H.S.	HAND SINK
K.F.D.	KITCHEN FLOOR DRAIN	U.B.S.	UNDER BAR SINK
R.F.D.	RESTROOM FLOOR DRAIN	U.B.H.S.	UNDER BAR HAND SINK
E.M.	ELECTRICAL METER	I.C.C.	ICE CREAM CABINET
G.M.	GAS METER	EX.MS	EXISTING MOP SINK
EX.4 CS	EXISTING 4 COMPARTMENT SINK	EX.HS	EXISTING HAND SINK
EX.3 CS	EXISTING 3 COMPARTMENT SINK		

KEY NOTES

- EXISTING 4 COMPARTMENT SINK WITH EXISTING WATER LINE TO BE REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING WATER LINE CONDITION AND REPLACE IF REQUIRED.
- EXISTING 3 COMPARTMENT SINK WITH EXISTING WATER LINE TO BE REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING WATER LINE CONDITION AND REPLACE IF REQUIRED.
- EXISTING HAND SINK WITH EXISTING WATER LINE TO BE REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING WATER LINE CONDITION AND REPLACE IF REQUIRED.
- EXISTING MOP SINK WITH EXISTING WATER LINE TO BE REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING WATER LINE CONDITION AND REPLACE IF REQUIRED.
- EXISTING WATER HEATER WITH ASSOCIATED PIPING AND EQUIPMENTS TO BE REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING WATER HEATER AND ASSOCIATED EQUIPMENTS CONDITION. REPLACE IF REQUIRED.
- CONNECT NEW 1-1/4" GAS LINE TO EXISTING GAS LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING GAS LINE LOCATION AND SIZE.
- CONTRACTOR TO MAKE SURE EXISTING GAS METER CAPACITY IS SUFFICIENT WITH ALL GAS EQUIPMENT. UPGRADE GAS METER IF REQUIRED. COORDINATE ALL WORK WITH UTILITY COMPANY AND LANDLORD.
- CONTRACTOR TO FIELD VERIFY EXITING CW AND HW PIPE LOCATION AND SIZE AND CONNECT NEW 1/2" CW AND 3/4" HW LINE TO EXISTING CW AND HW LINE RESPECTIVELY.
- CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR GAS FIRED EQUIPMENT.
- EXISTING ANSUL SYSTEM TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING ANSUL SYSTEM LOCATION AND CONDITION. REPLACE IF REQUIRED.

GENRAL NOTES

- PLUMBING CONTRACTOR TO VERIFY AND COORDINATE EXACT STREET PRESSURE, LOCATION OF METER AND PIPE ROUTING FROM METER TO PROJECT AREA TO ENSURE MINIMUM SUPPLY GPM AND PRESSURE FOR PROPER OPERATION ARE MET. NOTIFY ARCHITECT IN WRITING FOR CLARIFICATION PRIOR TO SUBMISSION OF BIDS.
- EXACT LOCATION OF PLUMBING FIXTURES SHALL BE DETERMINED FROM ARCHITECTURAL DRAWINGS.
- BEFORE SUBMITTING BID, THE PLUMBING CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS AND INCLUDE IN HIS BID AN AMOUNT TO FURNISH AND INSTALL ANY FIXTURES WHICH ARE SHOWN IN ADDITION TO FIXTURES SHOWN ON THE PLUMBING DRAWINGS.
- CONTRACTOR SHALL VERIFY AND COORDINATE LOCATION OF ALL PLUMBING LINES WITH DUCTWORK AND ELECTRICAL SERVICES.
- THE INSTALLATION OF ALL VALVES, UNIONS, THERMOMETERS, GAUGES, OR OTHER INDICATING OR RECORDING EQUIPMENT, OR SPECIALTIES REQUIRING FREQUENT READING, REPAIRS, ADJUSTMENT, INSPECTION, REMOVAL OR REPLACEMENT SHALL BE CONVENIENTLY AND ACCESSIBLY LOCATED WITH REFERENCE TO THE FINISHED BUILDING.
- CONTRACTOR SHALL NOT CUT HOLES IN STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT.
- CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.
- CONTRACTOR SHALL ROUGH-IN ALL WASTES AND SUPPLIES TO SPECIAL EQUIPMENT ACCORDING TO MANUFACTURERS SHOP DRAWINGS AND MAKE FINAL CONNECTIONS. ALL SUPPLIES SHALL BE VALVED.
- CAP/REMOVE ALL UNUSED EXISTING WATER AND GAS PIPING. COORDINATE WITH THE ARCHITECT.
- WATER SUPPLY TO CARBONATORS SHALL BE PROTECTED BY A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION DEVICE THAT IS APPROVED FOR USE WITH CARBONATORS (STAINLESS STEEL), IS TESTABLE AND LEAD FREE. ALL BACKFLOW DEVICES SHALL BE INSTALLED SO THAT THEY ARE ACCESSIBLE FOR REPAIR AND TESTING, IN COMPLIANCE WITH CALIFORNIA PLUMBING CODE STANDARDS.
- POTABLE WATER SUPPLY TO BEVERAGE DISPENSERS, CARBONATED BEVERAGE DISPENSERS, OR ICE MACHINES SHALL BE PROTECTED BY AN AIR GAP OR A VENTED BACKFLOW PREVENTER THAT COMPLIES WITH ASSE 1022. FOR CARBONATED BEVERAGE DISPENSERS, PIPING MATERIAL INSTALLED DOWNSTREAM OF THE BACKFLOW PREVENTER SHALL NOT BE AFFECTED BY CARBON DIOXIDE GAS. (IPC 6.08.17.11)
- WATER SUPPLY AND DRAIN PIPES UNDER ACCESSIBLE LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE BE CONFIGURED TO PROTECT AGAINST CONTACT. PROTECTORS, INSULATORS OR BOTH SHALL COMPLY WITH ASME A112.18.9 OR ASTM C1822, IPC 403.3.
- ALL WATER SUPPLY LINES TO BE COPPER ABOVE GRADE.
- REFER RISERS FOR PIPE SIZES.
- PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUTS, & SHUT-OFF VALVES AS REQUIRED.
- CW/HW PIPING TO BE PROVIDED WITH INSULATION AS PER 2022 CALIFORNIA ENERGY CODE (REFR SHEET P100)

LOW PRESSURE GAS PIPE  
SIZING CHART

PIPE SIZE	LOAD (CFH)
1/2"	50
3/4"	104
1"	195
1-1/4"	400
1-1/2"	600
2"	1160
2-1/2"	1840

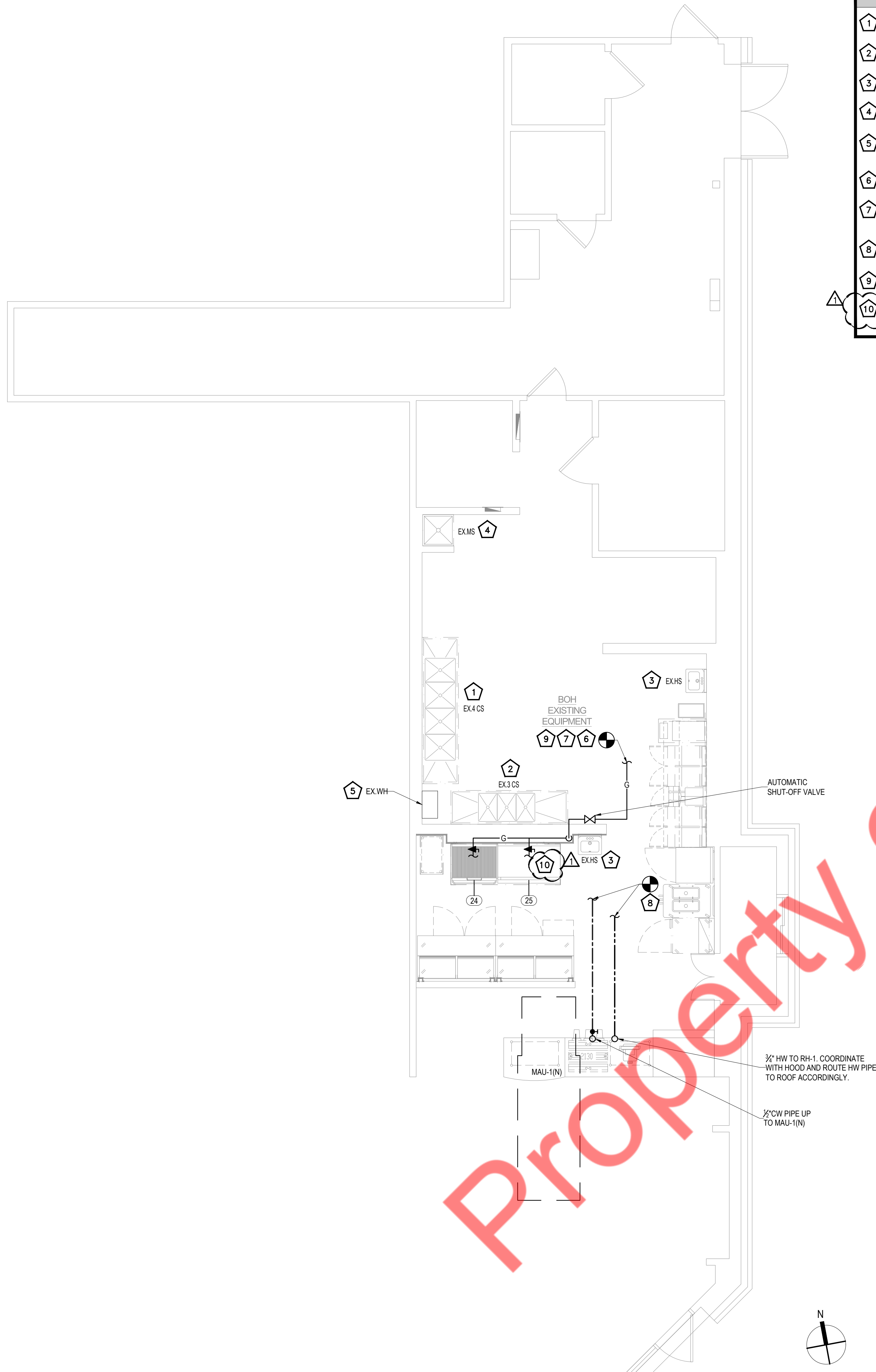
OPERATING PRESSURE OF 7"-14" WC WITH A PRESSURE DROP OF 0.5" WC TOTAL DEVELOPED LENGTH = 100 FEET BASED ON 2022 CPC TABLE 1215.2(1).

NATURAL GAS LOAD

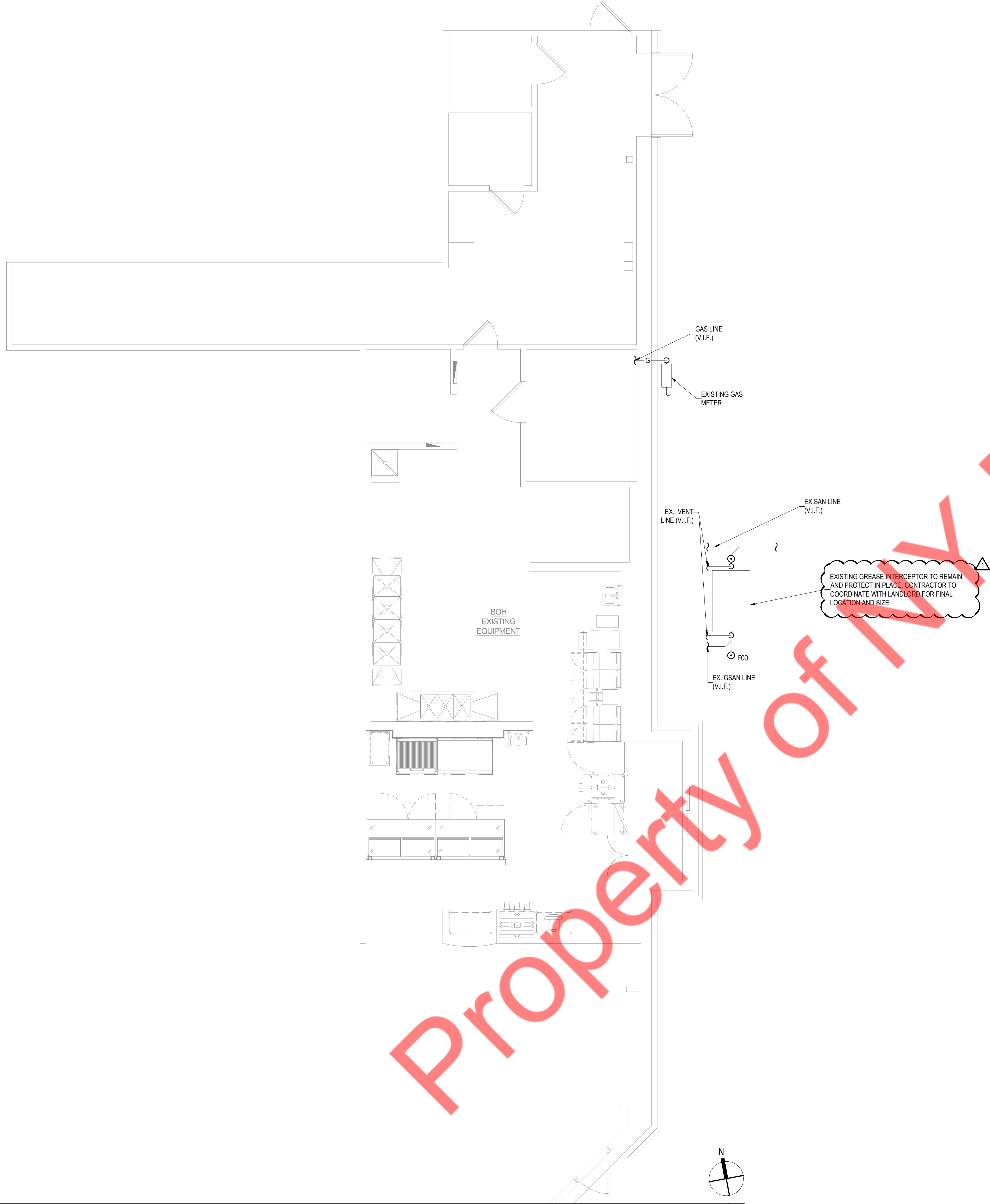
KITCHEN EQUIPMENT							
EQUIPMENT DESIGNATION	QTY.	DESCRIPTION	MANUFACTURER	MODEL	PRESSURE RANGE	CFH	TOTAL CFH
24	1	36" CHARBROILER	MAGIKITCHN	CM-SMB-636	7"-10" WC	105	105
25	1	48" COUNTER TOP GRIDDLE	JADE	JGT-2448 MOD	5"-14" WC	120	120
						TOTAL	225
NATURAL GAS SYSTEM OPERATING PRESSURE OF 7-14 INCHES WC NATURAL GAS SYSTEM SIZED WITH TOTAL DEVELOPED LENGTH FROM GAS METER TO MOST REMOTE PIECE OF EQUIPMENT OF 100' WITH A PRESSURE DROP OF 0.5 INCHES W.C.							

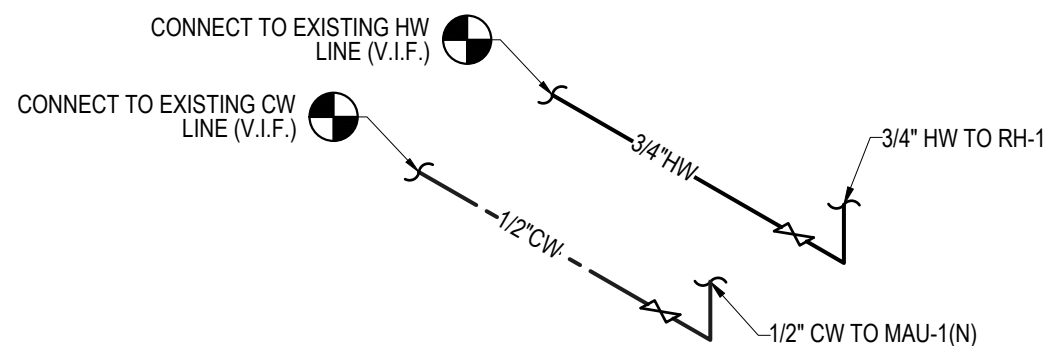
PLUMBING SYMBOLS

SAN	SANITARY WASTE LINE	T.P.	TRAP PRIMER
GSAN	GREASE WASTE LINE	T.M.V.	THERMOSTATIC MIXING VALVE
V	VENT LINE	T.P.R.V.	TEMP. PRESSURE RELIEF VALVE
G	GAS LINE	P.O.C.	POINT OF CONNECTION
CW	COLD WATER LINE	B.F.P.	BACK FLOW PREVENTER
HW	HOT WATER LINE	G.I.T.	GREASE INTERCEPTOR/TRAP
HW RECIRC	HOT WATER RECIRC LINE	LAV.	LAVATORY
FW	FILTERED WATER LINE	UR.	URINAL
SOV	SHUT-OFF VALVE	WC	WATER CLOSET
BFP	BACKFLOW PREVENTER	G.R.	GLASS RACK
V.T.R.	VENT THRU ROOF	A.F.F.	ABOVE FINISHED FLOOR
C.I.	CAST IRON	B.F.F.	BELOW FINISHED FLOOR
C.W.	COLD WATER	M	WATER METER
H.W.	HOT WATER	W.H.	WATER HEATER
T.W.	TEMPERED WATER	E.C.O.	EXTERIOR CLEAN-OUT
F.W.	FILTER WATER	F.C.O.	FLOOR CLEAN-OUT
F.S.	FLOOR SINK	W.C.O.	WALL CLEAN-OUT
F.D.	FLOOR DRAIN	M.S.	MOP SINK
H.D.	HUB DRAIN	S.S.	SCULLERY SINK
F.F.D.	FUNNEL FLOOR DRAIN	F.E.S.	FABRICATED ECONOMY SINK
K.F.D.	KITCHEN FLOOR DRAIN	H.S.	HAND SINK
R.F.D.	RESTROOM FLOOR DRAIN	U.B.S.	UNDER BAR SINK
E.M.	ELECTRICAL METER	U.B.H.S.	UNDER BAR HAND SINK
G.M.	GAS METER	I.C.C.	ICE CREAM CABINET
EX-4 CS	EXISTING 4 COMPARTMENT SINK	EX-MS	EXISTING MOP SINK
EX-3 CS	EXISTING 3 COMPARTMENT SINK	EX-HS	EXISTING HAND SINK



Plan Check Number:		
11/27/2024	65% SUBMITTAL SET	
12/23/2024	95% SUBMITTAL SET	

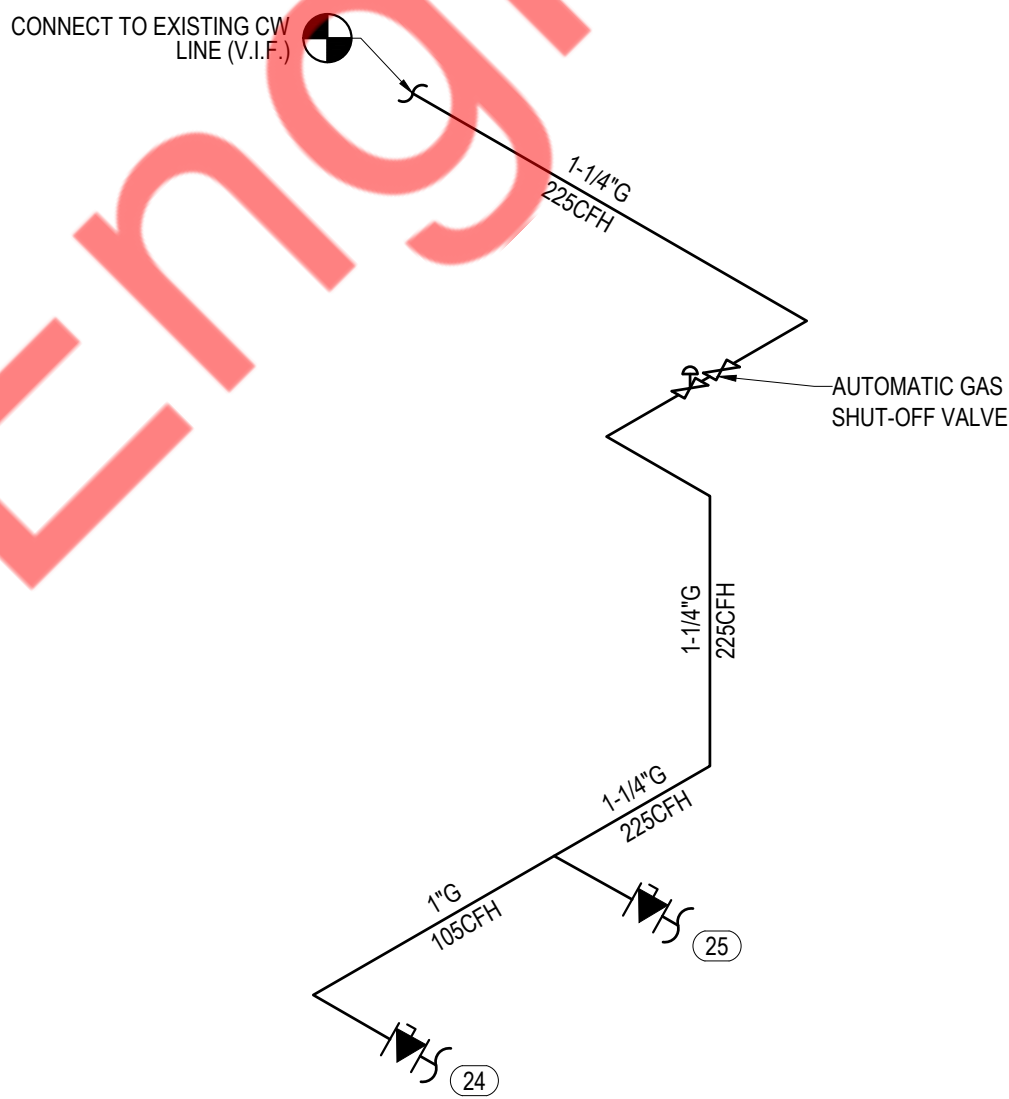




PLUMBING WATER RISER

N.T.S.

1



PLUMBING GAS RISER

N.T.S.

1

LOW PRESSURE GAS PIPE SIZING CHART	
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1/2"	50
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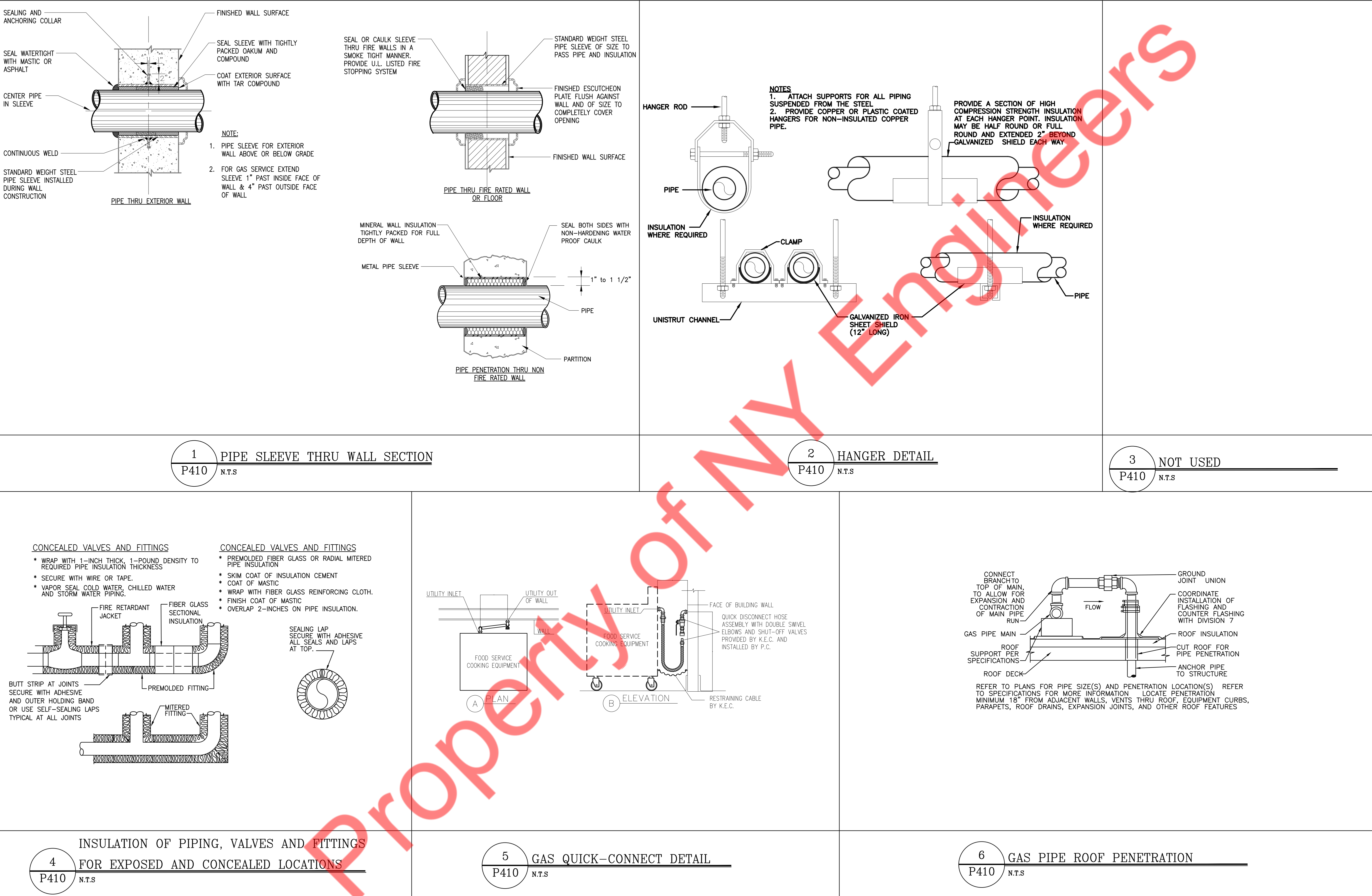
- GAS NOTE:
1. PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION. PROVIDE GAS PRESSURE REGULATOR FOR GAS FIRED EQUIPMENTS IF REQUIRED.
  2. CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LONGEST LENGTH OF RUN TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITION DIFFER THAN SHOWN ON THIS PLAN.

PLUMBING RISER  
DIAGRAMS

Plan Check Number:	
11/27/2024	65% SUBMITTAL SET
12/23/2024	95% SUBMITTAL SET

S H E E T

P400



Plan Check Number:		
11/27/2024	65% SUBMITTAL SET	
12/23/2024	95% SUBMITTAL SET	