SYMBOL LEGEND

SYMBOL	DESCRIPTION
HVAC PIPING	
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
TWS	TEMPERED WATER SUPPLY
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
CDWS	CONDENSER WATER SUPPLY
CDWR	CONDENSER WATER RETURN
D	DRAIN LINE
(E)	EXISTING PIPE
(E)	EXISTING PIPE TO BE REMOVED

ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED

AD	ACCESS DOOR	MCA	MINIMUM CIRCUIT AMPS
AIR	AIR CONDITION(-ING,-ED)	MFR	MANUFACTURER
COND		MIN	MINIMUM
APD	AIR PRESSURE DROP	N/A	NOT APPLICABLE
BD	BALANCING DAMPER	NC	NORMALLY CLOSED
BHP	BRAKE HORSE POWER	NC	NOISE CRITERIA
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
BTUH	BTU/HOUR	NO	NORMALLY OPEN
CFH	CUBIC FEET PER HOUR	NPSH	NET POSITIVE SUCTION HEAD
CFM	CUBIC FEET PER MINUTE	NTS	NOT TO SCALE
CLG	COOLING	OA	OUTSIDE AIR
COMP	COMPONENT	OD	OUTSIDE DIAMETER
COND	CONDENS(ER, -ING, -ATION)	OZ	OUNCE
CV	CONTROL VALVE	PD	PRESSURE DROP OR DIFF.
CW	COLD WATER	PG	PROPYLENE GLYCOL
DIA	DIAMETER	PH	PHASE
DISCH	DISCHARGE	PPM	PARTS PER MILLION
DP	DEPTH OR DEEP	PRESS	PRESSURE
DB	DRY BULB TEMPERATURE	PSF	POUNDS PER SQUARE FOOT
(E)	EXISTING	PSI	POUNDS PER SQUARE INCH
EER	ENERGY EFFICIENCY RATIO	PSIA	PSI ABSOLUTE
EFF	EFFICIENCY	PSIG	PSI GAUGE
EG	ETHYLENE GLYCOL	R	THERMAL RESISTANCE
ELEC	ELECTRIC	RA	RETURN AIR
ELEV	ELEVATION	RECIRC	RECIRCULATE
ENT	ENTERING	REFR	REFRIGERATION
EVAP	EVAPORAT(-E, -ING, -ED, -OR)	REQD	REQUIRED
EWT	ENTERING WATER TEMP	RPM	REVOLUTIONS PER MINUTE
EXT	EXTERNAL	RW	RAINWATER
(F)	FUTURE	SA	SUPPLY AIR
F	FAHRENHEIT	SC	SHADING COEFFICIENT
FC	FLEXIBLE CONNECTION	SCW	SOFT COLD WATER
FD	FIRE DAMPER	SF	SAFETY FACTOR
FLA	FULL LOAD AMPS	SH	SENSIBLE HEAT
FPI	FINS PER INCH	SL	SEA LEVEL
FPM	FEET PER MINUTE	SP	STATIC PRESSURE
FPS	FEET PER SECOND	SPEC(S)	SPECIFICATION(S)
FSD	FIRE SMOKE DAMPER	SQ	SQUARE
FT	FEET	STD	STANDARD
GAL	GALLON(S)	TEMP	TEMPERATURE
GPH	GALLONS PER HOUR	TSTAT	THERMOSTAT
GPM	GALLONS PER MINUTE	V	VOLT
HD	HEAD	VAC	VACUUM
HG	MERCURY	VAV	VARIABLE AIR VOLUME
HR	HOUR	VEL	VELOCITY
HT	HEIGHT	VENT	VENT, VENTILATION
HTG	HEATING	VFD	VARIABLE FREQUENCY DRIVE
HP	HORSE POWER	WC	WATER COLUMN
HW	HOT WATER	WG	WATER GAUGE
HZ	HERTZ(FREQUENCY)	WPD	WATER PRESSURE DROP
ID	INSIDE DIAMETER	WB	WET BULB
IN	INCH		
KW	KILOWATT		
LAT	LEAVING AIR TEMPERATURE		
LBS	POUNDS		
LG	LENGTH		
LH	LATENT HEAT		
LRA	LOCKED ROTOR AMPS		
LVG	LEAVING		
LWT	LEAVING WATER TEMP		
MBH	THOUSAND BTU PER HOUR		

DEFINITIONS

NOTE: ALL DEFINITIONS MAY NOT BE USED.

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.

APPROVE: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS TO MAKE THE ITEM FULLY OPERATIONAL."

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
VALVES, METERS, AND GAUGES	
	SHUT OFF VALVE
	GATE VALVE
	CHECK VALVE
	AUTO 2-WAY VALVE
	AUTO 3-WAY VALVE
	GLOBE VALVE
	BALL VALVE
	RELIEF VALVE
	CHAIN OPERATED GATE VALVE
	PRESSURE REDUCING VALVE
	BUTTERFLY VALVE
S	SOLENOID VALVE
	ANGLE VALVE
	VENTURI
	BALANCING OR PLUG COCK
	FLOW SETTER
	EXPANSION VALVE (REFRIG.)
T	TEMPERATURE SENSOR
MAV	MANUAL AIR VENT
	STRAINER
	GAUGE COCK
	FLEXIBLE CONNECTION
	PRESSURE GAUGE
	THERMOMETER
	VICTAULIC COUPLING
	REDUCER CONCENTRIC
	REDUCER ECCENTRIC
	REFRIGERANT SITE GLASS
	REFRIGERANT STRAINER
	REFRIGERANT FILTER DRIER
	90° ELBOW UP
	90° ELBOW DOWN
	90° TEE UP
	90° TEE DOWN
	UNION
	CAPPED PIPE
	ANCHOR
	FLOAT AND THERMOSTATIC TRAP
HVAC SYMBOLS	
T	THERMOSTAT
S	TEMPERATURE SENSOR
H	HUMIDISTAT
PLUMBING SYMBOLS	
C.B.	CATCH BASIN
M.H.	MANHOLE
W.H.	WALL HYDRANT
H.B.	HOSE BIBB
	CLEANOUT TO GRADE
	FLOOR CLEANOUT
	WALL CLEANOUT

SYMBOL LEGEND

SYMBOL	DESCRIPTION
DUCTWORK	

SINGLE LINE	DOUBLE LINE	DESCRIPTION
		RECTANGULAR SUPPLY DUCT UP
		RECTANGULAR SUPPLY DUCT DOWN
		RECTANGULAR RETURN DUCT UP
		RECTANGULAR RETURN DUCT DOWN
		RECTANGULAR EXHAUST DUCT UP
		RECTANGULAR EXHAUST DUCT DOWN
		ROUND DUCT UP
		ROUND DUCT DOWN
		ACOUSTICALLY LINED RECTANGULAR DUCT
		90° RECTANGULAR ELBOW WITH TURNING VANES
		90° RADIUS ELBOW R=1.5
		DUCT SIZE OR SHAPE TRANSITION
		OPPOSED BLADE BALANCING DAMPER (O.B.D.) IN RECT DUCT
		BUTTERFLY BALANCING DAMPER IN ROUND DUCTS
		COMBINATION TEE
		SPLITTER DAMPER
		SQUARE OR RECTANGULAR CEILING DIFFUSER
		ROUND CEILING DIFFUSER
		SIDEWALL REGISTER SUPPLY OR RETURN
		ROUND FLEXIBLE DUCT
		RETURN GRILLE
		EXHAUST GRILLE
FSD	FSD	FIRE/SMOKE DAMPER
FD	FD	FIRE DAMPER
FC	FC	FLEXIBLE CONNECTION
		EXISTING DUCT
		DUCT TO BE REMOVED

GENERAL MECHANICAL NOTES

1. ALL CEILING DIFFUSERS SHOWN AS SUCH ARE CD-1, CFM AS NOTED, UNLESS OTHERWISE NOTED. (CFM)
2. ALL CEILING RETURN GRILLES SHOWN AS SUCH ARE RG-1 UNLESS OTHERWISE NOTED. PROVIDE SOUND BOOT
3. ALL CEILING EXHAUST GRILLES SHOWN AS SUCH ARE EG-1, CFM AS NOTED, UNLESS OTHERWISE NOTED. (CFM)
4. DO NOT ROUTE DUCTS AND PIPES ABOVE ELECTRICAL PANELS. ALL ELECTRICAL PANELS MUST HAVE CLEAR ACCESS SPACE IN FRONT OF PANEL 4'-0" DEEP AND 6'-6" HIGH. DO NOT ROUTE DUCTS AND PIPES IN ELECTRICAL ROOMS, EXCEPT DUCTS AND PIPES SERVING THE ROOM OR WITHIN APPROPRIATE ENCLOSURE.
5. COORDINATE EXACT LOCATIONS OF CEILING DIFFUSERS AND GRILLES WITH ARCHITECTURAL REFLECTED CEILING PLANS.
6. ALL DUCT DIMENSIONS ARE INSIDE FREE AREA DIMENSIONS. ADJUST SHEET METAL DIMENSION FOR LINED DUCT.
7. ALL FIRE DAMPERS SHOWN ARE 1-1/2 HOUR UNLESS OTHERWISE NOTED.
8. IF CONTRACTOR ENCOUNTERS MATERIAL WHICH MAY CONTAIN ASBESTOS IMMEDIATELY STOP WORK IN THIS AREA AND NOTIFY THE OWNER.
9. PROVIDE CEILING ACCESS PANELS AS REQUIRED WHERE MECHANICAL EQUIPMENT, VALVES, HEAT PUMPS, FIRE DAMPERS, ETC. ARE LOCATED ABOVE INACCESSIBLE CEILINGS. ACCESS PANELS TO BE LISTED AND FIRE RATED EQUAL TO OR GREATER THAN THE RATING OF THE ASSEMBLY THEY ARE INSTALLED IN.
10. ALL DUCT AND FLUE PENETRATIONS THRU 1 HOUR ROOF ASSEMBLY TO BE ENCLOSED WITH 2 SHEET ROCK LAYERS FROM SHEET ROCK AT BOTTOM OF ROOF TRUSSES TO ROOF DECK.
11. STEEL ROOF DECK SHALL NOT BE USED TO SUPPORT LOADS FROM PIPING, DUCTWORK OR EQUIPMENT, UNLESS NOTED OTHERWISE. HANGER LOADS LESS THAN 50 LBS. MAY BE HUNG FROM THE STEEL ROOF DECK IN CASES WHEN HANGING FROM THE STEEL ROOF DECK CANNOT BE AVOIDED; THE ATTACHMENT METHOD MUST DISTRIBUTE THE LOAD ACROSS THE DECK AS APPROVED BY THE STRUCTURAL ENGINEER.
12. THE EQUIPMENT INSTALLER IS TO APPLY AND SIGN A CERTIFICATION LABEL TO EACH GAS-FIRED APPLIANCE, STATING THE APPLIANCE HAS BEEN ADJUSTED OR MODIFIED PER MANUFACTURER'S REQUIREMENTS FOR OPERATION AT THE PROJECT ALTITUDE AND WITH THE BTU-CONTENT OF THE AVAILABLE FUEL-GAS.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
# / SHEET	DETAIL INDICATOR: # INDICATES DETAIL NUMBER, SHEET INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
# / SHEET	ELEVATION OR SECTION INDICATOR, EXTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
# / SHEET	ELEVATION OR SECTION INDICATOR, INTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
TYPE / CFM / SIZE	DIFFUSER/GRILLE INDICATOR.
TYPE / SIZE	DIFFUSER/GRILLE INDICATOR.
	NEW CONNECTION POINT TO EXISTING

MECHANICAL SCOPE OF WORK

NEW CONSTRUCTION NOTES:

ELECTRIC UNIT HEATERS WILL BE PLACED WATER ENTRY ROOMS AND MAIN BUILDING ENTRY LOCATIONS.

ROOFTOP UNITS ARE TO BE INSTALLED WITHIN EXISTING EQUIPMENT WELLS ON ROOF OF EACH BUILDING. SUPPLY AND RETURN DUCTWORK IS TO ROUTE THROUGH EXISTING TRUSS SYSTEM. TERMINAL SUPPLY AND RETURN GRILLES ARE TO INCORPORATE INTEGRAL BALANCING DAMPERS.

CLOTHES DRYER AND BATHROOM EXHAUST DUCTWORK IS TO TERMINATE AT UNDERSIDE OF EXISTING BUILDING OVERHANGS.

THE NEW SYSTEM COMPONENTS WILL ALLOW FOR FUTURE OFFICE & TEMPORARY RESIDENT SPACES.

MECH/PLUMB SHEET INDEX

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STATE OF UTAH

project:

Tenant Finish for New Brighton Recovery Campus
4905, 4911, 4915, 4925, 4931, & 4953 South 900 East
Salt Lake County, Utah

date

April 24, 2017

revisions

PERMIT SET–December 28, 2016
1 ADDENDUM #1–January 04, 2017
2 ADDENDUM #3–January 11, 2017
3 ADDENDUM #4–January 17, 2017
4 ADDENDUM #5–January 20, 2017
5 ADDENDUM#7–February 24, 2017
6 ADDENDUM#8 – March 20, 2017
6 ADDENDUM#9 – April 11, 2017

data

project no:
drawn by:
checked by:

title

MECHANICAL GENERAL NOTES & LEGEND

sheet

M01

BUILDING 'D'

Building 'D' 4925 South 900 East Parcel # 22081850110000

GENERAL MECHANICAL NOTES

1. THESE DRAWINGS AND SPECIFICATIONS ARE FOR THE DIVISION 23 CONTRACTOR TO ENGINEER, DESIGN, BID AND INSTALL A HEATING, AIR CONDITIONING AND VENTILATION SYSTEM PER THE DESIGN INTENT SHOWN.

2. ALL EQUIPMENT, PIPING, DUCTWORK, COMPONENT AND ACCESSORY SIZES, CAPACITIES, AND TYPES SHOWN IN THESE DRAWINGS AND SPECIFICATIONS SHALL BE ADHERED TO.

3. THE DIVISION 23 CONTRACTOR SHALL DESIGN AND INSTALL A COMPLETE AND FULLY OPERATIONAL SYSTEM.

4. DESIGN AND AS-BUILT DRAWINGS SHOWING ALL EQUIPMENT, COMPONENTS, PIPING, AND CONTROLS SHALL BE PREPARED TO THE SAME SCALE AS THESE DRAWINGS. COPIES SHALL BE PROVIDED TO THE OWNER AND ARCHITECT/ENGINEER.

5. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO CONSTRUCT A COMPLETE, OPERATIONAL HVAC SYSTEM FOR THE ENTIRE PROJECT AS SHOWN ON THESE DRAWINGS, INCLUDING ALL NECESSARY FEES AND PERMITS.

6. THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY ADOPTED BUILDING CODE, MECHANICAL CODE, PLUMBING CODE, ELECTRICAL CODE, AND ALL OTHER APPLICABLE CITY, COUNTY, SCHOOL DISTRICT, STATE, AND FEDERAL CODES AND REGULATIONS IN EFFECT AT THE DATE OF THE BID. CONFORM TO ANY CODES, RULES, REGULATIONS AND REQUIREMENTS THAT THE PROJECT OWNER HAS.

7. PRIOR TO FABRICATION AND INSTALLATION, COORDINATE THE INSTALLATION OF ALL HVAC PIPING, DUCTWORK, AND EQUIPMENT WITH PLUMBING PIPING, PLUMBING EQUIPMENT, REFRIGERATION TRENCHES AND PIPING, FIRE PROTECTION PIPING AND ALL OTHER TRADES INCLUDING BUT NOT LIMITED TO: THE MECHANICAL CONTRACTOR, REFRIGERATION CONTRACTOR, ELECTRICAL CONTRACTOR, FIRE PROTECTION CONTRACTOR, GENERAL CONTRACTOR, AND ANY CONTRACTOR HIRED DIRECTLY BY THE OWNER. WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.

8. THE DRAWINGS SHOW THE GENERAL DESIGN, ARRANGEMENTS AND THE EXTENT OF THE SYSTEM. IT SHALL BE THE WORK OF THE CONTRACTOR TO MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT. MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES, OR MATERIAL REQUIRE PRIOR APPROVAL BY THE CONSULTING ENGINEER.

9. ALL HVAC INFORMATION IS NOT SHOWN ON THE HVAC DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS.

10. THE WORKING DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR HVAC EQUIPMENT AND PIPING SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, STRUCTURAL AND ELECTRICAL DRAWINGS.

11. SPACE ABOVE ALL CEILINGS IS LIMITED. CAREFUL COORDINATION IS REQUIRED WITH ALL TRADES BEFORE ANY PIPE, DUCT, OR EQUIPMENT IS ORDERED AND/OR INSTALLED. ANY CONFLICTS AND/OR CHANGES FOUND DURING INSTALLATION THAT RESULT FROM LACK OF COORDINATION BY THE CONTRACTORS DURING THE SHOP DRAWING PROCESS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

12. 1/8" SCALE SHOP DRAWINGS (SUBMITTED FOR APPROVAL) ARE REQUIRED FOR ALL DUCTWORK AND PIPING SYSTEMS.

13. THE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH.

14. DETAILS: THE CONTRACTOR IS RESPONSIBLE TO REVIEW AND USE WHERE APPROPRIATE ALL OF THE MECHANICAL DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON THE DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE MECHANICAL SYSTEM WITHOUT USING THE INCLUDED DETAILS IS THE RESPONSIBILITY OF THE CONTRACTOR.

15. PIPING SCHEMATICS: THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE PIPING SCHEMATICS INCLUDED WITH THE DRAWINGS FOR PIPING CONNECTIONS TO ALL MECHANICAL EQUIPMENT. THE PIPING SCHEMATICS SHOW DETAILED CONNECTIONS INCLUDING NECESSARY VALVES, FITTINGS, PRESSURE AND TEMPERATURE GAUGES, ETC., THAT ARE NOT SHOWN ON THE PIPING PLANS. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE MECHANICAL SYSTEM WITHOUT USING THE INCLUDED PIPING SCHEMATICS IS THE RESPONSIBILITY OF THE CONTRACTOR.

16. THE STRUCTURE SHOWN ON ALL DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OR ANY PORTION OF THE BUILDING. COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.

17. ANY PART OF THIS INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

18. COORDINATE THE RETURN OF ALL MECHANICAL EQUIPMENT REMOVED DURING DEMOLITION WITH THE OWNER'S REPRESENTATIVE.

19. ALL EQUIPMENT SHALL PROVIDE THE SCHEDULED PERFORMANCE AT THE SITE ALTITUDE.

20. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, VALVES, DAMPERS, AND OTHER DEVICES AND ACCESSORIES REQUIRED FOR A COMPLETE, WORKABLE INSTALLATION.

21. THE DIVISION 23 CONTRACTOR SHALL FURNISH ALL REQUIRED MOTORS. ALL MOTOR STARTING EQUIPMENT, WHEN NOT A PART OF THE EQUIPMENT, WILL BE FURNISHED BY THE ELECTRICAL CONTRACTOR.

22. EXISTING INTERIOR PIPING, EQUIPMENT, AND DUCTWORK HAS BEEN LOCATED IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL VERIFY LOCATIONS AND POINTS OF CONNECTION AND PIPE ROUTING THROUGH EXISTING CONDITIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL PERFORM THE WORK IN A MANNER THAT WILL CAUSE A MINIMUM DISRUPTION TO BUILDING TENANT USE AND SHALL COORDINATE THE WORK WITH THE BUILDING OWNER'S REPRESENTATIVE.

23. THE CONTRACTOR IS RESPONSIBLE FOR HVAC EQUIPMENT CHECK-IN, SAFEKEEPING, AND DAMAGE.

24. DO NOT ROUTE DUCTS AND PIPES ABOVE ELECTRICAL PANELS. ALL ELECTRICAL PANELS MUST HAVE CLEAR ACCESS SPACE IN FRONT OF PANEL 4'-0" DEEP AND 6'-6" HIGH. DO NOT ROUTE DUCTS AND PIPES IN ELECTRICAL ROOMS, EXCEPT DUCTS AND PIPES SERVING THE ROOM OR IF PROPER ENCLOSURE IS PROVIDED.

25. COORDINATE EXACT LOCATIONS OF CEILING DIFFUSERS AND GRILLES WITH ARCHITECTURAL REFLECTED CEILING PLAN.

26. ALL FIRE DAMPERS SHOWN ARE 1-1/2 HOUR UNLESS OTHERWISE NOTED.

27. IF CONTRACTOR ENCOUNTERS MATERIAL WHICH MAY CONTAIN ASBESTOS, IMMEDIATELY STOP WORK IN THIS AREA AND NOTIFY THE OWNER.

28. PROVIDE CEILING ACCESS PANELS AS REQUIRED WHERE MECHANICAL EQUIPMENT, VALVES, VAV BOXES, FIRE DAMPERS, ETC. ARE LOCATED ABOVE INACCESSIBLE CEILINGS.

29. ENCLOSE ALL DUCT AND FLUE PENETRATIONS THROUGH 1 HOUR ROOF ASSEMBLIES WITH 2 SHEET ROCK LAYERS FROM SHEET ROCK CEILING AT BOTTOM OF ROOF TRUSSES TO ROOF DECK

30. DO NOT USE STEEL ROOF DECK TO SUPPORT LOADS FROM PIPING, DUCTWORK OR EQUIPMENT. HANGER LOADS LESS THAN 50 LBS. MAY BE HUNG FROM THE STEEL ROOF DECK IN CASES WHERE HANGING FROM THE STEEL ROOF DECK CANNOT BE AVOIDED. THE ATTACHMENT METHOD MUST DISTRIBUTE THE LOAD ACROSS THE DECK AS APPROVED BY THE STRUCTURAL ENGINEER.

GENERAL MECHANICAL NOTES

31. PROPERLY LUBRICATE ALL PIECES OF EQUIPMENT BEFORE TURNING THE SYSTEM OVER TO THE OWNER.

32. PREPARE SUBMITTALS IN AN INDEXED, LABELED FOLDER CONTAINING FULL PERFORMANCE, MATERIAL AND INSTALLATION INFORMATION ABOUT ALL EQUIPMENT, PIPING, COMPONENTS AND ACCESSORIES TO BE USED. SUBMITTALS WILL BE CHECKED AT MOST TWICE. TIME SPENT ON SUBSEQUENT SUBMITTALS WILL BE BILLED TO THE CONTRACTOR BY THE ENGINEER AT ITS CURRENT HOURLY RATES.

33. TWO OPERATING AND MAINTENANCE MANUALS SHALL BE PROVIDED IN HARD BACK LOOSE LEAF BINDERS. MANUALS SHALL CONTAIN PRODUCT CUT SHEETS AND OPERATING AND MAINTENANCE INSTRUCTIONS ON ALL EQUIPMENT, ACCESSORIES, FIXTURES, VALVES, ETC., PROVIDED FOR THE PROJECT.

34. UPON COMPLETION OF THE WORK, REMOVE ALL SURPLUS MATERIALS AND RUBBISH. MAKE ALL REQUIRED PATCHING AND REPAIRS OF OTHER TRADES' WORK DAMAGED BY THE CONTRACTOR, AND LEAVE THE PREMISES IN A CLEAN, ORDERLY CONDITION.

35. THE CONTRACTOR SHALL OPERATE THE SYSTEM AND DEMONSTRATE ALL ASPECTS TO THE ENGINEER AND/OR OWNER, TO PROVE ITS OPERATION. ALL FILTERS USED DURING CONSTRUCTION SHALL BE REPLACED PRIOR TO THE TEST RUN PERIOD.

36. THE CONTRACTOR SHALL GUARANTEE THE HVAC SYSTEM FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.

37. THE CONTRACTOR SHALL, DURING CONSTRUCTION, MAINTAIN A SET OF AS-BUILT REDLINED RECORD DRAWINGS AT THE PROJECT SITE. ALL CHANGES IN LAYOUT, ROUTING, EQUIPMENT, COMPONENTS, AND ACCESSORIES SHALL BE RECORDED. THESE REDLINES SHALL BE GIVEN TO THE ARCHITECT/ENGINEER AFTER THE FINAL INSPECTION

MECHANICAL SUBMITTAL NOTES

1. MECHANICAL SUBMITTAL SHALL BE SUBMITTED AS A COMPLETE ELECTRONIC PACKAGE ASSEMBLED BY SPECIFICATION DIVISIONS.

2. ASSEMBLE COMPLETE ELECTRONIC SUBMITTAL PACKAGE INTO A SINGLE INDEXED FILE INCORPORATING SUBMITTAL REQUIREMENTS OF A SINGLE SPECIFICATION SECTION AND TRANSMITTAL FORM WITH LINKS ENABLING NAVIGATION TO EACH ITEM:
    a. LITERATURE SHALL INCLUDE REFERENCE TO EQUIPMENT CALL-OUT AND SPECIFICATION SECTION.
    b. FILE NAME SHALL USE PROJECT IDENTIFIER AND SPECIFICATION SECTION NUMBER FOLLOWED BY A DECIMAL POINT AND THEN A SEQUENTIAL NUMBER (E.G., LNHS-061000.01). RE-SUBITTALS SHALL INCLUDE AN ALPHABETIC SUFFIX AFTER ANOTHER DECIMAL POINT (E.G., LNHS-061000.01.A).
    c. PROVIDE MANUFACTURER'S CATALOG DATA SHEETS FOR EACH MANUFACTURED ITEM LISTED ON THE DRAWINGS AND SPECIFICATIONS.
    d. INCLUDE MANUFACTURER'S CATALOG DATA OF EACH MANUFACTURED ITEM AND ENOUGH INFORMATION TO SHOW COMPLIANCE WITH CONTRACT DOCUMENT REQUIREMENTS.
    e. LITERATURE SHALL SHOW CAPACITIES AND SIZE OF EQUIPMENT USED AND BE MARKED INDICATING EACH SPECIFIC ITEM WITH APPLICABLE DATA UNDERLINED.
    f. INCLUDE NAME, ADDRESS, AND PHONE NUMBER OF EACH SUPPLIER.
    g. DEVIATIONS AND ADDITIONAL INFORMATION: ON AN ATTACHED SEPARATE SHEET, PREPARED ON CONTRACTOR'S LETTERHEAD, RECORD RELEVANT INFORMATION, REQUESTS FOR DATA, REVISIONS OTHER THAN THOSE REQUESTED BY ENGINEER CONTRACT DOCUMENTS, INCLUDING MINOR VARIATIONS AND LIMITATIONS. INCLUDE SAME IDENTIFICATION INFORMATION AS RELATED SUBMITTAL.

3. PRODUCT DATA:
    a. COLLECT INFORMATION INTO A SINGLE SUBMITTAL FOR EACH ELEMENT OF CONSTRUCTION AND TYPE OF PRODUCT OR EQUIPMENT.
    b. IF INFORMATION MUST BE SPECIALLY PREPARED FOR SUBMITTAL BECAUSE STANDARD PUBLISHED DATA ARE NOT SUITABLE FOR USE, SUBMIT AS SHOP DRAWINGS, NOT AS PRODUCT DATA.
    c. MARK EACH COPY OF EACH SUBMITTAL TO SHOW WHICH PRODUCTS AND OPTIONS ARE APPLICABLE.
    d. INCLUDE THE FOLLOWING INFORMATION, AS APPLICABLE:
    e. MANUFACTURER'S CATALOG CUTS.
    f. MANUFACTURER'S PRODUCT SPECIFICATIONS.
    g. STANDARD COLOR CHARTS.
    h. STATEMENT OF COMPLIANCE WITH SPECIFIED REFERENCED STANDARDS.
    i. TESTING BY RECOGNIZED TESTING AGENCY.
    j. APPLICATION OF TESTING AGENCY LABELS AND SEALS.
    k. NOTATION OF COORDINATION REQUIREMENTS.
    l. AVAILABILITY AND DELIVERY TIME INFORMATION.
    m. FOR EQUIPMENT, INCLUDE THE FOLLOWING IN ADDITION TO THE ABOVE, AS APPLICABLE:
    n. WIRING DIAGRAMS SHOWING FACTORY-INSTALLED WIRING.
    o. PRINTED PERFORMANCE CURVES.
    p. OPERATIONAL RANGE DIAGRAMS.
    q. CLEARANCES REQUIRED TO OTHER CONSTRUCTION, IF NOT INDICATED ON ACCOMPANYING SHOP DRAWINGS.

5. PROCESSING TIME: ALLOW TIME FOR SUBMITTAL REVIEW, INCLUDING TIME FOR RESUBMITTALS, AS FOLLOWS. TIME FOR REVIEW, INCLUDING TIME FOR RESUBMITTALS, AS FOLLOWS. TIME FOR REVIEW SHALL COMMENCE ON ENGINEERS RECEIPT OF SUBMITTAL. NO EXTENSION OF THE CONTRACT TIME WILL BE AUTHORIZED BECAUSE OF FAILURE TO TRANSMIT SUBMITTALS ENOUGH IN ADVANCE OF THE WORK TO PERMIT PROCESSING, INCLUDING RESUBMITTALS.
    a. INITIAL REVIEW: ALLOW 15 DAYS FOR INITIAL REVIEW OF MECHANICAL SUBMITTAL.
    b. RESUBMITTALS REVIEW: ALLOW 15 DAYS FOR REVIEW OF EACH RESUBMITTAL.

6. DEVIATIONS AND ADDITIONAL INFORMATION: ON AN ATTACHED SEPARATE SHEET, PREPARED ON CONTRACTOR'S LETTERHEAD, RECORD RELEVANT INFORMATION, REQUESTS FOR DATA, REVISIONS OTHER THAN THOSE REQUESTED BY DESIGN ENGINEER ON PREVIOUS SUBMITTALS, AND DEVIATIONS FROM REQUIREMENTS IN THE CONTRACT DOCUMENTS, INCLUDING MINOR VARIATIONS AND LIMITATIONS. INCLUDE SAME IDENTIFICATION INFORMATION AS RELATED SUBMITTAL.

MECH. PIPING GENERAL NOTES

1. CAULK AROUND ALL PIPING THAT PASSES THROUGH FIRE RATED PARTITIONS WITH A NON-HARDENING CAULKING SIMILAR TO 3M "FIRE BARRIER".

2. PROVIDE PROPER PROVISIONS FOR EXPANSION OR MOVEMENT OF ALL PIPING.

3. PROVIDE LARGE ENOUGH PIPE SLEEVES THROUGH WALLS OR FLOORS TO ALLOW FOR ANTICIPATED DEFERENTIAL MOVEMENTS.

4. AT VERTICAL RISERS SUPPORT THE WEIGHT OF THE RISER AT A POINT OR POINTS ABOVE THE CENTER OF GRAVITY OF THE RISER. PROVIDE LATERAL GUIDES AT THE TOP AND BOTTOM OF THE RISER, AND AT THE INTERMEDIATE POINTS NOT TO EXCEED 30'-0" ON CENTER.

5. ALL PIPING SHALL BE SUPPORTED WITH TYPE I STEEL CLEVIS PIPE HANGERS.

6. ALL STEEL CLEVIS HANGERS USED TO SUPPORT PLASTIC PIPING SHALL BE PLASTIC COATED.

7. ALL STEEL HANGERS USED TO SUPPORT COPPER PIPING SHALL BE COPPER PLATED OR PLASTIC COATED.

8. PERFORATED METAL OR PLASTIC STRAPPING (PLUMBERS TAPE) IS NOT AN ACCEPTABLE MATERIAL FOR HANGING OR SECURING PIPE.

9. PROVIDE PIPE HANGERS WITHIN 18 INCHES OF ALL 90 DEGREE ELBOWS.

10. PROVIDE SWAY BRACING ON PIPING 4" AND LARGER AT CHANGES IN DIRECTION GREATER THAN 45 DEGREES.

11. ALL PIPING SHALL BE INSTALLED IN A NEAT ARRANGEMENT PARALLEL TO BUILDING STRUCTURE.

DUCT CONSTRUCTION NOTES

1. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL, EXCEPT WHERE INDICATED OTHERWISE.

2. SHEET METAL DUCT STATIC PRESSURE CLASSIFICATION:

SUPPLY AIR DUCT:	2" W.C.
RETURN AIR DUCT:	2" W.C. (NEGATIVE)
EXHAUST AIR DUCT:	2" W.C. (NEGATIVE)
OUTSIDE AIR DUCT:	2" W.C.

3. SEAL ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS TO SMACNA SEAL CLASS B.

4. DO NOT USE GRAY DUCT TAPE, FOIL BACKED TAPE, OIL BASED CAULKING AND GLAZING COMPOUNDS TO SEAL METAL DUCTS.

5. CROSS-BREAK DUCT SURFACES 19" THROUGH 60". USE ANGLE REINFORCING FOR DUCTS SURFACES OF 60".

6. ALL METAL LONGITUDINAL SEAMS SHALL BE PITTSBURGH OR OTHER LISTED SMACNA LISTED SEAM. DO NOT USE BUTTON PUNCH SNAP-BACK SEAMS.

7. SUSPEND METAL DUCTWORK NOT EXCEEDING 30" LONGEST SIDE AT EVERY JOINT. DO NOT EXCEED 10'-0" HANGER SPACING. USE 1" X 18 GAGE GALVANIZED STRAPS (MINIMUM) ATTACHED TO BOTTOM AND SIDES OF DUCT.

8. SUSPEND METAL DUCTWORK EXCEEDING 30" LONGEST SIDE AT MAXIMUM 8'-0" SPACING USING ANGLES AND RODS.

9. SUPPORT DUCTWORK FROM STRUCTURAL MEMBERS. ATTACHMENT TO ROOF DECK IS NOT ACCEPTABLE.

10. DUCT SIZES SHALL BE VERIFIED FOR CLEARANCES AT THE JOB SITE PRIOR TO FABRICATION. DIMENSIONS MAY BE CHANGED TO ACCOMMODATE CONSTRUCTION CLEARANCES. FREE AREA OF DUCT SHALL BE MAINTAINED.

11. DUCT TRANSITIONS SHALL BE CONSTRUCTED WITH SLOPE OF 1/4.

12. PROVIDE ELBOWS AND CHANGES IN DIRECTION WITH SINGLE VANE TURNING VANES.

13. ALL JOINTS SHALL BE MADE AIRTIGHT BY APPROVED METHODS, INCLUDING TAPES, MASTICS, GASKETS OR OTHER APPROVED CLOSURE SYSTEMS.

14. TAPE ALONE CANNOT BE SUBSTITUTED FOR MECHANICAL FASTENERS.

15. TAPES AND MASTICS USED TO SEAL DUCTWORK MUST BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A AND SHALL BE MARKED "181A-P" FOR PRESSURE-SENSITIVE TAPE, "181A-M" FOR MASTIC OR "181A-H" FOR HEAT SENSITIVE TAPE.

16. TAPES AND MASTICS USED TO SEAL FLEXIBLE AIR DUCTS SHALL COMPLY WITH UL 181B AND SHALL BE MARKED "181B-FX" FOR PRESSURE SENSITIVE TAPE, OR "181B-M" FOR MASTIC.

17. MECHANICAL FASTENERS USED WITH FLEXIBLE NON-METALLIC AIR DUCTS SHALL COMPLY WITH UL 181 AND SHALL BE MARKED "181B-".

18. FLEXIBLE CONNECTORS SHALL NOT BE USED.

19. HIGH EFFICIENCY TAKE-OFF FITTINGS WITH MANUAL DAMPER SHALL HAVE 2" STAND OFF BRACKET.

20. ALL BRANCH TAKE-OFFS TO INDIVIDUAL AIR INLET OR AIR OUTLET SHALL BE PROVIDED WITH MANUAL DAMPER.

21. ALL DUCTWORK SHALL BE A MINIMUM 26 GAUGE GALVANIZED SHEET METAL.

TEST AND BALANCE NOTES

1. THE MINIMUM REQUIREMENT FOR TESTING, ADJUSTING, AND BALANCING (TAB) OF THE HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) DISTRIBUTION SYSTEMS SHALL BE AS FOLLOWS.

2. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TESTING ADJUSTING AND BALANCING FOR THIS PROJECT

3. THE MECHANICAL SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED, INCLUDING SUPPLY AIR SYSTEM, RETURN AIR SYSTEM, EXHAUST AIR SYSTEM, OUTSIDE AIR SYSTEM AND ALL ASSOCIATED EQUIPMENT.

4. CONTRACTOR PERFORMING TESTING ADJUSTING AND BALANCING WORK SHALL BE EITHER AABC OR NEBB CERTIFIED.

5. TESTING ADJUSTING AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE NEBB OR AABC TEST PROCEDURES.

6. TESTING ADJUSTING AND BALANCING REPORT FORMS SHALL BE STANDARD FORMS FROM EITHER AABC OR NEBB.

7. CONTRACTOR SHALL VERIFY QUANTITIES AND LOCATIONS OF ALL BALANCING DEVICES. CONTRACTOR SHALL VERIFY THAT THESE BALANCING DEVICES ARE ACCESSIBLE AND APPROPRIATE FOR BALANCING AND FOR EFFICIENT SYSTEM AND EQUIPMENT OPERATION PRIOR TO COMMENCING WORK.

8. MECHANICAL AIR AND WATER SYSTEMS SHALL BE ADJUSTED TO WITHIN THE FOLLOWING TOLERANCES.
    PLUS 5 TO PLUS 10 PERCENT
    PLUS 5 TO PLUS 10 PERCENT
    EXHAUST FANS: PLUS 5 TO PLUS 10 PERCENT
    EQUIPMENT WITH FANS: PLUS 5 TO PLUS 10 PERCENT
    AIR OUTLETS AND INLETS: ZERO TO MINUS 10 PERCENT
    DOM. HW FLOW RATES: ZERO TO MINUS 10 PERCENT

9. FINAL BALANCE REPORT SHALL INCLUDE THE FOLLOWING.
    TEST CONDITIONS FOR FANS
    SYSTEM DIAGRAMS
    AIR CONDITIONING UNIT TEST REPORTS
    FAN TEST REPORTS
    AIR TERMINAL DEVICE REPORTS

PENETRATION FIRESTOPPING NOTES

1. FIRE RATED PENETRATIONS DETAILS SHOWN ON THE CONSTRUCTIONS DOCUMENTS SHOW GENERAL METHOD OF MECHANICAL (HVAC) AND PLUMBING PENETRATION FIRESTOPPING.

2. CONTRACTOR SHALL REVIEW CONSTRUCTION DOCUMENTS AND PROVIDE SPECIFIC FIRESTOPPING DETAILS FROM A SPECIFIC FIRESTOPPING MANUFACTURER FOR EACH MECHANICAL (HVAC) AND PLUMBING PIPE OR DUCT PENETRATION FOR EACH FIRE RATED ASSEMBLY.

3. PROVIDE PENETRATION FIRESTOPPING THAT IS PRODUCED AND INSTALLED TO RESIST SPREAD OF FIRE ACCORDING TO REQUIREMENTS INDICATED, RESIST PASSAGE OF SMOKE AND OTHER GASES, AND MAINTAIN ORIGINAL FIRE-RESISTANCE RATING OF CONSTRUCTION PENETRATED.

4. PENETRATION FIRESTOPPING SYSTEMS SHALL BE COMPATIBLE WITH ONE ANOTHER, WITH THE SUBSTRATES FORMING OPENINGS, AND WITH PENETRATING ITEMS IF ANY.

5. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: PROVIDE PENETRATION FIRESTOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479, BASED ON TESTING AT A POSITIVE PRESSURE DIFFERENTIAL OF 0.01-INCH WG

6. PENETRATION FIRESTOPPING PRODUCTS SHALL BEAR UL, ETL OR FM GLOBAL CLASSIFICATION MARKING OF QUALIFIED TESTING AND INSPECTING AGENCY.

7. DO NOT INSTALL PENETRATION FIRESTOPPING WHEN AMBIENT OR SUBSTRATE TEMPERATURES ARE OUTSIDE LIMITS PERMITTED BY PENETRATION FIRESTOPPING MANUFACTURERS OR WHEN SUBSTRATES ARE WET BECAUSE OF RAIN, FROST, CONDENSATION, OR OTHER CAUSES.

8. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT PENETRATION FIRESTOPPING IS INSTALLED ACCORDING TO SPECIFIED REQUIREMENTS.

9. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE-DRILLED HOLES, OR CUT OPENINGS TO ACCOMMODATE PENETRATION FIRESTOPPING.

10. INSTALL PENETRATION FIRESTOPPING TO COMPLY WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND PUBLISHED DRAWINGS FOR PRODUCTS AND APPLICATIONS INDICATED.

11. INSTALL FORMING MATERIALS AND OTHER ACCESSORIES OF TYPES REQUIRED TO SUPPORT FILL MATERIALS DURING THEIR APPLICATION AND IN THE POSITION NEEDED TO PRODUCE CROSS-SECTIONAL SHAPES AND DEPTHS REQUIRED TO ACHIEVE FIRE RATINGS INDICATED.

12. IDENTIFY PENETRATION FIRESTOPPING WITH PREPRINTED METAL OR PLASTIC LABELS. ATTACH LABELS PERMANENTLY TO SURFACES ADJACENT TO AND WITHIN 6 INCHES OF FIRESTOPPING EDGE SO LABELS WILL BE VISIBLE TO ANYONE SEEKING TO REMOVE PENETRATING ITEMS OR FIRESTOPPING.

SMOKE DETECTOR NOTES

1. SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE AND SHALL BE "SYSTEM SENSOR" DH100ACDCLP.

2. SMOKE DETECTORS SHALL BE INSTALLED IN THE RETURN AIR DUCT OF ALL AIR HANDLING UNITS WITH CAPACITY GREATER THAN 2,000 CFM.

3. PROVIDE SMOKE DETECTORS WHERE MULTIPLE AIR-HANDLING SYSTEMS SHARE COMMON SUPPLY OR RETURN AIR DUCTS OR PLENUMS WITH A COMBINED DESIGN CAPACITY GREATER THAN 2,000 CFM.

4. THE SMOKE DETECTORS SHALL BE INSTALLED TO MONITOR THE ENTIRE AIRFLOW CONVEYED BY THE SYSTEM INCLUDING RETURN AIR AND EXHAUST OR RELIEF AIR.

5. PROVIDE ACCESS TO ALL SMOKE DETECTORS FOR INSPECTION AND MAINTENANCE.

6. SMOKE DETECTOR SHALL BE INTERLOCKED WITH SUPPLY FAN. ELECTRICAL STARTER TO SHUT DOWN SUPPLY AIR FAN(S) ON SENSING SMOKE.

7. SMOKE DETECTOR SHALL BE INTERLOCKED WITH FIRE ALARM SYSTEM.

8. THE ACTUATION OF A DUCT SMOKE DETECTOR SHALL ACTIVATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION.

9. IN ADDITIONAL TO INTERLOCKING THE SMOKE DETECTOR TO THE FIRE ALARM SYSTEM, THE SMOKE DETECTOR SHALL BE CONNECTED TO A MULTI-SIGNALLING ANNUNCIATOR PANEL (SYSTEM SENSOR SSK 451) FOR TESTING PURPOSES.

10. MULTI-SIGNALLING ANNUNCIATOR PANEL (SYSTEM SENSOR SSK 451) SHALL BE INSTALLED AS SHOWN ON DRAWING AND AS REQUIRED BY BUILDING OFFICIAL FOR TESTING.

MECHANICAL SPECIFICATIONS

230100 - BASIC MECHANICAL REQUIREMENTS

1. COORDINATE THE LOCATION OF ALL NEW ROOF OPENINGS AND THE LOCATION OF ALL NEW AND RELOCATED ROOF MOUNTED EQUIPMENT WITH THE EXISTING STRUCTURE AND ARCHITECTURAL PLANS PRIOR TO ANY INSTALLATION.

2. V-BELT DRIVES SHALL BE OF FABRIC AND RUBBER CONSTRUCTION. BELT GUARDS SHALL BE PROVIDED FOR ALL EXPOSED BELTS AND DRIVES.

3. PROVIDE 6" CONCRETE HOUSEKEEPING PADS UNDER ALL FLOOR MOUNTED EQUIPMENT.

4. PROPERLY LUBRICATE ALL PIECES OF EQUIPMENT BEFORE TURNING THE SYSTEM OVER TO THE OWNER.

5. INSTALL DUCT MOUNTED SUPPLY AND RETURN AIR SMOKE DETECTORS IN ALL ROOFTOP, FAN-COIL, AIR-HANDLING, AND OTHER SUPPLY AIR SYSTEMS, WITH A CAPACITY GREATER THAN 2000 CFM. SMOKE DETECTORS ARE PURCHASED AND WIRED BY THE ELECTRICAL CONTRACTOR.

230500 - BASIC PIPING MATERIALS & METHODS

1. CORE CUT ALL PIPE PENETRATION OF EXISTING MASONRY OR CONCRETE WALLS AND FLOORS. SLEEVE ALL PENETRATIONS THROUGH NEW WALLS AND FLOORS. SEAL ALL PENETRATIONS WATER TIGHT WITH SILICONE SEALANT. USE FIRE RATED SEALANT (3M "FIRE BARRIER" OR EQUAL) FOR 1 HOUR OR 2 HOUR PENETRATIONS.

2. CAULK AROUND ALL PIPING THAT PASSES THROUGH FIRE-RATED PARTITIONS WITH A NON-HARDENING CAULKING SIMILAR TO 3M "FIRE BARRIER".

3. SEAL ALL PIPING THROUGH WALLS AIR TIGHT.

230523 - VALVES

1. PROVIDE VALVES OF THE TYPE AND QUANTITY SHOWN ON THE DRAWINGS. VALVES OF THE SAME TYPE TO BE BY ONE MANUFACTURER.

230548 - VIBRATION ISOLATION AND SEISMIC BRACING

1. ALL MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING MUST BE VIBRATION ISOLATED AND SEISMICALLY BRACED FOR THE SITE SPECIFIC SEISMIC DESIGN CATEGORY AND SEISMIC USE GROUP, IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE IBC, UBC, ASHRAE, AND SMACNA. PROVIDE SEISMIC PRODUCTS BY AMBER-BOOTH OR MASON INDUSTRIES.

2. IN GENERAL, PROVIDE SPRING MOUNTS TO ATTENUATE LOW FREQUENCY SOUND AND VIBRATION AND NEOPRENE PADS TO ATTENUATE HIGH FREQUENCY SOUND AND VIBRATION. SEISMIC BRACING/MOUNTING CAN BE COMBINED WITH VIBRATION ISOLATION AS APPLICABLE.

3. CONTRACTOR MANUFACTURED SEISMIC BRACING/RESTRAINT METHODS ARE NOT ACCEPTABLE. PROVIDE A SIGNED AND STAMPED LETTER FROM A PROFESSIONAL ENGINEER CERTIFYING THAT THE SUPPLIED PRODUCTS ARE CORRECT FOR THE APPLICATION AND THAT THE INSTALLATION IS IN COMPLIANCE WITH ALL APPLICABLE CODES.

MECHANICAL SPECIFICATIONS

230553 - MECHANICAL IDENTIFICATION

1. PIPE MARKERS:
    PLASTIC TAPE: PROVIDE MANUFACTURER'S STANDARD COLOR-CODED PRESSURE-SENSITIVE (SELF ADHESIVE) VINYL TAPE, NOT LESS THAN 3 MILS THICK. 1-1/2" WIDE TAPE MARKERS ON PIPES WITH OUTSIDE DIAMETERS LESS THAN 6" (INCLUDING INSULATION, IF ANY); 2-1/2" WIDE TAPE FOR LARGER PIPES.

2. DUCT MARKERS:
    PROVIDE MANUFACTURER'S STANDARD LAMINATED PLASTIC; COLOR CODED DUCT MARKERS.

3. COLOR:
    COMPLY WITH ANSI A13.1

4. LETTERING:
    MANUFACTURER'S STANDARD PRE-PRINTED NOMENCLATURE WHICH BEST DESCRIBES PIPING OR DUCT SYSTEM IN EACH INSTANCE OR AS SELECTED BY ARCHITECT OR ENGINEER IN CASES OF VARIANCE WITH NAMES AS SHOWN.

5. ARROWS:
    PRINT EACH MARKER WITH ARROWS INDICATING DIRECTION OF FLOW.

6. VALVE TAGS:
    PROVIDE PLASTIC LAMINATE VALVE TAGS: MANUFACTURER'S STANDARD 3/32" THICK ENGRAVED TAGS WITH PIPING SYSTEM ABBREVIATION IN 1/4" HIGH LETTERS AND SEQUENCED VALVE NUMBERS 1/2" HIGH, WITH 5/32" HOLE FOR FASTENER. PROVIDE 1-1/2" SQUARE BLACK TAGS WITH WHITE LETTERING.

7. VALVE TAG FASTENERS:
    PROVIDE MANUFACTURER'S STANDARD SOLID BRASS CHAIN (WIRE LINK OR BEADED TYPE), OR SOLID BRASS S-HOOKS OF THE SIZED REQUIRED FOR PROPER ATTACHMENT OF TAGS TO VALVES, AND MANUFACTURED SPECIFICALLY FOR THAT PURPOSE.

230593 - TESTING, ADJUSTING, AND BALANCING

OBTAIN THE SERVICES OF AN INDEPENDENT TESTING AND BALANCING AGENCY TO BALANCE AND ADJUST THE SYSTEM. THIS SHALL BE DONE BY PERSONS FULLY FAMILIAR WITH SYSTEMS OF THIS TYPE. BALANCING SHALL BE DONE IN ACCORDANCE TO AABC OR NEBB STANDARDS. ALL DATA SHALL BE RECORDED AND A REPORT SUBMITTED TO THE ENGINEER PRIOR TO JOB CLOSE OUT.

230700 - MECHANICAL INSULATION

1. PIPE INSULATION TO BE SNAP-ON GLASS FIBER TYPE WITH VAPOR JACKET. SEAL ALL ENDS AND JOINTS TO PROVIDE A COMPLETELY SEALED SYSTEM. ALTERNATIVELY, USE FLEXIBLE UNICELLULAR ASTM 534 TYPE 1 INSULATION. USE 1" THICKNESS FOR PIPE UP TO 2"Ø, AND 1 1/2" FOR PIPE OVER 2"Ø

2. WRAP ALL SUPPLY AND RETURN DUCTWORK WITH 1-1/2" THICK FOIL FACED FIBERGLASS INSULATION. WRAP INSULATION TIGHTLY ON THE DUCT WITH ALL CIRCUMFERENTIAL JOINTS BUTTED AND LONGITUDINAL JOINTS OVERLAPPED A MIN. OF 2". COVER ALL JOINTS WITH FOIL-REINFORCED 'KRAFT' TAPE, 3" WIDE. DUCTWORK INTERIOR TO BUILDING ENVELOPE WITH A MINIMUM R-5 WHILE EXTERIOR DUCTWORK INSULATION SHALL BE MINIMUM R-12.

3. NO RETURN AIR DUCT INSULATION IS REQUIRED IF THE RETURN AIR AND PLENUM TEMPERATURE DIFFERENCE IS LESS THAN 10°F

4. OUTDOOR DUCTWORK EXPOSED TO THE WEATHER SHALL HAVE 2" INSULATION AND SHALL BE FITTED WITH 0.016 EMBOSSED ALUMINUM JACKET POP-RIVITED FOR A TIGHT WEATHERPROOF FIT.

233113 - METAL DUCTWORK

1. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED, AND TESTED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS AND PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS, OR THE APPLICABLE STANDARDS ADOPTED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION, (SMACNA).

2. TRANSITION ALL NEW DUCTWORK TO CONNECT TO EXISTING, AS REQUIRED.

3. DUCTWORK SHALL BE GALVANIZED STEEL THROUGHOUT, FABRICATED AND INSTALLED SO THAT NO VIBRATION OR NOISE RESULTS. IT SHALL BE MADE FROM THE BEST GRADE OF GALVANIZED MILLED STEEL SHEETS OF U.S. STANDARD GAUGE AND BE FREE FROM BLISTERS, SLIVERS, AND PITS. ALL SEAMS SHALL BE AIRTIGHT, THE CONSTRUCTION OF ALL DUCTWORK, INCLUDING GAUGES OF METAL, BRACING LAYOUT, ETC., SHALL BE IN ACCORDANCE WITH SMACNA. SLEEVES FOR FIRE DAMPERS AND DUCT SECTIONS FORMING AN EXTENSION OF THE FIRE WALL SHALL BE 10 GAUGE STEEL.

4. SEAL DUCTWORK ACCORDING TO THE FOLLOWING SMACNA DUCT SEALING CLASS:

DUCT LOCATION	DUCT TYPE			
	SUPPLY		EXHAUST	RETURN
	<2in. Wg.	>2in. Wg.		
OUTDOORS	A	A	A	A
UNCONDITIONED SPACES	B	A	B	B
CONDITIONED SPACES	C	B	B	B
(CONCEALED DUCTWORK) CONDITIONED SPACES (EXPOSED DUCTWORK)	A	A	B	B

5. HANGERS FOR DUCTS UP TO 18" IN WIDTH OR DIAMETER SHALL BE PLACED ON NOT MORE THAN 8 FOOT CENTERS. DUCTS 19" AND OVER IN WIDTH OR DIAMETER SHALL BE SUPPORTED ON NOT MORE THAN 4 FOOT CENTERS. DUCT HANGERS SHALL BE CONSTRUCTED OF GALVANIZED BAND IRON 1-1/8" FOR DUCTS UP TO 36" IN WIDTH OR DIAMETER. HANGERS SHALL EXTEND DOWN SIDES AND A MINIMUM OF 1" UNDER RECTANGULAR DUCTS, AND WRAP COMPLETELY AROUND ROUND DUCTS. ALL DUCTS SHALL BE RIGIDLY SUPPORTED.

6. ALL DUCTWORK SHALL BE CLEANED PRIOR TO THE INSTALLATION OF CEILING AND DIFFUSERS. OPERATE FANS TO BLOW OUT DUCTWORK.

7. RECTANGULAR LOW-PRESSURE SUPPLY AND RETURN AIR DUCTWORK SHALL BE LINED WITH 1" FACED FIBERGLASS INSULATION SECURELY BUTTONED OR LAPPED AND SEALED. INSULATION SHALL BE 1-1/2 POUND DENSITY.

8. OUTDOOR DUCTWORK EXPOSED TO THE WEATHER SHALL BE LINED WITH MINIMUM R-8 FACED FIBERGLASS INSULATION SECURELY BUTTONED OR LAPPED AND SEALED, AND SHALL BE FITTED WITH A 0.016 EMBOSSED ALUMINUM JACKET POP RIVETED FOR A WEATHERPROOF FIT.

9. DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE CLEAR AREA AND SHALL BE INCREASED TO ACCOMMODATE INSULATION. DUCT LINER TO BE BY KNAUF GmbH, JOHN-MANSVILLE OR SCHULLER INTERNATIONAL.

10. CLASS I KITCHEN EXHAUST HOOD DUCT SYSTEMS:
    A. TYPE I COMMERCIAL HOOD AND GREASE DUCT SHALL MEET CLEARANCE REQUIREMENTS FROM COMBUSTIBLE AND NONCOMBUSTIBLE CONSTRUCTION IN ACCORDANCE TO 2012 IMC SECTION 507.9 AND ASTM E23-36.
    B. CONSTRUCT EXHAUST DUCT OF WELDED 16 GAGE CARBON STEEL SHEETS FOR CONCEALED DUCTS, AND WELDED OR FLANGED 18 GAGE STAINLESS STEEL FOR EXPOSED DUCTS.
    C. SLOPE HORIZONTAL DUCT AT 1/4" PER FOOT TOWARD HOOD.
    D. PROVIDE ACCESS DOORS AT EACH CHANGE OF DIRECTION.
    E. PROVIDE RESIDUE TRAP AT THE BASE OF EACH VERTICAL RISER, WITH PROVISIONS FOR CLEANOUT.
    F. ALL SEAMS, JOINTS AND PENETRATIONS SHALL HAVE A LIQUID-TIGHT, CONTINUOUS, EXTERNAL WELD.
    G. PROVIDE AND INSTALL ONE OF THE FOLLOWING SYSTEMS: DUCT ENCLOSURE WITH 2-HR FIRE RESISTIVE CONSTRUCTION OR, A DUCT WRAP SYSTEM - 3M FIREMASTER GREASE DUCT FIRE PROTECTION SYSTEM, OR APPROVED EQUAL, OR, A PREFABRICATED GREASE DUCT SYSTEM - METAL FAB MODEL "NO CHASE IPIC", OR APPROVED EQUAL.
        WHICHEVER METHOD IS CHOSEN MUST HAVE APPROVAL FROM THE ADMINISTRATIVE AUTHORITY AND STATE FIRE MARSHALL.

MECHANICAL SPECIFICATIONS

233300 - DUCTWORK ACCESSORIES

1. FLEXIBLE DUCTWORK: THE FINAL 5 FOOT CONNECTION TO GRILLES AND DIFFUSERS IN LAY-IN CEILINGS, OR TO FLOOR MOUNTED GRILLES, MAY BE MADE WITH FLEXIBLE DUCT, FLEXMASTER TYPE 5M ONLY. ENDS SHALL BE SEALED.

2. SQUARE/RECTANGULAR ELBOWS SHALL BE PROVIDED WITH TURNING VANES.

3. PROVIDE FLEXIBLE CONNECTIONS NOT LESS THAN 4" WIDE CONSTRUCTED OF HEAVY, WATERPROOF, WOVEN PLASTIC COATED GLASS FABRIC AT SUPPLY AND RETURN CONNECTIONS TO HEAT PUMPS, AIR HANDLING, ROOFTOP, MAKE-UP AIR OR FAN-COIL UNITS. CORNERS SHALL BE SEWN TIGHT. CONNECTIONS SHALL BE 20 OUNCE VENTFABRICS OR EQUAL.

4. COMBINATION FIRE AND SMOKE DAMPERS, SMOKE DAMPERS, OR FIRE DAMPERS IN DUCTWORK THROUGH ALL FLOORS AND FIRE WALLS SHALL BE FURNISHED AND INSTALLED AS REQUIRED TO CONFORM TO THE LATEST NFPA BULLETIN CONCERNING THIS TYPE OF BUILDING AND SHALL BE LISTED AND LABELED IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS OF UL555 AND UL555S. DAMPERS, COMPLETE WITH MOUNTING ANGLES, SHALL BE MULTI-BLADE, FUSIBLE LINK, SPRING ACTING WITH 11 GAUGE SLEEVE. FUSIBLE LINK SHALL BE RATED AT 165°F. CONTROLLED BY AUTOMATIC SMOKE DETECTION IN DUCT OR AREA OF SMOKE DISPERSION.

5. DUCT MOUNTED BALANCING DAMPERS SHALL BE USED TO CONTROL SUPPLY AIR TO EACH DIFFUSER AND GRILLE. AN OPERATING HEAD SHALL BE PLACED ON THE SIDE OF THE DUCT WITH A POSITIVE LOCKING QUADRANT. DAMPERS SHALL BE PROVIDED IN RETURN AND EXHAUST AIR DUCTS WHERE SHOWN ON DRAWINGS. COORDINATE THE LOCATION OF CEILING ACCESS PANELS.

6. PROVIDE CEILING ACCESS DOORS AT ALL LOCATIONS OF BALANCING DAMPERS, FIRE DAMPERS, FIRE/SMOKE DAMPERS, VALVES, ETC., WHERE THERE IS NOT A LIFT-OUT TYPE CEILING. ACCESS DOORS SHALL BE HINGED OF METAL CONSTRUCTION WITH SCREWDRIVER LATCHES. ACCESS DOORS TO BE LISTED AND FIRE RATED EQUAL TO OR GREATER THAN THE RATING ASSEMBLY THEY ARE INSTALLED IN.

7. AT FIRE DAMPERS, A DUCT MOUNTED SHEET METAL HINGED DOOR SHALL BE PROVIDED AND INSTALLED WITH POSITIVE LOCKING HANDLE. WHERE DUCTS ARE INSULATED, COVERS SHALL BE INSULATED. FIRE DAMPERS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS OF UL555. CONTROLLED BY FIRE DETECTOR, FUSABLE LINK, OR ELECTRICAL FUSABLE LINK. PROVIDE 1, 1-1/2, OR 3 HR FIRE RATED MATERIALS AT ALL PENETRATIONS OF FIRE BARRIERS BY DUCTS. SYSTEM APPROVED BY ASTM E 814 OR EQUAL.

8. GRAVITY OR BACKDRAFT DAMPERS SHALL BE ALL ALUMINUM CONSTRUCTION, INTERCONNECTED AND BLADED, PRESSURE DROP THROUGH DAMPERS SHALL NOT EXCEED 0.04" W.G.

9. FIRE ALARM CONTRACTOR SHALL TEST FOR FIRE/SMOKE DAMPERS AS REQUIRED BY LOCAL BUILDING OFFICIAL AND FIRE AUTHORITY PRIOR TO OCCUPANCY.

233416 - FANS

1. ROOF MOUNTED EXHAUST FANS SHALL BE COMPLETE WITH BACKDRAFT DAMPERS. A DISCONNECT SWITCH SHALL BE PROVIDED AT THE FAN.

2. THE DISCONNECT SWITCH SHALL TURN OFF THE FAN WITH THE ACTIVATION OF SMOKE DETECTION.

3. THE FAN SHALL BE COMPLETE WITH INSECT SCREEN AND PREFABRICATED ROOF CURB MATCHING THE FAN SIZE.

4. CEILING MOUNTED EXHAUST FANS SHALL BE COMPLETE WITH LOUVERED GRILLE, BACKDRAFT DAMPER, AND WALL CAP OR ROOF CAP, SEE PLANS.

5. FANS FOR GREASE HOOD APPLICATIONS SHALL BE UPBLAST TYPE, LISTED AND LABELED FOR GREASE HOOD USE AND INSTALLED PER APPLICABLE CODES.

6. UTILITY FAN SETS SHALL BE BELT DRIVEN, CENTRIFUGAL FANS CONSISTING OF WEATHER PROOF HOUSING, WHEEL FAN SHAFT, BEARINGS, MOTOR, DISCONNECT SWITCH, DRIVE ASSEMBLY, DRAIN CONNECTION AND ACCESSORIES.

7. MANUFACTURERS: COOK, ILG, PENN, GREENHECK, & BROAN

233713 - GRILLES, DIFFUSER AND LOUVERS

1. ALL GRILLES, DIFFUSERS, AND REGISTERS SHALL BE COMPLETE WITH FRAMES AND RUBBER GASKETS. FINISH FOR ALL REGISTERS, DIFFUSERS, AND GRILLES SHALL BE WHITE.

2. COORDINATE THE LOCATIONS OF ALL CEILING DIFFUSERS, REGISTERS, AND GRILLES WITH THE ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL LIGHTING LAYOUT, AND ARCHITECTURAL ELEVATIONS.

3. LOUVERS SHALL HAVE MINIMUM FREE AREA AND MAXIMUM PRESSURE DROP AS LISTED IN THE SCHEDULES. LOUVER SHALL HAVE FRAME AND SILLS COMPATIBLE WITH ADJACENT SUBSTRATE AND FIT ACCURATELY FOR WEATHERPROOF INSTALLATION. LOUVERS SHALL BE COMPLETE WITH 1/2" MESH ANODIZED ALUMINUM BIRD SCREEN.

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EQUIPMENT
SPECIFICATIONS

sheet
M02

BUILDING 'D'

MAKE-UP AIR UNIT SCHEDULE (2-STAGE HEATING/ EVAP COOLING) (BLDG 'D')

SYMBOL	MANUFACTURER	MODEL #	CFM	VOLT/PH	EER	COOLING CAP HI/LOW (BTUH)	HEATING INPUT 1ST/2ND STAGES (BTUH)	ELECTRICAL VOLT/PH	ELECTRICAL MCA (AMPS)	ELECTRICAL MAX FUSE	DIMENSIONS H X W X L	WEIGHT (LBS)	COMMENTS
MAU-1	SEE MANUFACTURER'S EQUIPMENT SCHEDULE BELOW												

MAU-1

Item	Qty	Description
	1 ea	MAKE-UP AIR UNIT Fan #2 D76 - Heater D76 Low CFM Direct Fired Heater. Belt Drive. Supply Fan handles 1152 CFM @ 0.500" wc ESP, Fan runs at 1917 RPM. Heater supplies 99533 BTUs. 80°F Temperature Rise. [Fuel: Natural Gas] Supply Motor: 1.000 HP, 3 Phase, 208 V, 60Hz, 3.4 FLA, ODP (Open Drip Proof) Down Discharge - Air Flow Right -> Left x1 - Size # 1 Celdek Evaporative Cooler for Compact Direct-fired Heater. 26.75" Wide X 76.438" Long X 29.688" High. Includes intake hood with filters. For outdoor installation. x1 - RTC Solutions • 40-90°F Discharge Temp Control x1 - Gas Manifold for Commercial GM - BTU 0 - 241291 - 7 in. w.c. - 14 in. w.c., No Insurance Requirement (ANSI), BV250-44 x1 - Cooling Interlock Relay. 24VAC Coil. 120V Contacts. Locks out burner circuit when AC is energized. x1 - Gas Pressure Gauge, 0-35", 2.5" Diameter, 1/4" Thread Size x1 - Gas Pressure Gauge, -5 to +15 Inches Wc., 2.5" Diameter, 1/4" Thread Size x1 - Freeze Protection Drain Control kit for Evaporative Coolers. Includes 3-Way water solenoid valve 8316G064 (shipped loose), Pressure switch installed upstream of 2way solenoid in unit, Brass Tee, 2 NPT half inch nipples, and two stage thermostat T678a-1015. Field wiring required by others for 3-way valve. For both Celdek and Standard V-bank type Configurations. x1 - Motorized Back Draft Damper 13" X 17" for D76 Compact Direct Fired Heaters w/Extended Shaft, Standard Galvanized Construction, 3/4" Rear Flange, TF120S Actuator Included x1 - Curb CRB19.5X52X20INS Insulated On Fan # 2 Flat Curb x1 - Rail ADJUSTLEG-36 On Fan # 2 x1
	1 ea	ELECTRICAL SYSTEM #1 SC-311110FP 3 Phase w/ control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Fan(s) On/Off Thermostatically Controlled. Room temperature sensor shipped loose for field installation. Includes 1 Duct Thermostat kit. x1 - Digital Prewire Lighting Relay Kit. Includes hood lighting relay & terminal blocks. Allows for up to 1400W of lighting each. x1
	1 ea	DUCT WORK Duct Run #1 (P1) DW125825OLT Single Wall Duct 12" diameter, 58.250" long, flange at both ends. Stainless Steel. x1 (P2) DW1260AJDKIT Single Wall Duct Adjustable, 12" diameter, 59.5" long, flange at one end With a 12" Diameter - 4" Tall - Adjustable Collar - Stainless Steel. x1 (P3) DW12VESU18 Duct Vertical Support Assembly, 12" Duct, 18" Clearance To Combustibles. Parts are Zinc Coated. x1 (P4) DW2312TP Duct to Curb Transition, 23" Curb to 12" Duct, 16 GA Aluminized. Misc. non-standard transition plate. x1 3M-2000PLUS Duct - 3M Fire Barrier 2000 Plus Silicone - Used as sealant to Seal Duct Joints. x1 834680600587XL Duct - Duct insulation for zero clearance to combustibles - 300" x 24" x 1-1/2" Roll. Pyroscat Wrap. x2 BANDING.5 Duct - Fire Barrier Wrap Stainless Steel Banding .5" Width - 200 FT Per Roll. x1 DW12CLASY Duct "V" Clamp With new design 14 Ga Brackets, 12" Duct, Assembly. x2 SEAL50-50 Duct - Fire Barrier Wrap Stainless Steel Banding Seal .5" Width. Quantity of 50. x1 TAPEALUM Duct - Fire Barrier Wrap Aluminum Foil Tape - 3" x 150' Roll. x1

TYPE I KITCHEN HOOD

Item	Qty	Description
01	1 ea	**HOOD #1** Captive Aire Model No. HOOD #1 Hood #1 5424ND-2-PSP-F - 6ft 0" Long Exhaust-Only Wall Canopy Hood with Front Perforated Supply Plenum with Built-in 3" Back Standoff x1 - 430 SS Where Exposed x1 - Utility Cabinet on the Right Side x1 - FILTER - 20" tall x 16" wide Stainless Steel Captrate Solo filter with hook, ETL Listed. Particulate capture efficiency: 93% efficient at 9 microns, 72% efficient at 5 microns x4 - L55 Series E26 Canopy Light Fixture - High Temp Assembly, Includes Clear Thermal and Shock Resistant Globe (L55 Fixture), Bulbs By Others x2 - EXHAUST RISER - Factory installed 12" Diameter X 4" Height x1 - SUPPLY RISER - 10"x 28" Supply Riser with Volume Dampers x2 - 1/2 Pint Grease Cup New Style, Flanged Slotted x2 - LEFT QUARTER END PANEL 23" Top Width, 0" Bottom Width, 23" High 430 SS x1 - RIGHT QUARTER END PANEL 23" Top Width, 0" Bottom Width, 23" High 430 SS x1 - Electrical Package Installation in Utility Cabinet by Plant. x1

KITCHEN HOOD FIRE SUPPRESSION SYSTEM

Item	Qty	Description
	1 ea	FIRE SUPPRESSION - Fire Suppression System Complete field installed UL300 hood fire suppression system (non union / non prevailing wage labor) Includes up to a 2" mechanical Gas valve, chrome sleeving on exposed piping, test, and Permits as required. Price is for a system that is installed during normal daytime weekday business hours. Any weekend or night work required will be extra. Gas valve needs to be installed by others prior to the fire system installation. Price is for surface mounted tension lines in conduit. If recessed tension lines are required, please consult CAS for revised price & requirements. Price includes two trips to jobsite. One trip is for installation, second trip is for test. Additional charges will apply for additional trips needed because of failed tests.
	1 ea	FACTORY SERVICES Factory Services Service Design Verification for Direct Fired Heater x1 Service Design Verification for Evap Cooler x1 Service Design Verification for Exhaust Fan x1 Service Design Verification for Hood x1 Service Design Verification for Standard Electrical Control Package x1 Service Design Verification Mileage Charge: (27) x 2 = 54 total miles x1

GREASE EXHAUST FAN SCHEDULE (BLDG 'D')

SYMBOL	MANUFACTURER AND MODEL NO.	LOCATION	TYPE	FAN CFM	FAN ESP	ELECTRICAL MOTOR H.P.	ELECTRICAL MOTOR WATTS	ELECTRICAL VOLT	ELECTRICAL PHASE	OPERATING WEIGHT (LBS.)	CONTROL METHOD	ACCESSORIES AND REMARKS
GEF-1	SEE MANUFACTURER'S EQUIPMENT SCHEDULE BELOW											

GEF-1

Item	Qty	Description
	1 ea	FAN #1 Fan #1 NCA14FA - Exhaust Fan NCA14FA Belt Drive Centrifugal Upblast Exhaust Fan with 15.75" wheel Exhaust Fan handles 1440 CFM @ -1.250" wc ESP, Fan runs at 1348 RPM. Exhaust Motor: 1.000 HP, 3 Phs, 208 V, 60Hz, 3.4 FLA, ODP (Open Drip Proof) x1 - Grease Cup for kitchen-duty centrifugal exhaust fans, Box Dimensions 17-1/8 L X 5-1/16 W X 3-3/4 H (18 GA.) (Includes Down Spout) x1 - Gasketing - Thermeez Woven Ceramic Tape - 1/4" x 1" with adhesive back - Max Temp 1500°F. To be applied between fan base and grease duct. Ships loose with fan. Gasket length supplied = perimeter of fan base. x1 - Curb CRB23x22E On Fan # 1 Flat Curb x1 - Hinged Base for Curb. Standard Hinge attached to curb. Used on Fans with wheels 20 inches or smaller. 12 GA Galvanized. x1 - Vented Base for Curb x1

ELECTRIC UNIT HEATER SCHEDULE

SYMBOL	MANUFACTURER AND MODEL NO.	LOCATION	ARRANGEMENT	CFM	ELECTRICAL KW	ELECTRICAL MOTOR H.P.	ELECTRICAL VOLT	ELECTRICAL PHASE	OPERATING WEIGHT (LBS.)	NOTES	ACCESSORIES AND REMARKS
EUH-1	TRANE UHEC03	WATER ENTRIES	VERTICAL	400	3.3	1/125	208	1	132	3	WALL HUNG
EUH-2	TRANE UHCA02	EXIT DOORS	HORIZONTAL	-	2.0	-	208	1	-	1,2	RECESSED, CEILING MOUNTED
EUH-3	TRANE UHAA15	CUSTODIAN	VERTICAL	-	1.5	-	208	1	22	1,2	RECESSED, WALL MOUNTED

NOTES:
(1) UNIT MOUNTED TAMPERPROOF THERMOSTAT
(2) UNIT MOUNTED DISCONNECT SWITCH
(3) PROVIDE WALL MOUNTED LINE VOLTAGE THERMOSTAT AND TAMPERPROOF WALL BRACKET

DIFFUSER AND GRILLE SCHEDULE

SYMBOL	MANUFACTURER AND MODEL NO.	LOCATION	CFM	OVERALL SIZE	NOTES	ACCESSORIES AND REMARKS
SG-1	TITUS 300R	CEILING	SEE PLANS	14 X 6 10 X 6	3,5	CEILING SUPPLY GRILLE W/ FIRE DAMPER
CD-1	TITUS PAS-FR	CEILING	SEE PLANS	24 X 24 12 X 12	2,5	CEILING DIFFUSER W/ FIRE DAMPER
RG-1	TITUS PAR-FR	CEILING	SEE PLANS	24 X 24 16 X 16	2,5	RETURN GRILLE W/ FIRE DAMPER
EG-1	TITUS 63F	EXTERIOR EXHAUST TERMINATION	SEE PLANS	8X6	4	EXHAUST DISCHARGE GRILLE, ALUMINUM
DG-1	TITUS CT-700L	DOOR TRANSFER	SEE PLANS	18 X 12	1	DOOR GRILLE
FIRE RATING NOTE: ALL CEILING DUCTWORK & DIFFUSER PENETRATIONS TO HAVE UL CLASSIFIED FIRE DAMPERS TO MAINTAIN FIRE RATING. (TYPICAL)						

NOTES:
(1) PROVIDE AUXILIARY FRAME FOR TO ALLOW FOR FINISHED LOOK ON BOTH SIDES OF DOOR.
(2) PROVIDE FRAME AND BALANCING DAMPER ACCESSIBLE THROUGH GRILLE FOR HARDLID CEILING APPLICATIONS AS REQUIRED.
(3) PROVE DOUBLE DEFLECTION GRILLE WITH INTEGRAL BALANCING DAMPER.
(4) PROVIDE NECESSARY FRAME TO ALLOW FOR INSTALLATION ON BOTTOM SIDE OF EXISTING EXTERIOR OVERHANG.
(5) PROVIDE UL CLASSIFIED FIRE RATED CEILING DIFFUSER ASSEMBLY.

EXHAUST FAN SCHEDULE

SYMBOL	MANUFACTURER AND MODEL NO.	LOCATION	TYPE	FAN CFM	FAN ESP	ELECTRICAL MOTOR H.P.	ELECTRICAL MOTOR WATTS	ELECTRICAL VOLT	ELECTRICAL PHASE	OPERATING WEIGHT (LBS.)	CONTROL METHOD	ACCESSORIES AND REMARKS
EF-1	PANASONIC FV-05-11VKS1	PRIVATE UNIT BATHROOMS	CEILING	110	0.5	-	57	115	1	27	1	CEILING MOUNTED W/ WHITE GRILLE
EF-2	PANASONIC FV-11-15VKS1	PUBLIC RESTROOM	CEILING	150	0.5	-	13	115	1	27	1	CEILING MOUNTED W/ WHITE GRILLE

CONTROL METHOD:
(1) CONTROLLED BY WALL SWITCH
(2) FAN RUNS CONTINUOUSLY DURING BUILDING OCCUPANCY
(3) CONTROLLED BY LINE VOLTAGE SPACE THERMOSTAT

ACCESSORIES:
(1) STANDARD DISCONNECT NEMA 1
(2) BACKDRAFT DAMPER
(3) FLEX DUCT CONNECTION
(4) FAN SPEED CONTROLLER 5A 120V PREWIRED
(5) RUBBER ISOLATOR SET (4)
(6) PROVIDE UL LISTED CEILING RADIATION DAMPER TO MATCH FAN TYPE (PANASONIC-RD05C3)

ROOFTOP UNIT SCHEDULE (2-STAGE HEATING/COOLING)

SYMBOL	MANUFACTURER	MODEL #	CFM	ESP	VOLT/PH	EER	COOLING CAP HI STAGE (BTUH)	HEATING INPUT (BTUH)	ELECTRICAL VOLT/PH	ELECTRICAL MCA (AMPS)	ELECTRICAL MAX FUSE	DIMENSIONS H X W X L	WEIGHT (LBS)	COMMENTS
RTU-1	TRANE	4YCZ6036	1200	1.0	208/3	16.0	36,000	96,000	208/3	19.1	30 A	48" X 45" X 52"	550	HORIZONTAL SUPPLY/RETURN
RTU-2	TRANE	YHC047E3	1600	1.0	208/3	16.0	50,500	120,000	208/3	28.9	40 A	41" X 53" X 88"	800	HORIZONTAL SUPPLY/RETURN

(1) PROVIDE DIGITAL REMOTE PROGRAMMABLE THERMOSTAT IN LOCKABLE COVER.
(2) 0-25% MANUAL FRESH AIR DAMPER (BUILDING B RTUS)
(3) 0-100% HORIZONTAL ECONOMIZER (BUILDINGS A & C THRU F RTUS)
(4) 13" HIGH ROOF CURB/PLATFORM
(5) CRANKCASE HEATER FOR LOW AMBIENT COOLING
(6) PROVIDE INSULATED DUCT SHROUD ON ALL EXTERIOR DUCTWORK
(7) GAS PRESSURE REGULATOR & ISOLATION VALVE
(8) 120 V CONVENIENCE OUTLET INTEGRAL TO UNIT
(9) CONDENSER COIL HAIL GUARD
(10) NON-FUSED DISCONNECT INTEGRAL TO UNIT
(11) GAS & ELECTRIC FEEDS TO ENTER THROUGH BASE OF UNIT

DUCTLESS SPLIT SYSTEM HEAT PUMP

SYMBOL	MANUFACTURER	INDOOR UNIT MODEL #	INDOOR UNIT CFM	INDOOR UNIT VOLT/PH	INDOOR UNIT RLA (AMPS)	COOLING CAPACITY (BTUH)	HEATING CAPACITY (BTUH)	OUTDOOR UNIT SYMBOL	OUTDOOR UNIT VOLT/PH	OUTDOOR UNIT MCA (AMPS)	OUTDOOR UNIT MODEL #	OUTDOOR UNIT HSPF	OUTDOOR UNIT SEER	COMMENTS
DSS-1	LENNOX	MS8-HI-24P	590	208/1	0.24	25,000	26,000	CU-1	208/1	16.0	MS8-HO-24P	10.20	18.00	HIGH SIDEWALL STYLE (BLDGS. A, B, D, E & F)
DSS-2	LENNOX	MS8-HI-30P	705	208/1	0.40	30,000	33,000	CU-2	208/1	20.0	MS8-HO-30P	8.20	16.00	HIGH SIDEWALL STYLE (BLDG. C)

(1) PROVIDE REMOTE PROGRAMMABLE THERMOSTAT. BUILDINGS A, B, D, E & F MAX TEMP 85F (ADJ.) BUILDING C COOLING SETPOINT 70F (ADJ.) MAINTAIN 50F HEATING SETPOINT (ADJ)
(2) BUILT IN CONDENSATE PUMP / DISCHARGE CONDENSATE TO APPROVED LOCATION
(3) MULTI-SPEED FAN
(4) DEFROST CONTROL
(5) COMPRESSOR OVERCURRENT PROTECTION
(6) PROVIDE MANUFACTURER'S WALL CHANNEL (SPEEDICHANNEL SYSTEM) TO CONCEAL ALL REFRIGERANT PIPING EXPOSED TO VIEW AND EXTERIOR CONDITIONS.
(7) PROVIDE MANUFACTURER'S CONDENSER PAD 18 X 36 X 2

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MECHANICAL SCHEDULES

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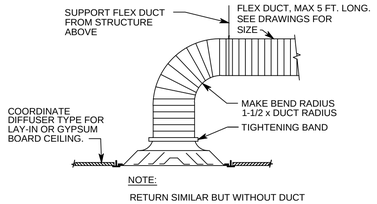
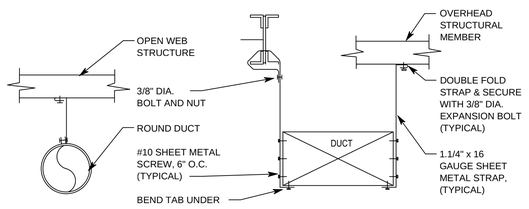
M11

BUILDING 'D'



8 DIFFUSER CONNECTION

SCALE: NTS

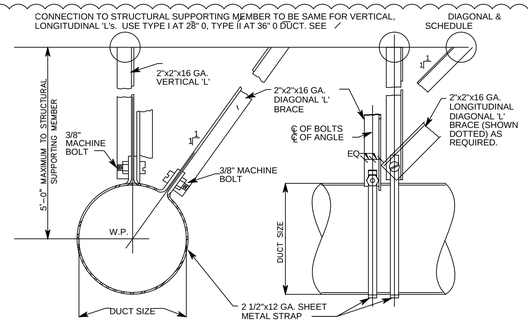


NOTE:
USE SPECIFIED SPACING AND NOT LESS THAN ONE SUPPORT PER BRANCH.

NOTE:
ONE HANGER REQUIRED DUCT 24" DIA. AND SMALLER, TWO HANGERS REQUIRED FOR DUCTS 26" DIA. AND LARGER.

9 DUCT HANGER

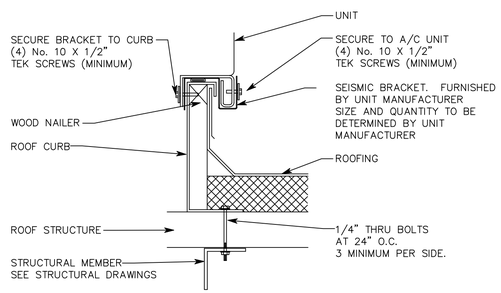
SCALE: NTS



NOTE!! FOR SPACING OF BRACING REFER TO GENERAL NOTE 3, SHEET 1.

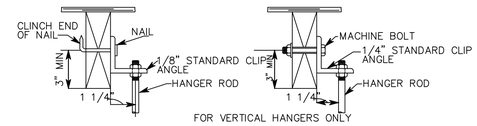
10 TYP BRACING FOR ROUND DUCT

SCALE: NTS



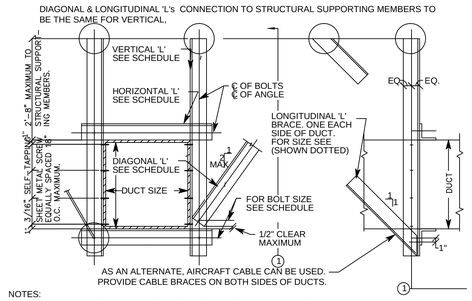
11 ROOF CURB SEISMIC BRACE

SCALE: NTS



4 STANDARD CLIP ANGLES

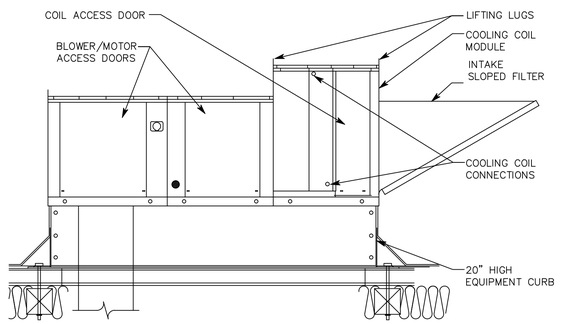
SCALE: NTS



NOTES:
1. WHEN A COMBINATION OF DUCTS ARE USED IN LIEU OF ONE DUCT, AT LEAST 2 SIDES OF EACH DUCT MUST BE CONNECTED TO VERTICAL OR HORIZONTAL 'L's. (ADD HORIZONTAL 'L's IF REQUIRED.)

5 SIDE BRACING–RECTANGULAR DUCT

SCALE: NTS



6 MAKE-UP AIR UNIT DETAIL

SCALE: NTS

NOTE: PROVIDE SLOPED CURB, SERVICE PLATFORM, & RAILING PER MANUFACTURER'S RECOMMENDATIONS.

NOTE:
ALL PIPING IN 3/8" SCH. 40 BLACK PIPE

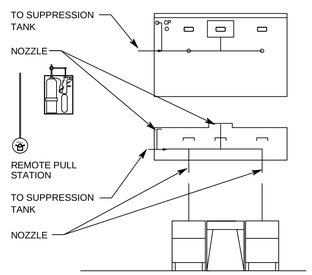
ALL FIELD EXPOSED PIPING SLEEVED IN CHROME

EXHAUST FAN TO REMAIN ON, MAKEUP AIR, GAS AND ALL ELECTRIC TO SHUT-DOWN IN SYSTEM ACTUATION.

NOZZLE PLACEMENT MEETS ANSUL UL300 CRITERIA

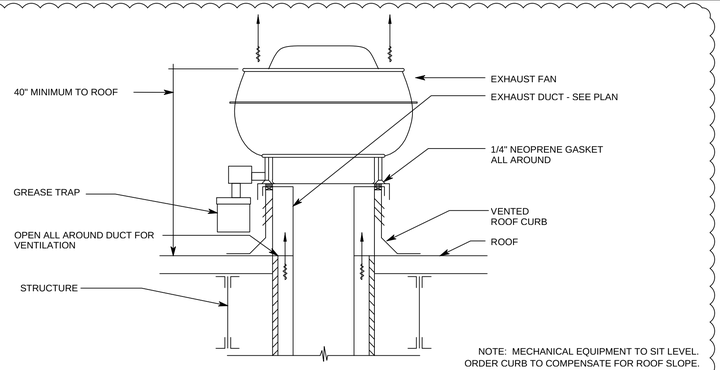
TEST LINKS TO BE DETERMINED BY INSTALLER

ELEC. EQUIP. -- NO GAS VALVE REQUIRED



7 FIRE SUPPRESSION SYSTEM

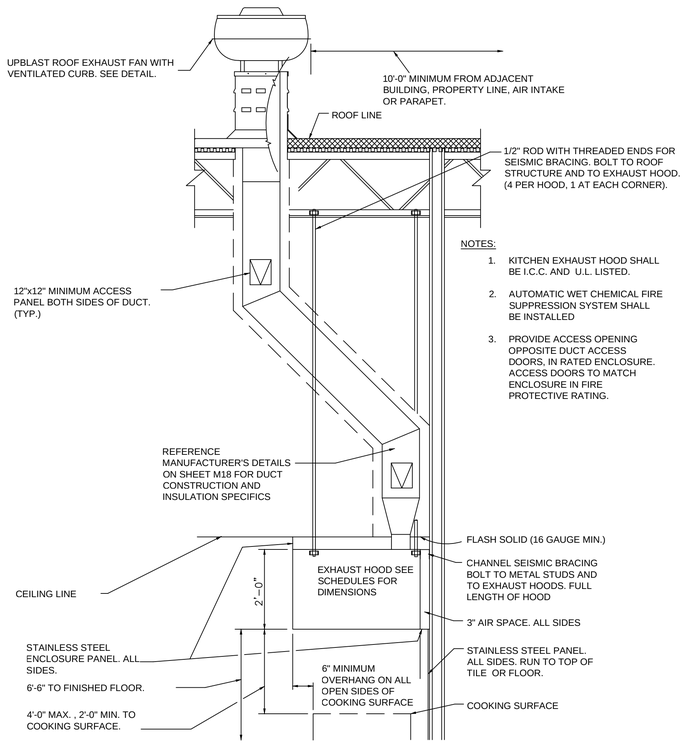
SCALE: NTS



NOTE: MECHANICAL EQUIPMENT TO SIT LEVEL. ORDER CURB TO COMPENSATE FOR ROOF SLOPE.

1 KITCHEN EXHAUST FAN DETAIL

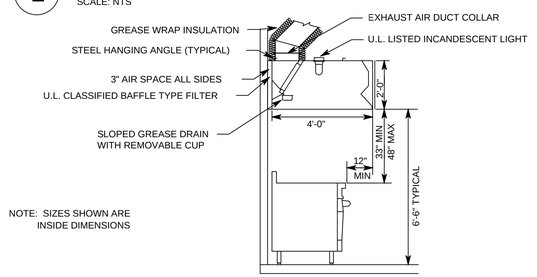
SCALE: NTS



NOTES:
1. KITCHEN EXHAUST HOOD SHALL BE I.C.C. AND U.L. LISTED.
2. AUTOMATIC WET CHEMICAL FIRE SUPPRESSION SYSTEM SHALL BE INSTALLED
3. PROVIDE ACCESS OPENING OPPOSITE DUCT ACCESS DOORS, IN RATED ENCLOSURE. ACCESS DOORS TO MATCH ENCLOSURE IN FIRE PROTECTIVE RATING.

2 KITCHEN EXHAUST SYSTEM DETAIL

SCALE: NTS



NOTE: SIZES SHOWN ARE INSIDE DIMENSIONS

3 SECTION THROUGH TYPE 1 HOOD

SCALE: NTS

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MECHANICAL DETAILS

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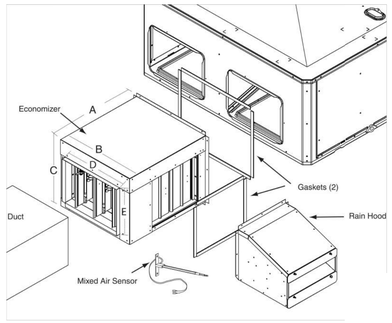
M12

BUILDING 'D'

BAYECON203,204A Horizontal Economizer and Rain Hood

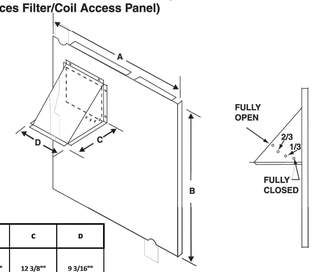


Economizer	A	B	C	D	E	F
BAYECON203AA	22"	20"	16 7/8	15 11/16	11 11/16	15

3 HORIZONTAL ECONOMIZER DETAIL (3 TON)
SCALE: NTS

Optional Equipment

BAYOSAH001,002A, 25% Outside Air Damper (Replaces Filter/Coil Access Panel)

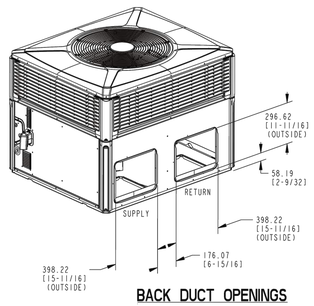


Manual Fresh Air Model	Unit Application Models	A	B	C	D
BAYOSAH001	4YC,WC3018-036 4TC*3018-036, 4W/T/Y/DCY4024-036, 4W/Y/DCZ60036	22 7/16""	20 11/16""	12 3/8""	9 3/16""

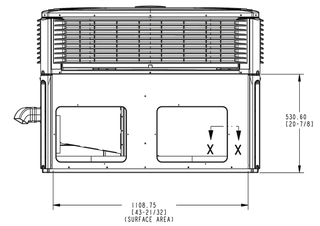
2 25% OUTSIDE AIR DAMPER (3 TON)
SCALE: NTS

RECOMMENDED SERVICE CLEARANCE MM/IN.		
		WITH ECONOMIZER
BACK SIDE	304.8 [12]	762.0 [30]
LEFT SIDE	762.0 [30]	914.4 [36]
RIGHT SIDE	914.4 [36]	-
FRONT SIDE	1066.8 [42]	-

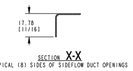
CLEARANCE TO COMBUSTIBLE MATERIAL MM/IN.	
BOTTOM	0
BACK SIDE	25.4 [1]
LEFT SIDE	152.4 [6]
RIGHT SIDE	304.8 [12]
FRONT SIDE	304.8 [12]
TOP	914.4 [36]



BACK DUCT OPENINGS



BACK SIDE



1 ROOFTOP UNIT DETAIL (3 TON)
SCALE: NTS

Stainless Steel Drain Pan

For excellent corrosion and oxidation resistance, the optional stainless steel drain pan provides a cleanable surface that complement other IAQ solutions such as high efficiency filtration (MERV 8 or 13), demand control ventilation (CO_2), and hot gas reheat.

Powered or Unpowered Convenience Outlet

This option is a GFCI, 120V/15amp, 2 plug, convenience outlet, either powered or unpowered. This option can only be ordered when Through the Base Electrical with either the Disconnect Switch or Circuit Breaker option is ordered.
Note: Not available on 460V/575V units.

Through-the-Base Electrical Utility Access

An electrical service entrance shall be provided allowing electrical access for both control and main power connections inside the curb and through the base of the unit. Option will allow for field installation of liquid-tight conduit and an external field installed disconnect switch.

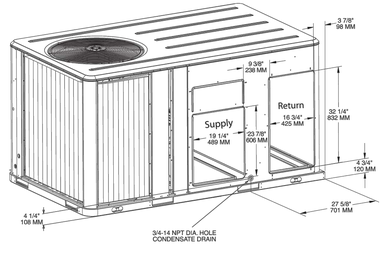
Factory provided through the base openings simpl wiring and piping. Because these utility openings frequently minimize the number of roof penetration integrity of roofing materials is enhanced.

6 RTU ACCESSORY & INSTALLATION DETAIL
SCALE: NTS

Touchscreen Programmable Thermostat (2H/2C)

Two Heat/Two Cool programmable thermostat with touch screen digital display. Menu-driven programming. Effortless set-up. Program each day separately with no need to copy multiple days. All programming can be done on one screen. Easy to read and use. Large, clear backlit digital display.

5 RTU THERMOSTAT DETAIL
SCALE: NTS



4 ROOFTOP UNIT DETAIL (4 TON)
SCALE: NTS

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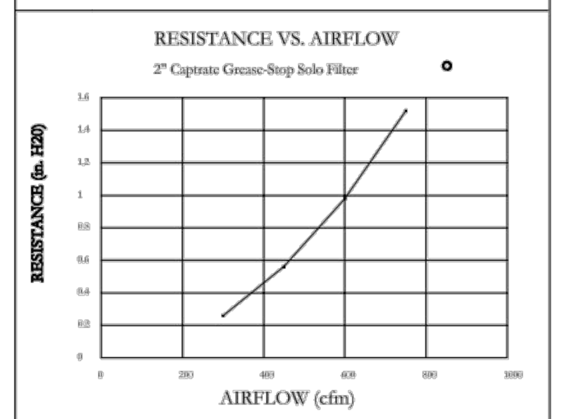
MECHANICAL DETAILS

sheet
M13

BUILDING 'D'

Captrate
Grease-Stop Solo Filter



Filter Detail

CAPTRATE

EXHAUST CFM=LENGTH OF HOOD X CFM/LIN.FT. (LOAD)

SUPPLY CFM=EXHAUST CFM X PERCENTAGE REQUIRED

$$\text{TOTAL DUCT AREA} = 144 \times \frac{\text{CFM}}{\text{FPM}(*)}$$

$$\text{DUCT LENGTH} = \frac{\text{TOTAL DUCT AREA}}{\text{DUCT DEPTH}}$$

*CAPTIVE-AIRE VENTILATOR DUCT SIZES ARE CALCULATED USING AN EXHAUST VELOCITY OF 1600-1800 FPM AND A SUPPLY VELOCITY OF 1000 FPM PLEASE CONSULT FACTORY FOR MAXIMUM ALLOWABLE DUCT SIZES

CALCULATIONS UTILIZED

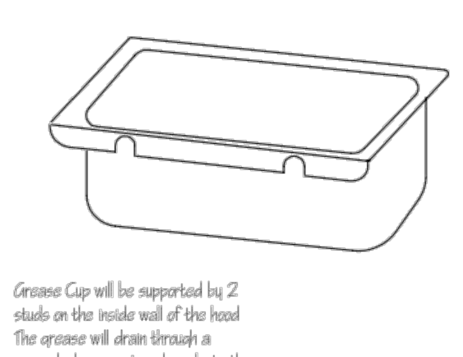
CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

- NFPA #96
- ETL SANITATION
- E.T.L. LISTED 3054804-001
- ETL IS LISTED TO ULC STANDARDS
- NSF

NFPA®

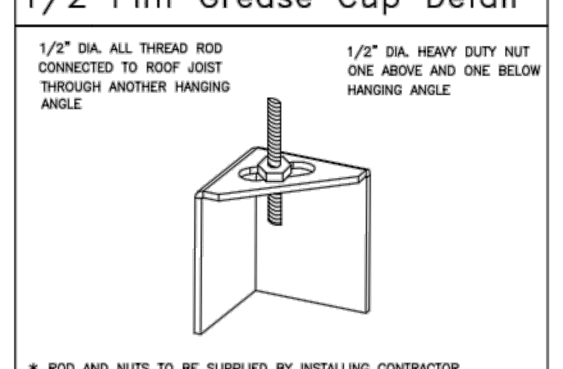
Intertek

BUILDING CODES



Grease Cup will be supported by 2 studs on the inside wall of the hood. The grease will drain through a concealed grease trough and into this removable cup.

1/2 Pint Grease Cup Detail



* ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR HANGING ANGLE IS PRE-PUNCHED AT FACTORY

ND-2 HANGING ANGLE DETAIL

HANGING ANGLES WILL BE LOCATED IN THE FOLLOWING LOCATIONS FOR WALL CANOPIES

HOOD STYLE		DIM FROM REAR	DIM FROM FRONT (24" High Hood)	DIM FROM FRONT (30" High Hood)
Wall	Exhaust Only	4.166"	2.25"	2.25"
	With MUA		2.25"	2.25"
Back Shelf	Exhaust Only	4.166"	2.25"	2.25"
	With MUA		2.25"	2.25"
Condensate		2.25"	2.25"	

HANGING ANGLE LOCATIONS

HOOD INFORMATION – Job#2871162

HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	EXHAUST PLENUM: TOTAL EXH. CFM	RISER(S): WIDTH	LENG.	HEIGHT	DIA.	CFM	S.P.	TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG.: END TO END	ROW
1		5424 ND-2-PSP-F	6' 0.00"	600 Deg.	1440			4"	12"	1440	-0.726"	1152	430 SS Where Exposed	ALONE	ALONE

PATENT NUMBERS
AC-PSP (United States) - US Patent 7963830 B2
AC-PSP Wall (Canada) - CA Patent 2820509
AC-PSP Island (Canada) - CA Patent 2520330

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HOOD INFORMATION

HOOD NO.	TAG	FILTER(S): TYPE	QTY.	HEIGHT	LENGTH	EFFICIENCY @ 9 MICRONS	LIGHT(S): QTY.	TYPE	WIRE GUARD	UTILITY CABINET(S): LOCATION	SIZE	FIRE SYSTEM: TYPE	SIZE	ELECTRICAL: MODEL #	SWITCHES: QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WGHT
1		Captrate Solo Filter	4	20"	16"	93% See Filter Spec.	2	L55 Series E26	NO	Right	12"x54"x24"			SC-3111OFP	1 Light 1 Fan	NO	468 LBS

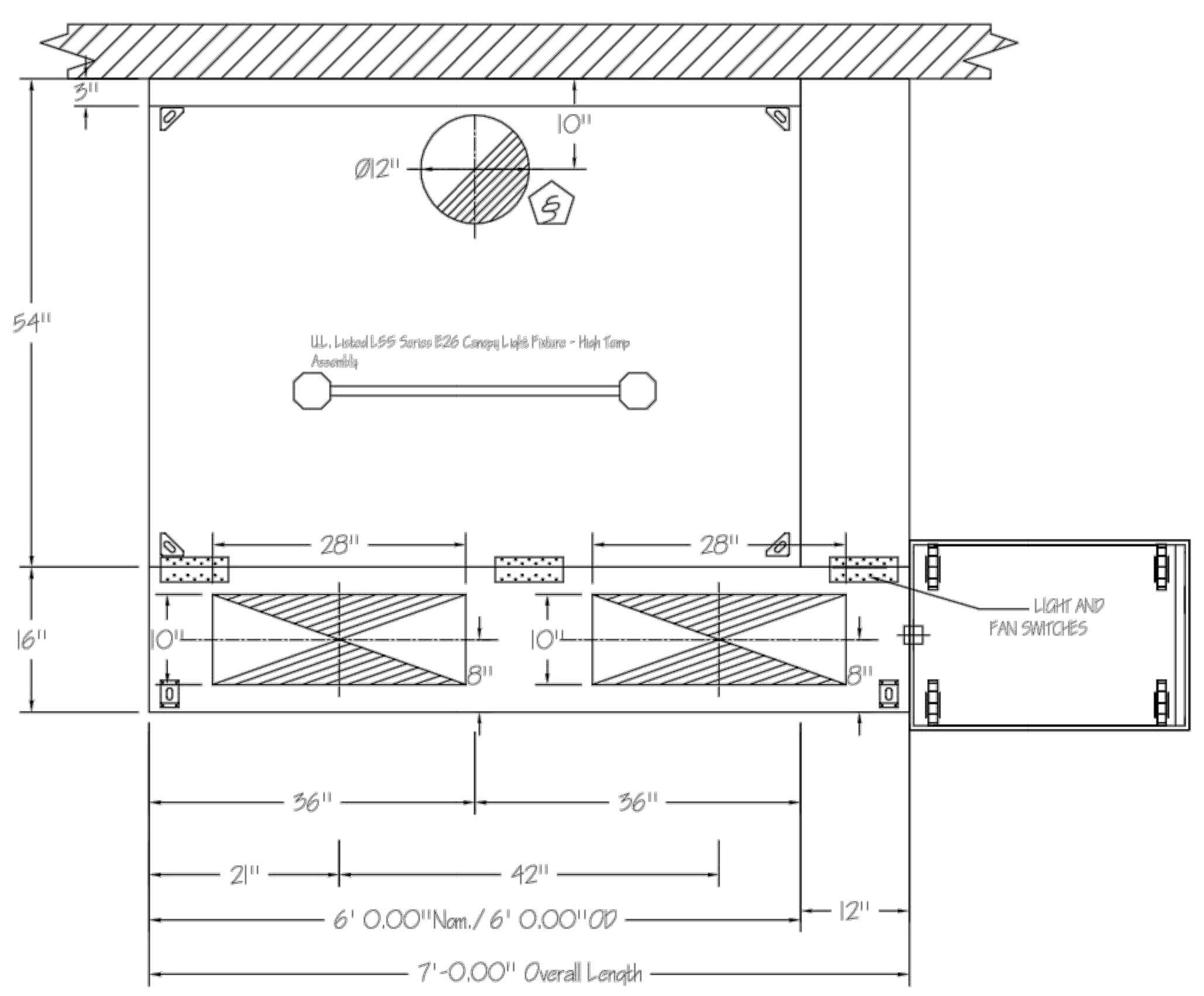
HOOD OPTIONS

HOOD NO.	TAG	OPTION
1		LEFT QUARTER END PANEL 23" Top Width, 0" Bottom Width, 23" High 430 SS
		RIGHT QUARTER END PANEL 23" Top Width, 0" Bottom Width, 23" High 430 SS

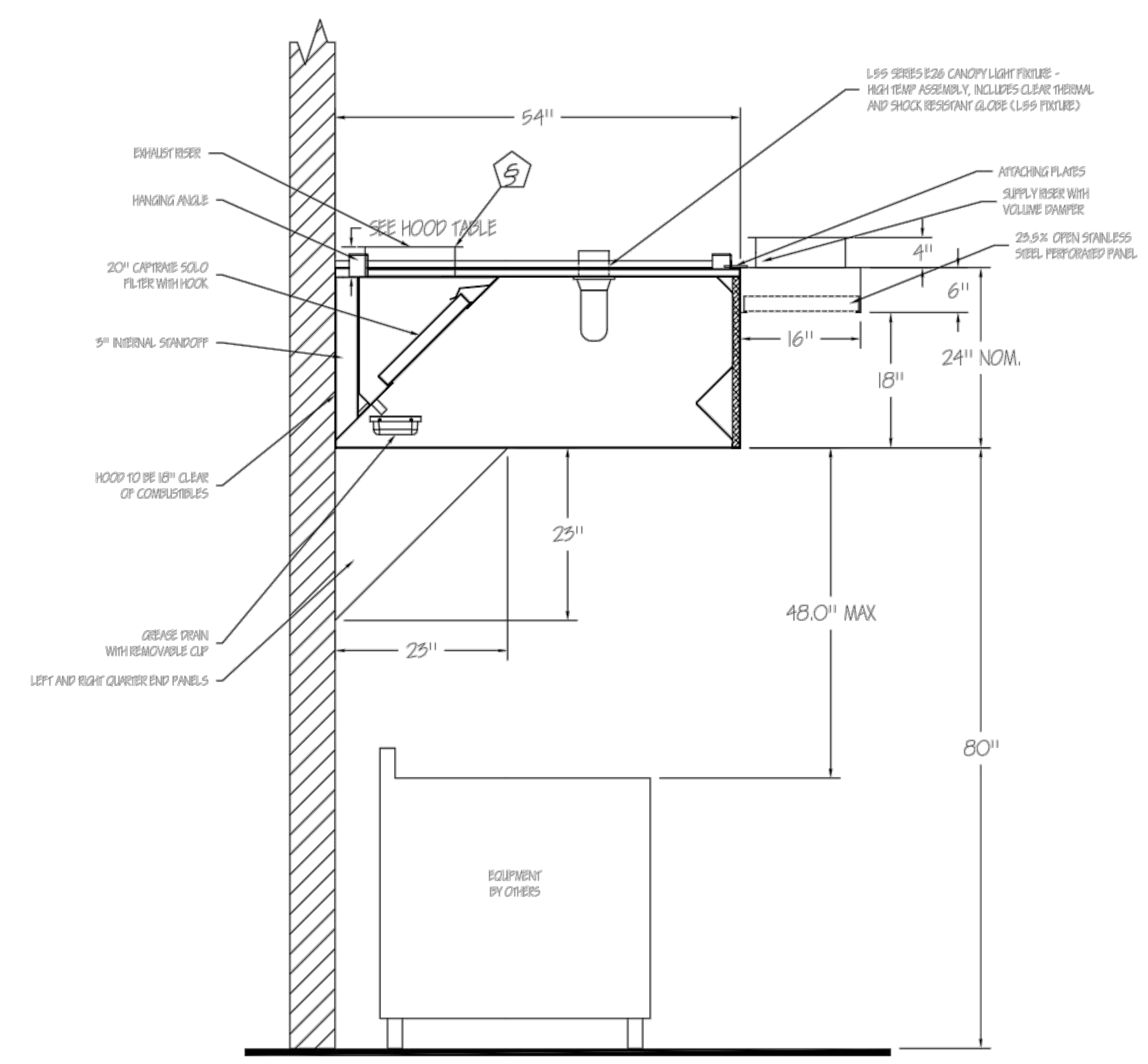
NOTE: MODEL ND-2 IS AN ETL LISTED HOOD
ETL LISTING IS 200 CFM/FT (600 DEGREES)
Q = ETL LISTING * 6' 0" = 1200 CFM < 1440 CFM (DESIGN)
MODEL ND-2 IS ETL LISTED WITH 1 EX RISER UP TO 16'

PERFORATED SUPPLY PLENUM(S)

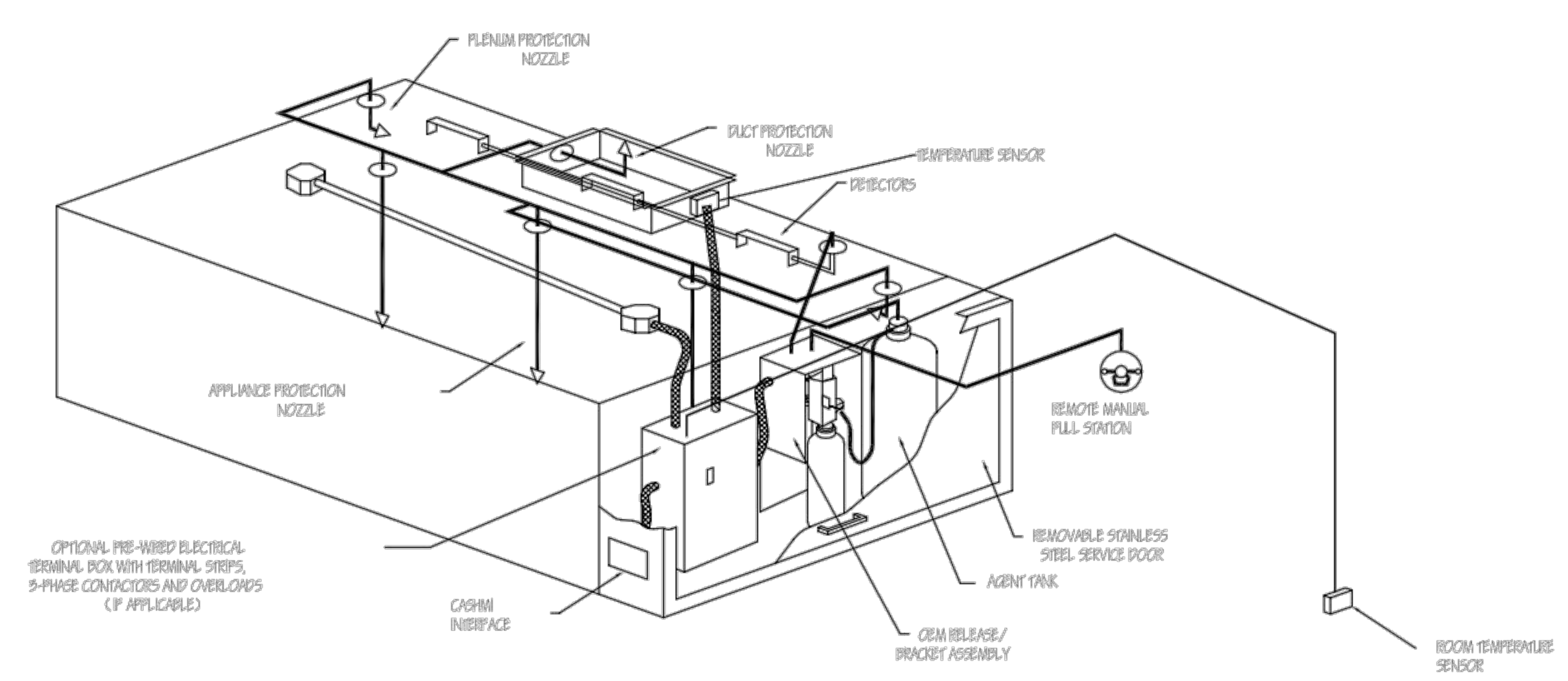
HOOD NO.	TAG	POS.	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S): WIDTH	LENG.	DIA.	CFM	S.P.
1		Front	84"	16"	6"	MUA	10"	28"		576	0.154"
						MUA	10"	28"		576	0.154"



PLAN VIEW – Hood #1
6' 0.00" LONG 5424ND-2-PSP-F

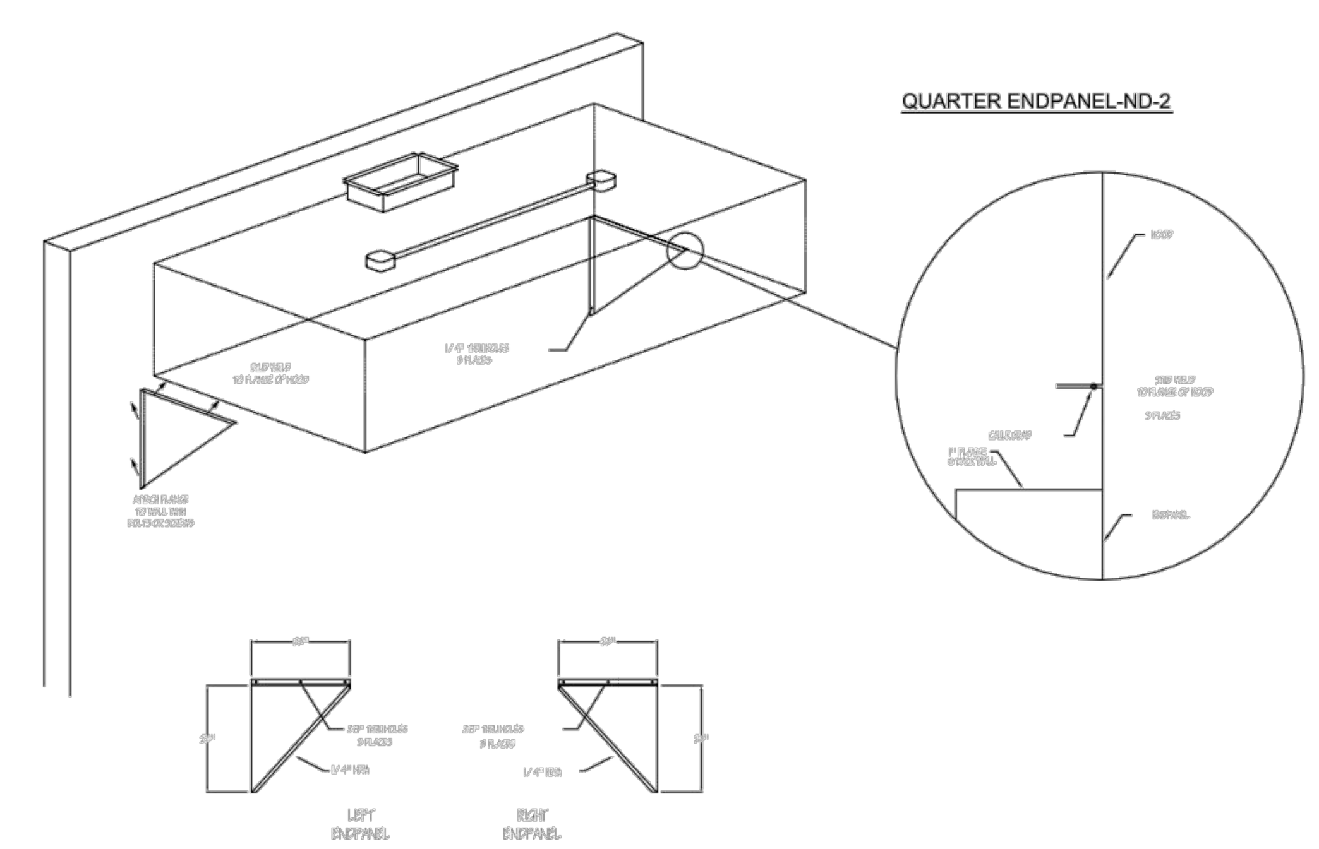


SECTION VIEW – MODEL 5424ND-2-PSP-F
HOOD – #1



TYPICAL ANSUL R-102 SYSTEM LAYOUT

QUARTER ENDPANEL-ND-2



REVISIONS

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Brighton Recovery Kitchen
SALT LAKE CITY, UT, 84107

DATE: 12/27/2016
DWG.#: 2871162
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 1

STANDARD Restaurant Supply
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FLOOR PLAN

Date: 20161227
Project: 03-231
Project Name: Brighton Recovery - Hood Ventilation drawing - Sheet 1

K-02.a

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sheet

M14

BUILDING 'D'

EXHAUST FAN INFORMATION – Job#2871162

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	WEIGHT (LBS.)	SONES
1		NCA14FA	1440	1.250	1348	1.000	0.6060	3	208	3.4	132	15.4

MUA FAN INFORMATION – Job#2871162

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	EVAP COOLER ENTERING DB TEMP.	EVAP COOLER ENTERING WB TEMP.	EVAP COOLER LEAVING DB TEMP.	EVAP COOLER LEAVING WB TEMP.	WEIGHT (LBS.)	SONES
2		D76	G7	D.6	1152	0.500	1917	1.000	0.7890	3	208	3.4	95.0°F	63.0°F	74.0°F	63.0°F	478	25

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2		108188	99533	80 deg F	7 in. w.c. - 14 in. w.c.	Natural

FAN OPTIONS

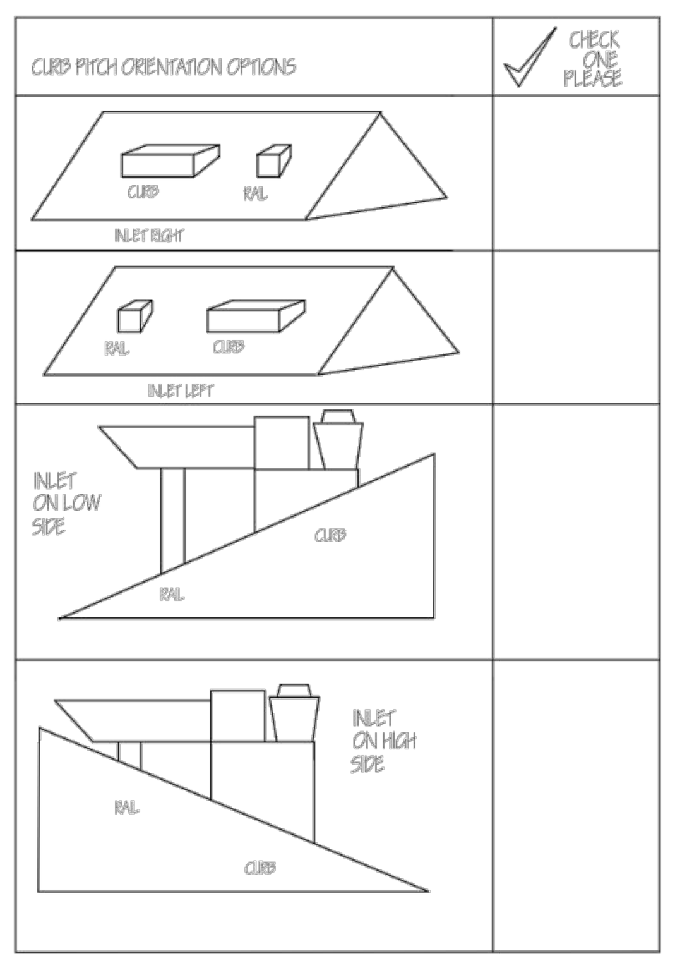
FAN UNIT NO.	TAG	OPTION (Qty. - Descr.)
1		1 - Grease Box
		1 - Fan Base Ceramic Seal - For Grease Ducts
2		1 - AC Interlock Relay - 24VAC Coil
		1 - Inlet Pressure Gauge, 0-35"
		1 - Manifold Pressure Gauge, -5 to 15" wc
		1 - Freeze Protection Drain Kit for Evaporative Coolers
		1 - Motorized Intake Damper (D76)

FAN ACCESSORIES

FAN UNIT NO.	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1		YES						
2							YES	

CURB ASSEMBLIES

NO.	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	41 LBS	Curb	23.000"W x 23.000"L x 22.000"H Vented Hinged
2	# 2	50 LBS	Curb	19.500"W x 52.000"L x 20.000"H Insulated
	# 2		Rail	4.000"W x 4.000"L x 36.000"H

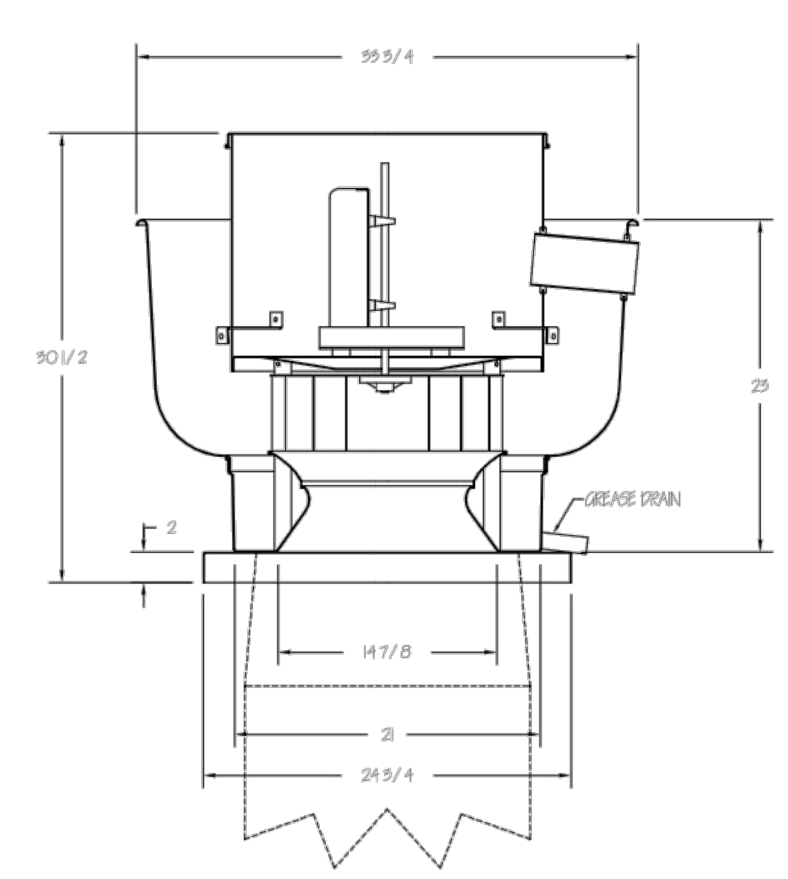


THE ELECTRICIAN IS RESPONSIBLE TO CONNECT THE EVAP COOLER WIRING HARNESS TO THE CONTACTS IN THE HEATER CONTROL CABINET.

THE ELECTRICIAN IS RESPONSIBLE TO CONNECT THE EVAP COOLER THREE WAY FREEZE PROTECTION VALVE TO THE CONTACTS IN THE EVAP COOLER MODULE CONTROL CABINET.

THE PLUMBER IS RESPONSIBLE TO INSTALL THE EVAP COOLER THREE WAY FREEZE PROTECTION VALVE BELOW THE ROOF LINE.

FAN #1 NCA14FA - EXHAUST FAN



FEATURES:

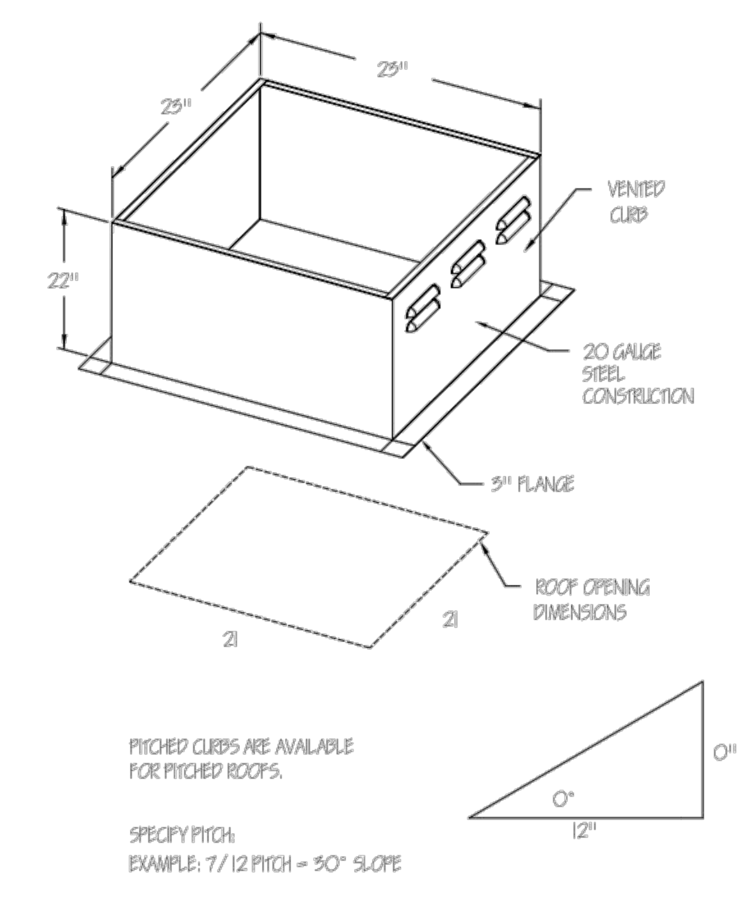
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762
- AMCA SOUND AND AIR CERTIFIED
- WIRING FROM MOTOR TO DISCONNECT SWITCH
- WEATHERPROOF DISCONNECT
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX
FAN BASE CERAMIC SEAL - FOR GREASE DUCTS



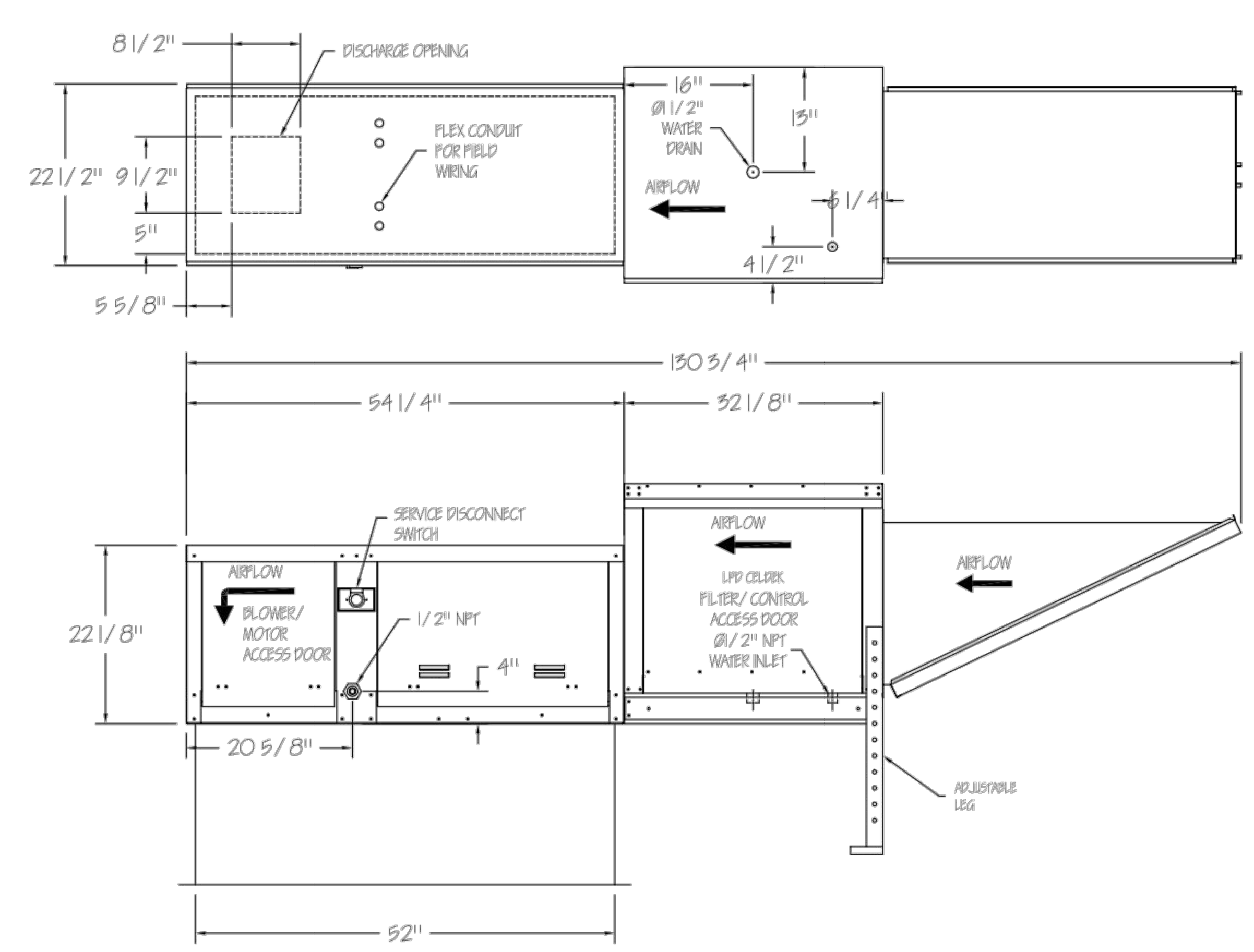
PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

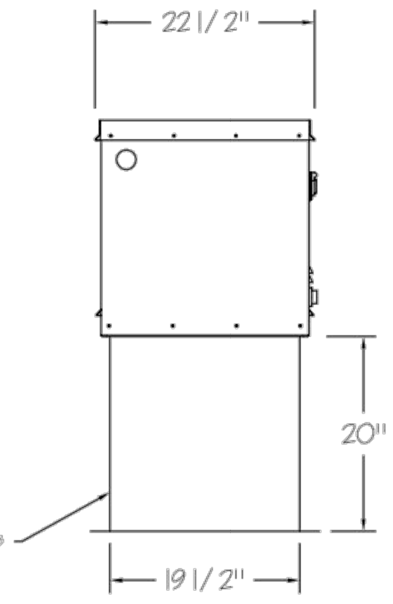
SPECIFY PITCH
EXAMPLE: 7/12 PITCH = 30° SLOPE

FAN #2 D76 - HEATER
1. LOW CFM DIRECT FIRED HEATER. BELT DRIVE.
2. EVAP COOLER (LPD CELDEK) W/ INTAKE HOOD W/ EZ FILTERS
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
4. COOLING INTERLOCK RELAY. 24VAC COIL. 120V CONTACTS. LOCKS OUT BURNER CIRCUIT WHEN AC IS ENERGIZED.
5. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE
6. GAS PRESSURE GAUGE, -5 TO + 15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE
7. FREEZE PROTECTION DRAIN CONTROL KIT FOR EVAPORATIVE COOLERS. INCLUDES 3-WAY WATER SOLENOID VALVE 8316G064 (SHIPPED LOOSE), PRESSURE SWITCH INSTALLED UPSTREAM OF 2WAY SOLENOID IN UNIT, BRASS TEE, 2 NPT HALF INCH NIPPLES, AND TWO STAGE THERMOSTAT 1678A-1C13. FIELD WIRING REQUIRED BY OTHERS FOR 3-WAY VALVE. FOR BOTH CELDEK AND STANDARD V-BANK TYPE CONFIGURATIONS.
8. MOTORIZED BACK DRAFT DAMPER 13" X 17" FOR D76 COMPACT DIRECT FIRED HEATERS W/ EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, TF1205 ACTUATOR INCLUDED

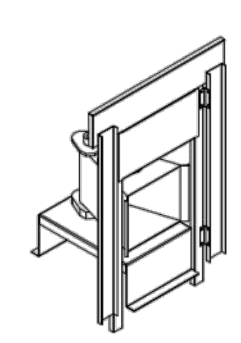
SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 14°F. TEMP. RISE = 80°F.
BTUs CALCULATED OFF STANDARD AIR DENSITY
OUTPUT BTUs AT ALTITUDE OF 0.0 ft. = 99533
INPUT BTUs AT ALTITUDE OF 0.0 ft. = 108188





ROOF OPENING 2" SMALLER THAN CURB DIMENSION.



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FLOOR PLAN

Date: 20161227
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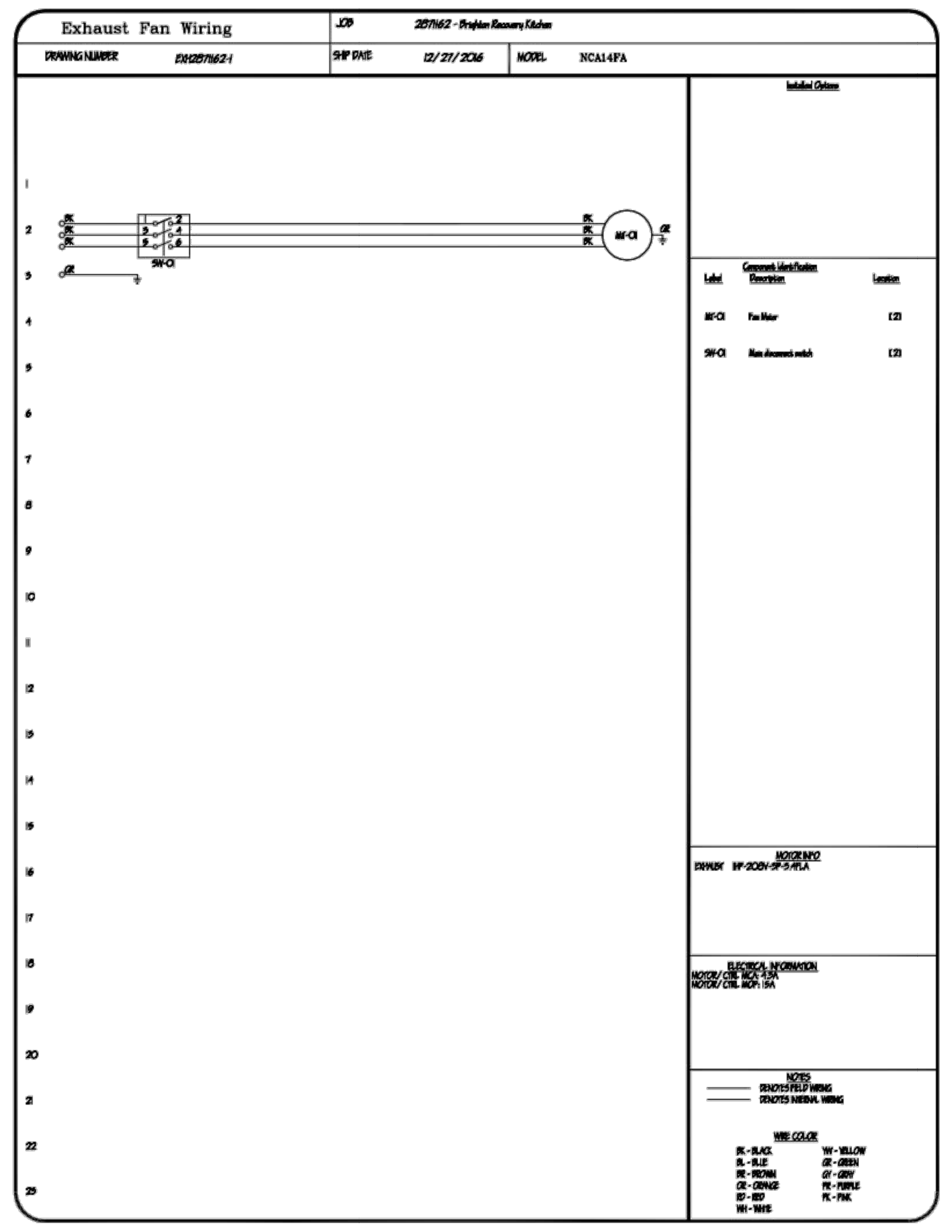

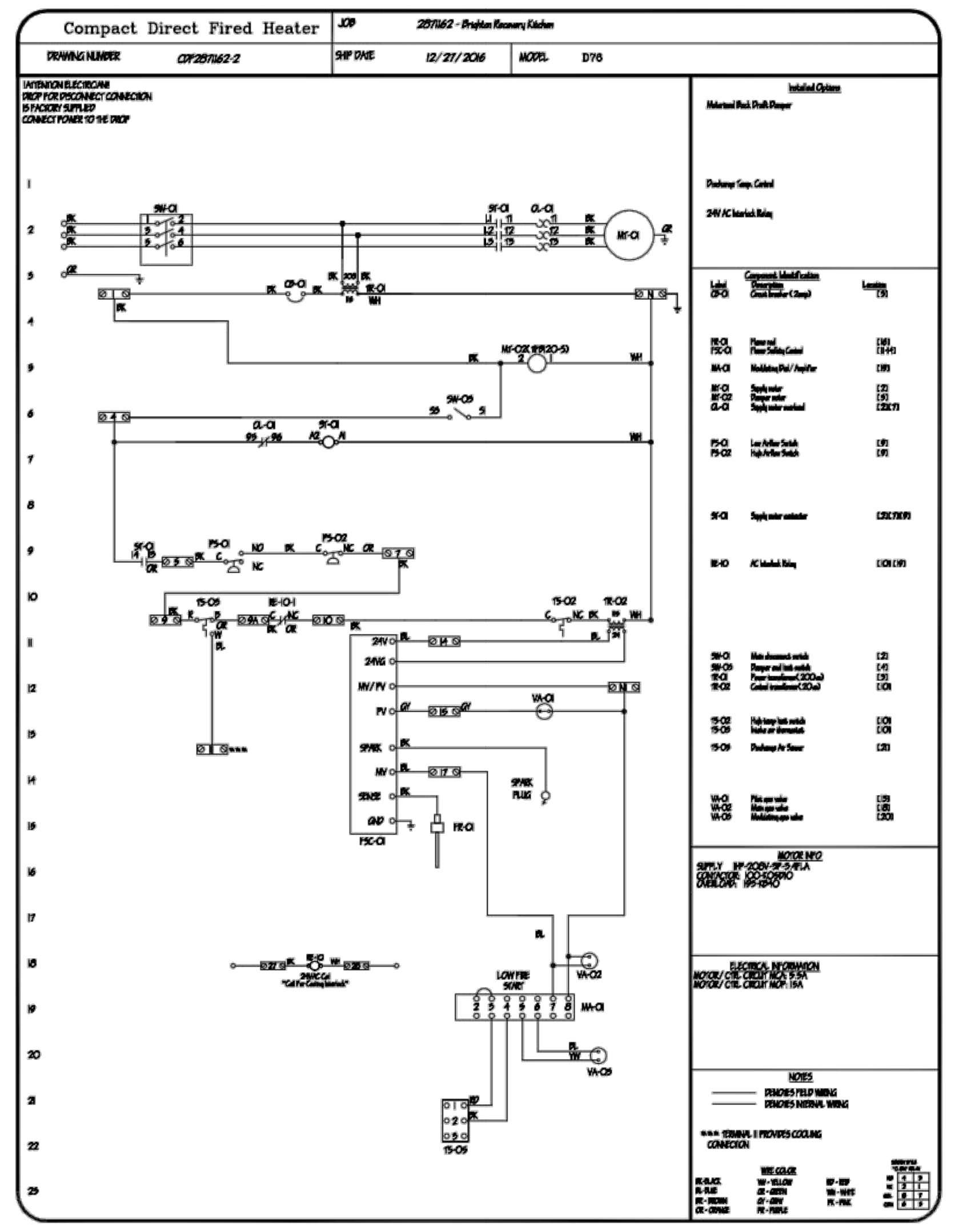

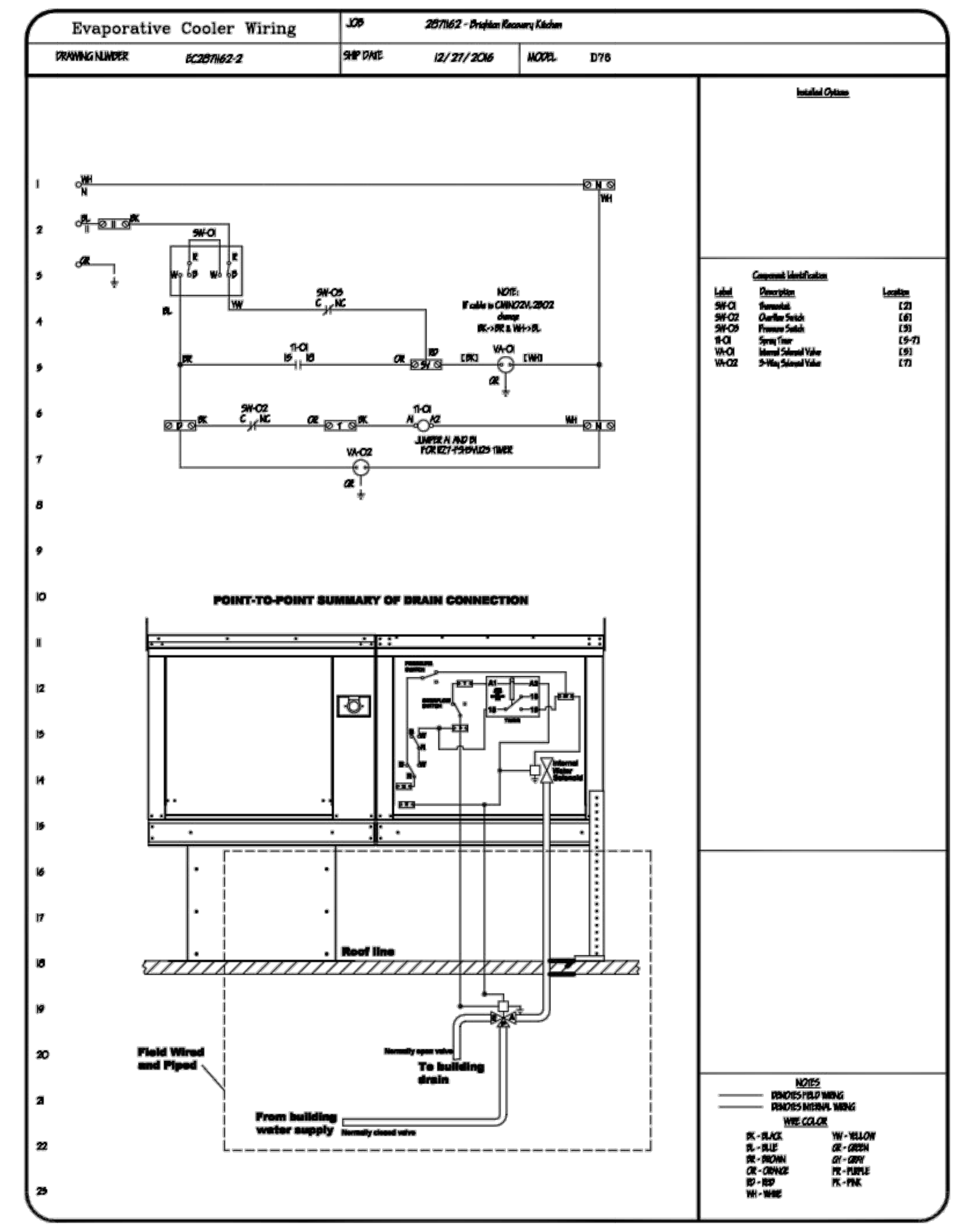

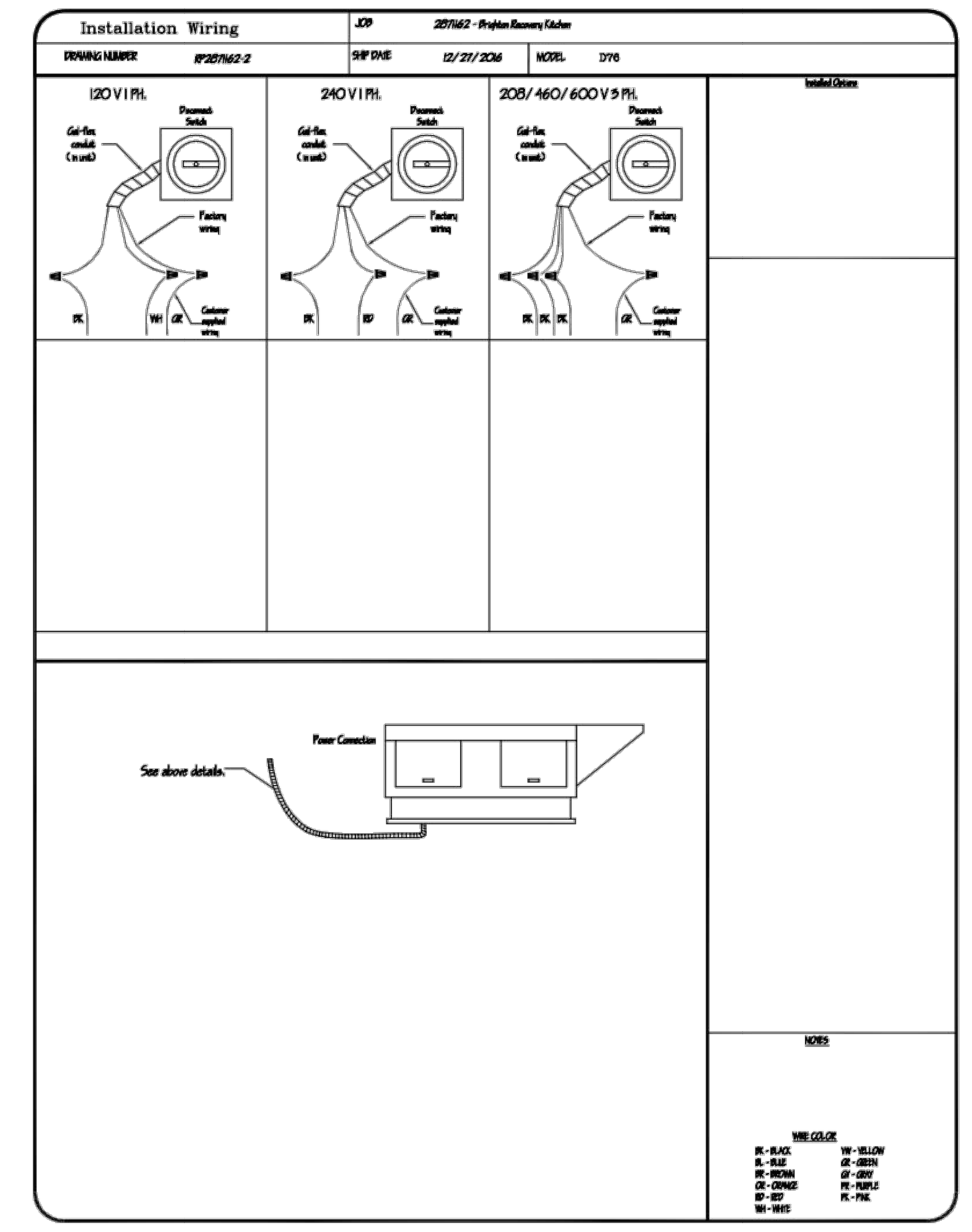

System Design Verification (SDV)

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

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

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

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Brighton Recovery Kitchen
SALT LAKE CITY, UT, 84107

DATE: 12/27/2016
DWG.#: 2871162
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 3

STANDARD Restaurant Supply
3500 S West Temple
Salt Lake City, Utah 84115

Terrill Roe
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FLOOR PLAN

Date 20161227
Project 03-231
Project Name Brighton Recovery - Hood Ventilation drawing - Sheet 3

K-02.c

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project:

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project no:
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checked by:

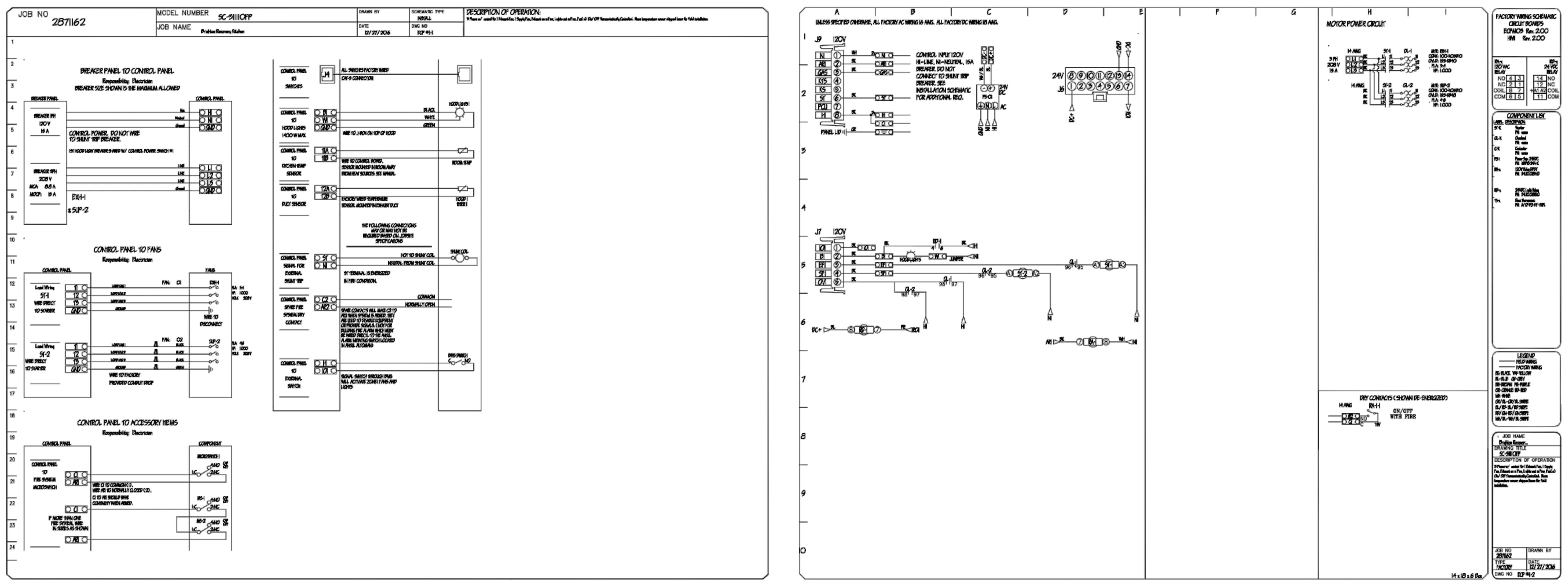
title
MECHANICAL DETAILS

sheet
M16

BUILDING 'D'

ELECTRICAL PACKAGES – Job#2871162

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TYPE	Φ	H.P.	VOLT	FLA
1		SC-3111OPP	Utility Cabinet Right	O4 - Utility Cabinet Right	1 Light	Smart Controls Thermostatic Control	Exhaust	3	1.000	208	3.4
				Hood # 1	1 Fan		Supply	3	1.000	208	3.4

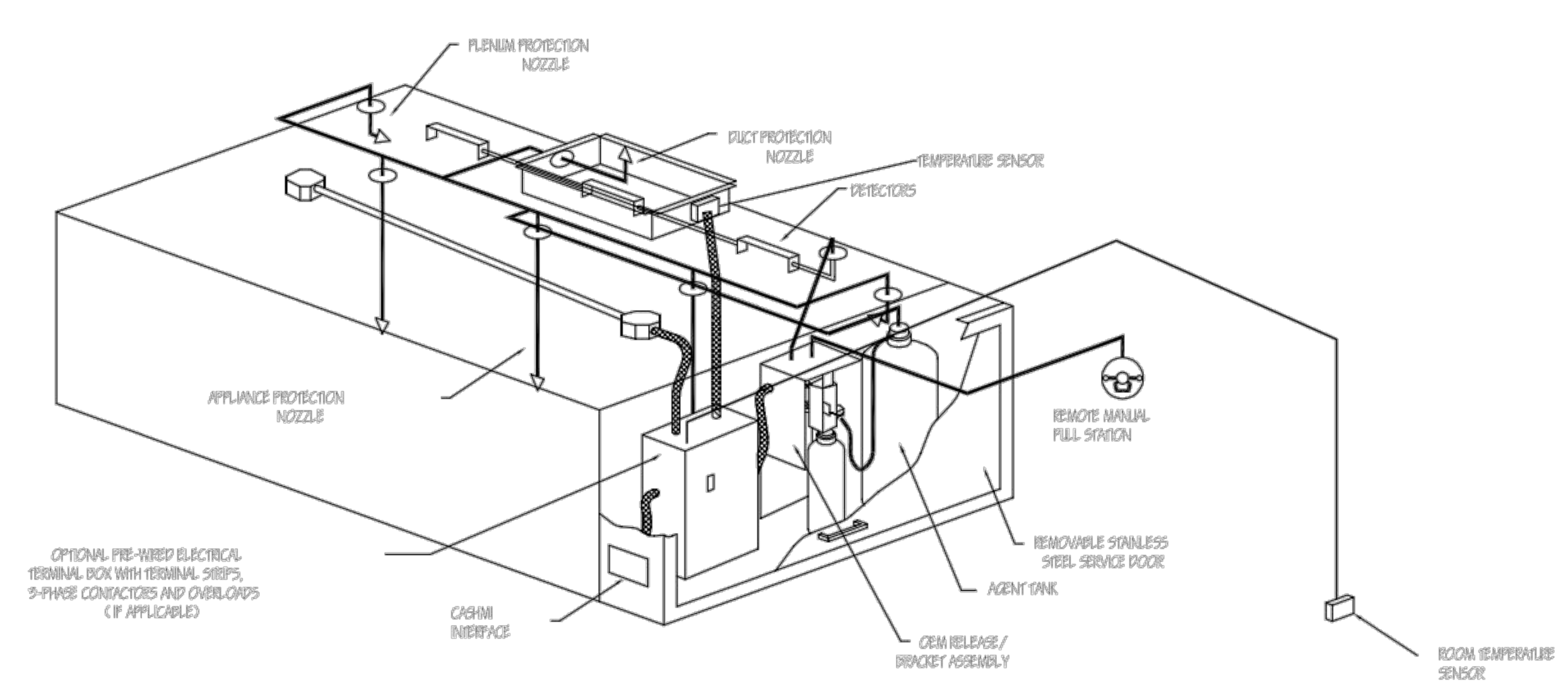


NOTES:

1. AUTOMATIC FIRE SUPPRESSION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NFPA REQUIREMENTS.

Hood Control Panel Specifications:

- Control panel shall be listed to UL standard UL508A.
- The control enclosure shall be NEMA 1 rated and listed for installation inside of the exhaust hood utility cabinet. The control enclosure may be constructed of stainless steel or painted steel.
- Temperature probe(s) located in the exhaust duct riser(s) shall be constructed of stainless steel.
- A digital thermostat controller, listed to UL standard UL61010-1, shall be provided to activate the hood exhaust fans dynamically based on a + 10 degree adjustable offset from the room temperature sensor. This function shall meet the requirements of IMC 507.2.1.1
- A digital thermostat controller shall provide adjustable hysteresis settings to prevent cycling of the fans after the cooking appliances have been turned off and/ or the heat in the exhaust system is reduced.
- A digital thermostat controller shall provide an adjustable minimum fan run-time setting to prevent fan cycling.
- A digital thermostat controller shall disable the supply fan(s), activate the exhaust fan(s), activate the appliance shunt trip, and disable an electric gas valve automatically under the following conditions (as applicable):
  a. Fire condition detected on a covered hood
  b. Excessive temperature detected on any duct temperature sensor in the system (250 F adjustable)
- A digital thermostat controller shall allow for external BMS fan control via dry contact (external control shall not override fan operation logic as required by code).
- An LCD interface shall be provided with the following features:
  a. On/ Off push button fan & light switch activation
  b. Integrated gas valve reset for electronic gas valves (no reset relay required)
  c. Fan starter overload trip detection with audible & visual alarm notification.
  d. Temperature sensor failure/ mis-wiring detection with audible & visual alarm notification
  e. A single low voltage Cat-5 RJ45 wiring connection



TYPICAL CONTROL SYSTEM LAYOUT

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FLOOR PLAN

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Project 03-231
Project Name Brighton Recovery - Hood Ventilation drawing - Sheet 4
K-02.d

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M17

BUILDING 'D'

DuctWork #1 Parts – Job#2871162

Tag	Part #	CFM	S.P.	Weight	Velocity	QTY	Description
P1	DW12S825OLT	1440	-0.0338	23.11	1833.46	1	Single Wall Duct 12" diameter, 58.250" long, flange at both ends. Stainless Steel.
P2 Assembled w/ P4	DW126OAJDKIT	1440	-0.0282	25.04	1833.46	1	Single Wall Duct Adjustable, 12" diameter, 59.5" long, flange at one end With a 12" Diameter - 4" Tall - Adjustable Collar - Stainless Steel.
P3	DW12VESU18			27.94		1	Duct Vertical Support Assembly, 12" Duct, 18" Clearance To Combustibles. Parts are Zinc Coated.
P4 Assembled w/ P2	DW2312TP	1440	0	8.02	1833.46	1	Duct to Curb Transition, 23" Curb to 12" Duct, 16 GA Aluminized. Misc. non-standard transition plate.
System at P4		1440	-0.788				
	3M-2000PLUS			0.80		1	Duct - 3M Fire Barrier 2000 Plus Silicone - Used as sealant to Seal Duct Joints.
	83468060058 7XL			52.00		2	Duct - Duct insulation for zero clearance to combustibles - 300" x 24" x 1-1/2" Roll. Pyroscat Wrap.
	BANDING.5			5.00		1	Duct - Fire Barrier Wrap Stainless Steel Banding .5" Width - 200 FT Per Roll.
	DW12CLASY			1.23		2	Duct "V" Clamp With new design 14 Ga Brackets, 12" Duct, Assembly.
	SEAL.50-50			0.50		1	Duct - Fire Barrier Wrap Stainless Steel Banding Seal .5" Width. Quantity of 50.
	TAPEALUM			0.25		1	Duct - Fire Barrier Wrap Aluminum Foil Tape - 3" x 150' Roll.
Total Weight				197.12			

SINGLE WALL FACTORY BUILT DUCTWORK

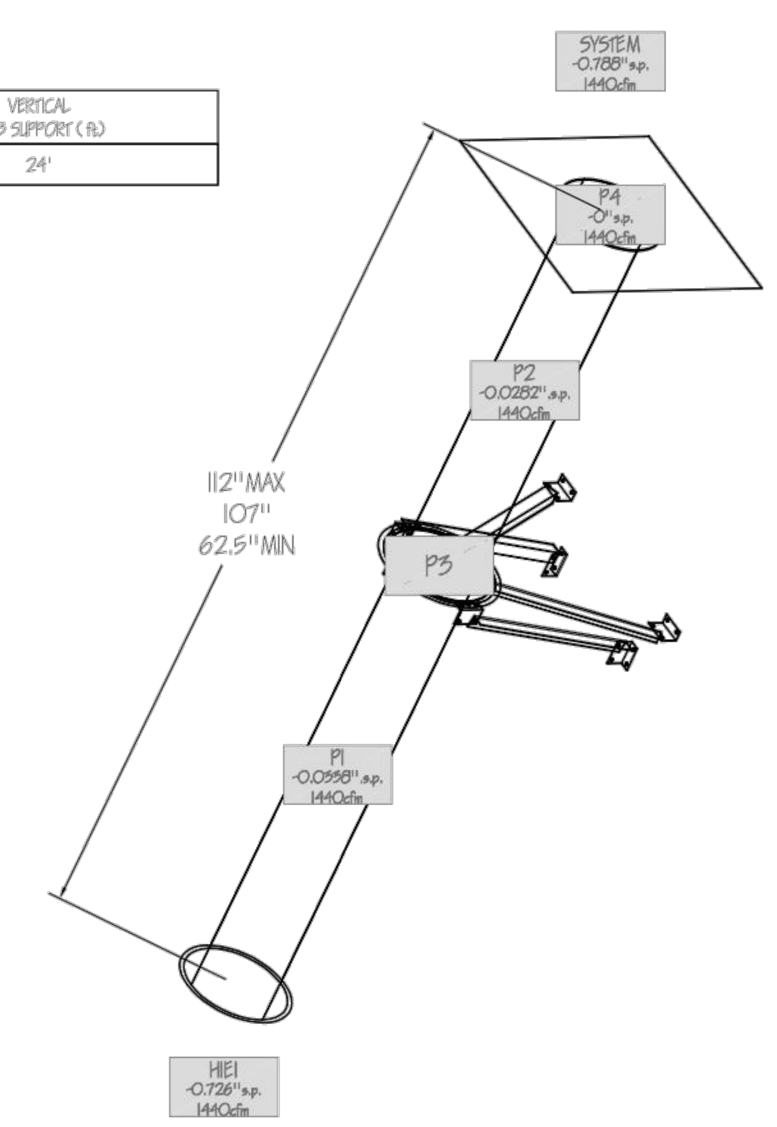
- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE INSTALLATION AND OPERATION MANUAL.
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

DUCT DIAMETER	HORIZONTAL WALL SUPPORT (ft)	VERTICAL WALL SUPPORT (ft)	VERTICAL CURB SUPPORT (ft)
12"	10'	10'	24'

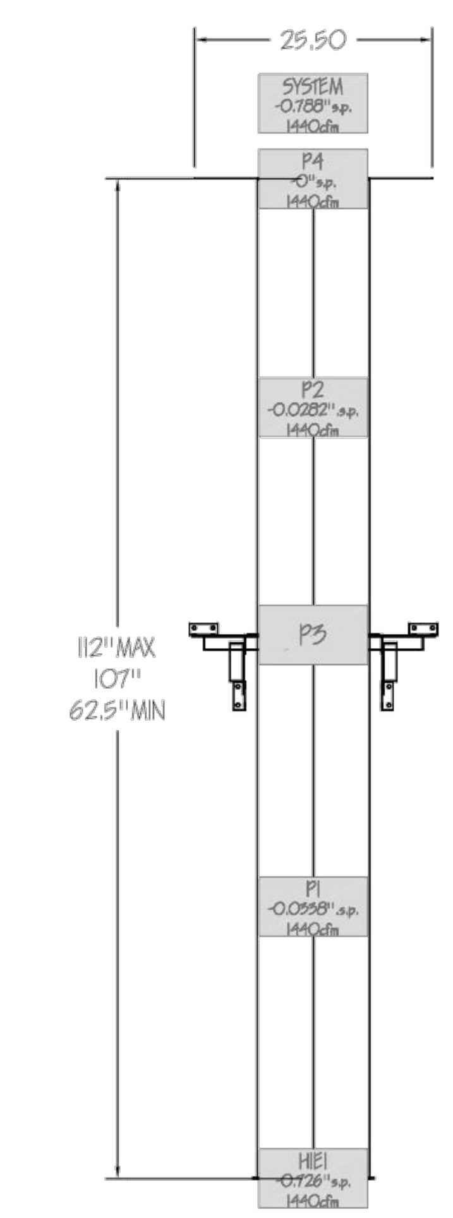
NOTES:

1. KITCHEN EXHAUST HOOD SHALL BE I.C.C. AND U.L. LISTED.

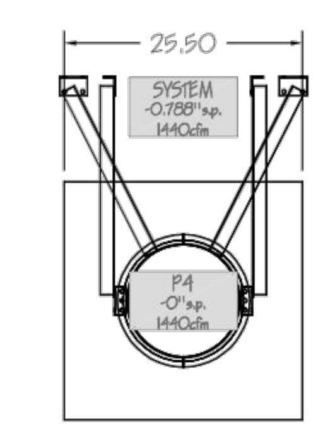
DuctWork #1 SE View



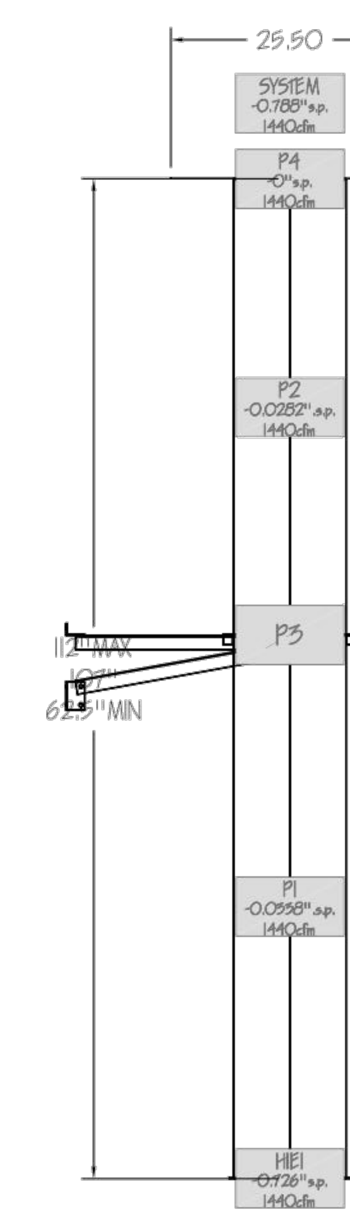
DuctWork #1 Front View

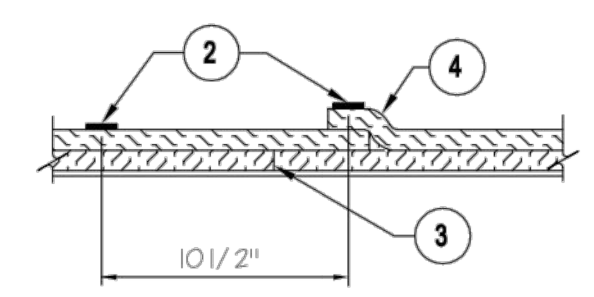


DuctWork #1 Top View

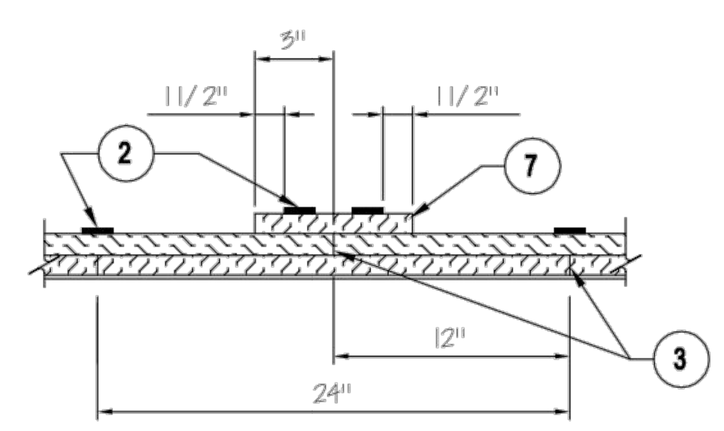


DuctWork #1 Side View





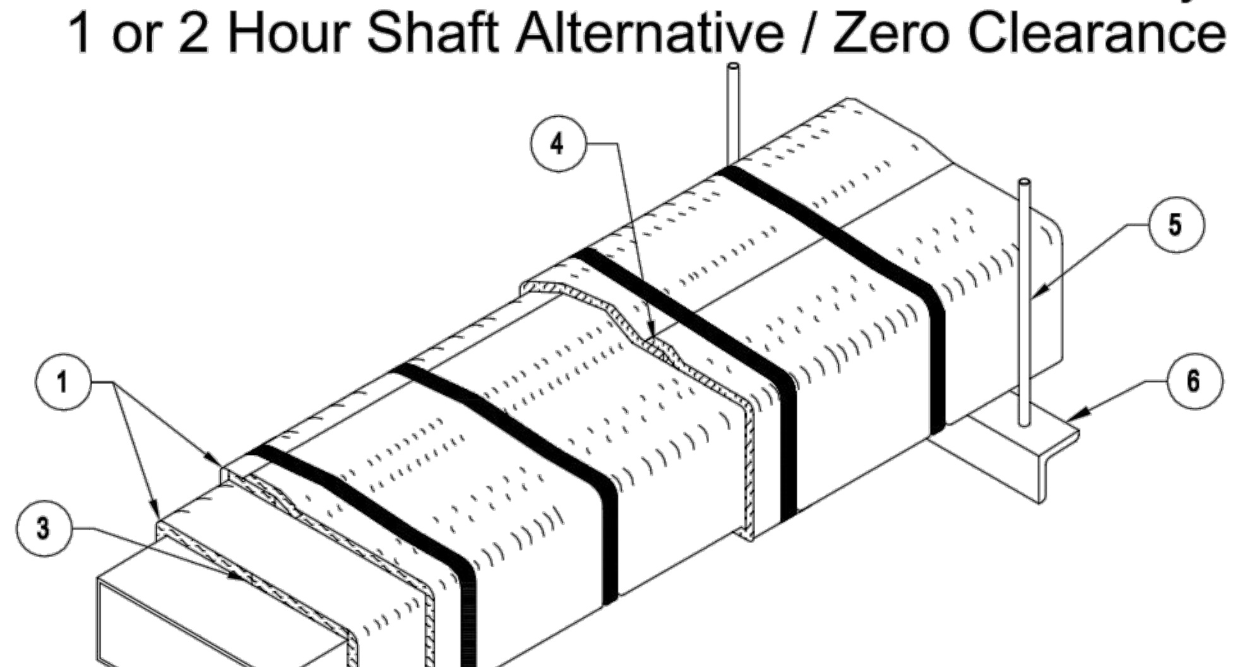
BUTT-JOINT/3"OVERLAP



BUTT-JOINT/COLLAR

Thermal Ceramics

Pyroscat Duct Wrap XL
Commercial Kitchen Grease Duct Enclosure System
Air Ventilation Duct Enclosure System
1 or 2 Hour Shaft Alternative / Zero Clearance to Combustibles



LEGEND	
1	Two Layers of Pyroscat Duct Wrap XL Blanket for Grease Duct Enclosures One Layer of Pyroscat Duct Wrap XL Blanket for Air Ventilation Duct Enclosures
2	Steel banding minimum 1/2" wide by 0.015" thick.
3	Tight butt joints on inner layer
4	Min. 3" overlap on perimeter and between adjacent blanket on outside layer
5	Min. 3/8" diameter hanger rod
6	Min. 2" x 2" x 1/8" angle for Grease Duct Enclosures Min. 1-1/2" x 1-1/2" x 1/8" angle or SMACNA Equivalent for Air Ventilation Duct Enclosures
7	Optional 6" FireMaster Pyroscat Duct Wrap XL collar

The integrity of Pyroscat duct systems is limited to the quality of the installation.

ABOVE DETAIL SHOWN AS SQUARE BUT WILL BE INSTALLED ON ROUND GREASE DUCT

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M18

BUILDING 'D'

SYMBOL LEGEND

SYMBOL	DESCRIPTION
PLUMBING PIPING	
W	SOIL, WASTE - ABOVE GRADE
W	SOIL, WASTE - BELOW GRADE
GW	GREASE WASTE - ABOVE GRADE
GW	GREASE WASTE - BELOW GRADE
	VENT
	COLD WATER
	HOT WATER
	HOT WATER CIRCULATE
ST	STORM - ABOVE GRADE
ST	STORM - BELOW GRADE
OST	OVERFLOW STORM ABOVE GRADE
OST	OVERFLOW STORM BELOW GRADE
VTR	VENT THRU ROOF
(E)	EXISTING PIPE
(E)	EXISTING PIPE TO BE REMOVED
G	GAS

SYMBOL LEGEND

SYMBOL	DESCRIPTION
VALVES, METERS, AND GAUGES	
	SHUT OFF VALVE
	GATE VALVE
	CHECK VALVE
	AUTO 2-WAY VALVE
	AUTO 3-WAY VALVE
	GLOBE VALVE
	BALL VALVE
	RELIEF VALVE
	CHAIN OPERATED GATE VALVE
	PRESSURE REDUCING VALVE
	BUTTERFLY VALVE
	SOLENOID VALVE
	ANGLE VALVE
	VENTURI
	BALANCING OR PLUG COCK
	FLOW SETTER
	EXPANSION VALVE (REFRIG.)
	GAS COCK
MAV	MANUAL AIR VENT
	STRAINER
	GAUGE COCK
	FLEXIBLE CONNECTION
	PRESSURE GAUGE
	THERMOMETER
	VICTAULIC COUPLING
	REDUCER CONCENTRIC
	REDUCER ECCENTRIC
	REFRIGERANT SITE GLASS
	REFRIGERANT STRAINER
	REFRIGERANT FILTER DRIER
	90° ELBOW UP
	90° ELBOW DOWN
	90° TEE UP
	90° TEE DOWN
	UNION
	CAPPED PIPE
	ANCHOR
	FLOAT AND THERMOSTATIC TRAP
PLUMBING SYMBOLS	
C.B.	CATCH BASIN
M.H.	MANHOLE
W.H.	WALL HYDRANT
H.B.	HOSE BIBB
	CLEANOUT TO GRADE
	FLOOR CLEANOUT
	WALL CLEANOUT
	1/2 GRATE
	3/4 GRATE
	FULL GRATE

ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED

AD	ACCESS DOOR	MCA	MINIMUM CIRCUIT AMPS
AC	AIR CONDITION(-ING,-ED)	MFR	MANUFACTURER
APD	AIR PRESSURE DROP	MIN	MINIMUM
BD	BALANCING DAMPER	N/A	NOT APPLICABLE
BHP	BRAKE HORSE POWER	NC	NORMALLY CLOSED
BTU	BRITISH THERMAL UNIT	NC	NOISE CRITERIA
BTUH	BTU/HOUR	NIC	NOT IN CONTRACT
CFH	CUBIC FEET PER HOUR	NO	NORMALLY OPEN
CFM	CUBIC FEET PER MINUTE	NPSH	NET POSITIVE SUCTION HEAD
CLG	COOLING	NTS	NOT TO SCALE
COMP	COMPONENT	OA	OUTSIDE AIR
COND	CONDENS(-ER, -ING, -ATION)	OD	OUTSIDE DIAMETER
CV	CONTROL VALVE	OZ	OUNCE
CW	COLD WATER	PD	PRESSURE DROP
DIA	DIAMETER	PG	PROPYLENE GLYCOL
DISCH	DISCHARGE	PH	PHASE
DP	DEPTH OR DEEP	PPM	PARTS PER MILLION
DB	DRY BULB TEMPERATURE	PRESS	PRESSURE
(E)	EXISTING	PSF	POUNDS PER SQUARE FOOT
EER	ENERGY EFFICIENCY RATIO	PSI	POUNDS PER SQUARE INCH
EFF	EFFICIENCY	PSIA	PSI ABSOLUTE
EG	ETHYLENE GLYCOL	PSIG	PSI GAUGE
ELEC	ELECTRIC	R	THERMAL RESISTANCE
ELEV	ELEVATION	RA	RETURN AIR
ENT	ENTERING	RECIRC	RECIRCULATE
EVAP	EVAPORAT(-E, -ING, -ED, -OR)	REFR	REFRIGERATION
EWT	ENTERING WATER TEMP	REQD	REQUIRED
EXT	EXTERNAL	RPM	REVOLUTIONS PER MINUTE
(F)	FUTURE	RW	RAINWATER
F	FAHRENHEIT	SA	SUPPLY AIR
FC	FLEXIBLE CONNECTION	SC	SHADING COEFFICIENT
FD	FIRE DAMPER	SCW	SOFT COLD WATER
FLA	FULL LOAD AMPS	SF	SAFETY FACTOR
FPI	FINS PER INCH	SH	SENSIBLE HEAT
FPM	FEET PER MINUTE	SL	SEA LEVEL
FPS	FEET PER SECOND	SP	STATIC PRESSSURE
FSD	FIRE SMOKE DAMPER	SPEC	SPECIFICATION
FT	FEET	SQ	SQUARE
GAL	GALLON(S)	STD	STANDARD
GPH	GALLONS PER HOUR	STM	STEAM
GPM	GALLONS PER MINUTE	TEMP	TEMPERATURE
HD	HEAD	TD	TEMP. DROP OR DIFF.
HG	MERCURY	TOT	TOTAL
HR	HOUR	TSTAT	THERMOSTAT
HT	HEIGHT	V	VENT
HTG	HEATING	VAC	VACUUM
HP	HORSE POWER	VAV	VARIABLE AIR VOLUME
HW	HOT WATER	VEL	VELOCITY
HZ	HERTZ(FREQUENCY)	VENT	VENT, VENTILATION
ID	INSIDE DIAMETER	VERT	VERTICAL
IN	INCH	VOL	VOLUME
KW	KILOWATT	WC	WATER COLUMN
LAT	LEAVING AIR TEMPERATURE	WG	WATER GAUGE
LBS	POUNDS	WPD	WATER PRESSURE DROP
LG	LENGTH	WTR	WATER
LH	LATENT HEAT	WT	WEIGHT
LRA	LOCKED ROTOR AMPS	WB	WET BULB TEMP
LVG	LEAVING		
LWT	LEAVING WATER TEMP		
MAX	MAXIMUM		
MBH	THOUSAND BTU PER HOUR		

SYMBOL LEGEND

SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
# / SHEET	DETAIL INDICATOR: # INDICATES DETAIL NUMBER, SHEET INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
100	ROOM OR SPACE NUMBER.
1	KEYNOTE INDICATOR.
	REVISION INDICATOR.
CU-1	EQUIPMENT INDICATOR.
P-	PLUMBING FIXTURE INDICATOR.
TYPE / CFM / SIZE	DIFFUSER/GRILLE INDICATOR.
TYPE / SIZE	DIFFUSER/GRILLE INDICATOR.
	BREAK, STRAIGHT
	BREAK, ROUND.
MATCH LINE / SEE XX/X-XXX	MATCH LINE INDICATOR
— — — —	HIDDEN FEATURES LINE: HIDDEN, THIN LINE.
—— · ——	CONTRACT LIMIT LINE: DASHDOT, WIDE LINE.
	NEW CONNECTION POINT TO EXISTING

PLUMBING SCOPE OF WORK

DEMOLITION NOTES:

PLUMBING CONTRACTOR TO UTILIZE SELECTIVE DEMOLITION APPROACH. MANY AREAS INCLUDE PLUMBING EQUIPMENT AND ACCESSORIES LOCATED ABOVE HARDLID CEILINGS OR WITHIN INACCESSIBLE SPACES. FIELD TRACING OF DEMOLITION IS REQUIRED.

ALL EXISTING PLUMBING FIXTURES AND ACCESSORIES ARE TO BE REMOVED TO ALLOW FOR NEW TENANT SPACES. ALL PLUMBING EQUIPMENT, FIXTURES, PIPING, AND ACCESSORIES THAT ARE CURRENTLY ABANDONED IN PLACE ARE TO BE REMOVED.

ALL STORM WATER / ROOF DRAINAGE PIPING WITHIN THE BUILDING IS TO REMAIN UNCHANGED.

EXISTING GAS METERS TO REMAIN. EXISTING GAS PIPING SEGMENTS MAY BE REUSED IF SIZING AND ROUTING ARE SIMILAR TO NEW PIPING LAYOUT. PUBLIC UTILITY COMPANY TO VERIFY NATURAL GAS CAPACITIES AND ASSOCIATED PRESSURES.

CAP/REPLACE ALL WASTE AND VENT LINES BACK TO NEAREST MAIN TO ALLOW FOR FUTURE CONNECTIONS.

NEW CONSTRUCTION NOTES:

NEW WATER ENTRIES WILL BE INSTALLED AS INDICATED ON PLANS.

ALL DOMESTIC COLD WATER AND FIRE WATER PIPING SEGMENTS EXPOSED TO ENVIRONMENT ARE TO BE INSULATED AND HEAT TRACED FOR FREEZE PROTECTION.

ALL EXISTING STORM DRAIN TERMINATIONS ARE TO CONNECT TO CIVIL DRAINAGE SYSTEM.

ALL GREASE WASTE PIPING DESIGNATED TO SERVE FUTURE WARMING KITCHEN WILL TIE INTO NEW GREASE INTERCEPTOR AS SHOWN ON CIVIL DRAWINGS. A VENT LINE FOR THE GREASE INTERCEPTOR WILL BE PROVIDED AND WILL TERMINATE THROUGH ROOF OF BUILDING 'D'.

THE NEW SYSTEM COMPONENTS WILL ALLOW FOR FUTURE OFFICE AND TEMPORARY RESIDENT SPACES AS INDICATED ON PLANS.

DOMESTIC WATER, WASTE, AND GREASE WASTE LINES (AS APPLICABLE) WILL BE PROVIDED TO EACH BUILDING AS INDICATED.

HEATING OF DOMESTIC WATER WILL BE PROVIDED BY INDIVIDUAL BUILDING WATER HEATERS.

DOMESTIC COLD WATER SUBMETERS TO BE INSTALLED IN EACH BUILDING'S WATER ENTRY ROOM. VERIFY NEED WITH OWNER PRIOR TO INSTALLATION.

FIRE PROTECTION SCOPE OF WORK

NEW CONSTRUCTION NOTES:

NEW FIRE ENTRIES TO BE INSTALLED AS INDICATED ON PLANS.

FIRE PROTECTION LINES TO BE ROUTED ON WARM SIDE OF BUILDING INSULATION.

INSTALL FIRE PROTECTION SYSTEM PER NOTES INDICATED ON P02 OF THIS DRAWING SET.

ALL BREEZEWAY SOFFITS TO INCORPORATE DRY PIPE FIRE PROTECTION SYSTEM FED FROM FIRE ENTRY ROOM PIPING AS REQUIRED.

IN THE EVENT THAT ROUTING MAY PROVE DIFFICULT DUE TO EXISTING CONDITIONS A DRY-PIPE SYSTEM SHOULD BE EVALUATED. LOCATE AIR COMPRESSOR IN ASSOCIATED FIRE ENTRY ROOM AS REQUIRED.

SEE SHEET P02 (SPEC SECTION 221316) AND SHEET P13 FOR FURTHER SYSTEM REQUIREMENTS & DETAILS.

DIVISION 26 CONTRACTOR TO PROVIDE POWER TO ASSOCIATED SYSTEM FLOW SWITCH.

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PLUMBING GENERAL NOTES & LEGEND

sheet

P01

BUILDING 'D'

PLUMBING SPECIFICATIONS

220100 - BASIC PIPING MATERIALS & METHODS

1. CORE CUT ALL PIPE PENETRATION OF EXISTING MASONRY OR CONCRETE WALLS AND FLOORS. SLEEVE ALL PENETRATIONS THROUGH NEW WALLS AND FLOORS. SEAL ALL PENETRATIONS WATER TIGHT WITH SILICONE SEALANT. USE FIRE RATED SEALANT (3M "FIRE BARRIER" OR EQUAL) FOR 1 HOUR OR 2 HOUR PENETRATIONS.
2. CAULK AROUND ALL PIPING THAT PASSES THROUGH FIRE-RATED PARTITIONS WITH A NON-HARDENING CAULKING SIMILAR TO 3M "FIRE BARRIER".
3. SEAL ALL PIPING THROUGH WALLS AIR TIGHT.

220533 - HEAT TRACING CABLE

1. PROVIDE RAYCHEM ELECTRIC SELF REGULATING HEATING CABLE WITH ALL NECESSARY ACCESSORIES TO MAINTAIN THE TEMPERATURE IN THE TRACED PIPE SYSTEM AT 45°F.
2. FOR DOMESTIC HOT WATER USE, THE CABLE SHALL BE DESIGNED, MANUFACTURED AND U.L. LISTED FOR DOMESTIC HOT WATER TEMPERATURE MAINTENANCE.
3. CABLE SHALL CONSIST OF TWO (2) 16-AWG NICKEL-COATED COPPER BUS WIRES EMBEDDED IN A RADIATION-CROSSLINKED CONDUCTIVE POLYMER CORE. IT SHALL BE COVERED BY A RADIATION-CROSSLINKED, POLYOLEFIN, DIELECTRIC JACKET SURROUNDED BY A POLYMER-COATED ALUMINUM WRAP, AND ENCLOSED IN A TINNED COPPER BRAID OF 14 AWG EQUIVALENT WIRE SIZE. THE BRAID SHALL BE COVERED WITH A (NOMINAL) 40-MIL POLYOLEFIN OUTER JACKET, COLOR CODED FOR EASY IDENTIFICATION.

220548 - VIBRATION ISOLATION AND SEISMIC

1. ALL PLUMBING EQUIPMENT AND PIPING MUST BE VIBRATION ISOLATED AND SEISMICALLY BRACED FOR THE SITE SPECIFIC SEISMIC DESIGN CATEGORY AND SEISMIC USE GROUP, IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE BUILDING CODES AND ASHRAE. PROVIDE SEISMIC PRODUCTS BY AMBER-BOOTH OR MASON INDUSTRIES.
2. IN GENERAL, PROVIDE SPRING MOUNTS TO ATTENUATE LOW FREQUENCY SOUND AND VIBRATION. PROVIDE NEOPRENE PADS TO ATTENUATE HIGH FREQUENCY SOUND
3. VIBRATION: SEISMIC BRACING/MOUNTING CAN BE COMBINED WITH VIBRATION ISOLATION AS APPLICABLE.
4. CONTRACTOR MANUFACTURED SEISMIC BRACING/RESTRAINT METHODS ARE NOT ACCEPTABLE.
5. PROVIDE A SIGNED AND STAMPED LETTER FROM A PROFESSIONAL ENGINEER CERTIFYING THAT THE SUPPLIED PRODUCTS ARE CORRECT FOR THE APPLICATION AND THAT THE INSTALLATION IS IN COMPLIANCE WITH ALL APPLICABLE CODES.

220719 - INSULATION

1. PIPE INSULATION: SNAP-ON GLASS FIBER TYPE WITH VAPOR JACKET. SEAL ALL ENDS AND JOINTS TO PROVIDE A COMPLETELY SEALED SYSTEM. ALTERNATIVELY, FOR INTERIOR WATER PIPING, USE FLEXIBLE UNICELLULAR ASTM 534 TYPE 1 INSULATION. USE 1" THICKNESS FOR PIPE UP TO 2"Ø AND 1-1/2" FOR PIPE OVER 2"Ø
2. PROVIDE ADA COMPLIANT FIXTURES WITH SNAP ON ADA ARTICLE 4.19 22FF COMPLIANT WHITE INSULATION. TRUEBRO LAV GUARD, BASIN GUARD OR LAV SHIELD.
3. THERMAL AND SOUND INSULATION AND COVERING WHICH ARE INSTALLED AND EXPOSED SPACES AND COVERING PIPE AND TUBING SHALL BE TESTED IN ACCORDANCE WITH ASTM E 84 AND HAVE A FLAME SPREAD OF 0-25 AND A SMOKE INDEX OF 0-450.
4. THERMAL AND SOUND INSULATION AND COVERING OVER PIPE AND TUBING WHICH ARE INSTALLED IN CONCEALED PLENUM SPACES SHALL BE TESTED IN ACCORDANCE WITH ASTM E 84 AND HAVE A FLAME SPREAD OF 0-25 AND A SMOKE INDEX OF 0-50.

221116 - WATER DISTRIBUTION PIPING

1. UNDERGROUND WATER PIPING:

   2" AND SMALLER:
   ASTM 88 TYPE "K" COPPER WITH A MINIMUM NUMBER OF SOLDERED JOINTS. USE 95-5 TIN ANTIMONY COPPER SOLDER.

   2-1/2" AND LARGER:
   PVC AWWA 900 CLASS 100 WITH SOLVENT CEMENTED JOINTS, OR PB PLASTIC PIPE ASTM D3309 SDR 11 WITH HEAT FUSION JOINTS.

2. NO TYPE "M" OR "DWV" COPPER IS TO BE USED IN THIS PROJECT.
3. ALL ABOVE GROUND HOT AND COLD WATER PIPING:
   ASTM B 88 TYPE "L" COPPER, WITH WROUGHT COPPER FITTINGS AND SOLDERED WITH 95-5 TIN-ANTIMONY SOLDER.
4. INSTALL PIPE HANGERS WITH THE FOLLOWING MINIMUM ROD SIZES AND MAXIMUM SPACING. UPON COMPLETION OF HANGER INSTALLATION, ALL ADJUSTMENTS HAVING THE POSSIBILITY OF TURNING SHALL BE LOCKED SECURELY IN PLACE BY DOUBLE NUTTING AT THE HANGER ROD ATTACHMENT TO THE STRUCTURE, AND AT THE PIPE HANGER.

NOM. PIPE SIZE-INCHES	MAX SPAN-FT.	MIN. ROD SIZE-INCHES
1	7	3/8
1-1/2	9	3/8
2	10	3/8
3	12	1/2
4	14	5/8
6	17	3/4

5. ALL PIPE HANGERS AND EQUIPMENT SUPPORTS SHALL BE LOCATED A MINIMUM DISTANCE OF 2" FROM ANY REFRIGERANT PIPE.
6. ALL PLUMBING FIXTURES CONNECTED TO A POTABLE WATER SYSTEM WITH HOSE CONNECTIONS ON THE OUTLET SIDE AND OWNER FURNISHED EQUIPMENT WITH DIRECT CONNECTIONS, SHALL BE PROVIDED WITH BACKFLOW PREVENTION.

PLUMBING SPECIFICATIONS

221316 - DRAINAGE AND VENT SYSTEMS

1. UNDERGROUND BUILDING DRAIN PIPE AND FITTINGS:
   A. NO HUB ABS OR PVC PLASTIC PIPE AND FITTINGS PER ASTM D2661 WITH ASTM D2235 SOLVENT
   OR
   B. ASTM A74 SERVICE WEIGHT, HUB AND SPIGOT CAST IRON SOIL PIPE, OR ASTM A888 (OR CISPI 301) HUBLESS CAST IRON SOIL PIPE WITH ASTM C564 HEAVY DUTY SHIELDED STAINLESS STEEL COUPLINGS.

   A. NO ASTM D2729 PIPE SHALL USED UNDERGROUND.

2. ABOVE GROUND SANITARY DRAINAGE AND VENT PIPING, IN ALL AREAS EXCEPT AIR PLENUMS AND EXCEPT IN A FIRE RATED BUILDING, SHALL BE ABS TYPE DWV PLASTIC PIPE AND FITTINGS PER ASTM D2661 WITH ASTM D2255 SOLVENT, OR PVC PLASTIC PIPE AND FITTINGS PER ASTM D2665 WITH ASTM D2564 SOLVENT, OR SERVICE WEIGHT, NO HUB CAST IRON COUPLED PIPE AND FITTINGS WITH COMPRESSION TYPE NEOPRENE GASKETS AND STAINLESS STEEL BANDS.
3. FORCE SEWER MAINS UP TO 4" SHALL BE TYPE L HARD COPPER TUBE WITH WROUGHT COPPER PRESSURE FITTINGS AND SOLDERED JOINTS, OR DUCTILE IRON PIPE AND FITTINGS WITH MECHANICAL JOINTS.
4. ALL SANITARY DRAINAGE AND VENT PIPING INSIDE AIR PLENUMS AND ANYWHERE IN A FIRE RATED BUILDING SHALL BE NO HUB SERVICE WEIGHT CAST IRON COUPLED PIPE AND FITTINGS WITH COMPRESSION TYPE NEOPRENE GASKETS AND STAINLESS STEEL BANDS. ASTM B306 COPPER PIPE MAY BE USED WITH SOLDERED JOINTS FOR PIPE 3" AND SMALLER.
5. ABOVE GROUND ROOF DRAIN LINES, EXCEPT IN AIR PLENUMS AND ANYWHERE IN A FIRE RATED BUILDING, SHALL BE ABS TYPE DWV PLASTIC PIPE AND FITTINGS PER ASTM D2661 WITH ASTM D2255 SOLVENT, OR PV C PLASTIC PIPE PER ASTM D2665 WITH ASTM D2564 SOLVENT.
6. ALL ROOF DRAIN LINES INSIDE AIR PLENUMS, OR ANYWHERE IN A FIRE RATED BUILDING, SHALL BE SERVICE WEIGHT CAST IRON PIPE TO CISPI STANDARD 301.
7. ALL ROOF DRAIN LINES SHALL BE FULLY INSULATED.
8. OVERFLOW ROOF DRAINS SHALL DAYLIGHT 18" ABOVE THE SURROUNDING HORIZONTAL AREA.
9. INSTALL SANITARY DRAIN LINES 2-1/2" AND LESS WITH A SLOPE OF 2%. INSTALL SANITARY DRAIN LINES 3"-6" WITH A SLOPE OF NOT LESS THAN 1%.
10. SLOPE ROOF DRAIN LINES DOWN IN DIRECTION OF FLOW, 1/8" PER FOOT (1%).
11. CLEANOUTS
    A. FINISHED WALL CLEANOUTS: SMITH FIGURE 4472 COMPLETE WITH CAST BRONZE TAPER THREADED PLUG, STAINLESS STEEL COVER AND SCREW.
    B. FLOOR CLEANOUTS (UNFINISHED AREAS): SMITH FIGURE 4223 DUCO CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORIATED SECURED CAST IRON TOP, TAPER THREADED BRONZE PLUG AND SPIGOT OUTLET.
    C. FINISHED FLOOR CLEANOUTS (CONCRETE FLOORS): SMITH FIGURE 4023 DUCO CAST IRON CLEANOUT WITH ADJUSTABLE SCORIATED SECURED NICKEL BRONZE TOP, TAPER THREADED CAST BRONZE PLUG AND SPIGOT OUTLET.
    D. FINISHED FLOOR CLEANOUTS (CARPETED FLOORS): SMITH FIGURE 4023-Y SAME AS CONCRETE FLOORS WITH CARPET MARKER.
    E. FINISHED FLOOR CLEANOUTS (TILE FLOORS): SMITH FIGURE 4163 DUCO CAST IRON CLEANOUT WITH SQUARE ADJUSTABLE SECURED NICKEL BRONZE TOP WITH 1/8" RECESS, TAPER THREADED BRONZE PLUG AND SPIGOT OUTLET.
    F. EXTERIOR CLEANOUTS (CLEANOUT TO GRADE): SMITH FIGURE 4253 DUCO CAST IRON CLEANOUT AND DOUBLE FLANGED HOUSING WITH HEAVY DUTY SECURED SCORIATED CAST IRON COVER WITH LIFTING DEVICE, TAPER THREADED BRONZE PLUG AND SPIGOT OUTLET.
12. FLOOR DRAINS:

    FD-1 FLOOR DRAIN: SMITH FIGURE 2010-BP CAST IRON BODY AND FLASHING COLLAR WITH PROTECTIVE CAP AND SQUARE NICKEL BRONZE ADJUSTABLE STRAINER HEAD WITH SECURED SQUARE HOLE GRATE, AND TRAP PRIMER CONNECTION.

    FD-2 MECHANICAL ROOM DRAIN: SMITH FIGURE 2110-NB MEDIUM DUTY FLOOR DRAIN. CAST IRON BODY AND FLASHING COLLAR WITH NICKEL BRONZE BAR GRATE.

13. ROOF DRAINS (AS REQUIRED IF REPLACEMENT IS NECESSARY)

    RD-1 ROOF DRAIN: SMITH FIGURE 1010-ERC CAST IRON BODY WITH COMBINED FLASHING CLAMP AND CAST IRON GRAVEL STOP, CAST IRON DOME, EXTENSION, SUMP RECEIVER AND UNDERDECK CLAMP.

    ORD-1 OVERFLOW ROOF DRAIN: SMITH FIGURE 1080-ERC CAST IRON BODY WITH FLASHING CLAMP, GRAVEL STOP, CAST IRON DOME, 2" HIGH CAST IRON WATER COLLAR, EXTENSION, SUMP RECEIVER AND UNDERDECK CLAMP.

    DSN-1 DOWNSPOUT NOZZLE:SMITH FIGURE 1770 DOWNSPOUT NOZZLE. CAST BRONZE BODY AND FLANGE. PROVIDE BRONZE BOLTS TO SECURE NOZZLE TO WALL. INSTALL 12" ABOVE FOUNDATION UNLESS NOTED OTHERWISE.

14. FIRE/WATER ENTRIES

    FIRE ENTRY: WATTS 757DCDA OSY OR EQUAL. DOUBLE CHECK DETECTOR ASSEMBLY. TWO INDEPENDENTLY OPERATING TRI-LINK CHECK VALVES, TWO SHUTOFF VALVES, AND FOUR TEST COCKS. STAINLESS STEEL HOUSING AND SLEEVE. MAXIMUM WORKING PRESSURE: 175PSI. PROVIDE FLOW SWITCH WITH LINE VOLTAGE POWER.

    DOMESTIC WATER ENTRY: WATTS LF909 OR EQUAL. LEAD FREE REDUCED PRESSURE ZONE ASSEMBLY. HORIZONTAL OR VERTICAL (UP OR DOWN) INSTALLATION, TEMPERATURE RANGE: 33°F – 140°F, MAXIMUM WORKING PRESSURE: 175PSI, TEMPERATURE RANGE: 33°F – 210°F, MAXIMUM WORKING PRESSURE: 175PSI (FOR MAIN SERVICE WATER ENTRY APPLICATIONS)

    DOMESTIC WATER DOUBLE CHECK: WATTS LF719 OR EQUAL. LEAD FREE DOUBLE CHECK VALVE ASSEMBLY. SEPARATE ACCESS, TOP ENTRY CHECK VALVE, REVERSIBLE SEAT DISC RUBBER, VALVE TEST COCKS, TEMPERATURE RANGE: 33°F – 180°F, MAXIMUM WORKING PRESSURE: 175PSI (FOR APPLICATIONS DOWNSTREAM OF WATER ENTRY PRESSURE REDUCING VALVE)

PLUMBING SPECIFICATIONS

221613 - NATURAL GAS SYSTEMS

1. NATURAL GAS PIPING ABOVE GROUND OR INSIDE BUILDINGS: SCHEDULE 40 BLACK STEEL WITH WELDED OR MALLEABLE IRON FITTINGS.
2. UNDERGROUND GAS PIPE: EITHER POLYETHYLENE ASTM D2513, OR SCHEDULE 40 BLACK STEEL PRIMED AND WRAPPED IN ACCORDANCE WITH LOCAL GAS COMPANY REQUIREMENTS.
3. GAS MAINS INSIDE BUILDINGS ARE SIZED FOR 2 PSIG PRESSURE. LOCATE PRESSURE REGULATORS AS SHOWN ON THE DRAWINGS TO REDUCE PRESSURE FROM 2 PSIG TO 7" W.C. PROVIDE FULL SIZE VENT LINES FROM GAS PRESSURE REGULATORS AND EXTEND TO OUTSIDE OR THROUGH ROOF. FLASH PENETRATIONS AND MAKE WATER TIGHT. INSTALL VENTLESS GAS REGULATOR AS ALTERNATE.
4. PROVIDE GAS SHUT OFF VALVE AT EACH PIECE OF GAS UTILIZING EQUIPMENT.
5. THE EQUIPMENT INSTALLER SHALL APPLY AND SIGN A CERTIFICATION LABEL TO EACH GAS-FIRED APPLIANCE, STATING THE APPLIANCE HAS BEEN ADJUSTED OR MODIFIED PER MANUFACTURER'S REQUIREMENTS FOR OPERATION AT THE PROJECT ALTITUDE AND WITH THE BTU-CONTENT OF THE AVAILABLE FUEL-GAS.

223000 - WATER HEATERS

1. INSTALL UNITS PLUMB AND LEVEL AND FIRMLY ANCHORED PER SEISMIC REQUIREMENTS. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES. ORIENT SO CONTROLS AND DEVICES NEEDING SERVICING ARE ACCESSIBLE.
2. CONNECT HOT AND COLD WATER PIPING TO UNITS WITH SHUT-OFF VALVES AND UNIONS. CONNECT HOT WATER CIRCULATING PIPING TO UNIT WITH SHUT-OFF VALVE, CHECK VALVE AND UNION.
3. USE DIELECTRIC FITTINGS AND UNIONS WHERE PIPING CONNECTIONS ARE DISSIMILAR METALS.
4. INSTALL VACUUM RELIEF VALVE IN COLD WATER INLET PIPING. EXTEND RELIEF VALVE DISCHARGE TO CLOSEST FLOOR DRAIN. INSTALL DRAIN AS INDIRECT WASTE TO SPILL INTO OPEN DRAIN OR OVER FLOOR DRAIN.
5. PROVIDE AND INSTALL EXPANSION TANK AS SCHEDULED IN DRAWINGS.

   EXPANSION TANK: DIAPHRAGM TYPE, PRE- PRESSURIZED STEEL TANK WITH RELIEF VALVE SETTING @ 120 PSI MAXIMUM PRESSURE.

6. CONNECT GAS SUPPLY PIPING TO BURNER WITH DRIP LEG, TEE, GAS COCK, AND UNION, MINIMUM SIZE SAME AS INLET CONNECTION. INSTALL GAS PRESSURE REGULATORS WHERE INDICATED.
7. CONNECT OIL PIPING TO OIL BURNER WITH SHUT-OFF VALVE AND UNION IN SUPPLY AND CHECK VALVE AND UNION IN RETURN PIPING.
8. ELECTRICAL CONNECTIONS: POWER WIRING AND DISCONNECT SWITCHES ARE SPECIFIED IN DIVISION 16. CONNECT UNIT COMPONENTS TO GROUND IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
9. VENT CONNECTIONS: CONNECT GAS FIRED WATER HEATER DRAFT HOOD TO VENT SYSTEM. UNLESS OTHERWISE INDICATED, PROVIDE VENT SAME SIZE AS OUTLET ON HEATER. COMPLY WITH GAS UTILITY REQUIREMENTS.
10. CONNECT OIL-FIRED WATER HEATER VENT AND DRAFT REGULATOR TO VENT SYSTEM. PROVIDE VENT AND DRAFT REGULATOR SAME SIZE AS OUTLET ON HEATER.
11. PROVIDE SEALED COMBUSTION SYSTEMS WITH CONNECTIONS FOR OUTSIDE COMBUSTION AIR.
12. PROVIDE CONCENTRIC VENT TERMINATION KIT FOR ROOF OR WALL APPLICATIONS.
13. PROVIDE PVC COMBUSTION AIR AND VENT PIPING FROM WATER HEATER TO TERMINATION KIT.
14. PROVIDE CONDENSATE DRAIN FROM WATER HEATER OR VENT AS REQUIRED.

PLUMBING SPECIFICATIONS

224213 - PLUMBING FIXTURES

1. PROVIDE AND INSTALL CARRIERS AS REQUIRED FOR FLOOR OR WALL MOUNTED PLUMBING FIXTURES. INSTALL ALL FIXTURES WITH ACCESSORIES AS REQUIRED TO PROVIDE A COMPLETE, WORKABLE INSTALLATION.
2. PLUMBING FIXTURES SHALL INCLUDE COMPRESSION STOPS ABOVE FLOOR IN SUPPLIES TO ALL FIXTURES AND A MINIMUM 17 GAUGE P-TRAP.
3. ALL LAVATORIES AND HAND SINKS WILL HAVE A COMBINATION FAUCET OR PREMIXING FAUCET CAPABLE OF SUPPLYING WARM WATER FOR A MINIMUM OF 10 SECONDS.
4. ALL JANITORIAL SINK FAUCETS MUST BE PROVIDED WITH AN APPROVED BACKFLOW PREVENTION DEVICE.
5. FLOOR DRAINS AND FLOOR SINKS ARE SHOWN IN THE APPROXIMATE LOCATION. COORDINATE FINAL LOCATION WITH EQUIPMENT AND DRAINAGE REQUIREMENTS. PROVIDE BLOCKOUTS AS NECESSARY.

PENETRATION FIRESTOPPING NOTES

1. CONTRACTOR SHALL REVIEW CONSTRUCTION DOCUMENTS AND PROVIDE SPECIFIC FIRESTOPPING DETAILS FROM A SPECIFIC FIRESTOPPING MANUFACTURER FOR EACH MECHANICAL (HVAC) AND PLUMBING PIPE OR DUCT PENETRATION FOR EACH FIRE RATED ASSEMBLY.
2. PROVIDE PENETRATION FIRESTOPPING THAT IS PRODUCED AND INSTALLED TO RESIST SPREAD OF FIRE ACCORDING TO REQUIREMENTS INDICATED, RESIST PASSAGE OF SMOKE AND OTHER GASES, AND MAINTAIN ORIGINAL FIRE-RESISTANCE RATING OF CONSTRUCTION PENETRATED.
3. PENETRATION FIRESTOPPING SYSTEMS SHALL BE COMPATIBLE WITH ONE ANOTHER, WITH THE SUBSTRATES FORMING OPENINGS, AND WITH PENETRATING ITEMS IF ANY.
4. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: PROVIDE PENETRATION FIRESTOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479, BASED ON TESTING AT A POSITIVE PRESSURE DIFFERENTIAL OF 0.01-INCH WG
5. PENETRATION FIRESTOPPING PRODUCTS SHALL BEAR UL, ETL OR FM GLOBAL CLASSIFICATION MARKING OF QUALIFIED TESTING AND INSPECTING AGENCY.
6. DO NOT INSTALL PENETRATION FIRESTOPPING WHEN AMBIENT OR SUBSTRATE TEMPERATURES ARE OUTSIDE LIMITS PERMITTED BY PENETRATION FIRESTOPPING MANUFACTURERS OR WHEN SUBSTRATES ARE WET BECAUSE OF RAIN, FROST, CONDENSATION, OR OTHER CAUSES.
7. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT PENETRATION FIRESTOPPING IS INSTALLED ACCORDING TO SPECIFIED REQUIREMENTS.
8. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE-DRILLED HOLES, OR CUT OPENINGS TO ACCOMMODATE PENETRATION FIRESTOPPING.
9. INSTALL PENETRATION FIRESTOPPING TO COMPLY WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND PUBLISHED DRAWINGS FOR PRODUCTS AND APPLICATIONS INDICATED.
10. INSTALL FORMING MATERIALS AND OTHER ACCESSORIES OF TYPES REQUIRED TO SUPPORT FILL MATERIALS DURING THEIR APPLICATION AND IN THE POSITION NEEDED TO PRODUCE CROSS-SECTIONAL SHAPES AND DEPTHS REQUIRED TO ACHIEVE FIRE RATINGS INDICATED.
11. IDENTIFY PENETRATION FIRESTOPPING WITH PREPRINTED METAL OR PLASTIC LABELS. ATTACH LABELS PERMANENTLY TO SURFACES ADJACENT TO AND WITHIN 6 INCHES OF FIRESTOPPING EDGE SO LABELS WILL BE VISIBLE TO ANYONE SEEKING TO REMOVE PENETRATING ITEMS OR FIRESTOPPING.

FIRE SPRINKLER SYSTEM REQUIREMENTS (NFPA-13)

THESE DRAWINGS AND SPECIFICATIONS ARE FOR THE FIRE PROTECTION CONTRACTOR TO ENGINEER, DESIGN, BID AND INSTALL A COMPLETE AND OPERATIONAL FIRE PROTECTION SYSTEM, PER THE DESIGN INTENT AS SHOWN.

1. CONTRACTOR TO PROVIDE A HYDRAULICALLY-DESIGNED, FUSIBLE LINK, FULLY SPRINKLED, WET PIPE FIRE PROTECTION SYSTEM FOR BUILDING SPACES NOT SUBJECT TO FREEZING.
2. CONTRACTOR TO PROVIDE A HYDRAULICALLY-DESIGNED, FUSIBLE LINK, FULLY SPRINKLED, DRY PIPE OR GLYCOL FIRE PROTECTION SYSTEM BUILDING SPACES SUBJECT TO FREEZING, INCLUDING PARKING GARAGES, ENTRANCE CANOPIES AND OVERHANGS.
3. ALL DESIGN SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE BUILDING CODE, FIRE CODE, MECHANICAL CODE, PLUMBING CODE, AND ANY OTHER LOCAL, STATE, OR FEDERAL REGULATIONS AND CODES, AS WELL AS INSTRUCTIONS FROM THE AUTHORITY HAVING JURISDICTION.
4. SUBMIT FIRE PROTECTION LAYOUT DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR GENERAL APPROVAL OF SYSTEM LAYOUT, LOCATION OF COMPONENTS ETC. THEN SUBMIT TO THE FIRE MARSHALL HAVING JURISDICTION AND OBTAIN APPROVAL. CONTRACTOR TO PAY ALL PERMIT/APPROVAL/PLANCHECK FEES AND COSTS INVOLVED.
5. SYSTEM DESIGN SHALL BE BASED ON THE FOLLOWING CRITERIA:
   5.1. LIGHT HAZARD IN ALL AREAS; EXCEPT ORDINARY HAZARD GROUP 1 IN THE KITCHEN AREA.
   5.2. DESIGN THE SYSTEM USING THE AREA/DENSITY METHOD IN NFPA 13.
   5.3. FLOW TEST DATA TO BE DETERMINED BY THE FIRE PROTECTION CONTRACTOR.
6. PROVIDE COVERAGE FOR A SINGLE FIRE ZONE.
7. PROVIDE INSPECTOR'S TEST CONNECTION IN A LOCATION APPROVED BY THE OWNER AND THE FIRE MARSHALL.
8. DUE CONSIDERATION SHALL BE GIVEN TO THE LOCATION OF BUILDING ELEMENTS. (I.E. BEAMS, COLUMNS, LIGHT FIXTURES, ETC.) IN DETERMINING SPRINKLER HEAD SPACING AND ARRANGEMENT. THE STRUCTURE SHOWN ON ALL DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OR ANY PORTION OF THE BUILDING. COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND STRUCTURAL.
9. ALL EQUIPMENT, PIPING, COMPONENT, AND ACCESSORY SIZES, CAPACITIES AND TYPES SHOWN IN THESE DRAWINGS AND SPECIFICATIONS SHALL BE ADHERED TO.
10. AUXILIARY DRAINS SHALL BE INCLUDED AS NECESSARY TO DRAIN ALL SPRINKLER SYSTEM DISTRIBUTION LINES AND BRANCHES DOWNSTREAM OF THE RISER CHECK VALVE.
11. AUTOMATIC AIR RELEASE VALVES SHALL BE FURNISHED AS NECESSARY TO VENT THE DRY PIPE SPRINKLER SYSTEM. THE VALVES SHALL BE MADE SEPARABLE FROM THE SYSTEM WITH APPROPRIATELY SIZED GATE VALVES.
12. THE CONTRACTOR SHALL THOROUGHLY TEST, DISINFECT, AND FLUSH THE PIPING SYSTEM ACCORDING TO APPLICABLE CODES AND STANDARDS.
13. ANY DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONNECTIONS REQUIRED FOR INSTALLATION.
14. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL BUILDING INFORMATION SUCH AS ATTIC SPACES, CONSTRUCTION MATERIALS, SPECIAL USE SPACES, BUILDING SECTIONS, ETC.
15. SPRINKLER HEADS:
    A. SPRINKLER HEADS FOR LIGHT HAZARD CLASSIFICATION SHALL BE QUICK RESPONSE TYPE PER NFPA 13. ALL OTHER CLASSIFICATIONS SHALL BE STANDARD RESPONSE TYPE.
    B. GENERAL: ALL HEADS SHALL BE FACTORY MUTUAL APPROVED FOR APPLICATION AND INSTALLATION. WET OR DRY TYPE AS REQUIRED. CEILING ESCUTCHEONS MAY BE PLASTIC OR METAL 2 PIECE TYPE
    C. EXPOSED HEADS IN CEILING: SEMI-RECESSED TYPE WITH SATIN CHROME-PLATED ESCUTCHEON CUP, WHEREVER HEADS ARE ADJACENT TO SURFACE-MOUNTED LIGHTS OR OBSTRUCTIONS, USE EXTENDED PENDENT HEAD WITH SHALLOW FRICTION ADJUSTABLE ESCUTCHEON WITH SATIN CHROME-PLATED FINISH. COORDINATE EXTENDED PENDENT HEAD USE WITH ARCHITECT PRIOR TO PURCHASE OR INSTALLATION.
    D. EXPOSED HEADS IN SOLID CEILINGS: SEMI-RECESSED TYPE WITH SHALLOW FRICTION ADJUSTABLE ESCUTCHEON WITH SATIN CHROME-PLATED FINISH.
    E. EXPOSED HEADS IN FINISHED METAL CEILING AREAS: SEMI-RECESSED TYPE WITH SATIN BRASS-PLATED ESCUTCHEON CUP, OF COLOR MATCH METAL CEILING.
    F. CONCEALED HEADS AND THOSE AREAS WITHOUT CEILINGS: UPRIGHT OR PENDANT TYPE WITH ROUGH BRASS FINISH.
    G. SPRINKLER HEADS IN ALL AREAS SHALL OPEN AT 160°-165°F, EXCEPT THAT HEADS IN BAKERY, DELI, ELECTRICAL TRANSFORMER ROOMS, AND PHONE/EMS ROOMS SHALL BE RATED AT 212°F.
    H. HEADS IN FREEZER/COOLER BOXES SHALL BE DRY PENDANT TYPE, AND SHALL BE OF COLOR TO MATCH CEILING.
    I. PENDANT HEADS ON DRY SPRINKLER SYSTEM SHALL BE DRY PENDANT TYPE AND SHALL BE OF COLOR TO MATCH CEILING.
    J. LEGEND:
       ——————o UPRIGHT
       ——————● PENDENT
       ——————o DRY PENDENT
17. RECORD DESIGN DRAWINGS SHOWING ALL EQUIPMENT, COMPONENTS, PIPING AND CONTROLS SHALL BE PREPARED TO THE SAME SCALE AS THESE DRAWINGS. DRAWINGS SHALL BE ON MYLAR AND BE DRAWN IN AUTOCAD. DISK COPIES SHALL BE PROVIDED TO THE OWNER AND ARCHITECT/ENGINEER.
18. DESIGN FOR SEISMIC DESIGN CATEGORY AND SEISMIC USE GROUP, IN ACCORDANCE WITH THE LATEST ADOPTED EDITIONS OF THE IBC, UBC, ASHRAE, AND SMACNA.
19. CONTRACTOR SHALL LOCATE P.I.V., RISERS, INCOMING SERVICE, ZONE VALVES AND FEED AND BRANCH MAINS IN LOCATIONS SHOWN ON THESE DRAWINGS.
20. THE WORKING DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR FIRE PROTECTION ITEMS SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, STRUCTURAL, AND ELECTRICAL DRAWINGS.
21. THE FIRE PROTECTION CONTRACTOR DOES NOT HAVE PRIORITY ON PIPE ROUTING. ALL PIPING TO BE FULLY COORDINATED WITH ALL HVAC, PLUMBING, ELECTRICAL, AND ARCHITECTURAL REQUIREMENTS AND TRADES. RESOLVE POTENTIAL CONFLICTS BEFORE PROCEEDING WITH INSTALLATION. IN ALL CASES, GRADED PIPE RUNS TAKE FIRST PRIORITY ON ROUTING. GENERALLY, DUCTWORK TAKES SECOND PRIORITY.
22. UPON COMPLETION OF THE WORK, REMOVE ALL SURPLUS MATERIALS AND RUBBISH. MAKE ALL REQUIRED PATCHING AND REPAIRS OF OTHER TRADES' WORK DAMAGED BY THIS CONTRACTOR, AND LEAVE THE PREMISES IN A CLEAN, ORDERLY CONDITION.
23. THE CONTRACTOR SHALL GUARANTEE THE ENTIRE FIRE PROTECTION SYSTEM FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
24. ALL ALLOWABLE SPRINKLER SYSTEM COMPONENTS SHALL BE PRIMED AND PAINTED RED, SYSTEM COMPONENTS WHICH MAY BE INACCESSIBLE AFTER INSTALLATION SHALL BE PAINTED BEFORE INSTALLATION.
25. IN AREAS WITH LAY-IN CEILINGS. LOCATE HEADS IN THE CENTER OF THE CEILING TILE. PROVIDE ALL NECESSARY ELBOWS IN BRANCH LINES, TO ACHIEVE THIS.

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REGISTERED PROFESSIONAL ENGINEER
04-24-2017
No. 9520491
BENJAMIN J. SCHLUP
STATE OF UTAH

project:

Tenant Finish for New Brighton Recovery Campus
4905, 4911, 4915, 4925, 4931, & 4953 South 900 East
Salt Lake County, Utah

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data

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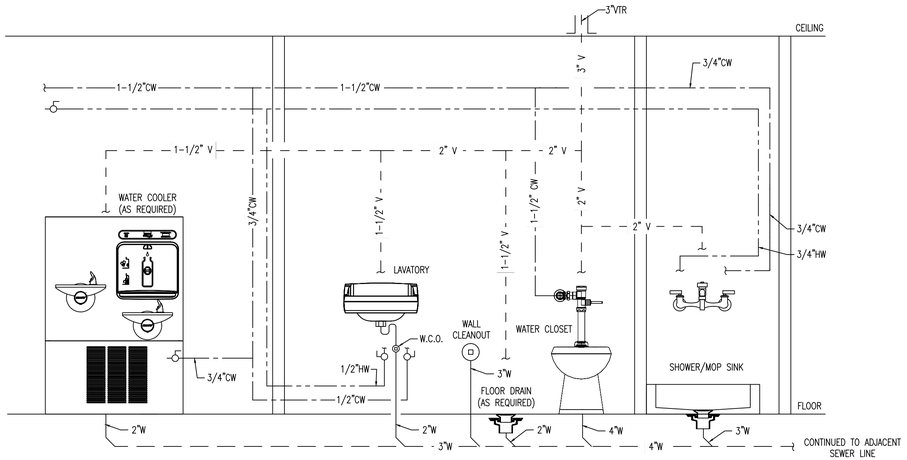
PLUMBING EQUIPMENT SPECIFICATIONS

sheet

P02

BUILDING 'D'



1 PLUMBING SCHEMATIC
SCALE: NTS

PLUMBING FIXTURE SCHEDULE (COORDINATE MOUNTING HEIGHTS WITH ARCH. PLANS)

SYMBOL	FIXTURE	MANUFACTURER AND MODEL NO.	COLD WATER	HOT WATER	WASTE	VENT	ACCESSORIES AND REMARKS
FD-1 FD-2	FLOOR DRAINS	SEE P02 (SPEC SECTION 221316)	-	-	2" OR 4"	1-1/2" OR 3"	REFERENCE SHEET P02. FLOOR DRAINS IN FINISHED SPACES TO BE FD-1 (2"). ALL WATER ENTRY DRAINS TO BE FD-2 (4"). INSTALL PROVENT TRAP GUARD OR EQUAL IN EACH DRAIN TYPE.
FIRE & DOMESTIC WATER ENTRIES DOUBLE CHECK & BACKFLOW DEVICES		SEE P02 (SPEC SECTION 221316)	SEE REMARKS	-	-	-	REFERENCE SHEET P02. MAKE/MODELS FOR FIRE/WATER ENTRY BACKFLOW PREVENTER AND DOUBLE CHECK DETECTOR ASSEMBLIES INDICATED. 4" FIRE ENTRY LINE WHERE INDICATED. BUILDINGS C & D TO INCORPORATE A 1-1/2" WATER SERVICE. BUILDINGS A, B, E, F TO HAVE 2" DOMESTIC WATER SERVICE. LOCATE FIRE CONTROL PANEL AT EACH FIRE ENTRY. ELECTRICAL: PROVIDE LINE VOLTAGE POWER (115V CIRCUITS) TO FIRE ENTRY FLOW SWITCH & AIR COMPRESSOR
SH-1	SHOWER (ADA) (FLOOR MOUNTED)	SEE ARCHITECTURAL	1/2"	1/2"	2"	1-1/2"	REFERENCE ARCHITECTURAL SHEET A6.1A. SPECIFICATIONS FOR SHOWER INSERT, DRAIN, SHOWERHEAD, VALVES, & ASSOCIATED ACCESSORIES ARE INDICATED.
GWH-1	GAS WATER HEATER (FLOOR MOUNTED)	BRADFORD WHITE EF-100T-300E-3N(A)	1-1/2"	1-1/2"	-	-	COMMERCIAL ULTRA HIGH EFFICIENCY GAS WATER HEATER. 92% THERMAL EFFICIENCY. DIRECT SPARK IGNITION. 300 MBH INPUT, 3/4" GAS CONNECTION, 100 GALLON CAPACITY, 335 GPH RECOVERY @ 100°F, DISCHARGE T&P VALVE INTO MOP SINK OR FLOOR DRAIN. PROVIDE 4.4 GALLON EXPANSION TANK (AMTROL EX-30 OR EQUAL). PROVIDE SEISMIC WATER HEATER STRAPS. DIMENSIONS: 77-5/8" H X 28-1/4" DIA.. 900 LB SHIPPING WEIGHT. PROVIDE 4" (PVC, CPVC, OR ABS) VERTICAL VENTING. TERMINATE THROUGH ROOF WITH CONCENTRIC VENT KIT PER MANUFACTURER'S RECOMMENDATIONS. ELECTRICAL: 115V AC REQUIRED.
GWH-2	GAS WATER HEATER (FLOOR MOUNTED)	BRADFORD WHITE EF-100T-250E-3N(A)	1-1/2"	1-1/2"	-	-	COMMERCIAL ULTRA HIGH EFFICIENCY GAS WATER HEATER. 97% THERMAL EFFICIENCY. DIRECT SPARK IGNITION. 250 MBH INPUT, 3/4" GAS CONNECTION, 100 GALLON CAPACITY, 294 GPH RECOVERY @ 100°F, DISCHARGE T&P VALVE INTO MOP SINK OR FLOOR DRAIN. PROVIDE 4.4 GALLON EXPANSION TANK (AMTROL EX-30 OR EQUAL). PROVIDE SEISMIC WATER HEATER STRAPS. DIMENSIONS: 77-5/8" H X 28-1/4" DIA.. 900 LB SHIPPING WEIGHT. PROVIDE 4" (PVC, CPVC, OR ABS) VERTICAL VENTING. TERMINATE THROUGH ROOF WITH CONCENTRIC VENT KIT PER MANUFACTURER'S RECOMMENDATIONS. ELECTRICAL: 115V AC REQUIRED.
GWH-3	GAS WATER HEATER (FLOOR MOUNTED)	BRADFORD WHITE LG2PDV50H603N	3/4"	3/4"	-	-	LIGHT DUTY COMMERCIAL POWER DIRECT VENT GAS WATER HEATER. 60 MBH INPUT, 1/2" GAS CONNECTION, 48 GALLON CAPACITY, 58 GPH RECOVERY @ 100°F, DISCHARGE T&P VALVE INTO MOP SINK OR FLOOR DRAIN. PROVIDE 2.1 GALLON EXPANSION TANK (WATTS PLT-5 OR EQUAL). PROVIDE SEISMIC WATER HEATER STRAPS. DIMENSIONS: 67" H X 22" DIA.. 205 LB SHIPPING WEIGHT. PROVIDE 3" (PVC, CPVC, OR ABS) VERTICAL VENTING. TERMINATE THROUGH ROOF WITH CONCENTRIC VENT KIT PER MANUFACTURER'S RECOMMENDATIONS. ELECTRICAL: 110 VAC REQUIRED FOR POWER VENTING (3.1 AMPERES)
GWH-4	GAS WATER HEATER (FLOOR MOUNTED)	BRADFORD WHITE EF-60T-199E-3N(A)	1-1/2"	1-1/2"	-	-	COMMERCIAL ULTRA HIGH EFFICIENCY GAS WATER HEATER. 92% THERMAL EFFICIENCY. DIRECT SPARK IGNITION. 199 MBH INPUT, 3/4" GAS CONNECTION, 60 GALLON CAPACITY, 223 GPH RECOVERY @ 100°F, DISCHARGE T&P VALVE INTO MOP SINK OR FLOOR DRAIN. PROVIDE 4.4 GALLON EXPANSION TANK (AMTROL EX-30 OR EQUAL). PROVIDE SEISMIC WATER HEATER STRAPS. DIMENSIONS: 57" H X 28-1/4" DIA.. 570 LB SHIPPING WEIGHT. PROVIDE 3" (PVC, CPVC, OR ABS) VERTICAL VENTING. TERMINATE THROUGH ROOF WITH CONCENTRIC VENT KIT PER MANUFACTURER'S RECOMMENDATIONS. ELECTRICAL: 115V AC REQUIRED.
HWCP-1	HOT WATER CIRCULATION PUMP	GRUNDFOS UP10-16BN5/TLC	-	1/2"	-	-	RECIRCULATION PUMP WITH MANUAL TIMER TO ALLOW FOR OPERATION DURING BUSINESS HOURS. INTEGRAL CHECK VALVE. ELECTRICAL: 115V PLUG IN TYPE. (6 FT LINE CORD)
HWCP-2	HOT WATER CIRCULATION PUMP	GRUNDFOS UP25-64SF	-	1/2"	-	-	RECIRCULATION PUMP. INTEGRAL CHECK VALVE. 5 GPM @ 15 FT HEAD, INTEGRAL CHECK VALVE. ELECTRICAL: 115V PLUG IN TYPE. (6 FT LINE CORD) 1/12 HP, 1.7 AMPS
MSB-1	MOP SINK BASIN	FLORESTONE MSR-2424	3/4"	3/4"	3"	1-1/2"	MOLDED MOP RECEPTOR, 24X24, 10" DEPTH, 18 GAUGE SS DRAIN GRID (#430), KOHLER K-8928, SERVICE SINK FAUCET, 3" THREADED THREADED SPOUT FOR HOSE CONNECTION, RUBBER HOSE WITH WALL HOOK. LEVER HANDLES
FS-1	FLOOR SINK	ZURN FD2375 (OR APPROVED EQUAL)	-	-	3"	1-1/2"	ENAMELED CAST IRON, ACID RESISTANT, DOME STRAINER, FULL GRATE
WM-1 WM-2	WATER METER (SUB-METERING)	BADGER RECORDALL MODEL M120 & M170 (OR APPROVED EQUAL)	-	1-1/2" 2"	-	-	LEAD FREE BRONZE ALLOW DISC METER (MATCH BUILDING WATER ENTRY SIZE 1-1/2" OR 2"), COMPLIES WITH AWWA STANDARD C700, 150 PSI MAX OPERATING PRESSURE.
BFP-1	BACKFLOW PREVENTER	WATTS MODEL SD-2 (OR APPROVED EQUAL)	1/2"	-	-	-	BACKFLOW PREVENTER FOR CARBONATED BEVERAGE MACHINES. DUAL CHECK DESIGN FOR PROTECTION OF WATER SUPPLY FROM CARBON DIOXIDE GAS AND CARBONATED WATER. ANSI/NSF STD 18 CERTIFIED, ASSE 1032 APPROVED DUAL CHECK VALVE, 316 STAINLESS STEEL BODY. MAX PRESSURE: 200 PSI, MAX TEMP: 110°F. PROVIDE RECOMMENDED STRAINER.
GD-1	FOOD WASTE DISPOSER	INSINKERATOR EVOLUTION	-	-	1-1/2"	-	ANTI-VIBRATION MOUNT, 34.6 OZ. CAPACITY, 12-1/4" HEIGHT. ELECTRICAL: 120 V, 3/4 HP, 8.1 AMPS
KS-1	KITCHEN SINK (ADA) FAUCET:	KOHLER K-3996-4 & KOHLER FORTE K-10445	1/2"	1/2"	1-1/2"	1-1/2"	33X22X6 DUAL BOWL TOP-MOUNT ADA SINK, 4 HOLE, 18 GAUGE SS, 4" FAUCET CENTERS, 18 GAUGE SS, FAUCET: PULL-OUT SPRAY, 1.8 GPM, LEVER HANDLES, (ADA), 7-3/4" SPOUT REACH, 4 HOLES.
UR-1 UR-2	URINAL (ADA)	SLOAN SU-1006 & ROYAL 181	1"	-	1-1/2"	1-1/2"	TOP SPUD WALL HUNG, STANDARD WASHDOWN URINAL, VITREOUS CHINA 1.5 GPF MANUAL FLUSHOMETER WITH WATER HAMMER ARRESTOR. 1
WC-1 WC-2	WATER CLOSET, FLOOR MOUNT (ADA)	SLOAN WETS-2450.1301 & ROYAL 113-1.28	1-1/2"	**	4"	2"	VITREOUS CHINA, ELONGATED BOWL, 1-1/2" TOP SPUD, COMMERCIAL TOILET SEAT, & BOLT CAP ACCESSORY 1.28 GPF MANUAL FLUSHOMETER. PROVIDE WITH WATER HAMMER ARRESTOR.
L-1	LAVATORY (ADA) FAUCET:	SLOAN SS-3001 & KOHLER K-16027-4	1/2"	1/2"	1-1/2"	1-1/2"	19.5"X16.5" VITREOUS CHINA UNDERMOUNTED WITH OVERFLOW. SINGLE HOLE BATHROOM FAUCET (ADA) LESS POP-UP TAIL PIECE, 1.2 GPM, 4-3/8" REACH. PROVIDE BDT VARIATION BELOW DECK THERMOSTATIC MIXING VALVE (SET WATER TEMP TO 110°F) PROVIDE UNDERCOUNTER PIPING INSULATION KIT.
L-2	LAVATORY (ADA) FAUCET:	SLOAN SS-3101 & KOHLER K-16027-4	1/2"	1/2"	2"	1-1/2"	20 3/4"X18 1/4" VITREOUS CHINA WALL MOUNTED LAVATORY, SINGLE HOLE. SINGLE HOLE BATHROOM FAUCET (ADA) LESS POP-UP TAIL PIECE, 1.2 GPM, 4-3/8" REACH. PROVIDE BDT VARIATION BELOW DECK THERMOSTATIC MIXING VALVE (SET WATER TEMP TO 110°F) PROVIDE UNDERCOUNTER PIPING INSULATION KIT.
S-1	SINK FAUCET:	KOHLER VAULT K-5286 UNDER-MOUNT KITCHEN SINK	1/2"	1/2"	1-1/2"	1-1/2"	24"X18-1/4" 16-GAUGE STAINLESS STEEL, SINGLE SQUARED BOWL, 9-INCH DEPTH FAUCET: KOHLER CORALAIS KITCHEN SINK FAUCET MODEL K-15888-K WRISTBLADE LEVER HANDLED FAUCET (ADA), 9" GOOSENECK SWING SPOUT, 1.8 GPM
S-2	SINK (ADA) FAUCET:	KOHLER VAULT K-3349-2 TOP MOUNT SINK	1/2"	1/2"	1-1/2"	1-1/2"	15"X15" 19-GAUGE STAINLESS STEEL, SINGLE BOWL, 2 FAUCET HOLES, 7-9/16-INCH DEPTH FAUCET: KOHLER CORALAIS KITCHEN SINK FAUCET MODEL K-15888-K WRISTBLADE LEVER HANDLED FAUCET (ADA), 9" GOOSENECK SWING SPOUT, 1.8 GPM
DF-1	DRINKING FOUNTAIN	ELKAY ECDFPW314C	1/2"	-	2"	1-1/2"	ADA HEIGHT DRINKING FOUNTAIN, WALL MOUNT, FULLY EXPOSED. 304 STAINLESS STEEL WITH SATIN FINISH.
EWC-1	ELECTRIC WATER COOLER	ELKAY LZWS-LRPBM28K	1/2"	-	2"	1-1/2"	DUAL HEIGHT WATER COOLER WITH FILTER WITH INTEGRAL SENSOR ACTIVATED 1.1 GPM BOTTLE FILLING STATION. STAINLESS STEEL, 8 GPH. RECIPROCATING TYPE COOLING SYSTEM. ELECTRICAL: 115V, 370 WATTS, 5.0 FLA (INSTALLATION REQUIRES 12" WALL DEPTH)

NOTES:
1. ALL FIXTURE FINISHES TO BE REVIEWED BY ARCHITECT PRIOR TO ORDERING.
2. PROVIDE WATER HAMMER ARRESTORS @ ALL ICE MACHINES, WASHING MACHINES, & DISHWASHERS.

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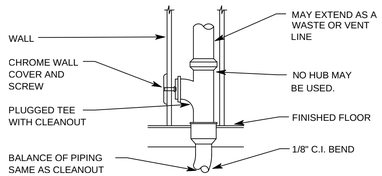
PLUMBING SCHEDULES & DETAILS

sheet

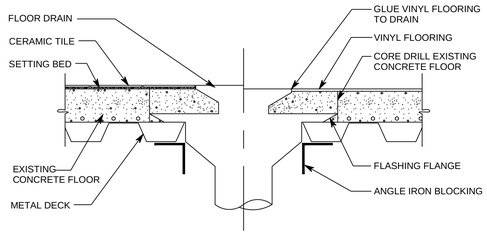
P11

BUILDING 'D'



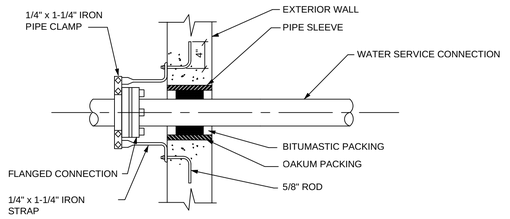
7 WALL CLEAN OUT

SCALE: NTS



4 FLOOR DRAIN DETAIL

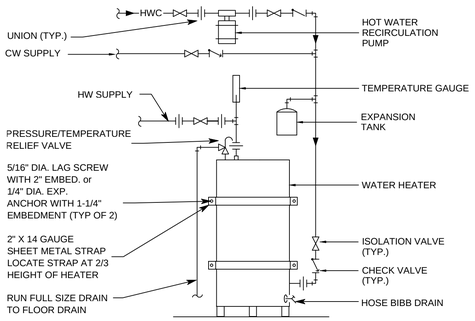
SCALE: NTS



NOTE:
WATER SERVICE CONNECTION THROUGH FLOOR TO BE ANCHORED IN SIMILAR MANNER.

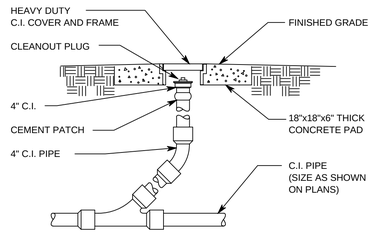
1 COLD WATER SERVICE ANCHORING

SCALE: NTS



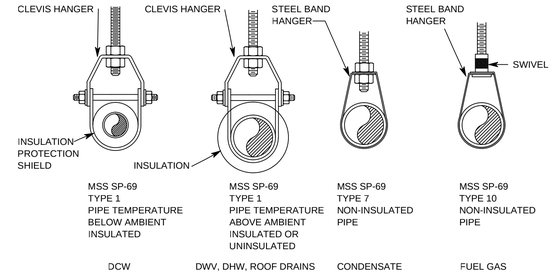
8 WATER HEATER DETAIL

SCALE: NTS



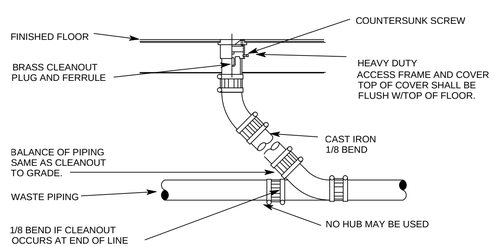
5 CLEANOUT TO GRADE

SCALE: NTS



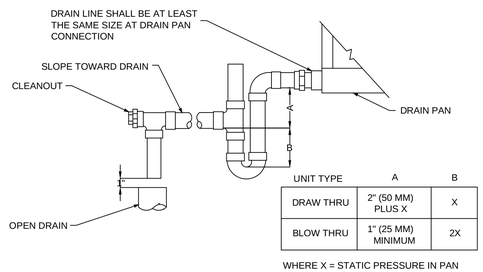
2 PIPE HANGER

SCALE: NTS



6 FLOOR CLEANOUT

SCALE: NTS

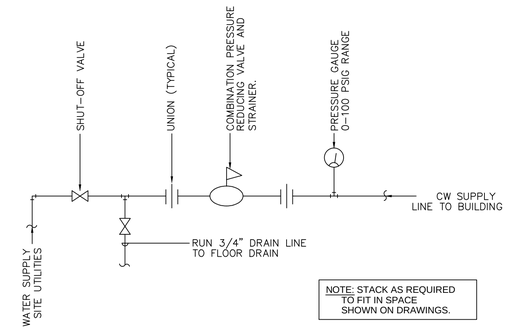


UNIT TYPE	A	B
DRAW THRU	2" (50 MM) PLUS X	X
BLOW THRU	1" (25 MM) MINIMUM	2X

WHERE X = STATIC PRESSURE IN PAN

9 CONDENSATE DRAIN DETAIL

SCALE: NTS



NOTE: STACK AS REQUIRED TO FIT IN SPACE SHOWN ON DRAWINGS.

3 WATER ENTRY DETAIL

SCALE: NTS

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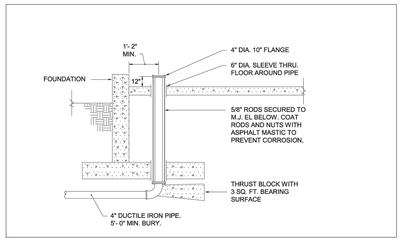
PLUMBING DETAILS

sheet

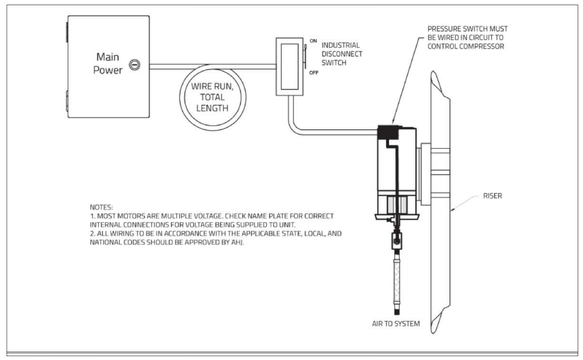
P12

BUILDING 'D'



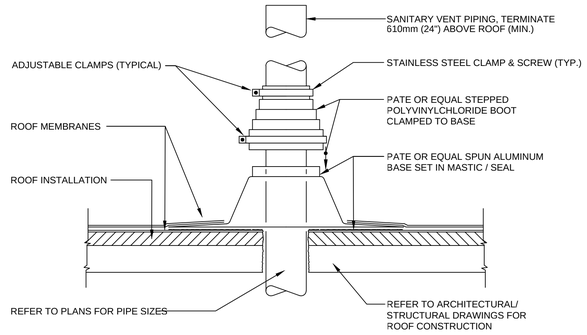
5 FIRE SPRINKLER ENTRY DETAIL

SCALE: NOT TO SCALE



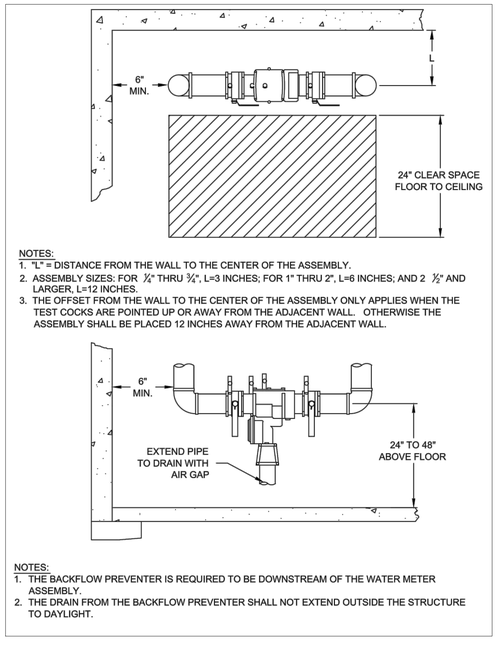
4 DRY PIPE FIRE SPRINKLER AIR COMPRESSOR DETAIL

SCALE: NOT TO SCALE

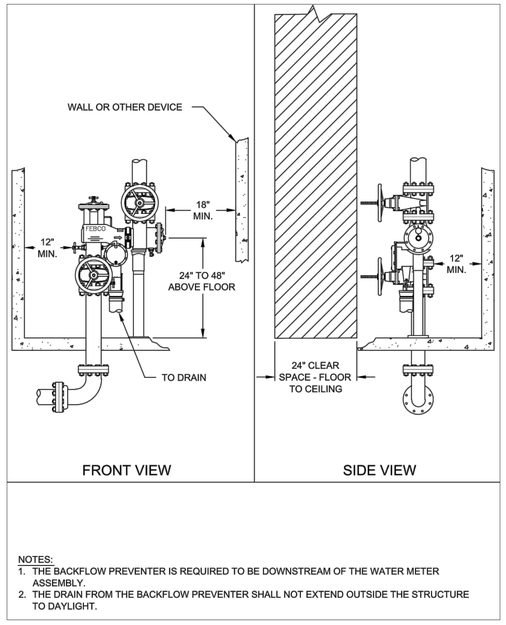


1 VENT THRU ROOF DETAIL

SCALE: NTS



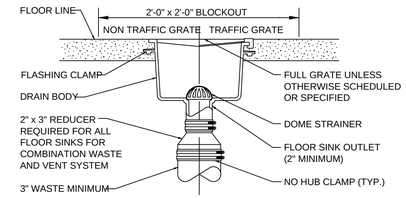
DOMESTIC REDUCED PRESSURE BACKFLOW PREVENTER



FIRE VERTICAL BACKFLOW PREVENTER

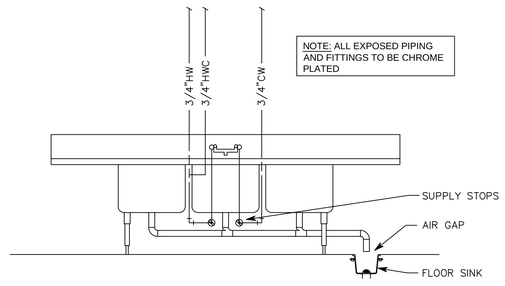
6 BACKFLOW PREVENTION DETAILS

SCALE: NOT TO SCALE



2 FLOOR SINK DETAIL

SCALE: NTS



3 3-COMPARTMENT SINK DETAIL

SCALE: NTS
NOTE: PROVIDE HOT WATER CIRCULATION LINE AS NOTED ON PLAN VIEW.
DISHWASHER TO DRAIN INTO FLOOR SINK BELOW 3-COMP SINK.

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PLUMBING DETAILS

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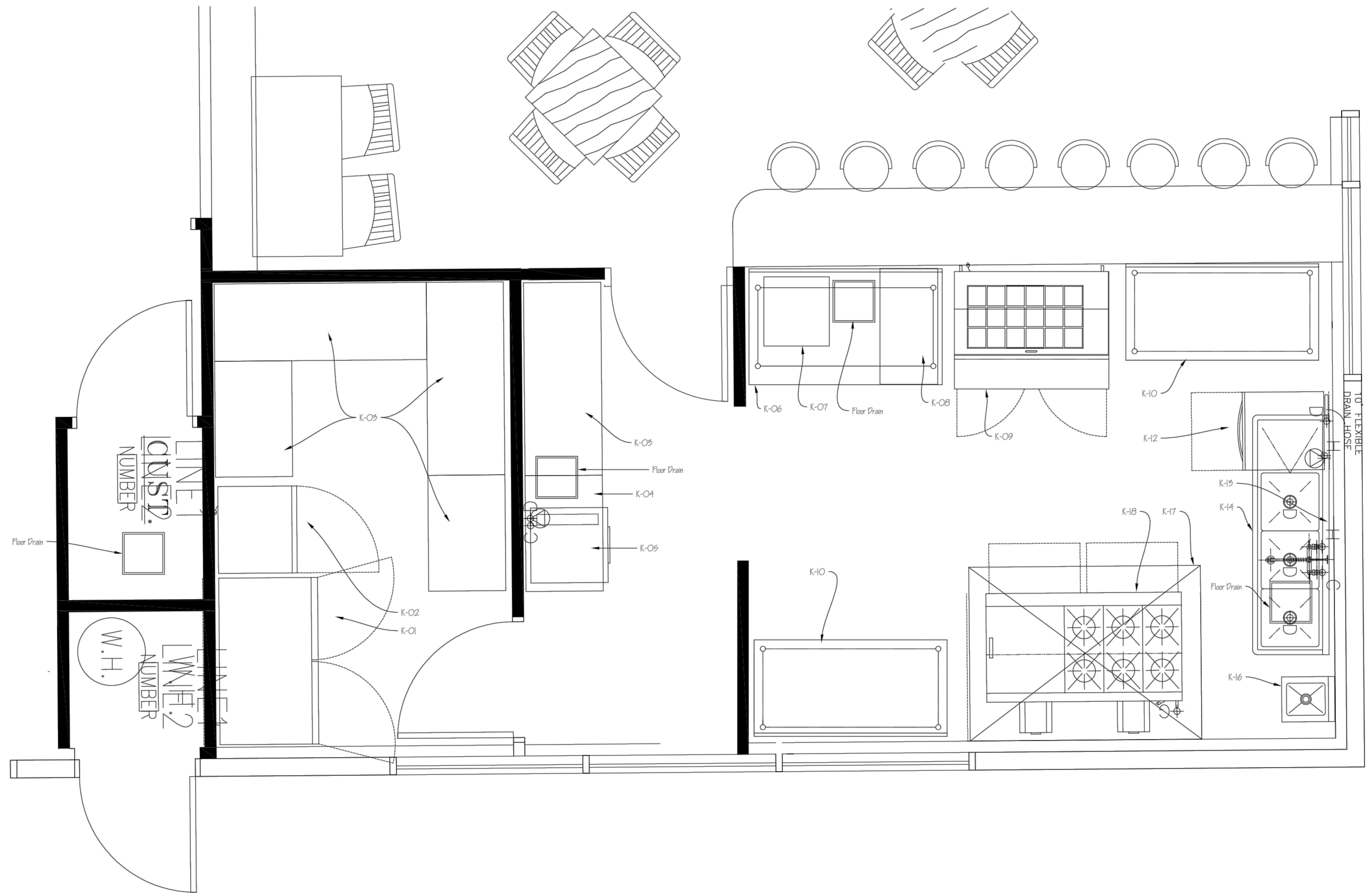
P13

BUILDING 'D'

Equipment Schedule

ItemNo	Quantity	Category	Mfr	Model	Cold Water (in)	Cold Water Conn. Height(in)	Hot Water (in)	Hot Water Conn. Height(in)	Indirect Waste Size	Direct Waste Size	Direct Waste Conn. Height(in)
K-01	1	Reach-In Refrigerator	Beverage Air	HRP2-1S							
K-02	1	Reach-In Freezer	Beverage Air	FB23-1S							
K-03	1	Shelving - Sizing TBD	Custom	SHELVING							
K-04	1	Work Table	Eagle Group	BPT-2436KL-X							
K-05	1	Nugget Ice Maker	Scotsman	N0422A-1	3/8"				3/4"		
K-06	1	Work Table	Eagle Group	T3648B							
K-06	1	Work Table	Eagle Group	T3660EB-BS							
K-07	1	Espresso Cappuccino Machine	Rancilio/Egro	EPOCA S1							
K-08	1	Soft Serve Machine	ElectroFreeze	CS8							
K-09	1	Mega Top Sandwich / Salad Preparation Refrigerator	Beverage Air	SPE48-18M							
K-10	2	Work Table	Eagle Group	BPT-3060FL-X							
K-11		Spare Number									
K-12	1	Dishwasher, Undercounter	Jackson WWS	AVENGER HT-E			1/2"		1-3/8"		
K-13	2	Shelving, Wall-Mounted	Eagle Group	WS1236-16/4							
K-14	1	Three (3) Compartment Sink	Eagle Group	BPS-1854-3-18L-FC-X							
	1		T&S Brass	B-0133-CCB	1/2"		1/2"				
K-15		Spare Number									
K-16	1	Hand Sink	Eagle Group	HSA-10-F-1X						1-1/2"	
K-17	1	Hood #1	Captive Aire	HOOD #1							
K-18	1	Range, 60", 6 Burners, 24" Griddle	Imperial	IR-6-G24							



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FLOOR PLAN

Project Name: Brighton Recovery - Plumbing

Date: 20161229

Project: 03-231

K-04

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PLUMBING DETAILS

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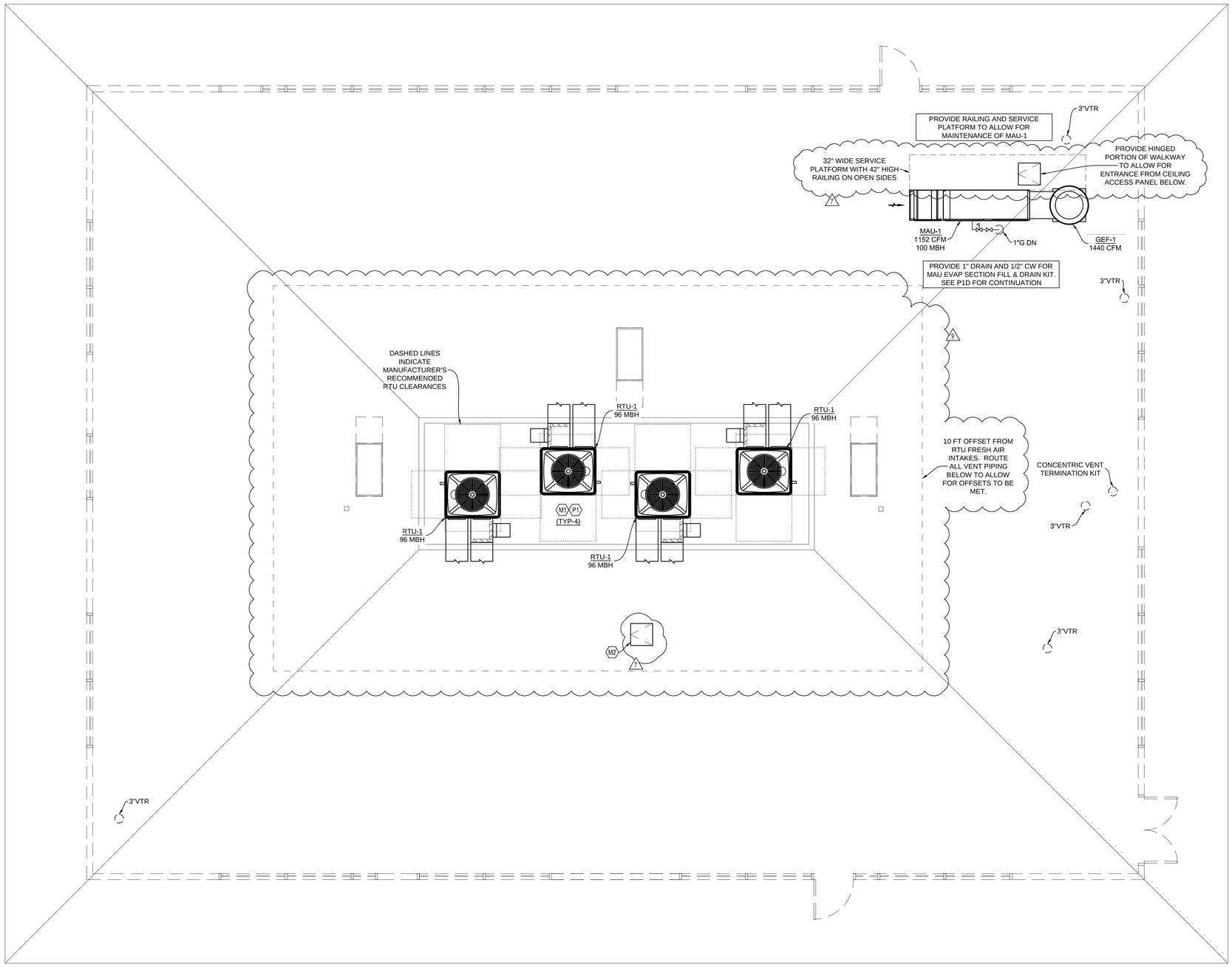
P14

BUILDING 'D'



KEYED NOTES

MECHANICAL

M1 LOCATION OF NEW ROOFTOP UNIT. COORDINATION FINAL LOCATION WITH EXISTING STRUCTURE. PROVIDE FLEXIBLE CONNECTION ON SUPPLY AND RETURN DUCTWORK TO MINIMIZE VIBRATION. PROVIDE EQUIPMENT CURB WITH RTU.

M2 LOCATION OF ROOF ACCESS HATCH. HORIZONTAL ACCESS PATH TO SIDEWALL OF EXISTING EQUIPMENT WELL WITHIN ATTIC SPACE TO BE PROVIDED WHERE MAIN LEVEL CEILING ACCESS PANEL IS NOT LOCATED DIRECTLY BELOW EQUIPMENT WELL. REFERENCE ARCHITECTURAL PLANS FOR INSTALLATION DETAILS AND DIMENSIONS. 7

PLUMBING

P1 ROUTE NEW GAS LINE TO UNDERSIDE OF ROOFTOP UNIT. PROVIDE GAS PRESSURE REGULATOR AND ISOLATION VALVE PER MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES

1. PROVIDE NECESSARY EQUIPMENT CURBS/PLATFORMS FOR ALL EXTERIOR MECHANICAL EQUIPMENT.
2. EXISTING PRIMARY AND OVERFLOW ROOF DRAINS TO REMAIN. COORDINATE LOCATIONS OF ROOFTOP UNITS ACCORDINGLY. REPLACE DAMAGED ROOF DRAINS AS REQUIRED.
3. PROVIDE NECESSARY CLEARANCES TO ALLOW FOR SERVICE TO ALL ROOFTOP EQUIPMENT. COORDINATE RTU LOCATIONS WITH ROOF ACCESS HATCHES.
4. ALL GAS PIPING SIZED PER TABLE 402.4(2) 2015 IFGC. GAS PRESSURE DOWNSTREAM OF METER IS LESS THAN 2 PSI.
5. EXISTING VENT-THRU-ROOF LOCATIONS TO BE REUSED WHERE POSSIBLE. PROVIDE NEW VERTICAL VENT EXTENSIONS AS REQUIRED.
6. ROUTE CONDENSATE LINES FROM RTUS TO NEARBY EXISTING ROOF DRAIN. PROVIDE FULL SIZE DRAIN LINE AND TRAP PER MANUFACTURER'S RECOMMENDATIONS.
7. PROVIDE 10 FEET SEPARATION DISTANCE BETWEEN ALL RTU OUTSIDE AIR INTAKE LOCATIONS AND PLUMBING VENT TERMINATIONS.

SERVICE PLATFORM NOTES

7

1. EVERY OPEN-SIDED FLOOR OR PLATFORM 4 FEET OR MORE ABOVE ADJACENT FLOOR OR GROUND LEVEL SHALL BE GUARDED BY A STANDARD RAILING ON ALL OPEN SIDES EXCEPT WHERE THERE IS ENTRANCE TO A RAMP, STAIRWAY, OR FIXED LADDER. THE RAILING SHALL BE PROVIDED WITH A TOEBOARD WHEREVER, BENEATH THE OPEN SIDES, PERSONS CAN PASS, THERE IS MOVING MACHINERY, OR THERE IS EQUIPMENT WITH WHICH FALLING MATERIALS COULD CREATE A HAZARD.
2. A STANDARD RAILING SHALL CONSIST OF TOP RAIL, INTERMEDIATE RAIL, AND POSTS, AND SHALL HAVE A VERTICAL HEIGHT OF 42 INCHES NOMINAL FROM UPPER SURFACE OF TOP RAIL TO FLOOR, PLATFORM, RUNWAY, OR RAMP LEVEL. THE TOP RAIL SHALL BE SMOOTH-SURFACED THROUGHOUT THE LENGTH OF THE RAILING. THE INTERMEDIATE RAIL SHALL BE APPROXIMATELY HALFWAY BETWEEN THE TOP RAIL AND THE FLOOR, PLATFORM, RUNWAY, OR RAMP. THE ENDS OF THE RAILS SHALL NOT OVERHANG THE TERMINAL POSTS EXCEPT WHERE SUCH OVERHANG DOES NOT CONSTITUTE A PROJECTION HAZARD.
3. A STANDARD TOEBOARD SHALL BE 4 INCHES NOMINAL IN VERTICAL HEIGHT FROM ITS TOP EDGE TO THE LEVEL OF THE FLOOR, PLATFORM, RUNWAY, OR RAMP. IT SHALL BE SECURELY FASTENED IN PLACE AND WITH NOT MORE THAN 1/4-INCH CLEARANCE ABOVE FLOOR LEVEL. IT MAY BE MADE OF ANY SUBSTANTIAL MATERIAL EITHER SOLID OR WITH OPENINGS NOT OVER 1 INCH IN GREATEST DIMENSION. WHERE MATERIAL IS PILED TO SUCH HEIGHT THAT A STANDARD TOEBOARD DOES NOT PROVIDE PROTECTION, PANELING FROM FLOOR TO INTERMEDIATE RAIL, OR TO TOP RAIL SHALL BE PROVIDED.
4. CONSTRUCTION TO BE OF 16G MATERIAL (MIN.) WALKING SURFACE TO BE GRATED MATERIAL TO ALLOW FOR DRAINAGE.
5. GENERAL CONTRACTOR TO PROVIDE SHOP DRAWING OF WORKING PLATFORM FOR APPROVAL BY OWNER & ARCHITECT.

MECH/PLUMB ROOF PLAN–BUILDING 'D'

SCALE: 1/4" = 1'–0"

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MECH/PLUMB ROOF PLAN BUILDING 'D'

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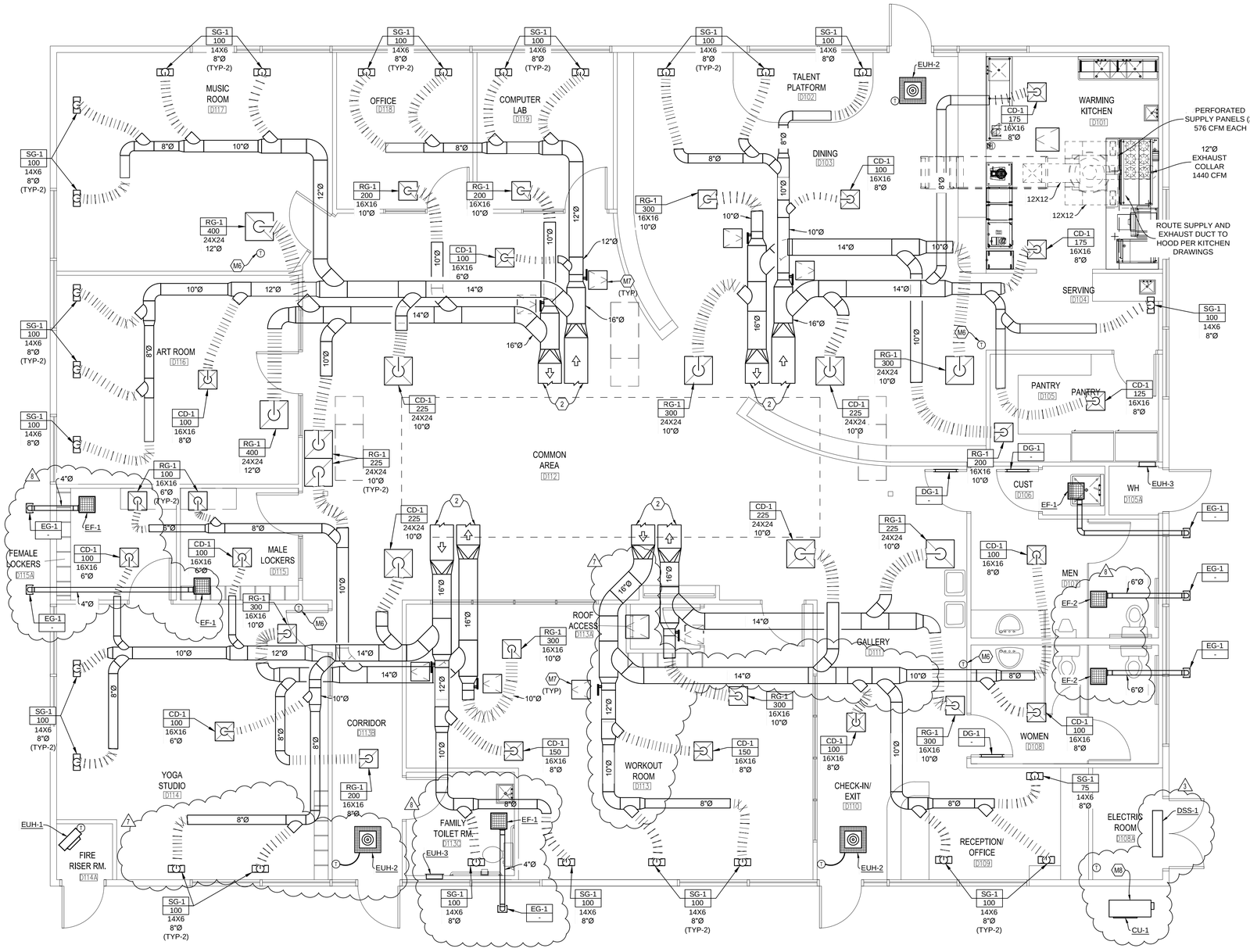
MP1D

BUILDING 'D'



MECHANICAL PLAN–BUILDING 'D'

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

KEYED NOTES

M1 INSTALL EXHAUST FAN AT THIS LOCATION. CONTINUE EXHAUST DUCT TO TERMINATE AT UNDERSIDE OF BUILDING OVERHANG AS INDICATED. COORDINATE LOCATION WITH OVERHEAD PLUMBING.

M2 SEE ROOF PLAN FOR CONTINUATION OF SUPPLY AND RETURN AIR DUCTWORK.

M3 LOCATION OF RECESSED DRYER VENT BOX. CONTINUE 4"Ø DRYER DUCT TO TERMINATE AT UNDERSIDE OF BUILDING OVERHANG AS INDICATED.

M4 RE-CIRCULATING KITCHEN HOOD.

M5 PROVIDE TERMINATION KIT FOR DRYER EXHAUST AT THIS LOCATION.

M6 LOCATION FOR DIGITAL THERMOSTAT WITHIN LOCKING ENCLOSURE.

M7 ACCESS PANEL TO ALLOW FOR ADJUSTMENT TO ABOVE CEILING BALANCING DAMPER.

M8 LOCATE OUTDOOR CONDENSING UNIT AS REQUIRED. PROVIDE CONCRETE EQUIPMENT PAD AS NECESSARY. SEE EQUIPMENT SCHEDULE FOR NECESSARY ACCESSORIES. CONCEAL ALL REFRIGERANT PIPING.

GENERAL NOTES

1. PROVIDE BALANCING DAMPERS ON ALL GRILLES, REGISTERS, & DIFFUSERS CONNECTED TO A ROOFTOP UNIT. ALLOW FOR ADJUSTMENT BY REMOVAL OF EXHAUST GRILLES OR BY PROVIDING ACCESS PANELS. (TYPICAL)
2. ROUTE SUPPLY AND RETURN AIR DUCTWORK THROUGH STRUCTURE AS REQUIRED. PROVIDE NECESSARY TRANSITIONS TO ALLOW FOR CLEAN PATH THE TERMINAL AIR DEVICES.
3. PROVIDE WATER TIGHT SEAL ON ALL DUCTWORK AS IT PENETRATE EXTERIOR ROOFING/WALL ASSEMBLIES.
4. PROVIDE (R-12 MIN.) INSULATION ON ALL ABOVE CEILING DUCTWORK ROUTED IN UNCONDITIONED SPACE.
5. COORDINATE LOCATIONS OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH OVERHEAD PLUMBING PIPING ROUTING.
6. VENTILATION PROVIDED BY RTU ECONOMIZER SET TO 20% MIN. OSA.
7. ENVIRONMENTAL FANS SHALL NOT TERMINATE CLOSER THAN 3 FEET ADJACENT TO BUILDING OPENINGS.
8. PROVIDE FIRE-RATED DAMPERS AT ALL CEILING DIFFUSERS AND GRILLES TO MAINTAIN FIRE-RATED ASSEMBLY.

KITCHEN NOTES

1. ALL GREASE EXHAUST DUCTWORK TO COMPLY WITH UL 181 AND CLOSURE SYSTEM SHALL BE PER UL 181B. IMC 603.6
2. GREASE DUCTS MUST BE A MINIMUM OF 12"X12". PER IMC 506.3.9
3. CLEANOUTS TO BE PROVIDED IN GREASE DUCTWORK. SPACING TO BE NO MORE THAN 20 FT APART AND NO MORE THAN 10 FT FROM CHANGES IN DIRECTION OVER 45°. IMC 506.3.9.
4. ALL CLEANOUTS IN GREASE EXHAUST DUCTWORK TO HAVE RATING NOT LESS THAN 1500 F. IMC 506.3.8.
5. PROVIDE A PERFORMANCE TEST AS WELL AS A CAPTURE AND CONTAINMENT TEST FOR ALL TYPE I HOOD SYSTEMS. THE CAPTURE AND CONTAINMENT TEST IS A VISUAL FIELD TEST WITH THE INSPECTOR. THE PERFORMANCE TEST INVOLVES TESTING AND BALANCING BY A QUALIFIED THIRD PARTY. TESTING AND BALANCING REPORTS REQUIRED AT TIME OF FINAL INSPECTION. IMC 507.6
6. PROVIDE A "LIGHT TEST" FOR ALL GREASE DUCTS PRIOR TO ENCLOSING OR CONCEALING. IMC 506.3.2.5
7. THE PERMIT HOLDER SHALL PROVIDE THE NECESSARY TEST EQUIPMENT AND DEVICES REQUIRED TO TEST THE EQUIPMENT. IMC 507.6
8. GREASE DUCT WRAP SHALL EXTEND FROM 18 INCHES BELOW ANY COMBUSTIBLE TRUSS OR WOOD JOIST TO A POINT 18 INCHES ABOVE THE SURFACE OF THE ROOF COVERING OR PROVIDE AN 18 INCH CLEARANCE TO COMBUSTIBLE MATERIAL FOR THE SAME DISTANCE OR PROVIDE A NON-COMBUSTIBLE ONE-HOUR FIRE-RATED SHAFT WITH GYP BOARD AND 3 INCHES MINIMUM REQUIRED CLEARANCE.

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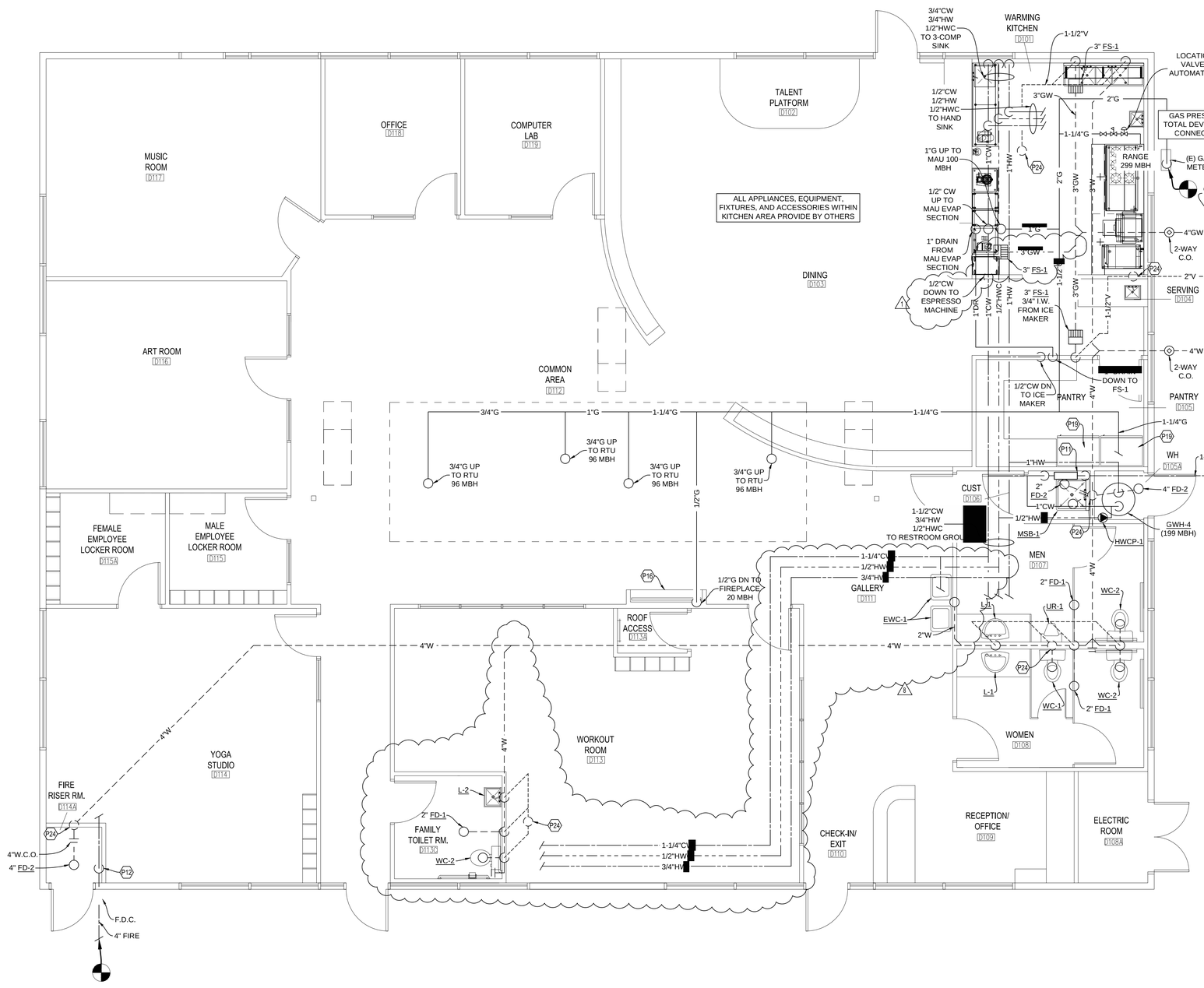

PLUMBING PLAN–BUILDING 'D'

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

KEYED NOTES

P1 PROVIDE AIR ADMITTANCE VALVE WITHIN CABINETS AT THIS LOCATION. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

P2 LOCATION OF HOT WATER CIRCULATION PUMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE CIRCUIT SETTERS AT FIXTURES AS REQUIRED TO ALLOW FOR HOT WATER CIRCULATION.

P3 NEW WATER HEATER. DIRECT T&P VALVE INTO FLOOR DRAIN. CONTINUE TO NEW FIXTURES AND PROVIDE ISOLATION VALVES AT EACH FIXTURE. PROVIDE GAS LINE ISOLATION VALVE AND SEISMIC BRACING. PROVIDE FLUE AND INTAKE PIPING PER SCHEDULE AND TERMINATE THROUGH ROOF WITH CONCENTRIC VENT KIT.

P4 NEW URINAL. TIE INTO NEW WASTE, VENT, AND DOMESTIC COLD WATER PIPING. SEE PLUMBING SCHEDULE FOR FIXTURE PIPING SIZES.

P5 NEW SINK. TIE INTO NEW WASTE, VENT, AND DOMESTIC HOT/COLD WATER PIPING. SEE PLUMBING SCHEDULE FOR FIXTURE PIPING SIZES.

P6 NEW KITCHEN SINK. TIE INTO NEW WASTE, VENT, AND DOMESTIC HOT/COLD WATER PIPING. SEE PLUMBING SCHEDULE FOR FIXTURE PIPING SIZES. PROVIDE RECESSED WALL BOX FOR REFRIGERATOR COLD WATER CONNECTION. PROVIDE HOT WATER CONNECTION TO SERVE DISHWASHER.

P7 LOCATION OF NEW WATER CLOSET. PROVIDE WATER, WASTE, & VENT CONNECTION. SEE PLUMBING SCHEDULE FOR FIXTURE PIPING SIZES.

P8 LOCATION OF NEW LAVATORY. PROVIDE WATER, WASTE, & VENT CONNECTION. SEE PLUMBING SCHEDULE FOR FIXTURE PIPING SIZES.

P9 LOCATION OF NEW FLOOR DRAIN. PROVIDE WASTE & VENT CONNECTION. SEE PLUMBING SCHEDULE FOR FIXTURE PIPING SIZES.

P10 SEE CIVIL PLANS FOR CONTINUATION.

P11 PROVIDE COLD WATER ENTRY WITH BACKFLOW PREVENTER. REFERENCE SHEET P02 FOR DEVICE MAKE/MODEL.

P12 PROVIDE 4" FIRE ENTRY DOUBLE CHECK DETECTOR ASSEMBLY. REFERENCE SHEET P02 FOR DEVICE MAKE/MODEL. PROVIDE POWER (115V) FOR RISER MOUNTED COMPRESSOR & PRESSURE SWITCH. REFERENCE SHEET P13 FOR DETAILS. INSTALL COMPRESSOR ABOVE HEIGHT OF DOOR HEADER TO KEEP OUT OF TRAVEL PATH.

P13 PROVIDE 3" VENT THROUGH ROOF.

P14 PROVIDE WALL CLEANOUT AT THIS LOCATION.

P15 PROVIDE GAS LINE WITH VENTLESS REGULATOR AND ISOLATION VALVE. CONNECT TO UNDERSIDE OF NEW RTU. NO ROOF PENETRATION REQUIRED WITH RTU MODEL SPECIFIED.

P16 PROVIDE GAS LINE TO FLUELESS DECORATIVE FIREPLACE (20 MBH). INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

P17 PROVIDE EMERGENCY FUEL SHUTOFF SWITCH NEAR KITCHEN HOOD. SWITCH TO CLOSE GAS LINE SOLENOID VALVE ASSOCIATED WITH ALL GAS-FIRED APPLIANCES IN KITCHEN.

P18 ROUTE 1/2" CW, HW, & HWC LINES BELOW FLOOR TO ISLAND KITCHEN SINK AT THIS LOCATION. EXTEND 1/2" HW LINE TO ADJACENT DISHWASHER.

P19 ROUTE CW LINE TO REFRIGERATOR WATER CONNECTION. PROVIDED RECESSED WALL BOX WITH ISOLATION VALVE.

P20 PROVIDE PIPING TRANSITIONS UNDER STRUCTURAL BEAM AS REQUIRED. (TYPICAL)

P21 ROUTE CW, HW, & HWC LINES TO CLOTHES WASHER WALL BOX. PROVIDE INTEGRAL ISOLATION VALVES AND WATER HAMMER ARRESTOR.

P22 ROUTE 1-1/2" CW, 3/4" HW, & 1/2" HWC LINES TO BATHROOM GROUP. PROVIDE HOT AND COLD WATER ISOLATION VALVES AT LAVATORIES.

P23 ROUTE 3/4" CW, 3/4" HW, & 1/2" HWC LINES TO MOP SINK/SINK.

P24 COMBINE VENT PIPING FROM BATHROOM FIXTURE AND TERMINATE THROUGH ROOF AT THIS LOCATION. MULTIPLE BATHROOMS GROUPS CAN BE GROUPED TO MINIMIZE ROOFING PENETRATIONS IF NEEDED. ALL VENT THROUGH ROOF PENETRATIONS TO BE 3" MINIMUM.

P25 CONTINUE WASTE LINE TO ADJACENT FIXTURE GROUPS. REFERENCE PLUMBING FIXTURE SCHEDULE FOR INDIVIDUAL FIXTURE WASTE LINE SIZES.

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