MEP LEGENDS:

- 22/14 — RECTANGULAR STEEL DUCTWORK (WIDTH/HEIGHT IN INCHES)
- RECTANGULAR DUCT IN SECTION, SUPPLY AIR
- RECTANGULAR DUCT IN SECTION, RETURN AIR
- 10 — ROUND STEEL DUCTWORK, DIAMETER SHOWN IN INCHES
- ROUND DUCT IN SECTION, RETURN AIR
- ROUND DUCT IN SECTION, SUPPLY AIR
- FLEXIBLE ROUND DUCTWORK, SIZES SHOWN ON GRILLE SCHEDULE.
- RECTANGULAR SUPPLY TRUNK DUCT WITH ROUND BRANCH TAP, MANUAL BALANCING DAMPER AND FLEXIBLE DUCT CONNECTION.
- DUCT MOUNTED BALANCING DAMPER WITH MANUAL LOCKING LEVER
- FD — COMBINATION FIRE/SMOKE DAMPER WITH DUCT ACCESS DOOR FOR SERVICE
- ACS — FACTORY HVAC UNIT OR EQUIPMENT, MARK SHOWN, SEE SCHEDULES
- FLEXIBLE DUCT CONNECTION TO EQUIPMENT OR PLENUM, SEE SPECS.
- A / 235 — CEILING LAY-IN SUPPLY AIR DIFFUSER , TYPE, CFM, AND AIR FLOW DIRECTION SHOWN, SEE SCHEDULES.
- B — CEILING LAY-IN RETURN, EXHAUST OR TRANSFER AIR GRILLE, TYPE AND AIR FLOW DIRECTION SHOWN, SEE SCHEDULES.
- B — DUCT MOUNTED RA GRILLE FOR OPEN RETURN, TYPE SHOWN.
- M — MOTORIZED BACKDRAFT OR CONTROL DAMPER, SEE CONTROLS DIAGRAM
- T — WALL MOUNTED THERMOSTAT AT 50" AFF. SEE SPECS AND CONTROL DETAILS
- T_R — REMOTE MOUNTED TEMP SENSOR CONNECTED TO THERMOSTAT. SEE SPECS AND CONTROL DETAILS
- CO2 — DUCT MOUNTED CARBON MONOXIDE (CO2) SENSOR FOR DEMAND VENTILATION CONTROL. SEE SPECS AND CONTROL DETAILS
- LOW-VOLTAGE CONTROL WIRING, SEE SPECS
- RETURN, EXHAUST OR TRANSFER AIRFLOW DIRECTION
- SUPPLY AIRFLOW DIRECTION
- UC — UNDERCUT DOOR MIN. 1" GAP, AIRFLOW DIRECTION SHOWN
- L/S — REFRIGERANT LINE SET PIPING, BARE COPPER LIQUID LINE AND INSULATED GAS SUCTION LINE, SIZED ON SCHEDULES.
- C — PIPING, CONDENSATE DRAIN, SLOPED MIN. 1/8" PER FOOT TOWARDS DRAIN, SIZED AS SHOWN.
- (NEG) — NEGATIVE ROOM PRESSURE, CREATED BY AIRFLOW BALANCE AS SHOWN, TRANSFER AIR FLOWS INTO ROOM UNDERNEATH DOOR UNDERCUT.

- P1 / 24 — HOMERUN, 120V/1P/20A CIRCUIT WITH 2 #12 AND #12 GND IN 1/2" CONDUIT, PANEL AND CIRCUIT NUMBER SHOWN.
- P1 / 26,28 — HOMERUN, 208V/2P CIRCUIT HOME RUN WITH 2 HOTS AND GND, PANEL AND CIRCUIT NO'S SHOWN.
- P1 / 1,3,5 — HOMERUN, 208V/3P CIRCUIT HOME RUN WITH 3 HOTS AND GND, PANEL AND CIRCUIT NO'S SHOWN.
- ELECTRICAL CONDUIT AND WIRE OR CABLES IN WALLS OR ABOVE CEILINGS
- UE — ELECTRICAL CONDUIT AND WIRE UNDERGROUND OR BELOW FLOOR WITH POWER CIRCUIT, SEE SCHEDULES.
- UD — 1" DATA CONDUIT AND PULL STRING BELOW FLOOR FOR FUTURE INSTALLATION OF CABLE BY OTHERS.
- $ — LIGHT SWITCH AT 48" ABOVE FINISHED FLOOR
- $3 — 3-WAY LIGHT SWITCH AT 48" ABOVE FINISHED FLOOR
- $O — OCCUPANCY/LIGHT SWITCH AT 48" ABOVE FINISHED FLOOR
- $M — MOTOR RATED TOGGLE SWITCH IN SUITABLE BOX WITH COVER
- DUPLEX RECEPTACLE AT 12" AFF.
- DUPLEX RECEPTACLE, GFI TYPE. AT 12" ABOVE FLOOR.
- WP — DUPLEX RECEPTACLE, GFI TYPE IN WEATHERPROOF BOX WITH COVER, MIN. 24" ABOVE GRADE.
- DUPLEX RECEPTACLE, FLOOR MOUNTED.
- DUPLEX RECEPTACLE, CEILING MOUNTED.
- QUAD RECEPTACLE AT 12" ABOVE FINISHED FLOOR.
- QUAD RECEPTACLE, GFI TYPE, AT 12" ABOVE FINISHED FLOOR.
- QUAD RECEPTACLE, FLOOR MOUNTED
- QUAD RECEPTACLE, CEILING MOUNTED
- 30A — 240V RECEPTACLE AT 12" AFF, AMP RATING SHOWN.
- J — JUNCTION BOX
- JUNCTION BOX AT 12" AFF WITH 1" CONDUIT AND PULL STRING STUB UP ABOVE CEILING FOR DATA CABLES BY OTHERS.
- FLOOR MOUNTED JUNCTION BOX WITH 1" UG CONDUIT AND PULL STRING STUB UP ABOVE CEILING AT NEARBY WALL FOR DATA CABLES BY OTHERS.
- CEILING MOUNTED DATA BOX FOR CABLE INSTALLATION BY OTHERS.
- ELECTRICAL PANELBOARD, LABEL SHOWN

- DISC. NO. SCHEDULED — 2 — DISCONNECT SWITCH, FUSED OR NON-FUSED, SEE SCHEDULES.
- T_1 — INDOOR LIGHTING TIMER, SEE SPECS AND LIGHTING CONTROL DETAILS.
- E — ELECTRICAL METER
- ELECTRICAL GROUND CONNECTION
- EXIT LIGHT FIXTURE AT 8' AFF, SEE SCHEDULES
- COMBINATION-EXIT FIXTURE/EMERGENCY LIGHT AT 8' AFF, SEE SCHEDULES
- EMERGENCY FIXTURE AT 8' AFF, SEE SCHEDULES
- OUTDOOR EMERGENCY FIXTURE AT 10' AFG, SEE SCHEDULES

- SANITARY DRAIN PIPING UNDER FLOOR OR GROUND, SLOPE MIN. 1/8" PER FT TOWARDS SEWER CONNECTION.
- GW — GREASE WASTE DRAIN PIPING UNDER FLOOR INSIDE BUILDING, SLOPE MIN. 1/8" PER FT TOWARDS GREASE TRAP CONNECTION.
- SANITARY VENT PIPING, INSTALLED ABOVE CEILINGS OR IN WALLS, SLOPED MIN. 1/8" PER FT TOWARDS DRAIN.
- V — SANITARY VENT PIPING, INSTALLED UNDERFLOOR, SLOPED MIN. 1/8" PER FT TOWARDS DRAIN.
- DOMESTIC CW PIPING, ABOVE CEILING OR IN WALLS.
- CW — DOMESTIC CW PIPING, UNDERFLOOR
- DOMESTIC HW PIPING, ABOVE CEILING OR IN WALLS.
- 1/2" DOMESTIC HOT WATER RE-CIRCULATION PIPING, TYPICAL
- POINT OF CONNECTION TO EXIST PIPING.
- PIPE CAPPED FOR FUTURE CONNECTION.
- PIPE ELBOW, 90° TURNED DOWN.
- PIPE ELBOW, 90° TURNED UP.
- PIPE TEE, BRANCH TURNED DOWN.
- PIPE TEE, BRANCH TURNED UP.
- VTR — VENT STACK UP THRU ROOF, SIZE SHOWN.
- 3" VTR — VENT STACK CONNECTION TO WASTE LINE BELOW.
- WASTE STACK UP THROUGH FLOOR.
- CO — CLEANOUT, FLOOR OR GRADE, WITH PROPER COVER.
- WCO — WALL CLEANOUT PLUG AND COVER.
- HOSE BIB AT 24" ABOVE FINISHED GRADE, SEE SPECS.
- BALL VALVE, LINE SIZED.
- BACKFLOW PREVENTER OR CHECK VALVE AS NOTED.
- PRESSURE REGULATOR VALVE, GAS OR WATER
- PRESSURE RELIEF VALVE, GAS OR WATER
- THERMOSTATIC MIXING VALVE, MASTER
- THERMOSTATIC MIXING VALVE, POINT OF USE
- BALANCING VALVE OR CIRCUIT SETTER
- PIPE UNION COUPLING
- PIPE FLEXIBLE COUPLING
- HW RECIRCULATION PUMP, SEE SCHEDULES.
- G — GAS METER BY UTILITY CO.
- GAS COCK, LINE SIZED.
- PRESSURE REGULATOR VALVE, GAS OR WATER
- G — NATURAL GAS PIPING, EXPOSED ABOVE CEILING OR ON WALL OR ROOF
- WC — NEW PLUMBING FIXTURE, DRAIN OR EQUIPMENT, MARK SHOWN
- AH1 — MECH OR OWNER FURNISHED EQUIPMENT, MARK SHOWN.
- RT1 — ROOFTOP MECHANICAL EQUIPMENT, MARK SHOWN.
- 1 / M2 — DETAIL NUMBER AND SHEET WHERE SHOWN.
- 2 / M4 — SECTION CUT LINE, DIRECTION ARROW, DETAIL NUMBER AND SHEET WHERE SHOWN.
- N — NORTH ARROW

CODE COMPLIANCE SCHEDULE	
CITY OF:	OVERLAND PARK, KS
MECHANICAL	2018 INTERNATIONAL MECHANICAL CODE
PLUMBING	2018 INTERNATIONAL PLUMBING CODE
FUEL GAS	2018 INTERNATIONAL FUEL GAS CODE
ELECTRICAL	2017 NATIONAL ELECTRIC CODE
ENERGY	2018 INTERNATIONAL ENERGY CODE
BUILDING	2018 INTERNATIONAL BUILDING CODE
ALL WORK SHALL COMPLY WITH LOCALLY ADOPTED CODES AS LISTED, INCLUDING ALL LOCAL AMMENDMENTS	

MEP COMMISSIONING PLANS:

A. PURPOSE: THIS COMMISSIONING PLAN IS REQUIRED FOR PERFORMANCE VERIFICATIONS AND QUALITY CONTROL. FAILURE TO IMPLEMENT THIS PLAN MAY RESULT IN POOR PERFORMANCE AND QUALITY. THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED AS THE BASIS OF ALL EVALUATIONS.

B. RESPONSIBILITIES:

1. OWNER/GENERAL CONTRACTOR (GC):
   a. IMPLEMENT THE COMMISSIONING PLAN AS PROVIDED
   b. REVIEW AND APPROVE ALL SUBMITTALS, TESTING AND WORK DESCRIBED BELOW.
   c. MAINTAIN RECORDS OF ALL COMMISSIONING WORK AND FINAL APPROVALS
   d. PROVIDE ENGINEER WITH COPY OF RECORDS AS NEEDED
2. MEP CONTRACTOR:
   a. COORDINATE, REVIEW AND APPROVE ALL VENDOR EQUIPMENT SUBMITTALS.
   b. OBTAIN GC APPROVAL OF ALL SUBMITTALS PRIOR TO ORDERING.
   c. PERFORM ALL COMMISSIONING WORK LISTED BELOW.
   d. OBTAIN GC APPROVAL OF ALL STARTUP AND TESTING OF MEP SYSTEMS AND EQUIPMENT
   e. MAINTAIN AND PROVIDE ALL OPERATIONS AND MAINTENANCE MATERIALS.
   f. PROVIDE OWNER TRAINING ON NEW SYSTEMS INSTALLED

C. SUBMITTALS: PRE-CONSTRUCTION SUBMITTALS SHALL INCLUDE MANUFACTURER'S SPECIFICATIONS, SHOP DRAWINGS AND INSTALLATION MANUALS. PROVIDE SUBMITTALS FOR GC AND ARCHITECT APPROVAL PRIOR TO ORDERING THE FOLLOWING MAJOR COMPONENTS.

1. MECHANICAL:
   a. FANS
   b. GRILLES AND DIFFUSERS
   c. THERMOSTATS AND CONTROL DEVICES
2. ELECTRICAL:
   a. ELECTRICAL DISTRIBUTION EQUIPMENT
   b. LIGHT FIXTURES AND ACCESSORIES
   c. AUTOMATIC LIGHTING CONTROLS
3. PLUMBING:
   a. PLUMBING FIXTURES, DRAINS AND ACCESSORIES
   b. WATER HEATERS AND RE-CIRCULATION PUMPS

D. MECHANICAL EQUIPMENT STARTUP: PROVIDE COMPLETE STARTUP AND TESTING OF NEW SYSTEMS AND EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS:

1. ENSURE PROPER WEATHER CONDITIONS AT TIME OF ALL TESTS.
2. MAKE ADJUSTMENTS AS REQUIRED TO MEET PERFORMANCE SPECIFICATIONS.
3. PERFORM ALL STARTUP TESTING AND ADJUSTMENT AS SPECIFIED IN MANUFACTURER'S START-UP SHEETS. PROVIDED COMPLETED STARTUP SHEETS WITH ALL FINAL MEASUREMENTS FOR THE FOLLOWING:
   a. ROOFTOP UNITS AND EXHAUST FANS
   b. THERMOSTATS AND CONTROL DEVICES
4. PROVIDE TEST AND BALANCE OF ALL NEW HVAC SYSTEMS. INCLUDE FINAL APPROVED BALANCING REPORT AT PROJECT COMPLETION.
   a. ADJUST ALL SUPPLY AIR AND EXHAUST AIR GRILLES ON MECHANIAL PLANS TO WITHIN + OR - 10% OF CFM QUANTITIES SHOWN ON PLANS. MAKE FAN ADJUSTMENTS AS NEEDED TO MEET AIRFLOW REQUIREMENTS.
   b. ADJUST OA AND RA DAMPERS ON ALL ROOFTOP UNITS AS NEEDED TO PROVIDE THE REQUIRED VENTILATION AS SHOWN ON SCHEDULES.
   c. WHERE DEMAND CONTROLLED VENTILATION IS SPECIFIED, COORDINATE WITH CONTROLS CONTRACTOR TO ESTABLISH AND PROGRAM THE MINIMUM AND MAXIMUM OA DAMPER POSITIONS OF EACH UNIT.
   d. ADJUST ALL BAROMETRIC RELIEF DAMPERS ON ROOFTOP UNITS TO PROVIDE NET POSITIVE PRESSURE IN THE BUILDING. MEASURE AND REPORT FINAL BUILDING STATIC PRESSURE.
   a. FOR ALL ROOFTOP UNITS, MEASURE AND RECORD DISCHARGE AIR, RETURN AIR AND OUTSIDE AIR TEMPERATURES UNDER FULL CAPACITY OPERATION IN BOTH HEATING AND COOLING MODES. MAKE ADJUSTMENTS AS NEEDED TO ACHIEVE + OR - 10% OF DESIGN SUPPLY AIR TEMPERATURES SCHEDULED ON DRAWINGS.
   e. CONTRACTOR SHALL WORK IN ACCORDANCE WITH NEBB, AABC OR SMACNA STANDARDS, AND PROVIDE ALL DATA ON STANDARD FORMS. MARK FINAL DAMPER POSITIONS WITH PERMANENT MARKER.

E. LIGHTING EQUIPMENT STARTUP: CONTRACTOR SHALL PERFORM THE FOLLOWING:

1. TEST ALL INDOOR AND OUTDOOR LIGHTING CONTROLS AFTER INSTALLATION. PROVIDE NAME AND SIGNATURE OF PERSON(S) COMPLETING THE TESTING, DATE PERFORMED, INITIAL AND FINAL SETTINGS OF CONTROLS ADJUSTMENTS AND THE RESULTING OPERATIONAL PERFORMANCE.
2. ENSURE LIGHT FIXTURES ARE INSTALLED AND OPERATIONAL
3. PERFORM COMPLETE OPERATIONAL TESTING OF EMERGENCY LIGHTING SYSTEMS AS REQUIRED BY NFPA 101, ANNUAL TESTING PROCEDURE.
4. VERIFY OPERATION OF ALL WALL MOUNTED OCCUPANCY LIGHT SWITCHES AND ADJUSTMENT AS REQUIRED FOR PROPER OPERATION, PER MANUFACTURER'S INSTRUCTIONS.
5. VERIFY OPERATION OF ALL CEILING MOUNTED OCCUPANCY SENSORS IN EACH ZONE SHOWN ON PLANS. ADJUST SETPOINTS AS REQUIRED FOR PROPER OPERATION, PER MANUFACTURER'S INSTRUCTIONS.
6. VERIFY OPERATION OF LIGHTING TIME CLOCKS. ADJUST SETPOINTS ON TIME CLOCK TO ENABLE OUTDOOR LIGHTING CIRCUIT INDEPENDENT OF SEASONAL CHANGES. PERFORM ALL TESTING PER MANUFACTURER'S INSTRUCTIONS.

E. ELECTRICAL SYSTEM STARTUP:

1. VERIFY THAT LABELS HAVE BEEN PROPERLY CREATED AND PERMANENTLY ATTACHED TO ALL PANELBOARDS AND DISCONNECT SWITCHES, AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
2. VERIFY THAT INDEX CARD HAS BEEN PROPERLY FILLED OUT WITH TYPE WRITTEN DESCRIPTION FOR EACH CIRCUIT INSTALLED IN ALL NEW PANELBOARDS. VERIFY THAT COMPLETED INDEX CARDS ARE PROPERLY ATTACHED TO EACH PANELBOARD.

F. PLUMBING STARTUP AND TESTING: CONTRACTOR SHALL PERFORM THE FOLLOWING:

1. PIPING SYSTEMS: CONTRACTOR SHALL PRESSURE TEST THE WASTE/VENT, POTABLE WATER PIPING SYSTEMS AS REQUIRED BY THE IPC OR THE AHJ.
2. WATER HEATER:
   a. AFTER PRESSURE TESTING PIPING CONNECTIONS, OPERATE WATER HEATER AND ADJUST TEMPERATURE SETTING TO 105°F.
   b. UTILIZE MANUFACTURER'S STARTUP SHEET TO SETUP AND TEST RE-CIRCULATION PUMP, INCLUDING ENERGY CONTROLS AS REQUIRED BY IECC. PROVIDE COMPLETED STARTUP SHEET WITH O&M MANUAL.
   c. PROVIDE MINIMUM FLOW BALANCING OF ALL HW RE-CIRCULATION BRANCHES USING BALANCING VALVES SHOWN ON PLANS. ENSURE THAT HOT WATER SUPPLY IS MAINTAINED IN EACH BRANCH.
3. MIXING VALVES: UTILIZE MFG'S INSTRUCTIONS TO ADJUST HW SUPPLY SETTING TO 105°F. TEST ACTUAL WATER TEMPERATURE AT ALL LAVATORIES AND HAND SINKS AFTER ADJUSTMENT TO VERIFY SETTINGS.

G. O&M DOCUMENTATION: MEP CONTRACTOR SHALL PROVIDE A MINIMUM OF 2 SETS OF OPERATIONS AND MAINTENANCE (O&M) BINDERS FOR THE PROJECT. EACH BINDER SHOULD INCLUDE ALL O&M MANUALS, WARRANTIES, STARTUP AND TESTING SHEETS, CONTROL DIAGRAMS AND SETPOINTS FOR THE FOLLOWING ITEMS:

1. TEST AND BALANCE REPORT.
2. ALL NEW LIGHTING AND CONTROLS, INCLUDING EMERGENCY LIGHTING
3. ALL NEW WATER HEATERS AND CIRCULATION PUMPS.

H. TRAINING: CONTRACTOR SHALL PROVIDE A MINIMUM OF 2 HOURS ON-SITE TRAINING FOR OWNER'S OPERATIONAL STAFF UPON COMPLETION OF ALL WORK. TRAINING SHALL COVER OPERATIONS AND MAINTENANCE ON ALL NEW MEP SYSTEMS INCLUDING:

1. MECHANICAL SYSTEMS & CONTROLS
2. AIR FILTER LOCATIONS, REPLACEMENT AND REQUIREMENTS
3. LIGHTING AND ELECTRICAL SYSTEMS AND EQUIPMENT
4. WATER HEATER AND TEMPERATURE ADJUSTMENT, MIXING VALVE ADJUSTMENT
5. RE-CIRCULATION PUMP AND WATER COOLER
6. WATER VALVE LOCATIONS AND USAGE

MEP ABBREVIATIONS:

A - AMPERES CURRENT
AFF - ABOVE FINISHED FLOOR
AFG - ABOVE FINISHED GRADE
AFI - ARC FAULT INTERRUPTING
AHJ - AUTHORITY HAVING JURISDICTION
ARCH - ARCHITECTURAL
BFF - BELOW FINISHED FLOOR
BFG - BELOW FINISHED GRADE
BOD - BOTTOM OF DUCT ABOVE FINISHED FLOOR OR GRADE
BOP - BOTTOM OF PIPE ABOVE FINISHED FLOOR OR GRADE
BTM - BOTTOM
BTU - BRITISH THERMAL UNIT
CB - CIRCUIT BREAKER
CFM - CUBIC FEET PER MINUTE
CFH - CUBIC FEET PER HOUR
CO - CLEANOUT, OR COMPANY
CONC - CONCRETE
COND - COLD-CONDENSATE FROM HVAC EQUIPMENT
CU - COPPER
CW - COLD WATER
DDC - DIRECT DIGITAL CONTROLS
DET - DETAIL
DIA - DIAMETER
DN - DOWN
DX - DIRECT EXPANSION
EF - EXHAUST FAN
ENGR - ENGINEER OR ENGINEERING
EXH - EXHAUST
EXIST - EXISTING
FC - FOOTCANDLES, ILLUMINANCE LEVEL
FD - FLOOR DRAIN
FT - FEET
°F - DEGREES FAHRENHEIT
GFI - GROUND FAULT INTERRUPTING
GND - GROUND
GPF - GALLONS PER FLUSH
GPH - GALLONS PER HOUR
GPM - GALLONS PER MINUTE
HW - HOT WATER, DOMESTIC
HVAC - HEATING, VENTILATION AND AIR CONDITIONING
HZ - HERTZ
IE - INVERT ELEVATION, BELOW FINISHED FLOOR LEVEL
IECC - INTERNATIONAL ENERGY CONSERVATION CODE
IFGC - INTERNATIONAL FUEL GAS CODE
IG - ISOLATED GROUND
IN - INCHES
IMC - INTERNATIONAL MECHANICAL CODE
IPC - INTERNATIONAL PLUMBING CODE
JBX - JUNCTION BOX
KW - KILOWATT
KVA - KILOVOLT AMPS
LBS - POUNDS
MAX - MAXIMUM
MBH - 1000 BTU PER HOUR
MCA - MINIMUM CIRCUIT AMPACITY
MCB - MAIN CIRCUIT BREAKER
MFG - MANUFACTURER
MIN - MINIMUM
MLO - MAIN LUGS ONLY
MOCP - MAXIMUM OVERCURRENT PROTECTION
NA - NOT APPLICABLE
NEC - NATIONAL ELECTRIC CODE
NEMA - NATIONAL ELECT MFG'S ASSOCIATION
NO - NUMBER
NFDS - NON-FUSED DISCONNECT SWITCH
NEG. - NEGATIVE
OA - OUTSIDE AIR
OE - OVERHEAD ELECTRICAL
OH - OVERHEAD
O&M - OPERATIONS & MAINTENANCE
P - POLE
PH - PHASE
PLCS - PLACES
POS - POINT OF SALE
PSIG - LBS PER SQUARE INCH, GAGE PRESSURE
RA - RETURN AIR
REFR - REFRIGERATOR
RH - REHEAT
SA - SUPPLY AIR
SCA - SHORT CIRCUIT CURRENT AVAILABLE
SQFT - SQUARE FEET
ST - SHUNT TRIP TYPE CIRCUIT BREAKER
TEMP - TEMPERATURE
TYP - TYPICAL
UD - UNDERGROUND DATA
UE - UNDERGROUND ELECTRICAL
V - VOLTS
VTR - VENT THROUGH ROOF
W - WIRE
WCO - WALL CLEANOUT PLUG AND COVER
WH - WATER HEATER
WP - WEATHERPROOF
XFMR - TRANSFORMER
YR - YEAR

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HANDEL'S ICE CREAM STORE

SHEET :
MEP1
GENERAL NOTES FOR CONTRACTORS
OF : 3

GENERAL NOTES FOR MEP CONTRACTORS:

A. INCIDENTAL WORK:

1. CUTTING AND PATCHING: WHERE CUTTING AND PATCHING ARE REQUIRED TO INSTALL MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS, CONTRACTORS SHALL PROVIDE AS NEEDED. AFTER INSTALLATION, PATCH ALL OPENINGS TO MATCH ADJACENT FINISHED SURFACES. FINISHED PAINTING TO BE PROVIDED BY OTHERS.

B. EXCAVATIONS:

1. PERFORM EXCAVATIONS CAUTIOUSLY TO AVOID DISRUPTION OR DAMAGE TO UNDERGROUND UTILITIES. HAVE ALL UNDERGROUND UTILITIES LOCATED AND MARKED, PRIOR TO DIGGING. UTILIZE HAND DIGGING WHEN NEAR BURIED PIPING, CABLES, GAS LINES, ETC.
2. COMBINE UNDERGROUND PIPING AND ELECTRICAL CONDUITS INTO COMMON TRENCHES WHERE POSSIBLE TO MINIMIZE TRENCHING. TRENCH ROUTING SHOWN ON PLANS IS PRELIMINARY ONLY. SEE CIVIL ENGR. PLANS FOR OUTDOOR ROUTING AND UTILITY CONNECTION DETAILS.
3. EXCAVATE EXIST CONCRETE FLOOR SLABS AS REQUIRED TO INSTALL PIPING AND ELECTRICAL CONDUITS AS SHOWN ON PLANS. ADJUST TRENCH ROUTE AS REQUIRED BY ACTUAL CONDITIONS, ROUTING SHOWN ON PLANS IS PRELIMINARY.

C. ENGINEERING DRAWINGS:

1. SCHEMATIC DRAWINGS: ALL ENGINEERING PLANS AND DETAILS ARE GENERALLY SCHEMATIC IN NATURE. ONLY ITEMS WITH SPECIFIC LOCATIONS AND OR SIZES WILL BE DIMENSIONED. CONTRACTORS ARE RESPONSIBLE FOR COORDINATING FINAL LOCATIONS OF ALL NEW EQUIPMENT. COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.
2. ADDED DETAILS: DRAWINGS DO NOT SHOW EVERY DETAIL OR ITEM REQUIRED FOR EQUIPMENT INSTALLATIONS. CONTRACTORS SHALL PROVIDE ALL REQUIRED INSTALLATION WORK AND ACCESSORIES AS SPECIFIED BY EQUIPMENT MFG'S INSTRUCTIONS.
3. OFFSETS AND ADJUSTMENTS: CONTRACTORS SHALL PROVIDE ALL REQUIRED OFFSETS AND ADJUSTMENTS TO DUCTWORK, CONDUIT AND PIPING SHOWN ON DRAWINGS AS NEEDED TO AVOID INTERFERENCES WITH BUILDING STRUCTURE AND OR OTHER TRADES. ALL FINAL COORDINATION AND DETAILING OF DUCTWORK AND PIPING SHALL BE PROVIDED BY CONTRACTORS.
4. EQUIPMENT SELECTION: THE CONTRACTOR AND SUPPLIER ARE RESPONSIBLE FOR THE FINAL SELECTION OF ALL EQUIPMENT, BASED ON THE PERFORMANCE AND FEATURES SCHEDULED ON THE DRAWINGS. MODEL NO'S SHOWN ON SCHEDULES ARE BASIS OF DESIGN ONLY AND SHALL BE CONFIRMED BY VENDOR THROUGH PRE-CONSTRUCTION SUBMITTALS. PERFORMANCE AND FEATURE DATA SHOWN SHALL BE EQUIVALENT FOR ALL SUBSTITUTIONS WHERE ALLOWED.
5. EQUIPMENT WEIGHTS: UTILIZE FINAL EQUIPMENT SUBMITTALS FROM SUPPLIER FOR ALL STRUCTURAL SUPPORT DESIGN. INCLUDE CURB WEIGHTS FOR ALL ROOFTOP MOUNTED EQUIPMENT. WEIGHTS SHOWN ON SCHEDULES ARE PRELIMINARY ONLY.

D. COORDINATION WITH OWNER:

1. MECHANICAL SHALL COORDINATE WITH OWNER TO VERIFY:
   a. LOCATIONS OF THERMOSTATS AND OTHER HVAC CONTROLS THAT REQUIRE ADJUSTMENT, SERVICE OR REPLACEMENT. LOCATIONS SHOWN ON PLANS ARE PRELIMINARY ONLY.
   b. COLOR AND FINISH OF ALL GRILLES AND DIFFUSERS AND EXPOSED DUCTWORK WHERE PAINTING IS SPECIFIED ON PLANS.
   c. VENDOR INSTALLATION DATA AND FINAL LOCATIONS FOR ALL OWNER FURNISHED EQUIPMENT REQUIRING HVAC CONNECTIONS, INCLUDING REFRIGERATION EQUIPMENT SHOWN ON PLANS.
2. ELECTRICAL SHALL COORDINATE WITH OWNER TO VERIFY:
   a. FINAL LOCATION AND MOUNTING HEIGHT OF ALL LIGHT FIXTURES, WALL MOUNTED RECEPTACLES, DATA BOXES AND LIGHTING CONTROLS.
   b. VENDOR INSTALLATION DATA AND FINAL LOCATIONS FOR ALL OWNER FURNISHED EQUIPMENT REQUIRING POWER CONNECTIONS, INCLUDING OUTDOOR SIGNAGE, APPLIANCES, COMMERCIAL KITCHEN, MEDICAL, OFFICE AND SHOP EQUIPMENT, AS REQUIRED BY MFG.
   c. PANEL AND EQUIPMENT IDENTIFICATION MARKS PRIOR TO ORDERING PERMANENT LABELS. ALL MARKS SHOWN ON PLANS ARE PRELIMINARY.
   d. COLOR AND FINISH OF ALL RECEPTACLES, COVER PLATES AND LIGHT FIXTURES.
3. PLUMBING SHALL COORDINATE WITH OWNER TO VERIFY:
   a. COLOR AND FINISH OF ALL PLUMBING FIXTURES.
   b. MOUNTING HEIGHT OF ALL WALL MOUNTED LAVATORIES OR SINKS
   c. VENDOR INSTALLATION DATA AND FINAL LOCATIONS FOR ALL OWNER FURNISHED EQUIPMENT REQUIRING PLUMBING CONNECTIONS, INCLUDING APPLIANCES, COMMERCIAL KITCHEN EQUIPMENT.

E. COORDINATION BETWEEN TRADES:

1. ALL CONTRACTORS SHALL COORDINATE WITH ALL OTHER TRADES TO AVOID INTERFERENCES, PROPERLY SEQUENCE INSTALLATIONS, AND PROVIDE MANUFACTURER'S REQUIRED SERVICE CLEARANCES. WHERE REQUIRED, CONTRACTOR SHALL MAKE THE REQUIRED ADJUSTMENTS.
2. ALL CONTRACTORS SHALL COORDINATE WITH ROOFING CONTRACTOR TO PROPERLY FLASH AND SEAL ALL ROOF CURBS AND PIPING PENETRATIONS THROUGH ROOF PER ARCHITECTURAL ROOFING SPECIFICATIONS.
3. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ARCHITECTRAL AND STRUCTURAL TO ENSURE ADEQUATE SERVICE AND REMOVAL CLEARANCES, AND CEILING ACCESS IS PROVIDED FOR ALL HVAC EQUIPMENT, INCLUDING EXHAUST FANS AND AIR HANDLING UNITS EXPOSED IN FINISHED SPACES, LOCATED ABOVE CEILINGS, OR IN ATTIC SPACES BETWEEN TRUSS WEBS.
4. MECHANICAL CONTRACTOR SHALL VERIFY FINAL ROOF OPENING LOCATIONS WITH STRUCTURAL PLANS PRIOR TO CUTTING FOR FANS AND HVAC UNITS. LOCATIONS SHOWN ON PLANS ARE PRELIMINARY.
5. ELECTRICAL CONTRACTOR TO PROVIDE SERVICE CONNECTIONS TO ALL HVAC EQUIPMENT, INCLUDING DISCONNECTS AND LABELS. HVAC CONTRACTOR TO PROVIDE FINAL SUBMITTALS TO ELECTRICAL.
6. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ARCH PRIOR TO ROUGH IN OF ALL ELECTRICAL PANELS, METER AND SERVICE SWITCH. LOCATIONS SHOW ON PLANS ARE PRELIMINARY ONLY. ENSURE FINAL LOCATIONS MAINTAIN REQUIRED CLEARANCES PER NEC REQUIREMENTS.
7. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY FINAL SPECIFICATIONS AND REQUIREMENTS FOR ALL NEW ELECTRICAL SERVICE EQUIPMENT SHOWN ON PLANS, INCLUDING METER BASE AND DISCONNECT SWITCH OR SERVICE PANEL BOARD.
8. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SERVICE CONNECTIONS TO PLUMBING EQUIPMENT AS SHOWN ON PLANS.
9. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH CIVIL TO PROVIDE CONCRETE BASE FOR ALL OUTDOOR AREA LIGHT POLES. COORDINATE THE REQUIRED BOLT PATTERN AND ROUGH-IN CONDUIT PRIOR TO POURING BASES BY OTHERS.
10. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ALL OWNER FURNISHED DATA, SECURITY, AUDIO, VIDEO, COMMUNITACTIONS OR FIRE ALARM CONTRACTORS TO PROVIDE ROUGH-IN FOR THEIR EQUIPMENT, INCLUDING WALL OUTLET BOXES, CEILING JUNCTION BOXES, CONDUIT AND WIRE, WHERE SHOWN ON PLANS. VERIFY FINAL LOCATIONS AND REQUIREMENTS WITH OWNER'S CONTRACTORS, PRIOR TO STARTING WORK.
11. PLUMBING CONTRACTOR SHALL PROVIDE ROUGH-IN FOR ALL INDIRECT DRAIN CONNECTIONS FOR CONDENSATE PRODUCING HVAC UNITS SHOWN ON MECHANICAL PLANS. MECHANICAL CONTRACTOR TO VERIFY FINAL DRAIN LOCATIONS WITH PLUMBING.
12. PLUMBING CONTRACTOR SHALL LOCATE ALL VENT-THRU-ROOF STACKS A MINIMUM 10' AWAY FROM ALL HVAC OUTSIDE AIR INTAKES.

F. MECHANICAL DUCTWORK, PIPING AND SUPPORTS:

1. FLEX DUCTS SIZES: SEE DIFFUSER AND GRILLE SCHEDULES FOR FLEX DUCT SIZES NOT SHOWN ON PLANS FOR CLARITY.
2. FABRICATE ALL SHEET METAL DUCTWORK ACCORDING TO LATEST SMACNA CONSTRUCTION STANDARDS, INCLUDING REINFORCEMENT, JOINTS, SEAL CLASS, AND METAL GAGE. ALL DUCTWORK SHOWN ON PLANS SHALL BE MIN. 1" PRESSURE RATED UNLESS NOTED OTHERWISE.
3. UNLESS SPECIFIED OTHERWISE, ALL BOOTS AND PLENUMS SHOWN SHALL BE GALVANIZED STEEL WITH INTERNAL OR EXTERNAL INSULATION AS SPECIFIED.
4. SEAL ALL CONCEALED DUCTWORK JOINTS AND SEAMS WITH MASTIC AND METAILIC TAPE AS NEEDED FOR MIN. 1" WC PRESSURE RATING, BEFORE INSTALLATION OF INSULATION LINER OR DUCT WRAP.
5. PROPERLY INSULATE ALL DUCTS, BOOTS, PLENUMS AND EQUIPMENT AS NEEDED TO PREVENT HEAT LOSSES AND CONDENSATION. PROVIDE THE FOLLOWING TYPES OF INSULATION, BASED ON HVAC SYSTEM AND LOCATION. SEE SPECIFICATIONS FOR INSULATION DETAILS.
   a. HVAC UNITS AND EQUIPMENT: FACTORY INTERNAL CLOSED CELL LINER OR CLEANABLE FIBERBOARD INSULATION.
   b. SUPPLY, RETURN, OA DUCTS CONCEALED IN UNCONDITIONED SPACES: DUCT WRAP
   c. EXHAUST OR RELIEF DUCTS, CONCEALED IN UNCONDITIONED SPACES: NOT REQUIRED
7. PLENUMS: PROVIDE FIELD FABRICATED SHEETMETAL BOOTS OR PLENUMS WHERE REQUIRED TO CONNECT DUCTWORK TO HVAC UNITS, GRILLES AND WALL LOUVERS. PROVIDE HINGED OR REMOVABLE ACCESS DOORS TO LOUVER AND AIR HANDLER PLENUMS FOR CLEANING, SIZED AS REQUIRED TO ALLOW FOR SERVICE ACCESS.
   a. PROVIDE 2" INTERNAL DUCT LINER OR CLOSED CELL BOARD INSULATION INSIDE ALL SUPPLY AND RETURN AIR PLENUMS FOR SOUND ATTENUATION. SEE SPECS FOR DUCT LINER AND INSULATION REQUIREMENTS.
   b. ALL PLENUMNS IN FOOD PRODUCTION AREAS SHALL HAVE CLOSED CELL FOAM BOARD LINER ONLY FOR SANITARY CLEANING PURPOSES. FIBERGLASS LINER SHALL NOT BE USED.
   c. LOUVERS: USE SAME INSULATION REQUIREMENTS AS CONNECTING DUCTWORK.
8. PLENUM SPACES: COORDINATE WITH ARCHITECT TO ENSURE ALL MATERIALS INSTALLED WITHIN BUILDING PLENUM SPACES ARE NON-COMBUSTIBLE, PER IMC 602. IDENTIFY ALL SPACES TO BE UTILIZED FOR RETURN AIR FLOW.
9. HOLD ALL DUCTWORK AND PIPING TIGHT AGAINST STRUCTURES, RUN IN A NEAT AND WORKMAN LIKE MANNER PARALLEL TO BUILDING LINES WHEREVER POSSIBLE. PROVIDE ALL REQUIRED DUCT AND PIPE HANGERS AND SUPPORTS WITH PROPER SPACING PER CODE REQUIREMENTS.
10. GROUP PARALLEL RUNS OF DUCTWORK AND PIPING TOGETHER ON COMMON HANGERS AND SUPPORTS TO MINIMIZE SPACE WHEREVER POSSIBLE.
11. INSTALL ALL EXPOSED DUCTWORK IN A NEAT AND ORDERLY MANNER WITH FINISHED APPEARANCE, INCLUDING ALL HANGERS AND SUPPORTS MIN. 9' TO BOD. PREP FINISHED DUCTWORK FOR PAINTING.
12. PROVIDE FIELD FABRICATED SHEETMETAL BOOTS OR PLENUMS WHERE REQUIRED TO CONNECT DUCTWORK TO GRILLES, WALL LOUVERS OR ROOF HOODS WITH RECTANGULAR COLLARS. PROVIDE HINGED OR REMOVABLE ACCESS DOORS TO LARGE PLENUMS FOR CLEANING, SIZED AS REQUIRED TO ALLOW FOR SERVICE ACCESS.
13. PROVIDE 2 TIE WRAPS AT EACH FLEX DUCT CONNECTION TO GRILLES, DAMPERS OR EQUIPMENT. INSTALL ALL FLEX DUCT FULLY EXTENDED AND FREE FROM KINKS OR TIGHT BENDS. PROVIDE FACTORY SHEET METAL ELBOW WHERE REQUIRED TO AVOID KINKING OR TIGHT BENDING.
14. INSTALL ALL DAMPERS, INCLUDING MANUAL BALANCING, BAROMETRIC RELIEF AND OR MOTORIZED BACKDRAFT DAMPERS IN ACCESSIBLE LOCATIONS FOR SERVICE AND ADJUSTMENT. LOCATIONS SHOWN ON PLANS ARE PRELIMINARY ONLY. WHERE INSTALLED ABOVE SHEETROCK CEILING, COORDINATE WITH OWNER TO PROVIDE ACCESS HATCH FOR SERVICE AND BALANCING.
15. ALL FINAL REFRIGERANT PIPING SIZES AND ACCESSORIES SHALL BE AS SPECIFIED BY EQUIPMENT VENDOR FOR ACTUAL SITE CONDITIONS, INCLUDING ACTUAL DISTANCES AND ELEVATION DIFFERENCE BETWEEN EVAPORATOR COILS AND CONDENSING UNITS. SIZES AND ACCESSORIES SHOWN ON PLANS ARE PRELIMINARY ONLY. PROVIDE ADDITIONAL ACESSORIES AND REFRIGERANT TO PRESSURIZE SYSTEM TO MANUFACTURER'S SPECIFICATIONS AS NEEDED FOR PROPER OPERATION.
16. ROUTE REFRIGERANT AND CONDENSATE DRAIN PIPING CONNECTIONS AT EQUIPMENT SO AS TO ALLOW FOR REMOVAL OF HVAC UNIT SERVICE PANELS FOR CLEANING AND REPAIR WITHOUT DISCONNECTING OR REMOVING ANY PIPING.
17. PROVIDE MINIMUM 1/2" INSULATION ON ALL INTERIOR COLD CONDENSATE DRAIN PIPING AND FITTINGS AFTER INSTALLATION. PROVIDE UV PROTECTION FOR ALL INSULATION EXPOSED TO THE OUTDOORS.
18. FOR ALL DUCTS PENETRATING A FIRE RATED WALL, PROVIDE SUITABLE UL LISTED FIRE DAMPER IN ACCESSIBLE LOCATION FOR SERVICE AND RESET.

G. HVAC EQUIPMENT INSTALLATIONS:

1. MAINTAIN ALL REQUIRED SERVICE CLEARANCES WHEN INSTALLING FANS AND HVAC UNITS. ENSURE THAT ALL INSTALLED EQUIPMENT CAN BE SAFELY ACCESSED AND SERVICED AFTER INSTALLATION OF ALL DUCTWORK, PIPING AND ELECTRICAL. COORDINATE WITH ARCH. TO PROVIDE PROPER ACCESS OPENINGS IN CEILINGS WHERE REQUIRED FOR SERVICE ACCESS AND REPLACEMENT.
2. WHERE ROOFTOP EQUIPMENT IS LOCATED WITHIN 10' OF EDGE, COORDINATE WITH ARCHITECTURAL TO PROVIDE SAFETY RAILINGS AS REQUIRED FOR SAFETY AND COMPLIANCE.

H. MECHANICAL CONTROL SYSTEMS:

1. PROVIDE A COMPLETE SYSTEM OF CONTROLS TO PROPERLY OPERATE ALL HVAC SYSTEMS SHOWN ON PLANS. PLANS SHOW ONLY THE ANTICIPATED MAJOR COMPONENTS OF CONTROL SYSTEMS AND REQUIRED SEQUENCE OF OPERATIONS. CONTRACTOR SHALL PROVIDE ALL ADDITIONAL CONTROLS DESIGN, FABRICATION AND INSTALLATION AS NEEDED TO MEET THE PERFORMANCE SEQUENCES SHOWN ON PLANS.
2. ALL CONTROL WIRING, NUMBER OF CONDUCTORS AND GAUGE SHALL BE AS SPECIFIED BY CONTROL EQUIPMENT MANUFACTURER. ALL WIRING EXPOSED IN MECHANICAL ROOMS OR SPACES SHALL BE INSTALLED IN EMT CONDUIT.
3. LOCATE ALL THERMOSTATS OR TEMP SENSORS NEAR RETURN GRILLE AS SHOWN FOR PROPER HVAC UNIT CONTROL OPERATION.
4. FOR ALL PACKAGED RTUs, PROVIDE AN EMERGENCY WATER-LEVEL FLOAT SWITCH IN THE PRIMARY DRAIN PAN. INTERLOCK SWITCH TO SHUT OFF UNIT COOLING UPON OVERFLOW LEVEL.
5. SMOKE DETECTORS: PROVIDE APPROVED SMOKE DETECTOR FOR ALL HVAC UNITS OVER 2000 CFM, SEE SPECS.
6. INTERLOCKS: PROVIDE ALL REQUIRED DEVICES AND INTERLOCK WIRING TO PERFORM THE SEQUENCE OF OPERATIONS AS SPECIFIED IN CONTROL DIAGRAMS. COORDINATE WITH CONTROLS MFG FOR FINAL REQUIREMENTS.

I. ELECTRICAL CONDUCTORS AND CABLES:

1. CONDUCTORS: ALL WIRES AND SIZES SHOWN ON PLANS ARE FOR COPPER WIRE WITH PROPER INSULATION, RATED FOR THE ACTUAL CONDITIONS OF THE INSTALLATION. ALUMINUM WIRE CAN BE SUBSTITUTED FOR CONDUCTORS SIZED #6 AND ABOVE. PROVIDE SUITABLE TERMINAL LUGS WHERE ALUMINUM WIRE IS USED.
2. CONDUCTOR SIZES: SEE ELECTRICAL PANEL SCHEDULES FOR ALL WIRE AND CONDUIT SIZES, NOT SHOWN ON PLANS FOR CLARITY. ALL ELECTRICAL CIRCUITS ON PLAN ARE IDENTIFIED AT HOMERUN BY PANEL AND CIRCUIT NUMBERS.
3. UTILIZE NM OR MC CABLES WITH FACTORY FITTINGS AND CONNECTORS IN PLACE OF CONDUIT AND WIRE WHERE ALLOWED FOR CONCEALED WIRING INSTALLATIONS, OUTSIDE, UNDERGROUND, INSIDE WALLS OR OTHER BUILDING FRAMING, AND IN ATTIC AND CEILING PLENUM SPACES. PROVIDE GUARD STRIPS WHEN INSTALLED ACROSS TOP OF JOISTS IN ATTICS

J. ELECTRICAL BOXES AND ENCLOSURES:

1. FOR ALL BOXES AND ENCLOSURES WITH EMERGENCY CIRCUITS, PROVIDE PERMANENT MARKING AS COMPONENT OF EMERGENCY SYSTEM.

K. ELECTRICAL CONDUITS AND SUPPORTS:

1. HOLD ALL CONDUITS TIGHT AGAINST STRUCTURE TO AVOID DAMAGE AND INTERFERENCE FROM OTHER TRADES. RUN ALL CONDUITS IN A NEAT AND WORKMAN LIKE MANNER PARALLEL TO BUILDING LINES.
2. PROVIDE ALL REQUIRED CONDUIT HANGERS AND SUPPORTS WITH PROPER SPACING PER CODE REQUIREMENTS. GROUP PARALLEL RUNS OF CONDUIT TOGETHER ON COMMON HANGERS AND SUPPORTS TO MINIMIZE SPACE WHEREVER POSSIBLE.
3. INSTALL A GALVANIZED IRON OR PVC SLEEVE FOR THE CONDUIT PASSING THROUGH CONCRETE OR MASONRY CONSTRUCTION.
4. UTILIZE EMT CONDUIT WHERE INSTALLING ELECTRICAL IN EXPOSED LOCATIONS IN MECHANICAL ROOMS, SERVICE UTILITY AND OTHER WORK AREAS NOT OPEN TO PUBLIC. IN HIGH CEILING OR HIGH BAY AREAS, USE EMT CONDUIT FOR WIRING UP TO MINIMUM 10' ABOVE FLOOR BEFORE SWITCHING TO NM OR MC CABLE.
5. UTILIZE SCH 40 PVC CONDUIT AND FITTINGS FOR ALL CIRCUITS INSTALLED IN FOOD PRODUCTION AND WASH DOWN AREAS. UTILIZE LIQUID TIGHT FLEXIBLE CONDUITS FOR ALL FINAL CONNECTIONS TO EQUIPMENT IN THESE AREAS.
6. UTILIZE RIGID PVC CONDUIT FOR INSTALLING ELECTRICAL IN UNDERGROUND EXTERIOR LOCATIONS WHERE ALLOWED AND NOT SUBJECT TO DAMAGE. WHERE EXPOSED CONDUITS ARE RISING OUT OF EXCAVATION TRENCH, PROVIDE SCHEDULE 80 PVC PIPE RISERS AND LONG-SWEEP ELBOWS IN TRENCH.
7. UTILIZE RIGID STEEL CONDUIT FOR INSTALLING ELECTRICAL CONDUCTORS IN ALL HIGH ABUSE AREAS INDOORS .
8. FOR ALL CONDUITS CONTAINING EMERGENCY CIRCUITS, PROVIDE PERMANENT MARKING MIN. EVERY 25FT, INDICATING CIRCUITS AS PART OF EMERGENCY POWER SYSTEM, WHERE CONDUITS ARE EXPOSED.

L. AUTOMATIC LIGHTING CONTROLS:

1. PROVIDE ALL REQUIRED INDOOR LIGHTING CONTROLS AS REQUIRED FOR COMPLIANCE WITH LATEST IECC REQUIREMENTS, INCLUDING WALL OR CEILING MOUNTED OCCUPANCY SENSORS, WIRING AND ACCESSORIES PER MFG DATA. PROGRAM TIMER WITH OWNER FURNISHED OCCUPANCY SCHEDULES FOR ALL INDOOR LIGHTING AND SIGNAGE.
2. INSTALL ALL LIGHTING CONTROLLERS IN ACCESSIBLE LOCATION ON WALL, ABOVE CEILING OR OTHER APPROVED LOCATION. WHEN ABOVE CEILING, PROVIDE PERMANENT MARKER FOR LOCATING CONTROLLER FROM THE GROUND.

M. APPLIANCE AND EQUIPMENT CONNECTIONS:

1. INSTALL ALL UNIT MOUNTED SWITCHES AND EQUIPMENT IN MANNER THAT DOES NOT COVER UP MANUFACTURER'S EQUIPMENT LABELS OR BLOCK ACCESS TO REMOVABLE SERVICE PANELS.
2. WHERE REQUIRED FOR EQUIPMENT SERVICE CONNECTIONS, PROVIDE STEEL CHANNEL SUPPORT STANDS FOR MOUNTING OF UNIT DISCONNECT SWITCHES, STARTERS, SPEED CONTROLLERS AND CONDUITS. PROPERLY SECURE SUPPORTS TO FLOORS OR WALLS.
3. ENSURE THAT SERVICE CLEARANCES ARE NOT BLOCKED BY ROUTING OF CONDUIT OR SUPPORT STRUCTURES AT ALL EQUIPMENT SERVICE CONNECTIONS. COORDINATE WITH HVAC CONTRACTOR TO DETERMINE REQUIRED CLEARANCES AND SERVICE WORK AREAS.

N. ELECTRICAL SERVICES AND EQUIPMENT:

1. INSTALL ALL ELECTRICAL SERVICE EQUIPMENT AS REQUIRED BY LOCAL UTILITY SPECIFICATIONS. FIELD VERIFY FINAL LOCATION OF EQUIPMENT TO ENSURE PROPER CLEARANCES ARE AVAILABLE FOR FINAL ENCLOSURES TO BE INSTALLED. PROVIDE STEEL MOUNTING RACK WHERE REQUIRED TO HOLD ALL METERS, DISCONNECT SWITCHES, BUSSED GUTTERS AND PANELS AS SHOWN.

O. SPECIALTY EQUIPMENT ROUGH-IN:

1. ALL ROUGH-IN WIRING LOCATED ABOVE CEILINGS AND INSIDE WALLS FOR DATA, SECURITY, AUDIO, VIDEO, COMMUNICATIONS OR FIRE ALARM CONTRACTORS, SHALL BE PLENUM RATED WIRE AND CABLE, WITHOUT CONDUIT. PROVIDE TIE WRAPS TO HOLD CABLES TIGHT TO STRUCTURE FOR PROTECTION FROM DAMAGE. ALL EXPOSED WIRING SHALL BE IN CONDUIT.

P. PLUMBING PIPING AND SUPPORTS:

1. FIRE PROTECTION PIPING AND ALARM SYSTEMS ARE PROVIDED BY OTHERS AND NOT INCLUDED IN THESE DRAWINGS AND SPECIFICAITONS.
2. PIPE SIZES:
   a. SEE PLUMBING FIXTURE AND DRAIN SCHEDULES FOR ALL PIPING CONNECTION SIZES NOT SHOWN ON PIPING PLANS.
   b. ALL HW RECIRCULATION PIPING SHALL BE 1/2" UNLESS SHOWN OTHERWISE.
   c. ALL COLD CONDENSATE DRAIN PIPING SHALL BE 3/4" UNLESS SHOWN OTHERWISE.
   d. SEE CONDENSING UNIT SCHEDULES FOR REFRIGERANT PIPE SIZES NOT SHOWN ON PIPING PLANS.
3. OPEN PIPING SYSTEMS, INCLUDING FLOOR DRAINS, FLOOR SINKS, HUB DRAINS, ETC., SHALL BE CAPPED OR PLUGGED DURING ALL CONSTRUCTION TO PREVENT DAMAGE AND THE ENTRANCE OF FOREIGN MATERIALS. REMOVE ALL PROTECTIVE COVERINGS UPON COMPLETION OF ALL WORK.
4. HOLD ALL PIPING TIGHT AGAINST STRUCTURE TO AVOID DAMAGE AND INTERFERENCE FROM OTHER TRADES. RUN ALL PIPING IN A NEAT AND WORKMAN LIKE MANNER PARALLEL TO BUILDING LINES.
5. PROVIDE ALL REQUIRED PIPING HANGERS AND SUPPORTS WITH PROPER SPACING PER CODE REQUIREMENTS. GROUP PARALLEL RUNS OF PIPING TOGETHER ON COMMON HANGERS AND SUPPORTS TO MINIMIZE SPACE WHEREVER POSSIBLE.
6. MAINTAIN MINIMUM 1/4" PER FOOT SLOPE TOWARDS DRAIN FOR BOTH WASTE AND VENT PIPING 2" AND SMALLER, AND MIN. 1/8" PER FOOT FOR ALL LARGER PIPING.
7. ROUTE ALL DRAIN PIPING AS NEEDED TO MINIMIZE REQUIRED DEPTH OF BUILDING SEWER. DRAIN PIPE ROUTING SHOWN ON PLANS IS SCHEMATIC LAYOUT, PLUMBING CONTRACTOR SHALL DETERMINE FINAL ROUTING.
8. PROVIDE PIPING INSULATION ON ALL DOMESTIC HOT AND COLD WATER PIPING, VALVES AND FITTINGS INSTALLED: MINIMUM R-4 RATED, WITH MINIMUM 1" THICKNESS ON HW PIPING UP THRU 1 1/4", AND MINIMUM 1.5" ON PIPING OVER 1 1/4"
9. PROVIDE LAVATORY PIPING COVERS TO SATISFY ADA REQUIREMENTS AT ALL LAVATORIES AND SINKS WHERE EXPOSED. SEE SPECS FOR REQUIREMENTS.
10. PROVIDE FIRE-CAULKING TO FILL ANNULAR SPACES WHERE PIPING PASSED THROUGH ALL FIRE RATED WALLS.
11. PROVIDE PVC PIPE SLEEVE WITH SILICONE CAULKING IN ANNULAR SPACES FOR ALL PIPING PASSING THROUGH CONCRETE FOUNDATION, WALLS, FLOORS OR ROOF.

Q. PLUMBING FIXTURES:

1. PROVIDE A WALL CLEANOUT UNDERNEATH ALL LAVATORIES AND SINKS, NOT SHOWN ON PLANS FOR CLARITY.

R. PLUMBING EQUIPMENT INSTALLATIONS:

1. WHERE REQUIRED FOR EQUIPMENT PIPING CONNECTIONS, PROVIDE STEEL CHANNEL SUPPORT STANDS FOR MOUNTING OF PIPING, VALVES, AND FITTINGS. PROPERLY SECURE SUPPORTS TO FLOORS OR WALLS.
2. PROVIDE POINT-OF-USE WATER HAMMER ARRESTERS ON HOT AND COLD-WATER SUPPLY PIPING FOR ALL DISHWASHERS, KITCHEN SINKS AND ANY OTHER EQUIPMENT WITH QUICK CLOSING VALVES, AND WHERE RE
3. PROVIDE TRAP PRIMERS AND WATER SUPPLY PIPING ON ALL FLOOR DRAINS LOCATED IN FOOD PROCESSING AREAS ONLY. PRIMER VALVES AND PIPING NOT SHOWN ON PLANS FOR CLARITY. LOCATE AUTOMATIC PRIMER VALVES IN ACCESSIBLE LOCATION AND PROVIDE ACCESS DOORS WHERE NEEDED FOR SERVICE.
4. PROVIDE TRAP GUARDS ON ALL OTHER FLOOR DRAINS IN ALL OTHER AREAS.
5. INSTALL PUMPS AND OTHER VIBRATING EQUIPMENT IN A MANNER THAT MINIMIZES NOISE LEVELS. MAKE ALL POSSIBLE ADJUSTMENTS TO REDUCE NOISE TO ACCEPTABLE LEVELS. SQUEAKS, SQUEALING AND RATTLING ARE NOT ACCEPTABLE.
6. WHERE AN UNDERFLOOR VENT IS REQUIRED FOR A FIXTURE OR DRAIN, PROVIDE A WALL CLEANOUT AT VENT STACK, NOT SHOWN ON PLANS FOR CLARITY.
7. BACKFLOW PREVENTERS: WHERE SHOWN ON PLANS OR REQUIRED BY AHJ, PROVIDE BACKFLOW PREVENTION DEVICES TO PROTECT AGAINST POLLUTION OR CONTAMINATION OF THE POTABLE WATER SYSTEM. SEE SPECS FOR TYPES REQUIRED. INSTALL ALL BACKFLOW PREVENTERS IN READILY ACCESSIBLE LOCATION. WHERE REQUIRED, PROVIDE DRAIN PIPING FOR VENTED BACKFLOW DEVICES PER MFG'S INSTRUCTIONS.
8. PROVIDE HW SUPPLY MIXING VALVE SET FOR MAX. 105F SUPPLY TEMPERATURE ON ALL LAVATORIES AND HAND SINKS NOT USED FOR DISHWASHING.

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HANDEL'S ICE CREAM STORE

SHEET :
MEP2
GENERAL NOTES FOR CONTRACTORS
OF : 3

MEP SPECIFICATIONS:

GENERAL CONDITIONS FOR MEP WORK:

A. CONTRACTOR QUALIFICATIONS:

1. CONTRACTORS SHALL STUDY CONTRACT DOCUMENTS, FULLY UNDERSTAND AND ACCEPT THE BASIS OF DESIGN AND SCOPE OF WORK. SUBMISSION OF BID INDICATES CONTRACTOR'S COMPLETE APPROVAL AND ACCEPTANCE OF CONSTRUCTION DOCUMENTS.

2. CONTRACTORS SHALL PROVIDE A MINIMUM 1 YR. WARRANTY ON ALL LABOR AND MATERIALS INSTALLED. CONTRACTOR SHALL MAKE ALL WARRANTY REPAIRS OR REPLACEMENTS IN A TIMELY MANNER, AT NO ADDITIONAL COST TO THE OWNER.

B. BASIS OF DESIGN:

1. ALL CONSTRUCTION DOCUMENTS PROVIDED BY OWNER, INCLUDING ENGINEERING DRAWINGS, NOTES, SCHEDULES, DETAILS, CALCULATIONS AND SPECIFICATIONS PROVIDED, ALONG WITH EQUIPMENT MANUFACTURER'S DRAWINGS AND SPECIFICATIONS, FORM THE 'BASIS OF DESIGN'.

2. THE BASIS OF DESIGN WILL BE USED FOR ALL INSPECTIONS, TESTING AND ACCEPTANCE OF THE WORK PERFORMED BY THE CONTRACTOR TO VERIFY SUCCESSFUL COMPLETION OF SCOPE OF WORK.

C. SCOPE OF WORK:

1. INSTALL COMPLETE AND OPERABLE MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS AS DESCRIBED BY THE CONSTRUCTION DOCUMENTS. INCIDENTAL ITEMS NOT SPECIFIED, BUT WHICH ARE ESSENTIAL FOR THE PROPER OPERATION OF SPECIFIED SYSTEMS AND EQUIPMENT, ARE INCLUDED IN THE SCOPE OF WORK AND SHALL BE PROVIDED BY CONTRACTOR AT NO ADDITIONAL COST.

2. COMPLY WITH COMMISSIONING PLAN SHOWN ON DRAWINGS TO VERIFY FINAL QUALITY AND PERFORMANCE OF ALL WORK.

D. CODE COMPLIANCE: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCALLY ADOPTED BUILDING CODES AS LISTED ON THE DRAWINGS, AND ACCORDING TO THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).

E. DISCREPANCIES:

1. IN THE CASE OF A DISCREPANCY BETWEEN DRAWINGS, SPECIFICATIONS OR MANUFACTURER'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY AND BE COMPLIED WITH BY THE CONTRACTOR.

2. IN THE CASE OF A DISCREPANCY BETWEEN BY CODES AND THE CONSTRUCTION DOCUMENTS OR MANUFACTURER'S REQUIREMENTS, THE AHJ SHALL DETERMINE WHICH SHOULD BE COMPLIED WITH BY THE CONTRACTOR.

F. JOBSITE CONDITIONS: CONTRACTOR SHALL EXAMINE THE JOBSITE PRIOR TO BIDDING AND FULLY UNDERSTAND THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. BY SUBMITTING BID FOR WORK CONTRACTOR ACCEPTS ALL JOB CONDITIONS AS-IS.

G. PERMITS AND FEES: CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS, LICENSES, AND CERTIFICATIONS REQUIRED BY THE AHJ AND PAY FOR ALL PERMITTING FEES.

H. UTILITY CONNECTIONS:

1. COORDINATE WITH LOCAL UTILITIES TO PROVIDE NEW SERVICES AS SHOWN ON PLANS. INSTALL ALL REQUIRED SERVICE CONNECTIONS PER UTILITY SPECIFICATIONS. PAY ALL UTILITY REQUIRED FEES FOR SERVICE CONNECTIONS OR MODIFICATIONS SHOWN ON PLANS.

2. CONNECT TO EXISTING SANITARY DRAIN AND DOMESTIC COLD WATER PIPING IN LEASE SPACE, FIELD VERIFY EXISTING CONDITIONS.

I. CONTRACTOR FURNISHED EQUIPMENT & MATERIALS: SHALL BE NEW, COMMERCIAL GRADE, MANUFACTURED AND CERTIFIED TO COMPLY WITH THE BASIS OF DESIGN, FREE OF DEFECT, MINIMUM 1-YEAR FACTORY WARRANTY. ALL SUBSTITUTIONS MUST BE 'APPROVED' THROUGH THE COMMISSIONING PROCESS TO BE ACCEPTABLE.

J. DELIVERY, STORAGE AND PROTECTION: CONTRACTOR SHALL INCLUDE ALL REQUIRED MATERIALS MANAGEMENT AS PART OF THE SCOPE OF WORK, INCLUDING DELIVERY, STORAGE AND RIGGING OF ALL EQUIPMENT AND MATERIALS TO BE FURNISHED. DAMAGED ITEMS SHOULD BE IDENTIFIED AND RETURNED TO THE FACTORY FOR REPLACEMENTS AT NO ADDITIONAL COST TO THE OWNER.

K. JOBSITE CLEANUP AND SAFETY: CONTRACTOR SHALL INCLUDE DAILY AND FINAL CLEANUP OF JOBSITE AS PART OF SCOPE OF WORK. CONTRACTOR SHALL COMPLY WITH ALL SAFETY REQUIREMENTS AS DIRECTED BY OWNER AND AHJ.

L. CORRECTIONS REQUIRED:

1. IF CONTRACTOR IDENTIFIES ANY ACTUAL SITUATION OR SITE CONDITION THAT WILL PROHIBIT OR NEGATIVELY IMPACT THE INSTALLATION OR PERFORMANCE OF THE SYSTEMS AS DESIGNED, STOP ALL WORK AND NOTIFY THE ENGINEER IMMEDIATELY.

2. ANY EQUIPMENT THAT IS FOUND TO BE DEFECTIVE, OR OUT OF COMPLIANCE WITH BASIS OF DESIGN OR CODE, CONTRACTOR SHALL REPLACE AT NO ADDITIONAL COST. ALL NEW WORK SHALL COMPLY WITH THE BASIS OF DESIGN.

3. IF CONTRACTOR DAMAGES ADJACENT PROPERTY WHILE PERFORMING SCOPE OF WORK, HE SHALL MAKE PROMPT REPAIR AT OWN EXPENSE, PRIOR TO COMPLETING PROJECT.

MECHANICAL EQUIPMENT & MATERIALS

A. REFRIGERANT PIPING & ACCESSORIES: PROVIDE COMPLETE REFRIGERANT PIPING SYSTEMS FOR ALL HVAC UNITS AND REFRIGERANTION EQUIPMENT WHERE REQUIRED, USING THE FOLLOWING MATERIALS:

1. PIPING: TYPE ACR, COPPER PIPE OR TUBING, 700 PSI, UL LISTED, INSULATED SUCTION LINE AND BARE LIQUID LINE, R410 RATED, AS MANUFACTURED BY STREAMLINE OR EQUAL. ALL COUPLINGS, VALVES AND FITTINGS OF BRASS OR COPPER.

2. PIPING INSULATION: CLOSED CELL FOAM INSLULATION, MIN 1/2" WALL ON ALL REFRIGERANT SUCTION LINES, AS MANUFACTURED BY ARMAFLEX OR EQUAL. WHERE GREATER THICKNESS IS REQUIRED BY EQUIPMENT MANUFACTURER'S FOR SPECIFIC INSTALLATIONS, PROVIDE AS REQUIRED BY MFG.

3. UV PIPE WRAP: 3" WIDE, NON-ADHESIVE, UV RESISTANT, PVC WRAP, AS MANUFACTURED BY RECTORSEAL, #HN-75-I OR EQUAL. PROVIDE UV WRAP AROUND ALL INSULATED REFRIGERANT PIPING OR LINE SET, EXPOSED TO THE OUTDOORS, AS REQUIRED BY ENERGY CODE.

4. SIGHT GLASS / MOISTURE INDICATOR: BRASS OR COPPER BODY, TEMP RATING -40°F / 185°F, LARGE VIEWING WINDOW, MOISTURE INDICATOR WITH REPLACEABLE ELEMENT, SLIP CONNECTIONS, AS MFG BY MUELLER OR EQUAL.

5. LIQUID LINE FILTER / DRYER: 700 PSIG DESIGN PRESSURE, 160°F TEMPERATURE RATING, UL LISTED, SOLID CORE DESIGN, 25 MICRON FILTER, AS MFG BY MUELLER - HIGH CAPACITY FILTER DRIERS OR EQUAL.

B. CONDENSATE DRAIN SYSTEMS: PROVIDE COMPLETE CONDENSATE DRAIN PIPING SYSTEMS FROM ALL HVAC UNITS AND EQUIPMENT WHERE REQUIRED, USING THE FOLLOWING MATERIALS:

1. COLD CONDENSATE

   a. GRAVITY DRAINS: COPPER PIPING WITH SWEAT FITTINGS AND JOINTS, OR PVC WITH SLIP FITTINGS. PROVIDE MINIMUM ½" INSULATION ON ALL PIPING AND FITTINGS AFTER INSTALLATION.

   b. PUMPED DRAINS: BRAIDED PVC DRAIN TUBING, MIN. 5/8" ID, WITH FACTORY BARBED FITTINGS.

   c. IN-LINE CHECK VALVE: MIN. 5/8" BARBED CONNECTIONS, INLINE BALL CONE, STAINLESS STEEL SPRING, 1 PSI CRACKING PRESSURE, 140F MAX RATED TEMPERATURE, 125 PSI RATED PRESSURE

   d. CONDENSATE PUMP: SLIM DESIGN FOR INSTALLATION INSIDE AC UNIT, 3.2 GPH AT 33 FT.HD. MAX RISE, UP TO 4.5 TON CAPACITY, 16W AT 120V INPUT POWER, INTEGRAL SAFETY CUTOFF SWITCH, AS MANUFACTURED BY ASPEN, MINI-AQUA MODEL OR EQUAL.

C. DUCTWORK SYSTEMS: UTILIZE ANY OF THE FOLLOWING AS SHOWN ON PLANS.

1. ROUND DUCT:

   a. FLEX DUCT, FACTORY MADE, STEEL WIRE HELIX, INNER FILM LINER AND FIBERGLASS SCRIM, FIBERGLASS BLANKET INSULATION AND POLYETHYLENE OUTER JACKET, AS MANUFACTURED BY THERMAFLEX, TYPE G-KM OR EQUAL. USE IN CONCEALED LOCATIONS ONLY.

   b. SNAP-LOCK, GALVANIZED STEEL, FACTORY MADE, MIN. 1" RATED, WITH FACTORY FITTINGS AND ACCESSORIES. USE IN CONCEALED LOCATIONS ONLY. FOR EXHAUST DUCTWORK, SEAL ALL JOINTS AND SEAMS WITH MASTIC ON HIGH PRESSURE SIDE OF FAN.

2. RECTANGULAR DUCT:

   a. GALVANIZED STEEL, CUSTOM FABRICATED, MIN. 1" RATED AND SEALED, WITH SLIP & DRIVE OR FLANGED AND GASKETED JOINTS. CAN BE USED FOR ALL EXPOSED AND CONCEALED DUCT LOCATIONS. WHERE EXPOSED, PROVIDE PAINT GRIP COATING AND PAINT BLACK AFTER INSTALLATION.

3. INSULATION: PROVIDE THERMAL PROTECTION FOR ALL HOT OR COLD HVAC DUCTWORK AND EQUIPMENT AS NEEDED TO PREVENT LOSS OF HEAT AND CONDENSATION. MIN. R6 FOR INTERIOR AND R8 EXTERIOR INSTALLATIONS AS FOLLOWS:

   a. BOARD INSULATION, EXTERIOR DUCTWORK: 1 1/2" CLOSED CELL FOAM BOARD, FOIL FACED LINER ON BOTH SIDES, MIN. R9.3 RATING, AS MANUFACTURED BY JOHNS MANVILLE, XPECT ISOFOAM APF BOARD, OR EQUAL. ADHERE TO INSIDE OF ALL DUCTWORK INSTALLED OUTDOORS, USING MFG'S INSTRUCTIONS.

   b. BOARD INSULATION, INTEROIR DUCT: 1 1/2" FIBERGLASS INSULATION BOARD, FOIL-REINFORCED VAPOR BARRIER, AS MANUFACTURED BY OWENS CORNING, SERIES 701 FOR CURVED SURFACES AND SERIES 705 FOR FLAT SURFACES, OR EQUAL.

   c. WRAP INSULATION: 2" ALL-SERVICE DUCT WRAP, FIBERGLASS BLANKET WITH FRK VAPOR RETARDER, AS MANUFACTURED BY OWNENS CORNING ALL-SERVICE DUCT WRAP OR EQUAL.

   d. LINER INSULATION: 2" THICK, R8 RATING, FIBERGLASS BLANKETS OR BOARDS, VEIL FACED AIRSTREAM SURFACE, MOLD AND BACTERIAL RESISTANT, AS MANUFACTURED BY OWENS CORNING, QUIET R ROTARY DUCT LINER OR EQUAL.

4. DUCT ACCESS DOOR: SQUARE, GALVANIZED STEEL, FLANGED FRAME, 1" INSULATION, CAMLOCK FASTENERS, GASKETED, SAFETY CHAIN, PIANO-HINGE, SMACNA CONSTRUCTIONS STANDARS, AS MANUFACTURED BY NAILOR INDUSTRIES, 085CH SERIES, OR EQUAL.

5. MANUAL BALANCING DAMPERS: ROUND DAMPERS SHALL BE AS MANUFACTURED BY RUSKIN, MODEL MDRS25 OR APPROVED EQUAL. RECTANGULAR DAMPERS SHALL BE AS MANUFACTURED BY RUSKIN, MODEL MD25 OR APPROVED EQUAL.

6. FIRE DAMPERS: COMBINATION FIRE/SMOKE TYPE, ROUND DAMPERS SHALL BE AS MANUFACTURED BY RUSKIN, MODEL MDRS25 OR APPROVED EQUAL. RECTANGULAR DAMPERS SHALL BE AS MANUFACTURED BY RUSKIN, MODEL MD25 OR APPROVED EQUAL.

7. GRILLES AND DIFFUSERS: AS SCHEDULED OR EQUAL. COORDINATE FINAL COLOR SELECTION WITH ARCH PRIOR TO ORDERING.

   a. WHERE REQUIRED, PROVIDE FACTORY MOUNTING FRAME FOR INSTALLATION INTO SHEETROCK CEILINGS.

D. HANGERS AND SUPPORTS: PROVIDE ALL REQUIRED HANGERS, SUPPORTS, VIBRATION ISOLATION, ETC, AS NEEDED FOR SAFE AND QUIET INSTALLATION OF ALL MECHANICAL SYSTEMS, DUCTWORK AND EQUIPMENT.

1. ROOF CURBS: FACTORY MADE, MINIMUM 8" TALL, AS MANUFACTURED BY GREENHECK, MODEL GPI OR EQUAL.

2. PIPE SUPPORTS: RECYCLED RUBBER SUPPORT BLOCK WITH GALVANIZED STEEL CHANNEL FOR CLAMPING PIPING TO BLOCK, AS MANUFACTURED BY B-LINE, MODEL DURA-BLOK OR EQUAL. SPACE SUPPORTS AS REQUIRED BY CODE FOR PIPE SIZES RUN ACROSS ROOF.

B. MECHANICAL CONTROL SYSTEMS:

1. CONTROL WIRING: COPPER CONDUCTORS, TWISTED PAIR, SHIELDED, PLENUMN RATED, AS RECOMMENDED BY CONTROLS EQUIPMENT MFG'S.

2. THERMOSTATS:

   a. LOW-VOLTAGE: PROGRAMMABLE, DIGITAL, CONTROL SEQUENCES AS REQUIRED BY LATEST ENERGY CODE, INCLUDING 7-DAY SCHEDULED TEMPERATURE SETBACK WITH OPTIMAL START AND MANUAL OVERRIDE OF UP TO 2 HRS, LCD DISPLAY SCREEN, AS MANUFACTURED BY HONEYWELL OR EQUAL. FOR MULTI-STAGE HVAC UNITS, PROVIDE SEPARATE CONTROL WIRE FOR EACH STAGE OF HEAT AND COOLING FOR ALL MULTI-STAGE UNITS. DO NOT JUMPER WIRE STAGES TOGETHER TO MAKE THEM RUN SIMULTANEOUSLY.

3. CO2 SENSOR: DUCT OR WALL MOUNTED AS SHOWN ON PLANS, NDIR TECHNOLOGY, PROPORTIONAL OUTPUT LEVEL, NORMALLY OPEN RELAY CONTACTS, LCD STATUS DISPLAY WITH INTEGRATED PUSHBUTTONS FOR OPERATION, AS MANUFACTURED BY HONEYWELL, MODEL #C7242 OR EQUAL.

4. CURRENT SWITCH: CURRENT OPERATED SWITCH, NORMALLY OPEN, 120V/20A RATED, AS MANUFACTURED BY KELE OR EQUAL.

5. FAN RELAY: 24VAC COIL, 120V/20A DRY CONTACTS, AS MANUFACTURED BY KELE OR EQUAL.

6. FAN TIMER: 24-HOUR ELECTRONIC TYPE, MIN. 2P/20A CONTACTS, 120V POWER SUPPLY, NEMA 1 ENCLOSURE, AS MANUFACTURED BY INTERMATIC #ET1125C OR EQUAL.

C. PACKAGED HVAC EQUIPMENT:

1. EXHAUST FAN, CEILING: PERFORMANCE, MAKE AND MODEL NUMBER AS SCHEDULED, OR APPROVED EQUAL.

   a. FACTORY WALL MOUNTING BRACKET.
   b. AUTOMATIC BACKDRAFT DAMPERS.
   c. FLEXIBLE DUCT CONNECTIONS FOR INLET AND OUTLET.

2. AIR CURTAINS: PERFORMANCE, MAKE AND MODEL NUMBER AS SCHEDULED, OR APPROVED EQUAL:

   a. FACTORY WALL OR CEILING BRACKET
   b. MULTI-SPEED MOTORS AND CONTROLS
   c. NOISE REDUCTION PACKAGE.
   d. DOOR LIMIT SWITCH AND BRACKET

ELECTRICAL EQUIPMENT & MATERIALS

A. CONDUIT AND WIREWAYS:

1. EMT: HOT GALVANIZED STEEL, INTERIOR COATING, UL LISTED, AS MANUFACTURED BY ALLIED, E-Z PULL EMT, OR EQUAL. ALL FACTORY COUPLINGS AND FITTINGS SHALL BE OF SAME MATERIAL AS CONDUIT.

2. RIGID STEEL: HOT DIPPED GALVANIZED STEEL, CORROSION RESISTANT, UL LISTED, AS MANUFACTURED BY ALLIED, GRC, OR EQUAL. ALL FACTORY COUPLINGS AND FITTINGS SHALL BE OF SAME MATERIAL AS CONDUIT.

3. PVC: SCHEDULE 40 OR 80 ELECTRICAL CONDUIT, UL LISTED, SLIP BELL FITTING ON ONE END, AS MANUFACTURED BY ALLIED OR EQUAL. SUNLIGHT RESISTANT WHERE USED EXPOSED OUTSIDE.

B. WIRE AND CABLE:

1. CONDUCTORS: PROVIDE COPPER CONDUCTORS OF STANDARD AMERICAN GAGES FOR ALL WIRING SHOWN ON DRAWINGS. MINIMUM 90°F RATED INSULATION FOR ALL CONDUCTORS USED, SUCH AS THHN, THHW, THW OR EQUAL.

2. ALUMINUM CONDUCTORS OF EQUIVALENT AMPACITY CAN BE SUBSTITUTED FOR SIZES #6 AND ABOVE.

3. MC CABLE: METAL CLAD CABLE WITH COPPER CONDUCTORS, RATED FOR WET OR DRY LOCATIONS, 90°C TEMPERATURE RATING, WITH GREEN INSULATED GROUNDING CONDUCTOR. ALL CONDUCTORS CABLED TOGETHER WITH SEPARATOR TAPE, INTERLOCKED ALUMINUM ARMOR, FLAME RETARDANT BLACK PVC JACKET OVER THE ARMOR.

4. SPLICE CONNECTORS: INSUL-TAP CONNECTORS, UV RATED, COPPER OR ALUMINUM RATED, AS MANUFACTURED BY POLARIS, IT SERIES OR EQUAL.

C. BOXES AND ENCLOSURES:

1. JUNCTION BOXES: PROVIDE PVC, WEATHERPROOF BOXES AND GASKETED COVERS FOR ALL EXPOSED RECEPTACLES AND EQUIPMENT CONNECTIONS IN FOOD PROCESSING AND COMMERCIAL KITCHEN AREAS.

2. FLOOR BOXES:

   a. FLUSH: ONE, TWO OR THREE GANG, INTERLOCKING MODULAR PVC, AS MANUFACTURED BY ARLINGTON MODEL #FLBC8500 OR EQUAL. BRASS OR NICKEL-PLATED COVERS WITH GASKETED FLIP LID, ONE, TWO OR THREE GANG, AS MANUFACTURED BY ARLINGTON MODEL #FLBC850 OR EQUAL.

D. RECEPTACLES AND COVER PLATES:

1. INDOORS:

   a. DUPLEX RECEPTACLES: 120V, DUPLEX, 15A 125V, NEMA 5-15R, AS MANUFACTURED BY HUBBELL MODEL #BR15I OR EQUAL.

   b. GFI RECEPTACLES: 120V, DUPLEX, TEST BUTTON, LED INDICATOR LIGHT, 15A 125V, NEMA 5-15R, AS MANUFACTURED BY HUBBELL MODEL #GF15IL OR EQUAL.

   c. 240V RECEPTACLES: 240V, 2 POLE WITH GROUND, COORDINATE FINAL NEMA TYPE AND AMPERAGE RATING WITH OWNER EQUIPMENT SUBMITTALS, AS MANUFACTURED BY HUBBELL OR EQUAL.

2. OUTDOORS:

   a. GFI RECEPTACLES: 120V, WEATHER RESISTANT, DUPLEX, TEST BUTTON, LED INDICATOR LIGHT, 15A 125V, NEMA 5-15R, AS MANUFACTURED BY HUBBELL MODEL #GF15ILWR OR EQUAL. PROVIDE WITH WEATHERPROOF, LOCKING COVER, EQUAL TO HUBBELL BELL #MX105OS.

E. WALL SWITCHES:

1. LIGHT SWITCH: 1P/15A/120V TOGGLE SWITCH, SINGLE GANG BOX MOUNTED, AS MANUFACTURED BY LEVITON MODEL # 5501-LHW OR EQUAL.

2. 3-WAY LIGHT SWITCH: 1P/15A/120V TOGGLE SWITCH, SINGLE GANG BOX MOUNTED, AS MANUFACTURED BY LEVITON MODEL # 5503-LHW OR EQUAL.

3. MOTOR RATED SWITCH: 1P/20A, SUITABLE FOR USAGE AS MANUAL TOGGLE CONTROLLER FOR FRACTIONAL HP MOTORS, AS MANUFACTURED BY LEVITON MODEL # MS302-DS OR EQUAL.

F. LIGHT FIXTURES: AS SCHEDULED ON PLANS, OR APPROVED EQUAL.

G. AUTOMATIC LIGHTING CONTROLS:

1. OCCUPANCY SWITCH: DUAL TECHNOLOGY, ULTRASONIC AND PASSIVE INFRARED, AUTOMATIC ON/OFF LIGHTING CONTROLLER:

   a. WALL SWITCH: SINGLE GANG, AS MANUFACTURED BY LEVITON, MODEL #OSSMT-MD/GD OR EQUAL. PROVIDE WITH OVERRIDE SWITCH AND MATCHING COVER PLATE. COORDINATE COLOR WITH ARCHITECT.

2. LIGHTING TIMER: 24-HOUR ELECTRONIC TYPE, MIN. 2P/20A CONTACTS, 120V POWER SUPPLY, NEMA 1 ENCLOSURE, AS MANUFACTURED BY INTERMATIC #ET1125C OR EQUAL.

H. PANELS, SWITCHGEAR & DISTRIBUTION EQUIPMENT

1. ELECTRICAL PANELS: AS MANUFACTURED BY EATON OR EQUAL. PROVIDE SUBMITTALS

2. CIRCUIT BREAKERS: AS SPECIFIED BY PANELBOARD MANUFACTURER. RATINGS AS SHOWN ON PLANS.

3. FUSES: AS SPECIFIED BY EQUIPMENT MANUFACTURER. RATINGS AS SHOWN ON PLANS.

4. DISCONNECT SWITCHES: HEAVY DUTY SAFETY SWITCH AS MANUFACTUED BY SQUARE D, OR EQUAL. PROVIDE NEMA 1 OR 3R ENCLOSURE AS REQUIRED. PROVIDE CLASS R, L OR J FUSES AND SPRING REINFORCED PLATED COPPER FUSE CLIPS WHERE SPECIFIED.

5. ELECTRICAL CAUTION TAPE: 6" WIDE HEAVY-DUTY POLYETHYLENE TAPE, RED WITH BLACK LETTERS, "CAUTION, ELECTRIC LINE BELOW." TEXT, AS MANUFACTURED BY BRADY #91296 OR EQUAL.

6. EQUIPMENT LABELS: PROVIDE EQUIPMENT LABELS FOR ALL DISCONNECT SWITCHES, PANELBOARDS, MOTOR CONTROL CENTERS AND OTHER MARKED ENCLOSURES. LABELS SHALL BE PERMANENTLY FASTENED TO EXTERIOR OF ENCLOSURE IN VISIBLE LOCATION AND SHALL MATCH EQUIPMENT IDENTIFICATION MARKS SHOWN ON PLANS.

   a. INTERIOR LABELS SHALL BE BLACK PLASTIC WITH WHITE LETTERS, MINIMUM ¾" HIGH.

   b. EXTERIOR LABELS SHALL BE METALLIC, SUITABLE FOR EXTERIOR LOCATIONS WITH BLACK LETTERS MINIMUM ¾" HIGH.

PLUMBING EQUIPMENT & MATERIALS

A. DOMESTIC WATER PIPING: THE CONTRACTOR MAY SELECT THE MOST COST EFFECTIVE PIPING, VALVES AND FITTINGS THAT ARE AVAILABLE FOR THE PROJECT. ALL MATERIALS, VALVES AND FITTINS MUST COMPLY WITH IPC SECTION 605. SEE BELOW FOR ALLOWABLE OPTIONS TO CHOOSE FROM:

1. WATER DISTRIBUTION PIPING (INSIDE BUILDING): MINIMUM 100 PSI PRESSURE RATED, CONFORMING TO NSF 61 STANDARDS, OF THE FOLLOWING APPROVED TYPES:

   a. TYPE L OR M COPPER, WITH JOINTS AND FITTINGS OF SAME MATERIAL. SOLDER JOINTS SHALL BE MADE WITH LEAD FREE FLUX AND SOLDER.
   b. CPVC PLASTIC PIPE AND FITTINGS WITH SLIP OR SCREWED JOINTS AND FITTINGS OF SAME MATERIAL.

2. ALL WATER PIPING AND FITTINGS INSTALLED IN PLENUM SPACES SHALL BE NON-COMBUSTIBLE OR HAVE A FLAME SPREAD INDEX OF 25 AND A SMOKE DEVELOPED INDEX OF 50, AND BE LISTED AS SUCH.

B. DRAIN, WASTE, VENT (DWV) PIPING: THE CONTRACTOR MAY SELECT THE MOST COST EFFECTIVE DRAIN PIPING AND FITTINGS THAT ARE AVAILABLE FOR THE PROJECT. ALL MATERIALS AND FITTINGS MUST COMPLY WITH IPC SECTION 605. SEE BELOW FOR ALLOWABLE OPTIONS TO CHOOSE FROM:

1. SCHEDULE 40 ABS PLASTIC PIPE AND FITTINGS
2. SCHEDULE 40 PVC PLASTIC PIPING AND FITTINGS
3. CAST IRON PIPE AND FITTINGS

ALL DRAIN PIPING AND FITTINGS INSTALLED IN PLENUM SPACES SHALL BE NON-COMBUSTIBLE OR HAVE A FLAME SPREAD INDEX OF 25 AND A SMOKE DEVELOPED INDEX OF 50, AND BE LISTED AS SUCH.

C. PIPING INSULATION:

1. MATERIALS: PIPING INSULATION MATERIALS SHALL BE ONE OF THE FOLLOWING TYPES:

   a. POLYETHYLENE FOAM, SELF-SEALING TYPE
   b. RUBBER, SELF-SEALING TYPE
   c. MOLDED FIBERGLASS WITH ALL SERVICE JACKET

2. DOMESTIC WATER PIPING: MINIMUM R-4 RATED, WITH MINIMUM 1" THICKNESS ON PIPING UP THROUGH 1 ¼", AND MINIMUM 1.5" THICKNESS ON PIPING OVER 1 ¼".

3. LAVATORY PIPING COVERS: 1/8" THICK MOLDED VINYL WASTE AND SUPPLY PIPING COVERS, FACTORY FORMED, UV RESISTANT, CHINA WHITE, PAINTABLE, INTERNAL FASTENERS, AS MANUFACTURED BY TRUEBRO LAVGUARD, MODEL #102 OR EQUAL.

D. VALVES: ALL VALVES MUST BE COMPATIBLE WITH THE TYPE OF PIPING MATERIAL INSTALLED IN THE SYSTEM, AND SHALL COMPLY WITH IPC TABLE 605.7. VALVES FOR DRINKING WATER SERVICE SHALL MEET THE REQUIREMENTS OF NSF 61.

1. BALL VALVES (WATER): FULLY PORTED, LINE SIZED, AS REQUIRED FOR SHUTOFF SERVICE.

2. HW BALANCING VALVES: ½" NPT, BRONZE BALL VALVE, FULLY PORTED, AS MANUFACTUED BY APOLLO #70-103-K8 OR EQUAL.

3. THERMOSTATIC MIXING VALVES: LEAD FREE, CORROSION RESISTANT, ADJUSTABLE, TAMPERPROOF, ASSE 1070 CONTROLS, INTEGRAL CHECK VALVES AND SCREENS, AS SCHEDULED OR EQUAL.

E. HOSE BIBS:

1. OUTDOOR: SHALL BE WOODFORD MODEL B22, HOT & COLD, CHROME FINISH, FREEZEPROOF TYPE, AUTOMATIC DRAINING WITH BACKFLOW PREVENTER AND KEYED OPERATION, OR APPROVED EQUAL. VERIFY WALL THICKNESS PRIOR TO ORDERING HOSE BIBS.

F. BACKFLOW PREVENTERS: ALL BACKFLOW PREVENTERS SHALL BE COMPLIANT WITH IPC TABLE 608.1 AND SUB SECTIONS AS FOLLOWS:

1. MAIN CW LINE: WHERE REQUIRED BY LOCAL AHJ, PROVIDE AS FOLLOWS:
   a. HEALTH HAZARD (CONTAMINATION): LINE SIZED, CAST BRONZE BODY, TEST COCKS, BALL VALVES, REDUCED PRESSURE ZONE ASSEMBLY, WATTS #LF909 OR EQUAL.
   b. NON-HEALTH HAZARD (POLLUTION): LINE SIZED, CAST BRONZE BODY, TEST COCKS, BALL VALVES, DOUBLE CHECK VALVE ASSEMBLY, AS MANUFACTURED BY WATTS #LF007 OR EQUAL.
2. BEVERAGE DISPENSERS: 3/8" NPT, STAINLESS STEEL AND RUBBER CONSTRUCTION, FDA COMPLIANT MATERIALS, DUAL CHECK VALVE ASSEMBLY, AS MANUFACTURED BY WATTS #SD-2 OR EQUAL.
3. APPLIANCES: MIN. ½", ANTI-SIPHON VACUUM BREAKER, LEAD FREE CAST COPPER BODY, SILICONE DISC, AS MANUFACTURED BY WATTS #LF288A OR EQUAL.
4. HOSE BIBS: FACTORY ANTI-SIPHON VACUUM BREAKER, SEE HOSE BIBS.

G. WATER HAMMER ARRESTERS:

1. POINT OF USE: STAINLESS STEEL BODY, PISTON-TYPE, AS MANUFACTURED BY SIOUX CHIEF, 660 SERIES OR EQUAL. SELECT CONFIGURATION FOR POINT OF USE CONNECTION AT EACH FIXTURE, INCLUDING STRAIGHT, TEE, TUB/SHOWER, ETC. COORDINATE PROPER SELECTIONS WITH EQUIPMENT VENDOR.

H. VALVE TAGS: 20 GA. BRASS TAG, MIN. 1 1/2" DIA, STAMPED AND BLACK FILLED TEXT, 3/16" DIA. MOUNTING HOLE, AS MANUFACTURED BY MARKSERV.COM OR EQUAL.
1. PROVIDE VALVE TAG FOR ALL MAJOR HW AND CW STOP VALVES, INDICATING SERVICE OF VALVE.
2. PROVIDE VALVE TAG FOR ALL MAJOR GAS STOP VALVES, INDICATING SERVICE OF VALVE.

I. FLOOR DRAINS: AS SCHEDULED ON DRAWINGS OR MANUFACTURER RECOMMENDED EQUAL.

1. TRAP PRIMERS: AUTOMATIC VALVE, BRONZE BODY, ½" NPT THREADED CONNECTIONS, AS MANUFACTURED BY JAY R. SMITH, FIGURE 2699 OR EQUAL.

   a. ACCESS DOORS: FACTORY MADE, 16 GA STEEL WITH PRIME COAT FINISH, 1" WIDE WALL FRAME WITH 1/4" MOUNTING HOLES, SIZED AS NEEDED FOR ACTUAL VALVES INSTALLED, AS MANUFACTURED BY PRECISION PLUMBING PRODUCTS, DRY WALL TYPE, OR EQUAL.

2. TRAP GUARDS: PROVIDE ALL FLOOR DRAINS WITH TRAP GUARDS FOR PROTECTION AGAINST DRY TRAPS, AS MANUFACTURED BY RECTORSEAL, SURESEAL SERIES OR EQUAL. SIZE GUARDS FOR ACTUAL TRAPS INSTALLED.

3. FLOOR SINKS: PROVIDE ALL FLOOR SINKS WITH FACTORY CUT OPENINGS IN TOP GRATE FOR INSTALLATION OF ACTUAL INDIRECT WASTE PIPING REQUIRED. COORDINATE SELECTIONS WITH DRAIN SUPPLIER.

J. CLEANOUTS: PROVIDE WHERE SHOWN ON PLANS AND AS REQUIRED BY LOCAL PLUMBING CODES. CLEANOUTS SHALL BE SUITABLE FOR CONDITIONS WHERE INSTALLED AS FOLLOWS:

1. FLOORS, FINISHED: CLEANOUT TEE WITH NICKEL BRONZE, ADJUSTABLE TOP, AS MANUFACTURED BY J.R. SMITH, ZURN OR EQUAL.

2. WALL: CLEANOUT TEE, STAINLESS STEEL ROUND COVER AND SCREW, IRON PLUG WITH SEAL, AS MANUFACTURED BY J.R. SMITH, ZURN OR EQUAL.

K. ROOFTOP SUPPORTS: RECYCLED RUBBER SUPPORT BLOCK WITH GALVANIZED STEEL CHANNEL FOR CLAMPING PIPING TO BLOCK, AS MANUFACTURED BY B-LINE, MODEL DURA-BLOK OR EQUAL. SPACE SUPPORTS AS REQUIRED BY CODE FOR PIPE SIZES RUN ACROSS ROOF.

L. PLUMBING FIXTURES AND ACCESSORIES: AS SCHEDULED ON DRAWINGS OR APPROVED EQUAL. FURNISH AND INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ALL REQUIRED FITTINGS AND ACCESSORIES FOR A COMPLETE AND FUNCTIONING FIXTURE, WHETHER SPECIFIED ON PLANS OR NOT.

PACKAGED PLUMBING EQUIPMENT:

A. WATER HEATERS: TYPE, STORAGE CAPACITY AND PERFORMANCE AS SCHEDULED ON DRAWINGS OR EQUAL. INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ALL REQUIRED VALVES AND FITTINGS AS SHOWN ON THE PLANS, INCLUDING THE FOLLOWING ACCESSORIES:

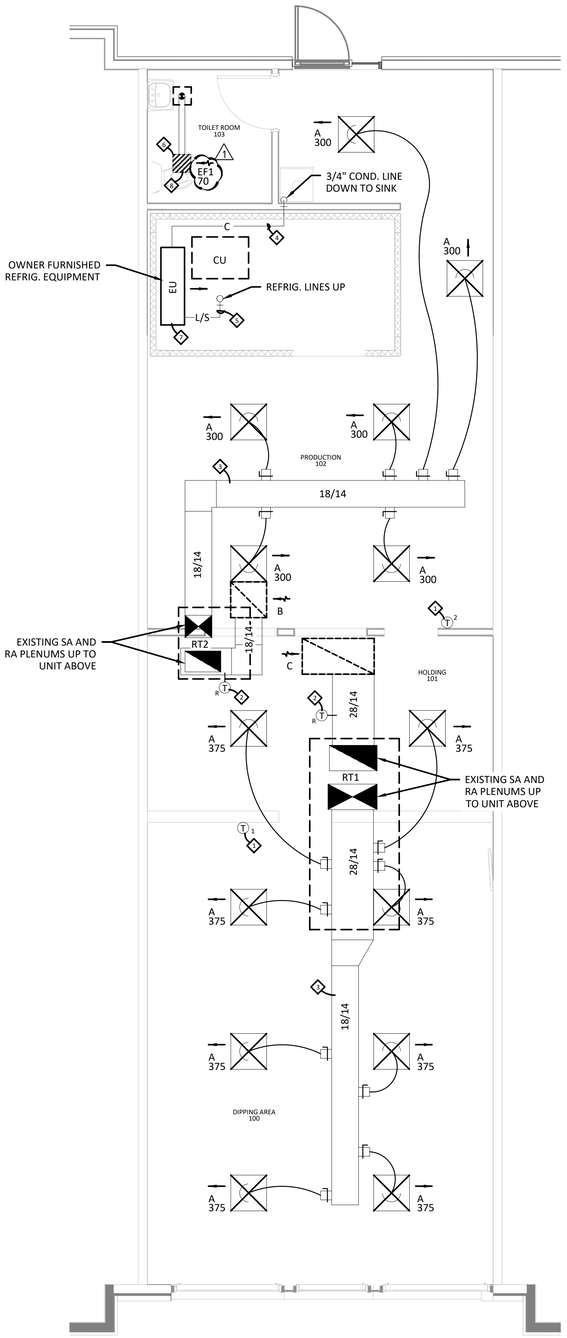
1. EXPANSION TANK: ANTIMICROBIAL LINER, WATER DIFFUSER, PRE-CHARGED TO MATCH WATER SERVICE PRESSURE, DEEP DRAWN STEEL DOMES, THICK RUBBER DIAPHRAGM, STAINLESS STEEL SYSTEM CONNECTION, NSF 61 APPROVED, AS MANUFACTURED BY AMITROL, MODEL THERM-X-TROL, OR EQUAL. SIZING SHALL BE PROVIDED BY VENDOR BASED ON WATER HEATER CAPACITY.

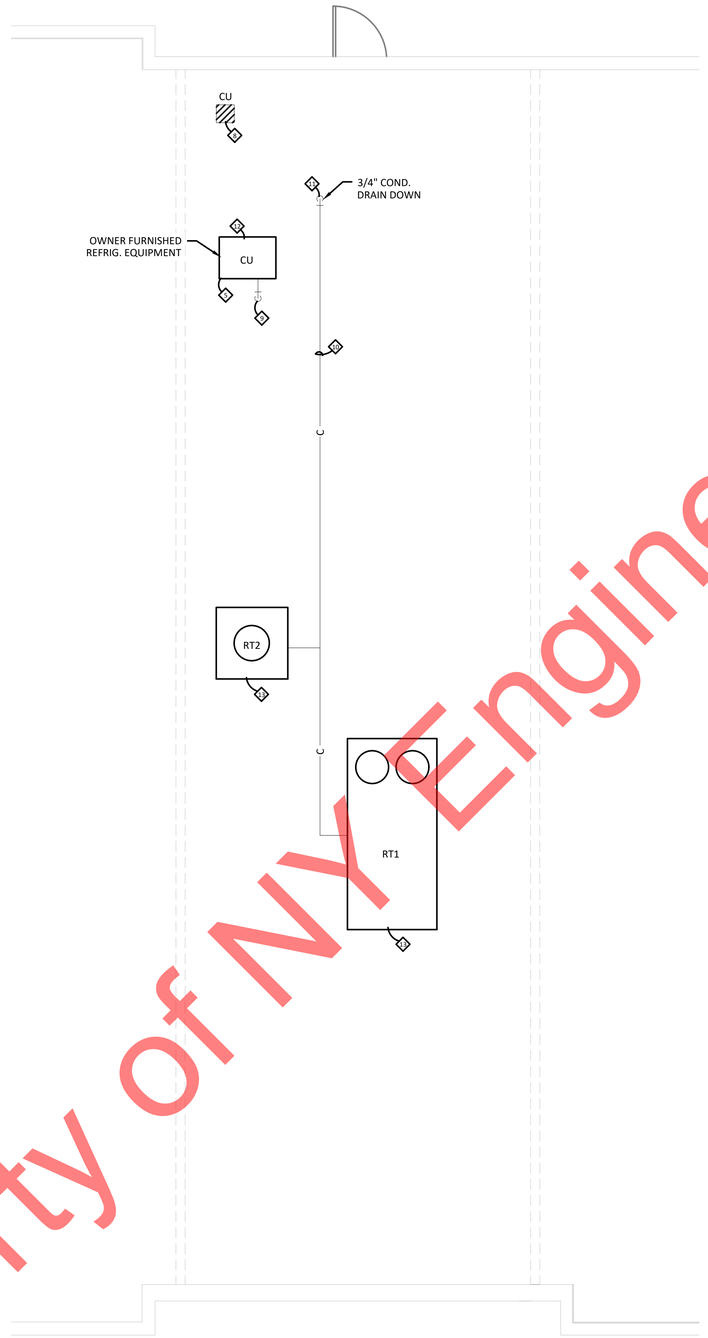
2. VACUUM BREAKER: LOW PROFILE, ALL BRASS BODY, PROTECTIVE CAP, AS MANUFACTURED BY WATTS MODEL #N36-M1 OR EQUAL. LINE SIZED FOR COLD WATER INLET PIPING.

3. RELIEF VALVE: TEMPERATURE AND PRESSURE RELIEF VALVE, LEAD FREE COPPER ALLOY BODY WITH NPT MALE INLET AND NPT FEMALE OUTLET CONNECTIONS, UNIQUE THERMOSTAT WITH SPECIAL THERMO-BONDED COATING, AND A TEST LEVER. TEMPERATURE RELIEF: 210°F, PRESSURE RELIEF RANGE: 75 TO 150PSI, AS MANUFACTURED BY WATTS, SERIES LF100XL.

4. HEAT TRAPS: ON SYSTEMS WITHOUT CIRCULATION PUMP, PROVIDE WATER HEATER WITH FACTORY HEAT TRAPS, LINE SIZED, AND INSTALL PER MANUFACTURER'S INSTRUCTIONS.

5. WALL MOUNT: 12 GA. GALV PAN WITH 1" PVC DRAIN CONNECTION, THREADED RODS WITH TURNBUCKLES, WALL BRACKETS, AS MANUFACTURED BY HOLDRITE





PLAN - HVAC

1 / M1 — SCALE: 1/4"=1'-0"

NOTES:

1. COORDINATE ALL FINAL GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN, LOCATIONS SHOWN ABOVE ARE PRELIMINARY.
2. ALL CONDENSATE PIPING IS 3/4" UNLESS SHOWN OTHERWISE
3. SEE SCHEDULES FOR ALL REFRIGERANT LINE SIZES, NOT SHOWN ABOVE.
4. COORDINATE WITH OWNER/VENDOR FOR ALL INSTALLATION DETAILS ON WALK-IN COOLER EQUIPMENT, SHOWN FOR REFERENCE ONLY. SIZE REFRIGERANT AND CONDENSATE DRAIN PIPING PER MFG'S INSTRUCTIONS.

ROOF PLAN - HVAC

2 / M1 — SCALE: 1/4"=1'-0"

NOTE:

1. ALL CONDENSATE DRAIN PIPING 3/4" UNLESS SHOWN OTHERWISE.
2. SEE CONDENSING UNIT SCHEDULE FOR REFRIGERANT PIPING SIZES.

◇ KEYNOTES:

1. PROVIDE PROGRAMMABLE THERMOSTAT AND HUMIDISTAT WHERE SHOWN, AND LOCKING COVER, TYPICAL 2 PLACES. CONNECT THERMOSTAT TO REMOTE DUCT MOUNTED TEMP SENSOR FOR CONTROL OF UNIT. COORDINATE FINAL LOCATION AND LOCKING REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN.
2. PROVIDE REMOTE TEMP SENSOR IN RA PLENUM. SEE CONTROL DETAILS FOR SEQUENCE OF OPERATIONS REQUIRED.
3. CONCEALED RECTANGULAR AND OR ROUND DUCTWORK ABOVE FINISHED CEILING. HOLD TIGHT TO STRUCTURE ABOVE, MAINTAIN MIN. 12" BOD ABOVE FINISHED CEILINGS. COORDINATE FINAL CEILING HEIGHT WITH ARCH. ROUTE FLEXIBLE DUCT BRANCHES FULLY EXTENDED THROUGH JOIST WEBS WHERE REQUIRED.
4. PROVIDE MIN. 3/4" INSULATED, COLD CONDENSATE DRAIN PIPING FOR EVAPORATOR UNIT. ROUTE PIPING ALONG WALL, MIN. 1/4" PER FOOT SLOPE TOWARDS DRAIN, TYPICAL.
5. PROVIDE REFRIGERANT PIPING PER MFG'S INSTRUCTIONS, ROUTE BETWEEN EVAPORATOR COILS AND CONDENSING UNIT ON ROOF, HOLD TIGHT AND ROUTE THROUGH ROOF FRAMING AS REQUIRED, TYPICAL. PROVIDE COMPLETE REFRIGERANT CHARGE AFTER PRESSURE TESTING LINE SET.
6. PROVIDE CEILING MOUNTED EXHAUST FAN SUSPENDED FROM STRUCTURE ABOVE CEILING.
7. COORDINATE WITH OWNER/VENDOR TO INSTALL WALK-IN COOLER EVAPORATOR UNIT, PER MFG'S INSTRUCTIONS.
8. PROVIDE ROOF CAP WITH FACTORY CURB FOR EXHAUST FAN OUTLET, SEE SCHEDULES. MAINTAIN MIN. 10FT SEPARATION FROM ALL OUTSIDE AIR INTAKES. COORDINATE WITH STRUCTURAL FOR FINAL PENETRATION LOCATION. COORDINATE WITH ROOFING CONTRACTOR TO FLASH AND SEAL CURB AS REQUIRED.
9. PROVIDE REFRIGERANT PIPING ON ROOFTOP SUPPORTS, ROUTE LINESET BETWEEN EVAPORATOR UNIT INSIDE COOLER AND CONDENSING UNIT ON ROOF. COORDINATE WITH EQUIP MFG FOR ALL REFRIGERANT LINE SET ACCESSORIES THAT MAY BE REQUIRED FOR FINAL CONDITIONS. PROVIDE COMPLETE REFRIGERANT SYSTEM CHARGE AFTER PRESSURE TESTING LINE SET.
10. PROVIDE MIN. 3/4" COLD CONDENSATE DRAIN PIPING ON ROOFTOP SUPPORTS, MIN. 1/4" PER FOOT SLOPE TOWARDS DRAIN, TYPICAL. ROUTE DRAIN PIPING BETWEEN ROOFTOP UNITS AND SANITARY DRAIN SYSTEM AS SHOWN. SPACE SUPPORTS MIN. 3' APART OR AS REQUIRED TO MAINTAIN PROPER SLOPE.
11. 3/4" CONDENSATE DRAIN DOWN TO INDIRECT CONNECTION AT FLOOR DRAIN BELOW. COORDINATE ROUGH IN WITH PLUMBING CONTRACTOR. PROVIDE CURB FOR ROOF PENETRATION, COORDINATE WITH ROOFING CONTRACTOR.
12. COORDINATE WITH OWNER/VENDOR TO INSTALL WALK-IN COOLER CONDENSER UNIT ON FACTORY ROOF CURB, PER MFG'S INSTRUCTIONS. MAINTAIN MANUFACTURER'S REQUIRED SERVICE CLEARANCES. COORDINATE FINAL LOCATION WITH STRUCTURAL. COORDINATE INSTALLATION DETAILS WITH MFG'S INSTRUCTIONS.
13. EXISTING PACKAGED RTU TO BE RE-USED AS SHOWN ON PLANS, TYPICAL 2 PLACES. CLEAN UNIT AND MAKE MODIFICATIONS AS SHOWN TO ALLOW FOR RE-USE WITH THE NEW TENANT. ADD CONTROLS WHERE REQUIRED.

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HANDEL'S ICE CREAM STORE

SHEET :
M1
HVAC PLANS AND NOTES
OF : 3

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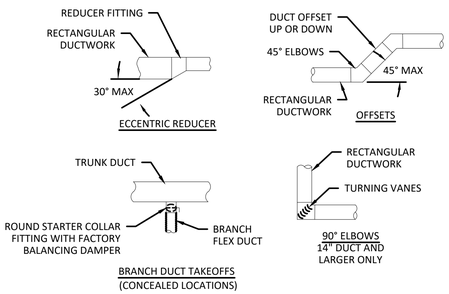
ROOFTOP UNIT SCHEDULE		
MARK	RT1	RT2
SERVES	SERVICE AREA	PRODUCTION AREA
TOTAL AIRFLOW (CFM)	3,000	1,800
OUTSIDE AIR (CFM)	165	95
RETURN AIR (CFM)	2,835	1,705
PERCENTAGE OA (%)	6%	5%
EXT. S.P. (IN.WG.)	0.63	0.63
OPERATING WEIGHT (LBS)	940	605
FILTER RATING	8	8
DX COOLING DATA		
ENT. AIR DB (F)	76.2	76.1
ENT. AIR WB (F)	63.1	63.1
LVG AIR DB (F)	55.0	55.0
LVG AIR WB (F)	54.0	54.0
SENS. CAP. (MBH)	68.5	41.0
TOT. CAP. (MBH)	90.0	54.0
NO. CIRCUITS	2	1
MIN. SEER	14	14
HEATING DATA		
ENT. AIR DB (F)	69.7	69.8
LVG AIR DB (F)	91.1	92.6
MIN. OUTPUT CAP. (MBH)	69.3	44.4
ELECT. HEATER CAPACITY (KW)	20.3	13.0
NO. STAGES	2	2
ELECTRICAL DATA		
VOLTS/POLE	208V/3P	208V/3P
MIN. MOTOR HP	1.55	0.93
MCA (AMPS) WITH HEATER	76.0	54.0
MOCP (AMPS) WITH HEATER	80.0	60.0
MANUFACTURER	TBD	TBD
MODEL NO.	TBD	TBD
FACTORY ACCESSORIES		

THE RTU DATA ABOVE IS PRESENTED AS REFERENCE ONLY FOR THE (2) EXISTING UNITS SERVING THE SPACE. FIELD VERIFY ALL INFORMATION PRIOR TO UTILIZING FOR TEST AND BALANCE PURPOSES.

ROOF CAP SCHEDULE	
MARK	RC
SERVES	EF1
ROOF CAP PD (IN. WC.)	0.10
AIRFLOW (CFM)	250
FREE AREA (SQFT)	0.35
AIR VELOCITY (FT/MIN)	716
DUCT COLLAR (IN)	8
CAP DIAMETER (IN)	12
CAP HEIGHT (IN)	12
CURB SIZE (IN x IN)	15.25 x 15.25
MANUFACTURER	BROAN
MODEL NO.	611CM
FACTOR ACCESSORIES	AUTOMATIC DAMPERS

EXHAUST FAN SCHEDULE	
MARK	EF-1
SERVES	TOILET
TYPE	CEILING MOUNTED CENTRIFUGAL
MOUNTING	DUCT INLINE
DUCT CONNECTION (IN)	8
OPERATING WEIGHT (LBS)	30
AIRFLOW (CFM)	70
EXT. S. P. (IN. WG.)	0.4
MAX. SONES	6
MOTOR DATA	
FULL LOAD INPUT (WATTS)	132
VOLTS/POLE	120V/1P
MANUFACTURER	BROAN
MODEL NO.	L100
FACTORY ACCESSORIES	ROOF CAP

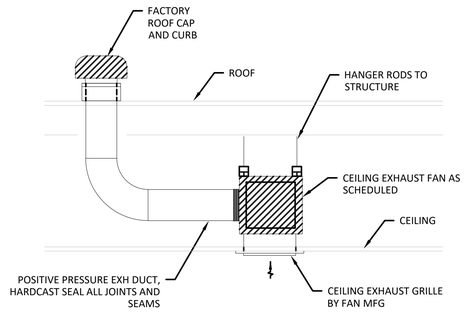
DIFFUSER & GRILLE SCHEDULE			
MARK	A	B	C
SERVES	SUPPLY	RETURN	RETURN
MAXIMUM (CFM)	450	2,000	4,000
MAX. P.D (IN WC)	0.06	0.13	0.13
MOUNTING TYPE	LAY IN	LAY IN	LAY IN
NECK SIZE (IN)	10	22 x 22	22 x 46
FACE SIZE (IN)	24 x 24	24 x 24	24 x 48
MAX. NC	25	25	25
MANUFACTURER	TITUS	TITUS	TITUS
MODEL NO.	TMS	PAR	PAR
FINISH	WHITE	WHITE	WHITE
CONSTRUCTION	STEEL	STEEL	STEEL
FLEX CONNECTION (IN)	12	NA	NA



2/M2 DUCTWORK DETAILS
NO SCALE

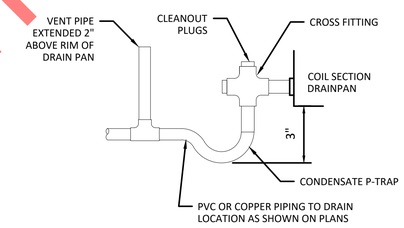
NOTES:

1. FABRICATE ALL DUCTWORK SYSTEMS ACCORDING TO LATEST SMACNA DUCT CONSTRUCTION STANDARDS.
2. WHERE INSTALLED IN CONCEALED LOCATIONS, SEAL ALL JOINTS AND SEAMS WITH METALIC TAPE AND OR MASTIC SEALANT AS NEEDED FOR MIN. 1" WC. PRESSURE RATING.
3. WHERE INSTALLED IN EXPOSED, FINISHED LOCATIONS, SEAL ALL JOINTS AND SEAMS WITH PAINTABLE SEALANT AS NEEDED FOR MIN. 1" WC. PRESSURE RATING.
4. PROVIDE ALL REQUIRED DUCT BRACING PER SMACNA CONSTRUCTION STANDARDS.
5. ALL FLEX DUCT BRANCHES TO BE INSTALLED FULLY EXTENDED WITHOUT KINKS OR SHARP BENTS,
6. PROVIDE ALL REQUIRED SUPPORTS TO ENSURE UNRESTRICTED AIRFLOW THROUGH FLEX DUCT BRANCHES. WHERE REQUIRED, PROVIDE FACTORY STEEL, LONG SWEEP ELBOWS TO ENSURE SMOOTH BENDS.



1/M2 CEILING EXHAUST FAN DETAILS
NO SCALE

NOTES:
1. COORDINATE WITH ARCH AND STRUCTURAL PLANS FOR FINAL FAN LOCATION AND SUPPORT REQUIREMENTS.



3/M2 CONDENSATE TRAP DETAIL
NO SCALE

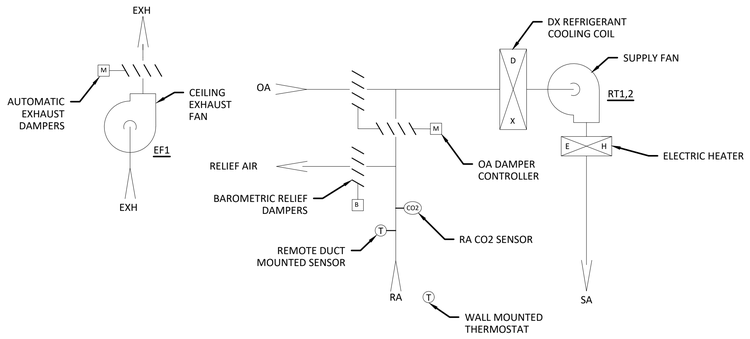
NOTES:
1. PIPING SHOWN ABOVE IS GENERAL ARRANGEMENT ONLY. MODIFY AS REQUIRED TO AVOID INTERFERENCES.
2. ENSURE THAT CONDENSATE PIPING DOES NOT BLOCK ACCESS TO UNIT PANELS FOR SERVICE.
3. PROVIDE SUPPORTS FOR ALL PIPING RUN ACROSS ROOFTOP, SEE SPECS.

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HANDEL'S ICE CREAM STORE

SHEET :
M2
HVAC SCHEDULES AND DETAILS
OF : 3



1 M3 RTU CONTROL DIAGRAM
NO SCALE

SEQUENCE OF OPERATIONS:

A. EXHAUST FANS:

1. RESTROOM EXHAUST FANS SHALL BE INTERLOCKED WITH HVAC UNITS TO START AND RUN CONTINUOUSLY DURING OCCUPIED PERIODS. MOTORIZED EXHAUST DAMPERS SHALL AUTOMATICALLY OPEN WHILE FAN IS RUNNING AND CLOSE WHEN FAN IS OFF. SEE INTERLOCK DIAGRAM FOR EXHAUST FAN INTERLOCKS.

B. ROOFTOP UNITS:

1. WALL MOUNTED THERMOSTATS CONTROLLING ALL ROOFTOP UNITS SHALL BE PROGRAMMED WITH OWNER'S OCCUPIED/UNOCCUPIED TIME SCHEDULE.
2. RTU FANS SHALL BE PROGRAMMED TO RUN CONTINUOUSLY DURING OCCUPIED PERIODS AND CYCLE ONLY DURING UNOCCUPIED TIMES, IN ORDER TO COMPLY WITH MECHANICAL VENTILATION REQUIREMENTS.
3. CONNECT REMOTE DUCT MOUNTED TEMP SENSOR FOR CONTROL OF UNIT THERMOSTAT, EACH UNIT.

C. VENTILATION (STANDARD): RT2 ONLY

1. RTU OA DAMPERS, UNDER NORMAL OPERATION, SHALL OPEN TO ALLOW FOR SCHEDULED OA VENTILATION WHEN THE FAN IS IN OPERATION. COORDINATE WITH BALANCING CONTRACTOR TO MAKE FINAL MEASUREMENTS AND SETTINGS OF ALL MINIMUM OA DAMPER POSITIONS.
2. FACTORY BAROMETRIC RELIEF DAMPERS ON RTUS SHALL AUTOMATICALLY OPEN AND RELIEVE EXCESS BUILDING PRESSURE WHENEVER REQUIRED.
3. OA DAMPERS SHALL AUTOMATICALLY CLOSE WHEN FAN IS OFF.

D. VENTILATION (DCV): RT1 ONLY

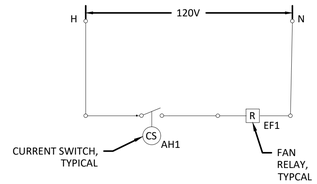
1. OA DAMPERS, UNDER NORMAL OPERATION, SHALL PROVIDE DEMAND CONTROLLED VENTILATION (DCV). COORDINATE WITH BALANCING CONTRACTOR TO MAKE FINAL MEASUREMENTS AND SETTINGS OF MINIMUM OA DAMPER POSITIONS.
2. RA DUCT MOUNTED CO2 SENSOR SHALL MODULATE OA DAMPERS AS NEEDED TO MAINTAIN 1000 PPM SET POINT (ADJUSTABLE).
3. FACTORY BAROMETRIC RELIEF DAMPERS ON RTU'S SHALL AUTOMATICALLY OPEN AND RELIEVE EXCESS AIR FROM BUILDING WHENEVER INDOOR PRESSURE IS ABOVE MIN +0.01".

E. DX COOLING:

1. UPON CALL FOR COOLING FROM REMOTE DUCT MOUNTED SENSOR, RTU SHALL OPERATE IN COOLING MODE TO STAGE ON/OFF REFRIGERANT COMPRESSOR STAGES IN SEQUENCE, AS NEEDED TO MAINTAIN ROOM TEMPERATURE SET POINT.

F. HEATING SYSTEMS:

1. UPON CALL FOR HEATING FROM REMOTE DUCT MOUNTED SENSOR, RTU SHALL STAGE ELECT HEATER ON/OFF AS NEEDED TO MAINTAIN ROOM TEMPERATURE SET POINT.



2 M3 FAN INTERLOCK DIAGRAM
NO SCALE

NOTES:

1. ALL CONTROL WORK SHALL BE PERFORMED BY PERSON(S) OR SUBCONTRACTOR WITH MIN. 3 YRS EXPERIENCE IN COMMERCIAL HVAC CONTROLS. RESIDENTIAL WORK SHALL NOT BE COUNTED AS EXPERIENCE IN COMMERCIAL WORK.
2. DIAGRAM SHOWS GENERAL ARRANGEMENT ONLY. PROVIDE ALL CUSTOM CONTROL CABINET(S), FIELD WIRING AND FIELD INSTALLED DEVICES REQUIRED, WETHER SHOWN OR NOT, FOR A FULLY FUNCTIONING SYSTEM.
3. PROVIDE SUITABLE NEMA-4X RATED ENCLOSURES IN ACCESSIBLE LOCATIONS FOR ALL CONTROL COMPONENTS UNLESS WALL, ROOF, DUCT OR UNIT MOUNTED. ALL CONTROL WIRING SHALL BE IN SUITABLE CONDUIT RATED FOR ENVIRONMENT WHERE INSTALLED. CONTROL WIRING ABOVE CEILING SHALL BE IN PLENUM RATED CABLE WITH SUPPORTS AS REQUIRED BY LATEST NEC CODE.
4. COORDINATE WITH ELECTRICAL TO PROVIDE 120V POWER AS NEEDED FOR ALL HVAC CONTROLS.
5. CONTROL SEQUENCE: WHEN RTUs STARTS AND RUNS, CURRENT SWITCH ON FAN MOTOR WILL CLOSE AND SEND POWER TO FAN RELAY TO START EF1. WHEN RTUs STOP, FAN RELAY SHALL OPEN AND FAN SHALL STOP.

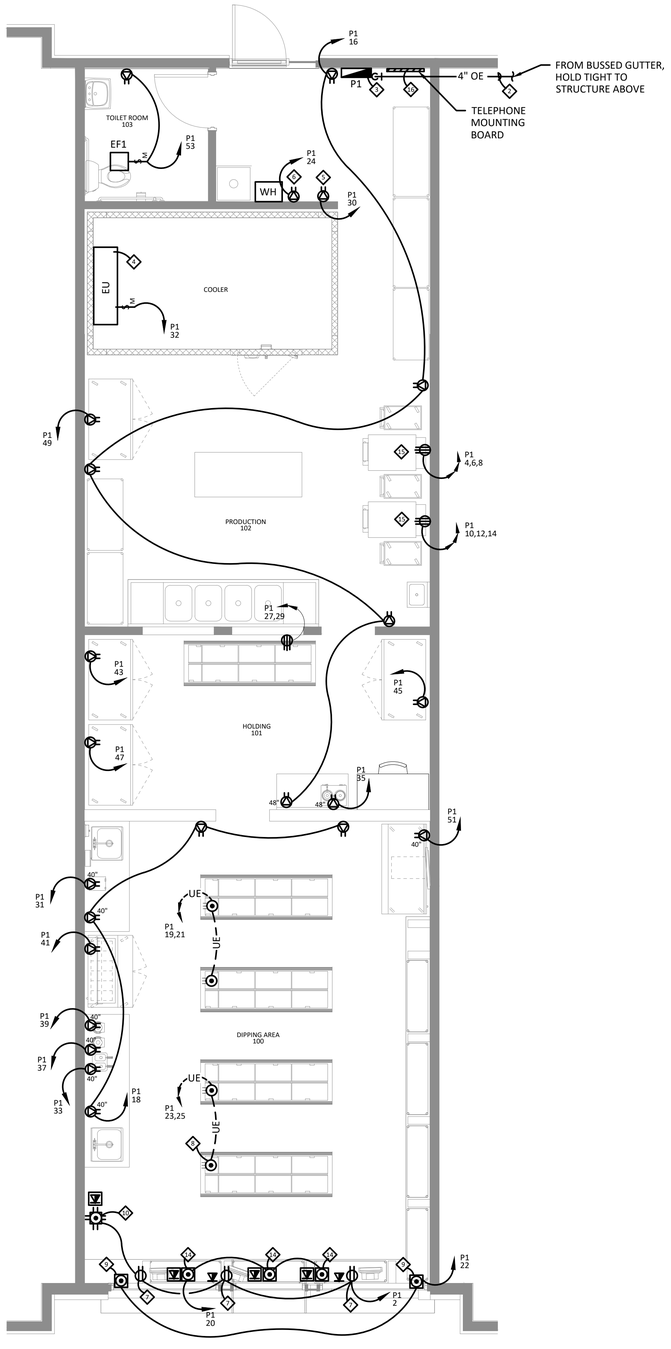
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HANDEL'S ICE CREAM STORE

1

SHEET :
M3
HVAC SCHEDULES AND DETAILS
OF : 3

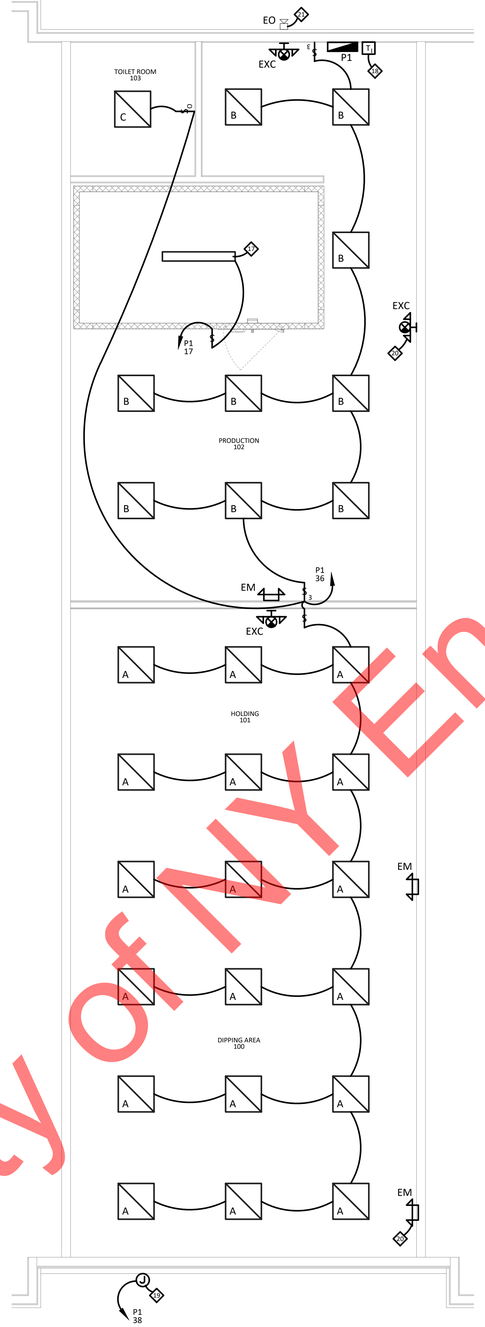


PLAN - ELECTRICAL

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

NOTES

1. COORDINATE WITH OWNER, FINAL RECEPTACLE AND DATA BOX LOCATIONS AND MOUNTING HEIGHTS, PRIOR TO ROUGH-IN. LOCATIONS SHOWN ON PLANS ARE PRELIMINARY.



PLAN - LIGHTING

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

NOTES:

1. COORDINATE WITH OWNER, ALL LIGHT SWITCH LOCATIONS PRIOR TO ROUGH-IN. LOCATIONS SHOWN ARE PRELIMINARY ONLY.

KEYNOTES:

1. EXIST ELECT UTILITY POINT OF SERVICE, BUSSED GUTTER, AND NEW TENANTS ELECTRICAL METER. SEE RISER DIAGRAM FOR DETAILS.
2. OVERHEAD SERVICE FEEDER FROM MAIN SWITCH AT BUSSED GUTTER TO SERVICE PANEL. HOLD CONDUIT TIGHT TO STRUCTURE ABOVE. SEE RISER DIAGRAM FOR CONDUIT AND WIRE SIZES
3. NEW PANEL LOCATION, FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH FRAMING CONTRACTOR TO ENSURE PROPER CLEARANCE FOR PANEL ROUGH-IN, TYPICAL. ROUTE NEW OR EXISTING FEEDER TO TO NEW PANEL LOCATION.
4. COORDINATE WITH REFRIGERATION CONTRACTOR PROVIDE POWER CONNECTIONS FOR COOLER LIGHTING AND EVAPORATOR. VERIFY FINAL LOCATION AND REQUIREMENTS FOR CONNECTION WITH REFRIGERATION CONTRACTOR.
5. COORDINATE WITH PLUMBING CONTRACTOR TO PROVIDE GFI RECEPTACLE FOR RECIRCULATION PUMP RP, LOCATION SHOWN IS PRELIMINARY.
6. COORDINATE WITH PLUMBING CONTRACTOR TO PROVIDE CORD AND PLUG CONNECTION FOR WALL MOUNTED WATER HEATER.
7. COORDINATE FINAL RECEPTACLE AND DATA BOX LOCATIONS IN MILLWORK WITH OWNER, PRIOR TO ROUGH-IN. LOCATIONS SHOWN ARE PRELIMINARY ONLY. SEE DETAIL 1/E5 FOR POS RECEPTACLE LOCATIONS.
8. COORDINATE WITH OWNER FOR FINAL LOCATION OF ALL FLOOR RECEPTACLES, PRIOR TO ROUGH-IN. LOCATIONS SHOWN ARE PRELIMINARY ONLY, TYPICAL 4 PLACES. POSITION BOXES TO ALIGN WITH OWNER EQUIPMENT AS REQUIRED. SEE DETAIL 2/E5.
9. PROVIDE CEILING MOUNTED RECEPTACLE FOR SHOW WINDOW, TYPICAL 2 PLACES. COORDINATE FINAL LOCATIONS WITH OWNER PRIOR TO ROUGH-IN.
10. PROVIDE QUAD RECEPTACLE IN CEILING FOR ORDERING MONITOR, COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN.
11. PROVIDE FOURPLEX FOR KITCHEN DISPLAY SCREEN & KDS BOX. VIEW 3RD PARTY STATION DETAIL, REFER TO ARCHITECTURAL PLAN. SEE E-05 DET-4. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
12. PROVIDE FOURPLEX FOR INTERNET ROUTER, NETWORK FIREWALL & POS SWITCH. SEE E-05 DET-8. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
13. PROVIDE FOURPLEX FOR SECURITY DISPLAY, SECURITY DVR & AUDIO RECEIVER. SEE E-05 DET-8. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
14. PROVIDE NEW RECEPTACLE AND DATA BOX IN CEILING FOR TV FLAVOR BOARDS, TYPICAL 3 PLACES.
15. COORDINATE WITH EQUIPMENT PROVIDER TO INSTALL BX CABLE CORD, 50A, 3P/4W, 125/250V, NEMA L14-50 FOR CARPIGIANI BATCH FREEZER, SEE DETAIL 3/E5.
16. NEW TELEPHONE MOUNTING BOARD WITH #6 CU GND, TO COMPLY WITH NEC 800-100. EXTEND EXISTING CONDUIT TO NEW LOCATION AS REQUIRED. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT PRIOR TO INSTALLATION.
17. COORDINATE WITH REFRIGERATION CONTRACTOR PROVIDE POWER CONNECTIONS FOR COOLER LIGHTING. VERIFY FINAL LOCATION AND REQUIREMENTS FOR CONNECTION WITH REFRIGERATION CONTRACTOR.
18. INDOOR LIGHTING TIMER, INSTALLED IN ACCESSIBLE LOCATION FOR ADJUSTMENT, COORDINATE FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN. SEE DETAILS FOR WIRING.
19. COORDINATE WITH OWNER TO LOCATE JBOX AND POWER CIRCUIT FOR OWNER FURNISHED SIGNAGE IN DESIGNATED AREA ABOVE STOREFRONT. LOCATION SHOWN IS PRELIMINARY. PROVIDE FINAL CONNECTION TO OWNER FURNISHED SIGNAGE.
20. ALL EMERGENCY LIGHTING, INCLUDING EXIT SIGNS, ARE ON CIRCUIT P1-34. WIRING NOT SHOWN FOR CLARITY.
21. EXIST EMERGENCY LIGHT TO REMAIN. FIELD VERIFY EXISTING CONDITIONS. IF NEEDED, PROVIDE NEW FIXTURE AS SHOWN.

LIGHTING CONTROLS:	
(C405.2.1) OCCUPANT SENSOR	TOILET ROOM 103
(C405.2.2) TIME-SWITCH CONTROLS	DIPPING AREA 100, HOLDING 101 & PRODUCTION 102

NOTES:

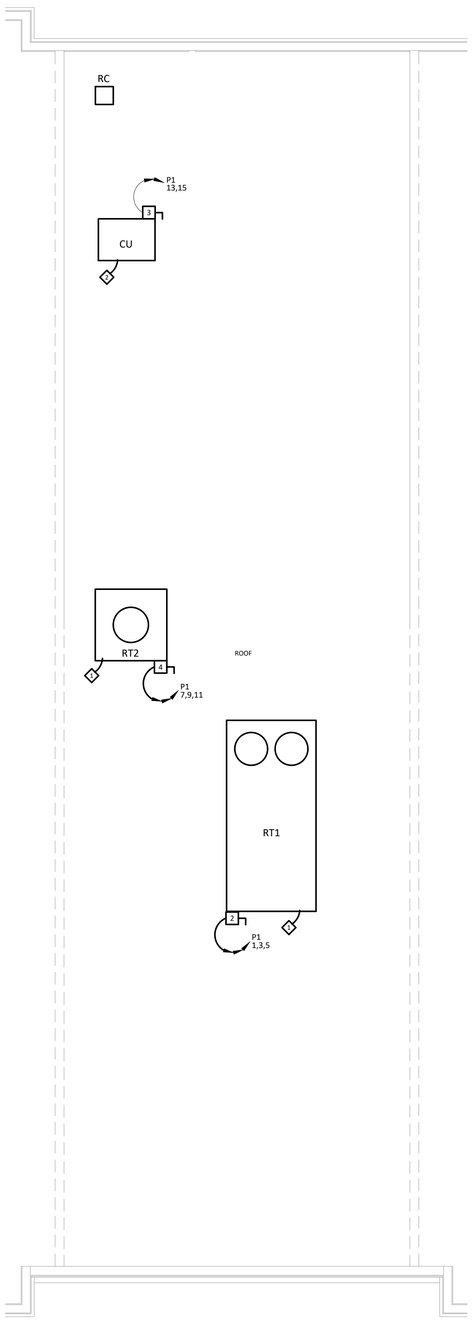
1. PLEASE REFER TO SHEET E3 DET-1 LIGHTING CONTROL DETAIL FOR EXACT CONTROL OF INDOOR LIGHTING & OUTDOOR SIGNAGE VIA TIMER.

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HANDEL'S ICE CREAM STORE

SHEET :
E1
ELECTRICAL PLANS AND NOTES
OF : 5



ROOF PLAN - ELECTRICAL

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

NOTES:
1. COORDINATE WITH HVAC CONTRACTOR FOR FINAL EQUIPMENT LOCATIONS, PRIOR TO ROUGH-IN. LOCATIONS SHOWN ON PLANS ARE PRELIMINARY.
2. PROVIDE CONNECTIONS FOR 120V CONVIENECE OUTLETS WHERE PROVIDED WITH HVAC EQUIPMENT, COORDINATE WITH HVAC CONTRACTOR FOR REQUIREMENTS.

KEYNOTES:

1. COORDINATE WITH MECH CONTRACTOR TO PROVIDE POWER CONNECTIONS FOR EXIST ROOFTOP UNIT WITH FACTORY 120V CONVENIENCE RECEPTACLE. PROVIDE FIELD CONNECTION FOR RECEPTACLE, TYPICAL 2 PLACES. FIELD VERIFY EXISTING CONDITIONS AND POWER REQUIREMENTS.
2. COORDINATE WITH REFRIGERATION CONTRACTOR TO LOCATE AND PROVIDE POWER CONNECTIONS FOR COOLER CONDENSER. VERIFY FINAL LOCATION AND REQUIREMENTS FOR CONNECTION WITH REFRIGERATION CONTRACTOR.

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HANDEL'S ICE CREAM STORE

SHEET :
E2
ROOF ELECTRICAL PLAN AND NOTES
OF : 4

LIGHTING FIXTURE SCHEDULE

MARK	TYPE	MANUFACTURER	MODEL NO.	MOUNTING	MTG HEIGHT FT	INPUT VOLT	INPUT WATTS	LUMENS	LAMP TYPE	COLOR TEMP	BUG RATING	FACTORY ACCESSORIES
A	TROFFER	LITHONIA	CPX 2X2 3200LM 80 40K SWL MVOLT	LAY-IN	CEILING	120	30	3,700	LED	4000K		
B	TROFFER	LITHONIA	CPX 2X2 4000LM 80 40K SWL MVOLT	LAY-IN	CEILING	120	36	4,500	LED	4000K		
C	TROFFER	LITHONIA	CPX 2X2 6000LM 80 40K SWL MVOLT	LAY-IN	CEILING	120	54	6,600	LED	4000K		
EXC	COMBO EXIT/ EMERGENCY LIGHT	COMPAC	CLXNRW	SURFACE	7.5	120	10	NA	LED	N/A		EMERGENCY BATTERY
EM	EMERGENCY LIGHT	COMPAC	CLU2NW	SURFACE	7.5	120	10	NA	LED	N/A		EMERGENCY BATTERY
EO	EMERGENCY LIGHT-OUTDOOR	PHILIPS	PLEMBZ	SURFACE	9	120	10	NA	LED	N/A		EMERGENCY BATTERY

NOTE: PROVIDE ADDITIONAL UN-SWITCHED HOT WIRE CONNECTION FOR ALL EMERGENCY BATTERIES PER MFG'S INSTRUCTIONS, NOT SHOWN ON PLANS FOR CLARITY.

SERVICE PANEL SCHEDULE

	120/208	VOLTS	PANEL : P1		MAIN BREAKER :	MLO	AMPS
18K AIC	3	PHASE	LOCATION : STOCK ROOM		BUSSING :	400	AMPS
MIN. SC RATING	4	WIRE	FEEDER : SEE RISER DIAGRAM		ENTER CABINET AT :	TOP	

WIRE AND CONDUIT H	N	G	C	SERVES	WATTAGE A	B	C	CIRC #	BRK A	PHASE A - B - C	BRK A	CIRC #	WATTAGE A	B	C	SERVES	WIRE AND CONDUIT H	N	G	C
3	-	8	1 1/4"	RT1	9,126			1			20	2	720			POS RECEPTACLES	12	12	12	1/2"
						9,126		3	3P/80			4		4,203						
							9,126	5			3P/40	6			4,203	CARPIGIANI BATCH FREEZER	8	-	10	3/4"
4	-	8	1"	RT2	6,485			7				8	4,203							
						6,485		9	3P/60			10		4,203						
							6,485	11			3P/40	12			4,203	CARPIGIANI BATCH FREEZER	8	-	10	3/4"
12	-	12	1/2"	REFRIG. CONDENSING UNIT	1,664			13				14	4,203							
						1,664		15	2P/25			16		900		RECEPTACLES-PRODUCTION	12	12	12	1/2"
12	12	12	1/2"	COOLER LIGHTING			600	17	20			18			720	RECEPTACLES-PRODUCTION	12	12	12	1/2"
12	-	12	1/2"	SERVING CABINETS	1,248			19	2P/20 GFI			20	1,500			TV FLAVOR BOARDS	12	12	12	1/2"
						1,248		21				22		360		SHOW WINDOW RECEPTACLES	12	12	12	1/2"
12	-	12	1/2"	SERVING CABINETS			1,248	23	2P/20 GFI			24			960	WATER HEATER WH1	12	12	12	1/2"
					1,248			25				26	918			INTERIOR LIGHTING	12	12	12	1/2"
12	-	12	1/2"	HOLDING CABINET		1,248		27	2P/20			28		1,000		OWNER SIGNAGE	12	12	12	1/2"
							1,248	29				30			500	RECIRC PUMP	12	12	12	1/2"
12	12	12	1/2"	ARTIC SWIRL	1,200			31	20			32	360			COOLER EVAPORATOR UNIT	12	12	12	1/2"
12	12	12	1/2"	EZ TOPPER		400		33	20			34		100		EMERGENCY LIGHTING	12	12	12	1/2"
12	12	12	1/2"	TWIN TOPPING WARMER			1,000	35	20			36				SPACE				
12	12	12	1/2"	BLENDER	1,320			37	20			38				SPACE				
12	12	12	1/2"	BLENDER		1,320		39	20			40				SPACE				
12	12	12	1/2"	SANDWICH UNIT			720	41	20			42				SPACE				
12	12	12	1/2"	2 DOOR FREEZER	1,152			43	20			44				SPACE				
12	12	12	1/2"	2 DOOR FREEZER		1,152		45	20			46				SPACE				
12	12	12	1/2"	2 DOOR FREEZER			1,152	47	20			48				SPACE				
12	12	12	1/2"	2 DOOR FREEZER	1,152			49	20			50				SPACE				
12	12	12	1/2"	WORKTOP FREEZER		600		51	20			52				SPACE				
12	12	12	1/2"	EXH FAN EF1			500	53	20			54				SPACE				
				TOTAL	24,595	23,243	22,079					TOTAL	11,904	10,766	10,586					

PHASE GRAND TOTALS

A	B	C	
36,499	34,009	32,665	WATTS
304	283	272	AMPS

PANEL GRAND TOTAL: 103,173 WATTS
LOAD FACTOR: 1.00
MIN. PANEL RATING: 286 AMPS

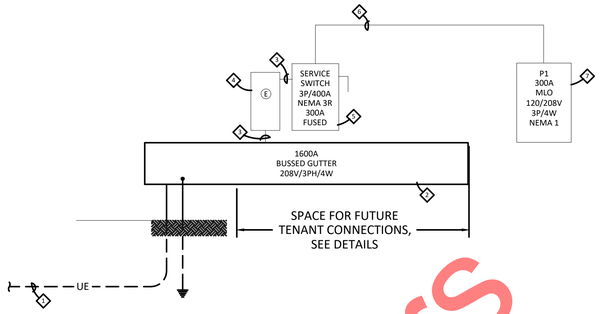
LEGEND:
GFI = GFI BREAKER
ST = SHUNT TRIP BREAKER
AFI = ARC FAULT BREAKER

DISCONNECT SWITCH SCHEDULE

MARK	SERVES	NO. POLES	RATED AMPS	TYPE	FUSE AMPS	VOLTS	ENCLOSURE	REMARKS
1	SERVICE SWITCH	3	400	FUSED	300	208	NEMA 3R	WALL MOUNTED
2	RT1	3	60	NFDS	NA	208	NEMA 3R	UNIT MOUNTED
3	RT2	3	60	NFDS	NA	208	NEMA 3R	UNIT MOUNTED
4	CU	2	30	NFDS	NA	208	NEMA 3R	UNIT MOUNTED

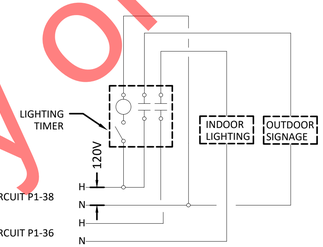
LOAD ANALYSIS: PANEL P1

LIGHTING:	1,700	VA
RECEPTACLES:	4,200	VA
APPLIANCES:	45,194	VA
PRODUCTION LOADS:	0	VA
LARGER OF HEATING OR AC LOADS:	46,833	VA
MOTOR LOADS:	4,328	VA
GRAND TOTAL:	102,255	VA
120/208V/3PH/4W	284	A



2 E3 ELECTRICAL RISER DIAGRAM
NO SCALE

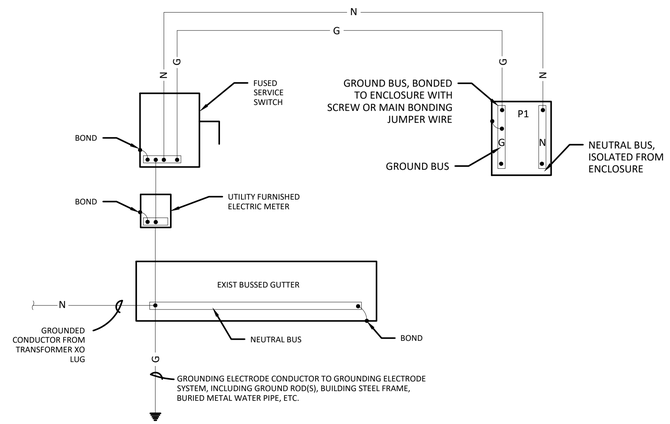
1. EXIST SERVICE CONDUCTORS: EXISTING SERVICE CONDUCTORS FROM UTILITY TRANSFORMER, FIELD VERIFY EXISTING CONDITIONS.
2. ELECTRICAL POINT OF SERVICE: RATINGS AS SHOWN ABOVE ARE PRELIMINARY ONLY. CONNECT TO EXIST BUSSED GUTTER WITH NEW TENANT METER CONNECTION, OR REUSE EXISTING METER AND SWITCH IF CONDITIONS PERMIT. FIELD VERIFY EXISTING CONDITIONS.
3. SERVICE CONDUCTORS: 4 #400 IN 4" CONDUIT, COORDINATE ROUGH-IN REQUIREMENTS WITH UTILITY.
4. ELECTRIC METER: UTILITY FURNISHED ENCLOSURE TO BE INSTALLED BY CONTRACTOR, COORDINATE ROUGH-IN WITH UTILITY.
5. SERVICE SWITCH: RATINGS AS SHOWN ABOVE. COORDINATE ROUGH-IN REQUIREMENTS WITH UTILITY.
6. PANEL FEEDER: 4 #400 MCM AND #4 CU GND IN 4" CONDUIT. ROUTE TO NEW PANEL IN TENANT SPACE.
7. SERVICE PANEL: RATINGS AS SHOWN, LOCATED IN TENANT SPACE, SEE PLANS.



1 E3 INDOOR LIGHTING CONTROL DETAIL
NO SCALE

NOTES:

1. LOCATE ALL LIGHTING CONTROLS IN ACCESSIBLE LOCATION FOR SERVICE AND ADJUSTMENT.
2. PROGRAM TIMER TO OPERATE LIGHTING ACCORDING TO OWNERS SCHEDULES. UTILIZE MFG'S INSTRUCTIONS TO MAKE ALL SETTING ADJUSTMENTS.
3. ALL CIRCUITS SHOWN ARE 120V/20A/1PH.
4. PROVIDE WIRE LABELS FOR EACH CIRCUIT, INCLUDING PANEL AND CIRCUIT NO.



3 E3 SERVICE GROUNDING DETAIL
NO SCALE

NOTES:

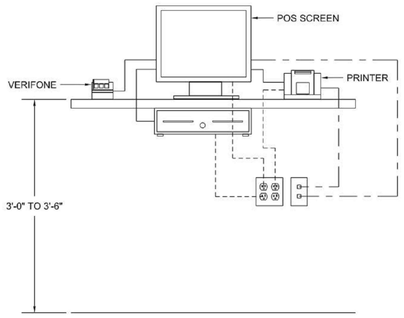
1. DIAGRAM ABOVE IS GENERAL ARRANGEMENT ONLY. PHASE CONDUCTORS NOT SHOWN FOR CLARITY.
2. SEE RISER DIAGRAM FOR NEUTRAL AND GROUND CONDUCTOR SIZES NOT SHOWN ABOVE.

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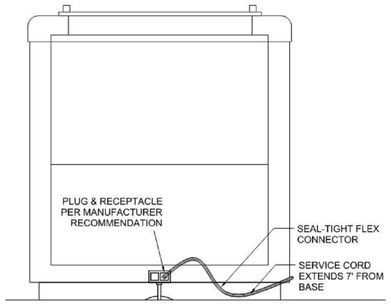
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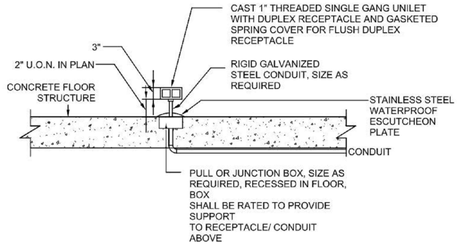
HANDEL'S ICE CREAM STORE

SHEET :
E3
ELECTRICAL SCHEDULES AND DETAILS
OF : 4

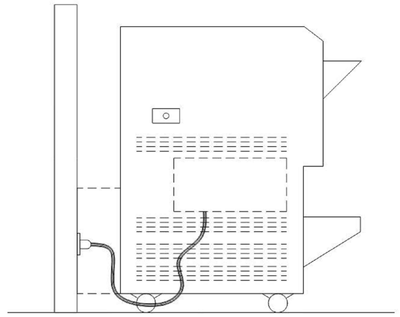


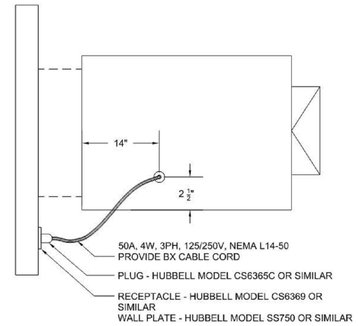
1 E4 POS STATION DETAILS
NO SCALE



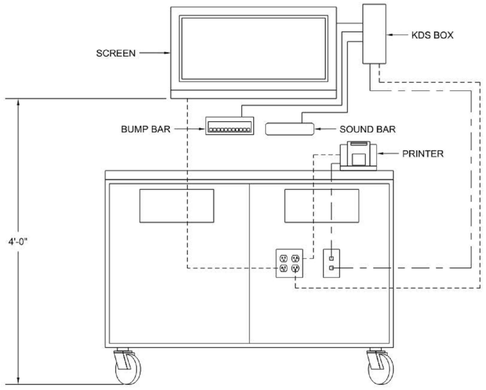


2 E4 SERVING CABINET ROUGH-IN
NO SCALE

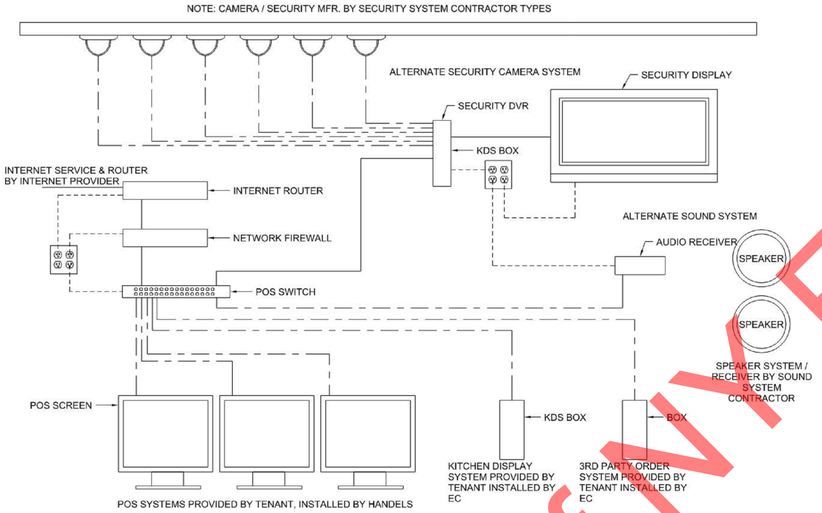




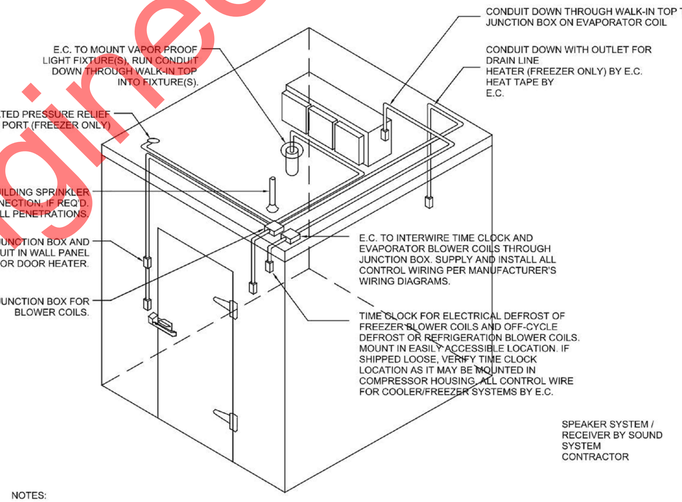
3 E4 CARPIGIANI BATCH FREEZER ELECTRICAL SUPPLY
NO SCALE



4 E4 32" 3RD PARTY STATION
NO SCALE



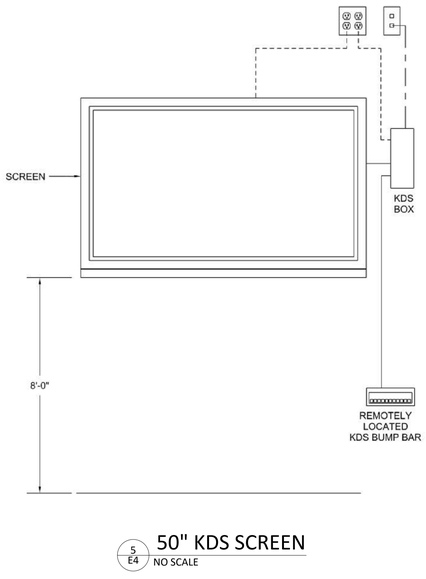
6 E4 BOH A/V SETUP
NO SCALE



NOTES:

1. THIS DETAIL IS TYPICAL AND SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE E.C. SHALL OBTAIN THE WALK-IN VENDOR'S WRITTEN INSTALLATION INSTRUCTIONS AND PROVIDE ALL INDICATED ELECTRICAL WORK.
2. COORDINATE EXACT SCOPE AND REQUIREMENTS WITH OWNER AND OWNER'S WALK-IN VENDOR.
3. ALL INTERCONNECTING CONDUIT TO BE RUN ABOVE WALK-IN. EXPOSED CONDUIT INSIDE THE WALK-IN SHALL NOT BE ALLOWED EXCEPT FOR THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. SEAL ALL PENETRATIONS THROUGHOUT WALK-IN. SEAL ALL ELECTRICAL CONDUIT WITH THERMAL PLASTIC.

7 E4 WALK-IN ELECTRICAL DETAIL
NO SCALE



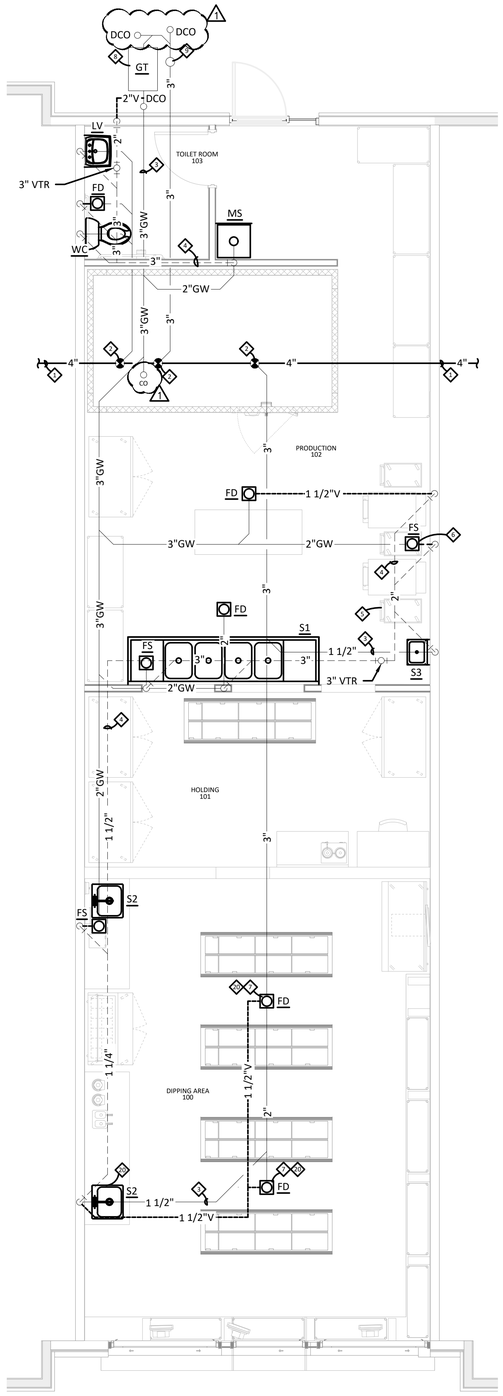
5 E4 50" KDS SCREEN
NO SCALE

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HANDEL'S ICE CREAM STORE

SHEET :
E4
ELECTRICAL SCHEDULES
OF : 4



PLAN - DWV PIPING

N · 1 / P1 · SCALE: 1/4"=1'-0"

NOTES:

1. SEE PLUMBING FIXTURE SCHEDULE FOR ALL INDIVIDUAL DRAIN AND VENT CONNECTION SIZES, NOT SHOWN ON PLANS FOR CLARITY.
2. PROVIDE A WALL CLEANOUT BENEATH ALL LAVATORIES AND SINKS, NOT SHOWN ABOVE FOR CLARITY.
3. PROVIDE EXCAVATION OF FLOOR AS REQUIRED TO LOCATE EXISTING AND INSTALL NEW PIPING AS SHOWN ON PLANS.



PLAN - WATER AND GAS PIPING

N · 2 / P1 · SCALE: 1/4"=1'-0"

NOTES:

1. SEE PLUMBING FIXTURE SCHEDULE FOR ALL INDIVIDUAL WATER CONNECTION SIZES, NOT SHOWN ON PLANS FOR CLARITY.
2. ALL HW RE-CIRCULATION PIPING AND VALVES SHALL BE 1/2", NOT SHOWN FOR CLARITY.

KEYNOTES:

1. EXIST 4" BUILDING SEWER LINE. FIELD VERIFY ACTUAL LOCATION, SIZE AND INVERT ELEVATION PRIOR TO STARTING WORK.
2. CONNECT TO EXISTING DRAIN LINE, TYPICAL 3 PLACES. FIELD VERIFY LOCATION AND INVERT ELEVATION OF EXISTING DRAIN LINE. LOCATION SHOWN IS PRELIMINARY.
3. NEW UNDER FLOOR DRAIN LINES, TYPICAL, PROVIDE EXCAVATION OF FLOOR FOR INSTALLATION. BACKFILL WITH CLEAN SAND AND DIRT, AND REPAIR FLOOR AFTER INSTALLATION. COORDINATE FINAL REQUIREMENTS WITH ARCHITECT OR STRUCTURAL.
4. NEW VENT PIPING ABOVE CEILING, MIN. 12" CLEARANCE ABOVE CEILINGS. COORDINATE REMOVAL OF CEILINGS OR LIGHTING AS NEEDED FOR INSTALLATION WHERE REQUIRED FOR WORK SHOWN.
5. PROVIDE INDIRECT DRAIN CONNECTION FOR OWNER FURNISHED REFRIGERATION EQUIPMENT, 3 PLACES. COORDINATE FINAL LOCATIONS AND REQUIREMENTS WITH EQUIPMENT SUPPLIER, PRIOR TO ROUGH-IN.
6. COORDINATE WITH OWNER AND EQUIPMENT SUPPLIER TO LOCATE FLOOR SINK AS NEEDED TO DRAIN EQUIPMENT PER MFG'S INSTRUCTIONS.
7. COORDINATE WITH OWNER/SUPPLIER TO LOCATE FLOOR DRAIN PRIOR TO ROUGH-IN, TYPICAL 2 PLACES. LOCATION AND TYPE SCHEDULED ARE PRELIMINARY ONLY. COORDINATE FINAL SELECTION OF DRAIN WITH OWNER/SUPPLIER.
8. GREASE TRAP BELOW GRADE WITH STEEL GRADE COVERS. COORDINATE FINAL LOCATION WITH OWNER AND CIVIL. PROVIDE EXTENSIONS AND GRADE COVER FOR SERVICE ACCESS.
9. PROVIDE MIN. 6" SAMPLE PORT DOWNSTREAM OF GREASE TRAP FOR INSPECTION. COORDINATE REQUIREMENTS WITH LOCAL AHJ.
10. CONNECT TO EXISTING CW LINE OR TENANT SERVICE VALVE ABOVE CEILING IN THIS AREA, FIELD LOCATE EXISTING LINE, LOCATIONS SHOWN ARE PRELIMINARY.
11. PROVIDE WATER CONNECTION FOR OWNER FURNISHED EQUIPMENT OR FIXTURE. WHERE REQUIRED, PROVIDE BACKFLOW PREVENTION AND OR WATER HAMMER ARRESTOR, SEE SPECS. ENSURE MIN. 1/8" PER FOOT SLOPE TOWARDS SANITARY SEWER OR SUMP BASIN. COORDINATE WITH OWNER FOR INSTALLATION REQUIREMENTS.
12. PROVIDE TANKLESS GAS FIRED WATER HEATER, WALL MOUNTED ABOVE MOP SINK. COORDINATE SUPPORT DESIGN AND INSTALLATION WITH STRUCTURAL. ROUTE WATER HEATER DRAINS INTO MOP SINK BELOW. PROVIDE 3" PVC INTAKE AND VENT PIPE WITH CONCENTRIC WALL VENT AS SHOWN. SEE DETAILS.
13. PROVIDE HW RECIRC PUMP, INSTALLED IN ACCESSIBLE LOCATION FOR SERVICE AND ADJUSTMENT. COORDINATE WITH ELECTRICAL TO PROVIDE POWER CONNECTIONS. SET UP PUMP ENERGY CONTROLS AS REQUIRED BY LATEST ENERGY CODES.
14. PROVIDE POINT-OF-USE TYPE, HW MIXING VALVE FOR ALL NEW LAVATORIES AND HAND SINKS, SET TO MAX. 105°F, SEE SCHEDULES. LOCATE VALVE IN ACCESSIBLE LOCATION FOR SERVICE AND ADJUSTMENT.
15. COORDINATE WITH OWNER FOR FINAL LOCATION OF HOSE BIB FOR SIDEWALK WASH DOWN, PRIOR TO ROUGH-IN. LOCATION SHOWN IS PRELIMINARY ONLY.
16. EXIST FUEL GAS POINT OF SERVICE HEADER AND REGULATOR FOR BUILDING.
17. COORDINATE WITH LOCAL UTILITY TO PROVIDE NEW FUEL GAS SERVICE TO TENANT SUITE, WITH METER AND STOP VALVE. SEE SCHEDULES FOR REQUIRED GAS DEMAND AND PRESSURE. MIN. 199 CFH DEMAND FOR NEW TENANT SUITE.
18. 1 1/4" FUEL GAS PIPING TO WATER HEATER CONNECTION, SEE DETAILS.
19. EXIST CW SUPPLY LINE FOR TENANT CONNECTIONS, FIELD VERIFY LOCATION AND SIZE. LOCATION AND SIZE SHOWN IS PRELIMINARY ONLY.
20. DO NOT USE ANY EQUIPMENT TO WASH SERVING CABINET AND HAND SINK THAT MAY POTENTIALLY GENERATE GREASE AND NO FATS, OIL OR GREASE ARE PERMITTED IN THIS FIXTURE.

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HANDEL'S ICE CREAM STORE

SHEET :
P1
DWV PIPING
PLANS AND NOTES
OF : 4

GREASE INTERCEPTOR SIZING

FIXTURE	QTY	DFU PER UNIT	TOTAL DFU	FLOW-THROUGH GPM
FLOOR SINK	1	2	2	1
DUMP SINK	1	2	2	1
FLOOR DRAIN	2	2	4	2
4-COMPARTMENT SINK	1	8	8	4
MOP SINK	1	2	2	1
			TOTAL:	9
GREASE RETENTION CAPACITY:		18 LBS		

INTECEPTOR SCHEDULE

MARK	GT
SERVES	GREASE
TYPE	UNDERGROUND
TRAP MATERIAL	POLY
FLOW RATE (GPM)	9
GREASE CAPACITY (LBS)	40
TANK WEIGHT (LBS)	30
TANK INLET SIZE (IN)	2
TANK OUTLET SIZE (IN)	2
TANK VENT SIZE (IN)	2
LENGTH (IN)	29.0
WIDTH (IN)	19.5
HEIGHT (IN)	14.8
MANUFACTURER	ASHLAND
MODEL NO:	4800 SERIES
FACTORY ACCESSORIES:	EXTENSION RINGS, GRADE COVER

WATER HEATER SCHEDULE

MARK	WH1
DESCRIPTION	TANKLESS, GAS FIRED
DIMENSIONS (IN)	29H x 17W x 15D
SHIPPING WT. (LBS)	85
WATER CONNECTIONS (IN)	3/4
AIR INLET CONNECTION (IN)	3
VENT CONNECTION (IN)	3
TEMPERATURE RISE (F)	45
MAX. FLOW RATE (GPM)	8.5
MAX. GAS INPUT (MBH)	199
THERMAL EFFICIENCY (%)	94%
GAS PRESSURE (IN.WG.)	4 TO 10
ELECTRICAL INPUT	8A/120V/1PH
MANUFACTURER	RHEEM
MODEL NO.	RTGH-RH11DV

DRAIN SCHEDULE

MARK	FD	FS
TYPE	ROUND TOP, LIGHT DUTY	FLOOR SINK, PORCELAIN INTERIOR, DOME STRAINER
GRATE OPEN AREA (SQ.IN.)	23	31
FLOOR DRAIN DIMENSIONS (IN)	9" DIA.	12" SQUARE
BODY MATERIAL	CAST IRON	CAST IRON
GRATE MATERIAL	CAST IRON	STAINLESS
STRAINER MATERIAL	NA	STAINLESS
WASTE SIZE (IN)	2	4
VENT SIZE (IN)	1 1/2	3
WEIGHT (LBS)	21	32
MANUFACTURER	ZURN	J.R.SMITH
MODEL NO:	Z415	3150-Y-12

RECIRCULATION PUMP SCHEDULE

MARK	RP
FLOW (GPM)	3
TOT. PRESSURE (PSI)	46
TYPE	IN-LINE
INLET / DISCHARGE SIZE (IN)	1/2 NPT
WEIGHT (LBS)	8
MOTOR DATA	
MIN. MOTOR HP	0.13
MIN. PUMP EFFICIENCY (%)	75
RPM	3250
VOLTS/PHASE/HZ	120/1/60
MOTOR TYPE	ODP
MANUFACTURER	TACO
MODEL NO:	008-IQSF6
ACCESSORIES:	ENERGY CONTROLS

PLUMBING FIXTURE SCHEDULE

MARK	WC	LAV	S1	S2	S3	MS
DESCRIPTION	WATER CLOSET, TANK	LAVATORY, DROP IN	3 COMPARTMENT KITCHEN SINK	HAND SINK, DROP IN	HAND SINK, WALL HUNG	MOP SINK, FLOOR MOUNTED
FEATURES	FLOOR MOUNTED, ELONGATED BOWL, 1.28 GPF, PRESSURE ASSISTED	SQUARE BOWL, 21 x 18 x 4.5 DEEP, 4" CENTERS 0.5 GPM	TRIPLE BOWL, 18 x 18 x 18 DEEP, 18 GA STEEL, 2 HOLE 2.2 GPM	SQUARE BOWL, 20 x 22 x 13.5 DEEP, 20 GA STEEL, 4 HOLE 2.2 GPM	SQUARE BOWL, 20 x 22 x 13.5 DEEP, 20 GA STEEL, 4 HOLE 2.2 GPM	SQUARE, 24 x 24 x 14 DEEP, 18 GA BASIN 2.2 GPM
FINISH	VITREOUS CHINA	VITREOUS CHINA	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL
WASTE SIZE (IN)	3	1 1/4"	1 1/2	1 1/2	1 1/2	1 1/2
VENT SIZE (IN)	1 1/2	1 1/4"	1 1/2	1 1/2	1 1/2	1 1/2
CW SIZE (IN)	3/8	3/8	1/2	1/2	1/2	1/2
HW SIZE (IN)	-	3/8	1/2	1/2	1/2	1/2
MFG. & MODEL NO.	AM. STD. # 0355.12	AM. STD. # 0355.012	ATOSA # MRSA-3-D	EAGLE GROUP # SR19-16-13.5-1	BLENDPORT # BPHS-10140F0LRS	GSW # SE2424FM
ACCESSORIES:	SEAT: AM. STD. #5901.100.020 OPEN FRONT	CHICAGO FAUCET # 3600-E2805AB	ELKAY # LK943C FAUCET	GOOSENECK FAUCET INCLUDED	GOOSENECK FAUCET INCLUDED	FAUCET: GSW #AA-840E, SIDESPLASH: GSW #SExxxxFM-SP

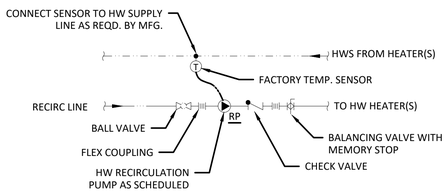
MIXING VALVE SCHEDULE

MARK	MV
INLET CONNECTIONS (NPT)	1/2"
OUTLET CONNECTIONS (NPT)	1/2"
MAXIMUM FLOW (GPM)	2.5
MAX PRESSURE DROP (PSI)	20
MANUFACTURER	POWERS
MODEL NO:	LFG480-01

GAS EQUIPMENT SCHEDULE

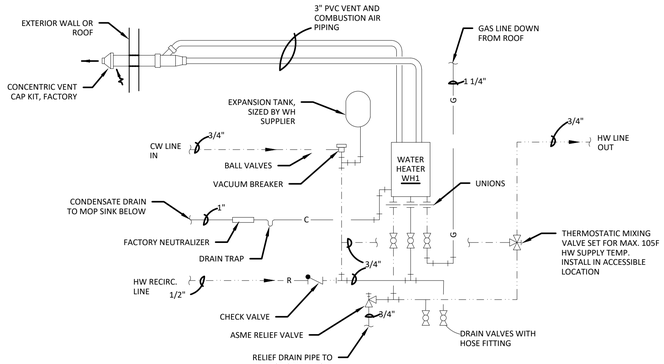
GAS BURNING EQUIPMENT	QTY	INPUT PRESS IN.WC.	INPUT MBH	GAS DEMAND CFH	TOTAL CFH
WATER HEATER WH1	1	7.0	199.0	199	199
TOTAL UNITS:	1			TOTAL CFH:	199

GAS METER DEMAND:	199	CFH
ESTIMATED SERVICE PRESSURE:	0.5	PSI
MDL: MAXIMUM DEVELOPED LENGTH TO UNITS:	100	FT
BUILDING GAS MAIN SIZE:	1 1/4"	



HW PUMP DETAILS
4 / P2 — NO SCALE

NOTE
1. SEE PLANS FOR PIPE SIZING, NOT SHOWN FOR CLARITY.
2. ADJUST BALANCING VALVE TO FLOW RATE SHOWN ON SCHEDULE.
3. INSTALL FACTORY TEMPERATURE SENSOR IN HW SUPPLY PIPING AS SHOWN, PER PUMP MFG'S INSTRUCTIONS. PROVIDE THERMOWELL FOR SENSOR AS REQUIRED.
4. PROVIDE ALL REQUIRED CONTROL WIRING AND PUMP SETUP AS REQUIRED TO COMPLY WITH LATEST IECC RECIRCULATION PUMP CONTROL SEQUENCES AS FOLLOWS:
   a) FACTORY PUMP CONTROLS SHALL AUTOMATICALLY START PUMP UPON A DEMAND FOR HOT WATER.
   b) CONTROLS SHALL AUTOMATICALLY STOP PUMP WHEN WATER IN CIRCULATION LOOP IS AT DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.
   c) CONTROLS SHALL AUTOMATICALLY LIMIT THE OPERATION OF THE PUMP FROM HEATING CYCLE STARTUP TO NOT GREATER THAN 5 MINUTES AFTER THE END OF CYCLE.

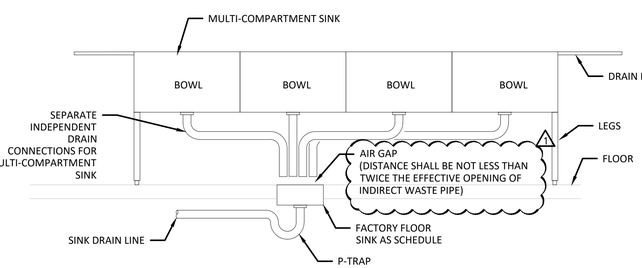


WATER HEATER DETAILS
5 / P2 — NO SCALE

NOTES:
1. PIPING SHOWN IS GENERAL ARRANGEMENT, FIELD ADJUST AS NEEDED.
2. MAINTAIN ALL REQUIRED SERVICE CLEARANCES AROUND WATER HEATER, PER MFG'S INSTRUCTIONS.
3. PROVIDE ALL REQUIRED VENT AND COMBUSTION AIR PIPING SYSTEMS PER MANUFACTURER'S INSTRUCTIONS, INCLUDING HANGERS AND SUPPORTS, TERMINAL CAPS, ETC.
4. PROVIDE CONDENSATE NEUTRALIZER AND DRAIN PIPING SYSTEM WITH PROPER SLOPE AS REQD. BY MANUFACTURER'S INSTRUCTIONS.
5. WATER HEATERS HAVE BUILT-IN RE-CIRCULATION PUMP AND CONTROLS TO MEET ENERGY CODE REQUIREMENTS.
6. INSTALL CONCENTRIC VENT TERMINAL PER MANUFACTURER'S INSTRUCTIONS.
7. PROVIDE ALL REQUIRED RE-CIRCULATION PUMP SETUP AS REQUIRED TO COMPLY WITH LATEST IECC CONTROL SEQUENCES AS FOLLOWS:
   a) FACTORY PUMP CONTROLS SHALL AUTOMATICALLY START PUMP UPON A DEMAND FOR HOT WATER.
   b) CONTROLS SHALL AUTOMATICALLY STOP PUMP WHEN WATER IN CIRCULATION LOOP IS AT DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.
   c) CONTROLS SHALL AUTOMATICALLY LIMIT THE OPERATION OF THE PUMP FROM HEATING CYCLE STARTUP TO NOT GREATER THAN 5 MINUTES AFTER THE END OF CYCLE.

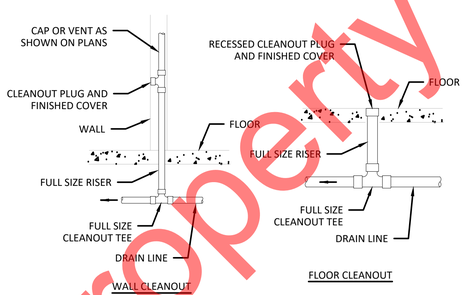
DRAIN PIPING DETAILS
2 / P2 — NO SCALE

NOTES:
1. WHERE REQUIRED TO PASS THROUGH CONC. GRADE BEAM, PROVIDE PVC PIPE SLEEVE AS SHOWN ABOVE.
2. CAULK ANNULAR SPACE BETWEEN DRAIN PIPING AND SLEEVE WITH SILICONE CAULKING.



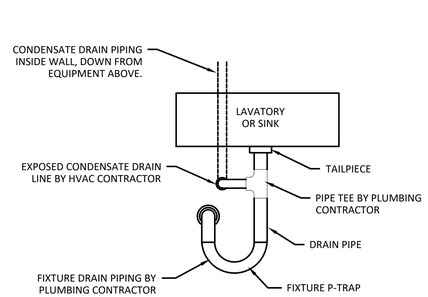
KITCHEN SINK DRAIN DETAILS
6 / P2 — NO SCALE

NOTES:
1. DETAIL ABOVE IS GENERAL ARRANGEMENT ONLY, MAKE FIELD ADJUSTMENTS AS NEEDED TO ENSURE PROPER DRAINAGE.



CLEANOUT DETAILS
1 / P2 — NO SCALE

NOTES:
1. DETAIL ABOVE IS GENERAL ARRANGEMENT ONLY, COORDINATE WITH CLEANOUT MFG'S INSTALLATION DETAILS WHERE REQUIRED.
2. PROVIDE CLEANOUT COVERS SUITABLE FOR THE ACTUAL CONDITIONS AT THE FINAL LOCATIONS, PER MFG RATINGS.



CONDENSATE DRAIN DETAIL
3 / P2 — NO SCALE

NOTES:
1. PIPING SHOWN ABOVE IS GENERAL ARRANGEMENT ONLY FOR INDIRECT DRAIN CONNECTIONS SHOWN ON HVAC PLANS.
2. COORDINATE WITH HVAC CONTRACTOR TO PROVIDE ROUGH-IN FOR CONDENSATE DRAIN CONNECTION AS SHOWN.

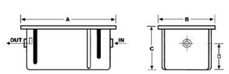
- **Certified** to the exacting standards of PDI.
- **Listed** by other local code authorities and national standards groups such as **IAPMO** and **UPC**.
- **PolyTrap®** is **Superior** to metal, fiberglass, or specially treated materials that are promoted as "preventing corrosion". PolyTrap® grease interceptors include a completely integrated surface guaranteed not to corrode, chip, peel or leach.
- **Leak-proof,** seamless constructed tank, manufactured with high-quality material that provides enhanced stiffness in combination with impact resistant properties.
- **Lightweight**, easy to handle and install – yet durable and sturdy to withstand the most rigorous applications of the plumbing industry.
- The unique resin used allows for use in applications requiring high temperature continuous service. No comparable material like it.
- Smooth, non-stick surface allows for easier and more complete cleaning, **Stay's Clean Looking.**
- Surfaces discourage bacteria build-up.
- High value for you – the customer.
- **Fast Delivery**, in stock.
- Can be used on floor or in ground flush to floor.
- Can be shipped anywhere for very low cost compared to metal competitors.



Options and Considerations for ordering
- All dimensions are nominal and may vary from table.
- 4800 Series models include flow control device.
- Matte finish on all covers to reduce slipping.
- Special HD Diamond Plate cover over-lays are available for pedestrian traffic areas.
- All units include removable baffle and internal air-relief.

* Check on code approval status & availability.

DATA ON DIMENSIONS & SPECIFICATIONS



Model Number		4804	4807	4810	4815	4820	4825	4835	4850	75*
Flow Rate G.P.M.		4	7	10	15	20	25	35	50	75
Grease Capacity (lbs.)		8	14	20	30	40	50	70	100	150
Approximate Dimensions (inches)	Length (A)	16.25	20	23	23	29	32.5	32.5	37	44.25
	Width (B)	10	14.5	14.5	19.5	19.5	19.5	22	25	25
	Height (C)	10.25	11.75	13.375	14	14.75	18	19	19	25
Bottom of unit to center of inlet/ outlet (D)		7	7.50	8.50	9.25	10.50	13	13.5	13.5	19.25
Nom. Wall Thickness (in.)		3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
Approximate Weight (lbs.)		10	15	18	25	30	35	40	50	72
Standard Inlet/Outlet (in.)		2	2	2	2	2	3	3	3	3
Liquid Holding Capacity (gal)		2.3	5.6	7.3	12.1	17.6	24.8	30.0	40.5	61.8

*Certification Pending

INTERCEPTOR DETAIL
7 / P2

NOTES:
1. COORDINATE FINAL INSTALLATION DETAILS AND REQUIRED ACCESSORIES WITH INTERCEPTOR MANUFACTURER. PROVIDE ALL REQUIRED PIPING AND ACCESSORIES FOR WORKING INSTALLATION.
2. FIELD VERIFY DEPTH OF EXISTING SANITARY SEWER LINE BEFORE STARTING WORK. NOTIFY ENGINEER IF ADEQUATE DEPTH IS NOT AVAILABLE FOR PROPER INSTALLATION.
3. PROVIDE EXTENSION RINGS TO BRING TRAP ACCESS TO GRADE LEVEL, PROVIDE STEEL GRADE COVER.

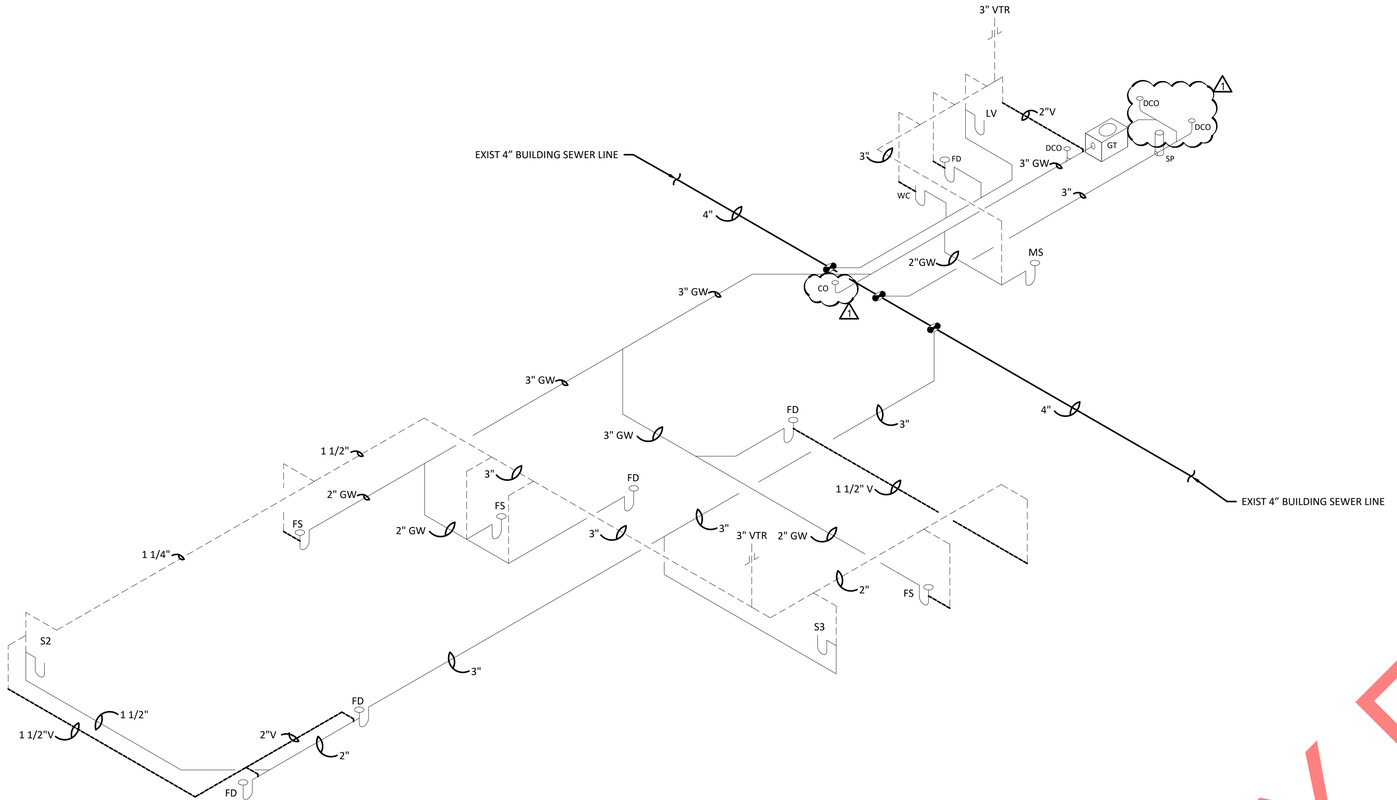
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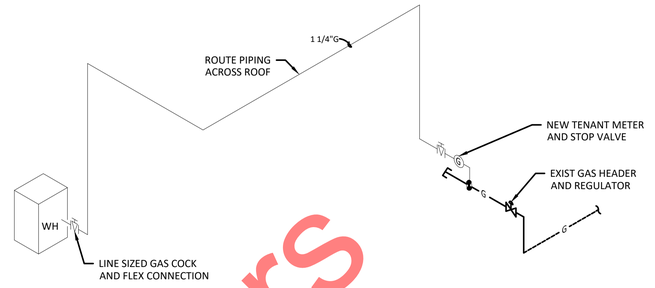
HANDEL'S ICE CREAM STORE

1

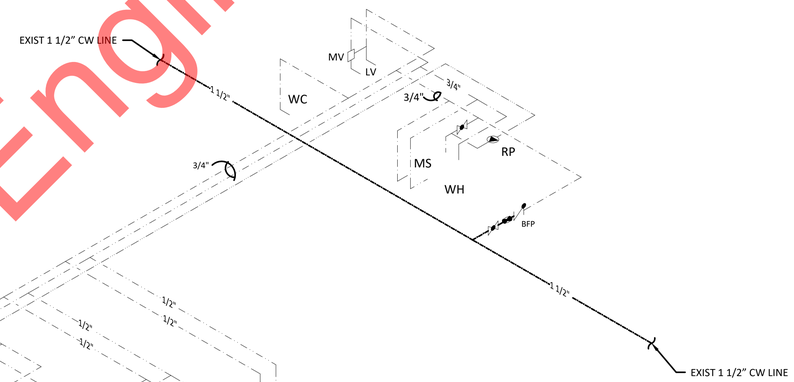
SHEET :
P2
PLUMBING DETAILS AND SCHEDULES
OF : 3

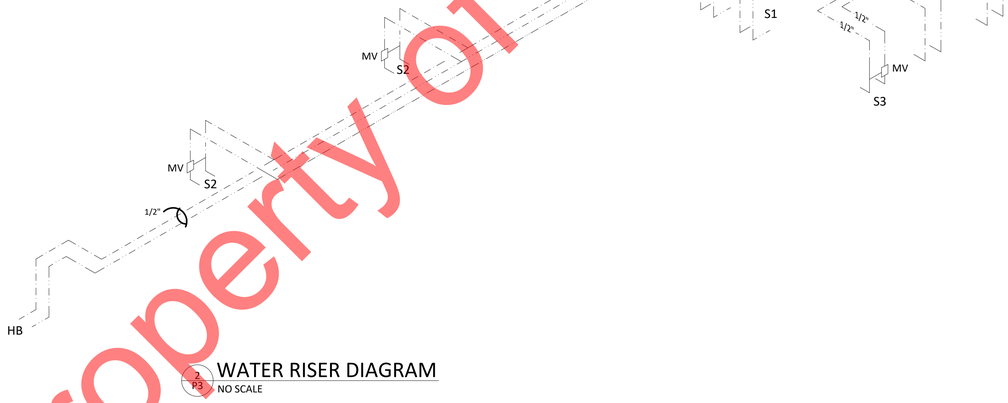


1 P3 DWV RISER DIAGRAM
NO SCALE



3 P3 GAS RISER DIAGRAM
NO SCALE





2 P3 WATER RISER DIAGRAM
NO SCALE

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SHEET :
P3
PLUMBING RISER DIAGRAMS
OF : 3