City of Aurora
Building Codes Division
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Aurora, CO 80012
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GENERAL NOTES - ALL HVAC SHEETS

A. ALL MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL BUILDING CODES. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS FOR MECHANICAL AND PLUMBING CONSTRUCTION.

B. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES, AND COMPLY WITH ALL NATIONAL, STATE, AND MUNICIPAL LAWS, CODES, AND ORDINANCES RELATING TO BUILDING AND PUBLIC SAFETY.

C. CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR A COMPLETE WORKING AND COORDINATED SYSTEM.

D. COORDINATE THE EXACT LOCATION OF MECHANICAL AND PLUMBING EQUIPMENT WITH THE LOCATIONS OF LIGHT FIXTURES, PIPING CONDUIT, AND OTHER CONSTRUCTION. TO ALLOW FOR PROPER ACCESS TO SERVICE EQUIPMENT.

E. COORDINATE THE LOCATION OF DUCTWORK AND PIPING WITH OTHER TRADES AND PROVIDE OFFSETS IN DUCTWORK AND PIPING AS REQUIRED.

F. IT IS THE INTENT OF THESE DOCUMENTS TO ALLOW ALL CEILING CONSTRUCTION AND HEIGHTS TO BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS. COORDINATE THE LOCATION OF DUCTWORK AND PIPING AND PROVIDE OFFSETS IN DUCTWORK AND PIPING AS REQUIRED TO MEET THIS INTENT.

G. CONDUIT, PIPING, AND DUCTWORK SHALL BE INDEPENDENTLY SUPPORTED, AND EACH SUPPORT SHALL BE INDEPENDENT OF PARTITION AND CEILING SYSTEM SUPPORTS. WHERE INDEPENDENT SUPPORT IS NOT POSSIBLE AN ENGINEERED SUPPORT SYSTEM SHALL BE UTILIZED.

H. INSTALL ALL FLOOR MOUNTED EQUIPMENT ON PADS AS SPECIFIED. PAD BY GENERAL CONTRACTOR. COORDINATE REQUIREMENTS WITH GENERAL CONTRACTOR.

I. ALL WORK SHALL BE SCHEDULED AND PERFORMED IN STRICT COORDINATION WITH ARCHITECTURAL PHASING PLANS AND WITH HOSPITAL SCHEDULES, OCCUPANCIES, AND WORK.

J. PROTECT EQUIPMENT AND WORK FORM DAMAGE DURING HANDLING AND INSTALLATION UNTIL COMPLETION OF CONSTRUCTION.

K. REMOVE ALL EXCESS MATERIAL AND DEBRIS AND CLEAN ALL EQUIPMENT UPON COMPLETION OF WORK. TOUCH UP WITH PAINT WHERE REQUIRED.

L. CONTRACTOR SHALL VISIT JOBSITE AND VERIFY SIZE AND LOCATION OF ALL EXISTING ITEMS AND CONDITIONS.

M. ALL CONNECTION BETWEEN PIPES OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC UNIONS.

N. CONTRACTOR SHALL COORDINATE ALL WORK CLOSELY WITH EXISTING CONDITIONS AND WITH ALL OTHER TRADES.

O. ALL EXISTING FACILITIES SHALL BE PROTECTED DURING THE CONSTRUCTION ACTIVITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE AND STORE ITEMS WHCH ARE SUBJECT TO DAMAGE.

P. ARCHITECT SHALL HAVE FINAL APPROVAL OF ALL GRILLE, DIFFUSER, AND THERMOSTAT LOCATIONS.

Q. COORDINATE ALL AIR DEVICE LOCATIONS AND MOUNTING FRAME STYLES WITH LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS.

R. COORDINATE ALL WALL MOUNTED DEVICE LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS.

V. DEMOLITION OF EACH PHASE SHALL OCCUR AS PART OF THE WORK FOR THAT PHASE. REMOVE ONLYTHE WORK THAT SERVES THE AREA OF DEMOLITION.

W. PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO PREVENT DISRUPTING ADJACENT AREAS OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

X. PROVIDE ADDITIONAL VALVES, TAPS, TEMPORARY DUCTWORK, ETC. AS NECESSARY TO PROVIDE UNINTERRUPTED SERVICE TO AREAS OUTSIDE OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

Y. ALL NECESSARY SHUTDOWNS OR OUT OF PHASE WORK SHALL BE COORDINATED WITH THE HOSPITAL REPRESENTATIVE.

Z. DUCT SIZES ARE NET FREE AREA.

AA. PROVIDE ROUND DUCTS TO ALL AIR DEVICES UNLESS NOTED OTHERWISE. DUCT SIZE SHALL MATCH AIR DEVICE NECK SIZE OR THE TABLE IN AIR DEVICE SCHEDULE, WHICHEVER IS LARGER. FLEXIBLE DUCTS SHALL BE SIZED SIMILARLY. DO NOT USE FLEXIBLE DUCTS ABOVE NON-LAYIN CEILINGS.

BB. TERMINAL BOX INLET DUCTS: SIZE THE RUNOUT DUCT AND ITS TAP AT MAIN TRUCK PER VAV BOX SCHEDULE.

CC. PROVIDE FRAMED 0.5" BY 0.5" BIRD SCREEN (GALVANIZED STEEL ASSEMBLY) AT ALL DUCTS TERMINATING WITHOUT AN AIR DEVICE, AT INDOOR FACE OF LOUVERS, AND AT UNDUCTED AIR FLOW OPENINGS AT EQUIPMENT.

DD. PROVIDE MANUAL VOLUME DAMPER IN EACH AIR DEVICE RUNOUT DUCT AS FAR FROM AIR DEVICE AS POSSIBLE.

EE. INSTALL SPACE THERMOSTAT ADJACENT TO LATCH SIDE OF DOOR IN SPACE INDICATED.
INDICATED LOCATIONS ARE APPROXIMATE. AVOID HEAT PRODUCING EQUIPMENT.
FINAL SPACE THERMOSTAT/SENSOR LOCATIONS SHALL BE AS DIRECTED BY THE ARCHITECT.
INSTALL HUMIDISTATS IN SIMILAR FASHION.

FF. INSTALL TURNING VANES IN ALL 90 DEGREE SQUARE ELLS IN SUPPLY, RETURN, AND EXHAUST DUCTS. (NONE ALLOWED IN COMBUSTION AIR DUCTS).

GG. FURTURE SPACE THERMOSTATS AND HUMIDISTATS: INSTALL 2"x4" BOX WITH STAINLESS STEEL COVER PLATE AND WITH 1/2" CONDUIT UP TO CEILING SPACE.

HH. LOCATE ISOLATION VALVES FOR EQUIPMENT AS CLOSE TO THE MAIN AS POSSIBLE.

II. PROVIDE CONDENSATE DRAIN PIPING FROM ALL COOLING COILS TO DRAIN.

JJ. MULTI-BLADE DAMPERS OF ANY TYPE INSTALLED WITHIN 36" OF AN ELL OR OTHER FITTING SHALL BE INSTALLED WITH THE DAMPER BLADE SHAFTS PARALLEL TO THE AIRSTREAM FLOW DIRECTION UPSTREAM OF THE FITTING.

KK. PROVIDE DRAIN PAN UNDER PIPES INSIDE ELECTRICAL AND COMMUNICATION ROOMS.

LL. ROUTE EMERGENCY CONDENSATE LINES FROM FAN COIL UNITS AS INDICATED TO OPEN SITE ABOVE PLUMBING FIXTURE WHERE INDICATED.

MM. COORDINATE LOCATION OF ALL DISCONNECTS, CONTROL PANELS AND ELECTRICAL CONNECTIONS FOR MECHANICAL AND PLUMBING EQUIPMENT TO MAINTAIN NEC REQUIRED CLEARANCES OF 42" DEEP AND 30" WIDE IN FRONT OF EQUIPMENT.

NN. ALL FIRE AND COMBINATION FIRE/SMOKE DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION DETAILS AND BE U.L. TESTED AND LISTED.

GENERAL PIPING NOTES

A. REFER TO THE ARCHITECTURAL PHASING PLAN FOR THE AREAS SHOWN ON THIS SET OF PLANS. WORK SHALL BE SCHEDULED AND PERFORMED IN SEQUENCE WITH THE PHASING PLAN.

B. DEMOLITION OF EACH PHASE SHALL OCCUR AS PART OF THE WORK FOR THAT PHASE. REMOVE ONLY THE WORK THAT SERVES THE AREA OF DEMOLITION.

C. PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO PREVENT DISRUPTING ADJACENT AREAS OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

D. PROVIDE ADDITIONAL VALVES, TAPS, TEMPORARY DUCTWORK AND/OR PIPING AS NECESSARY TO PROVIDE UNINTERRUPTED SERVICE TO AREAS OUTSIDE OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

E. ALL WORK SHALL BE PERFORMED IN STRICT COORDINATION WITH HOSPITAL SCHEDULES, OCCUPANCIES AND WORK. CONTRACTOR SHALL COORDINATE WITH HOSPITAL REPRESENTATIVE.

F. ALL NECESSARY SHUTDOWNS OR OUT OF PHASE WORK SHALL BE SCHEDULED WITH THE HOSPITAL REPRESENTATIVE.

G. ARCHITECT SHALL HAVE FINAL APPROVAL OF ALL THERMOSTAT LOCATIONS.

H. G.C. TO PROVIDE ACCESS DOORS IF REQUIRED FOR ACCESS TO VAV'S AND ANY VALVES THAT ARE NOT ACCESSIBLE. VERIFY SIZE AND LOCATIONS WITH MECHANICAL CONTRACTOR.

GENERAL DEMOLITION NOTES:

A. ALL CAPPED DUCT TAPS AND CONNECTING DUCTS THAT ARE NOT BEING USED ARE TO BE REMOVED BACK TO THE MAIN DUCT AND PATCHED AS PER ITEM B BELOW.

B. SEAL AIR TIGHT AND PATCH OPENINGS IN EXISTING DUCTWORK THAT IS TO REMAIN INCLUDING OPENINGS. WHERE TAPS OR DUCTWORK ARE TO BE REMOVED, THE FOLLOWING SHALL OCCOR:

- OPENINGS IN THE MAIN DUCTS ARE TO BE COVERED WITH A SHEET METAL PATCH. THE PATCH IS TO BE LARGER THAN THE EXISTING OPENING AND IS TO BE SECURED WITH SHEET METAL SCREWS FOUR INCHES ON CENTERS.
- A LIBERAL QUANTITY OF FIRE RESISTANT ADHESIVE IS TO BE APPLIED UNDER THE EDGES OF THE METAL PATCH AND THE ASSEMBLY SCREWED IN PLACE.

C. REFER TO THE ARCHITECTURAL PHASING PLAN FOR THE AREAS SHOWN ON THIS PLAN. WORK SHALL BE SCHEDULED AND PERFORMED IN SEQUENCE WITH THE PHASING PLAN.

D. DEMOLITION OF EACH PHASE SHALL OCCUR AS PART OF THE WORK FOR THAT PHASE. REMOVE ONLY THE WORK THAT SERVES THE AREA OF DEMOLITION.

E. PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO PREVENT DISRUPTING ADJACENT AREAS OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

F. PROVIDE ADDITIONAL VALVES, TAPS, TEMPORARY DUCTWORK AND/OR PIPING AS NECESSARY TO PROVIDE UNINTERRUPTED SERVICE TO AREAS OUTSIDE OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

G. ALL WORK SHALL BE PERFORMED IN STRICT COORDINATION WITH HOSPITAL SCHEDULES, OCCUPANCIES AND WORK. CONTRACTOR SHALL COORDINATE WITH HOSPITAL REPRESENTATIVE.

H. ALL NECESSARY SHUTDOWNS OR OUT OF PHASE WORK SHALL BE SCHEDULED WITH THE HOSPITAL REPRESENTATIVE.

PROJECT DESIGN CRITERIA

LOCATION:	
CITY/STATE	AURORA, COLORADO
APPLICABLE CODES:	
BUILDING	2006 IBC
MECHANICAL	2006 IMC
PLUMBING	2006 IPC
ENERGY	2006 IECC
ELECTRICAL	2005 NEC
LATITUDE:	
DEG. N. LAT.	39.75
ELEVATION:	
FT. ABOVE SEA LEVEL	5331

MECHANICAL ABBREVIATIONS

AC	ABOVE CEILING	FCU	FAN COIL UNIT
AFF	ABOVE FINISHED FLOOR	FPB	FAN POWERED BOX
AI	ANALOG INPUT	FPI	FINS PER INCH
AO	ANALOG OUTPUT	GC	GENERAL CONTRACTOR
BFC	BELOW FINISHED CEILING	GEF	GENERAL EXHAUST FAN
BF	BELOW FLOOR, BLIND FLANGE	GSF	GENERAL SUPPLY FAN
BG	BELOW GRADE	MVD	MANUAL VOLUME DAMPER
BV	BUTTERFLY VALVE	N	NEW
CRU	COMPUTER ROOM UNIT	OBD	OPPOSED BLADE DAMPER
CRU	CONDENSATE RETURN UNIT	R	RELOCATED
CU	CONDENSING UNIT	RA	RETURN AIR
DI	DIGITAL INPUT	RCA	RECIRCULATED (RETURN) AIR
DO	DIGITAL OUTPUT	RLA	RELIEF AIR
DS	DISCONNECT SWITCH	SA	SUPPLY AIR
E	EXISTING	UH	UNIT HEATER
EDH	ELECTRIC DUCT HEATER	VAV	VARIABLE AIR VOLUME
EUH	ELECTRIC UNIT HEATER	WH	WATER HEATER
EF	EXHAUST FAN	WHP	WATER-SOURCE HEAT PUMP
SF	SUPPLY FAN	FMB	FILTER MIXING BOX
EA	EXHAUST AIR	IN HG	INCHES MERCURY (PRESSURE)
OA	OUTSIDE AIR	IN WC	INCHES WATER COLUMN (PRESSURE)
CHW	CHILLED WATER	IBT	INVERTED BUCKET TRAP
UNO	UNLESS NOTED OTHERWISE	TAV	THERMOSTATIC AIR VENT (STEAM SYSTEM)
PRV	PRESSURE RELIEF VALVE	MA	MIXED AIR
SV	SAFETY VALVE	LE	LAUNDRY EQUIPMENT

CONTROL DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
(AI)	ANALOG INPUT
(AO)	ANALOG OUTPUT
(DI)	DIGITAL INPUT
(DO)	DIGITAL OUTPUT
TT-X	TEMPERATURE TRANSMITTER #X
HT-X	RELATIVE HUMIDITY TRANSMITTER #X
V-X	CONTROL VALVE #X
SPT-X	STATIC PRESSURE TRANSMITTER #X
ESC-X	END SWITCH, NORMALLY CLOSED #X
ESO-X	END SWITCH, NORMALLY OPEN #X
TS-X	TEMPERATURE SENSOR #X
SD-X	SMOKE DETECTOR #X
OL	OVERLOAD RELAY #X
DPS-X	DIFFERENTIAL PRESSURE SENSOR #X
CSR-X	CURRENT SENSING RELAY #X
FM-X	FLOW METER #X
FS-X	FLOW SWITCH #X
EAS-X	EMERGENCY AIR HANDLER SHUTDOWN BUTTON - AHU-#X

MECHANICAL SYMBOLS

ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

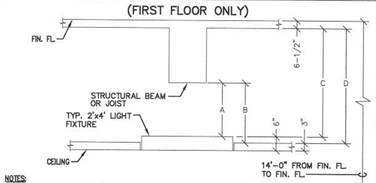
SYMBOL	DESCRIPTION
(A/#)	NEW EQUIPMENT DESIGNATION (TOP - EQUIP. ABBREV., BOTTOM - MARK)
(A/#)	NEW DIFFUSER DESIGNATION (TOP - SCHEDULE DESIG., BOTTOM - CFM)
	NEW EQUIPMENT
	EXISTING EQUIPMENT
	EXISTING EQUIPMENT TO BE REMOVED OR RELOCATED
	NEW PIPING
	EXISTING PIPING
	EXISTING PIPING TO BE REMOVED OR RELOCATED
	NEW DUCT
	EXISTING DUCT
	EXISTING DUCT TO BE REMOVED OR RELOCATED
	NEW DUCT PROVIDED AS NOTED
	NEW SUPPLY DIFFUSER
	EXISTING SUPPLY DIFFUSER
	EXISTING SUPPLY DIFFUSER TO BE REMOVED OR RELOCATED
	NEW R/A OR EXHAUST GRILLE
	EXISTING R/A OR EXHAUST GRILLE
	EXISTING R/A OR EXHAUST GRILLE TO BE REMOVED OR RELOCATED
	FLEXIBLE DUCT
T	THERMOSTAT
T	EXISTING THERMOSTAT TO BE REMOVED OR RELOCATED
	45° PRESSURE TAP W/ VOLUME DAMPER
	CONICAL TAP WITH VOLUME DAMPER
	CONICAL TAP W/O VOLUME DAMPER
	MANUAL VOLUME DAMPER
	FIRE DAMPER
	SMOKE DAMPER
	FIRE/SMOKE DAMPER
M	MOTORIZED DAMPER
B	BAROMETRIC DAMPER
CHS	CHILLED WATER SUPPLY PIPE
CHR	CHILLED WATER RETURN PIPE
CS	CONDENSER WATER SUPPLY PIPE
CR	CONDENSER WATER RETURN PIPE
HS	HEATING WATER SUPPLY
HR	HEATING WATER RETURN
HPS	HIGH PRESSURE STEAM
HPR	HIGH PRESSURE CONDENSATE RETURN
LPS	LOW PRESSURE STEAM
LPR	LOW PRESSURE CONDENSATE RETURN
PCR	PUMPED CONDENSATE RETURN
PCHS	PRIMARY CHILLED WATER SUPPLY
PCHR	PRIMARY CHILLED WATER RETURN
SCHS	SECONDARY CHILLED WATER SUPPLY
SCHR	SECONDARY CHILLED WATER RETURN
MW	MAKE-UP WATER
CD	CONDENSATE DRAIN
	DIRECTION OF SLOPE
	DIRECTION OF FLOW
	EXPANSION LOOP
	GATE VALVE
	BUTTERFLY VALVE
	BALL VALVE
	GLOBE VALVE
	TEMPERATURE AND PRESSURE RELIEF VALVE
	AUTOMATIC 2-WAY CONTROL VALVE
	AUTOMATIC 3-WAY CONTROL VALVE
	PLUG VALVE/BALANCING COCK
	SOLENOID VALVE
	CHECK VALVE
	VALVE IN VERTICAL
	UNION
	PETE'S PLUG
	GAUGE COCK
	THERMOMETER
	THERMOMETER WELL
	STRAINER WITH BLOW-OFF VALVE
	F & T STEAM TRAP
	STEAM BUCKET TRAP
	CONNECT TO EXISTING
EP	ELECTRIC PNEUMATIC SWITCH
	ECCENTRIC REDUCER (TOP SIDE)
	ECCENTRIC REDUCER (BOTTOM SIDE)
	CONCENTRIC REDUCER
V	VENT (FROM STEAM SYSTEM)
BD	BLOWDOWN (STEAM SYSTEM)
//	CONTROL SIGNAL
D	DRAIN LINE (FROM EQUIPMENT)
	DUCT FLEXIBLE CONNECTION
30#	STEAM LINE (30 PSIG SHOWN)
OF	OVERFLOW LINE (FROM EQUIPMENT)

MEP SYSTEM COORDINATION SCHEDULE

SYSTEM	FURNISHED BY	INSTALLED BY	POWER WIRING BY	CONTROL OR SUPERVISION WIRING BY
LIFE SAFETY SYSTEM	DIV 27	DIV 27	DIV 26	DIV 27
SMOKE DAMPER/ACTUATOR	DIV 23	DIV 23	DIV 26	DIV 27
FIRE/SMOKE DAMPER/ ACTUATOR	DIV 23	DIV 23	DIV 26	DIV 27
DUCT SMOKE DETECTOR	DIV 27	DIV 26	----	DIV 27
NURSE CALL/ FIRE ALARM INTERFACE	DIV 27	DIV 27	----	DIV 27
MEDICAL GAS ALARM	DIV 22	DIV 22	DIV 26	DIV 22
MOTOR STARTERS (INTEGRAL TO EQUIP.)	DIV 23	N/A	DIV 26	DIV 23
MOTOR STARTERS (NON-INTEGRAL)	DIV 23	DIV 26	DIV 26	DIV 23
COMB. MOTOR STARTER/DISCONNECT (INTEGRAL TO EQUIP.)	DIV 23	N/A	DIV 26	DIV 23
COMB. MOTOR STARTER/DISCONNECT (NON-INTEGRAL)	DIV 23	DIV 26	DIV 26	DIV 23
PUMPS	DIV 23	DIV 26	DIV 26	DIV 23
AIR HANDLERS	DIV 23	DIV 26	DIV 26	DIV 23
FANS	DIV 23	DIV 26	DIV 26	DIV 23
FAN POWERED BOXES	DIV 23	DIV 26	DIV 26	DIV 23
MISC. MOTORS	DIV 23	DIV 26	DIV 26	DIV 23
VARIABLE FREQUENCY DRIVES (VFD'S)	DIV 23	DIV 26	DIV 26	DIV 23
AIR HANDLING SYSTEMS	DIV 23	DIV 26	DIV 26	DIV 23
DISCONNECT SWITCHES (NON-INTEGRAL)	DIV 26	DIV 26	DIV 26	----
THIS TABLE IS PROVIDED AS A GUIDE TO THE DOCUMENT PREPARATION AND IN NO WAY INDICATES CONTRACTOR MEANS AND METHODS				

CLEARANCE SCHEDULE

(FIRST FLOOR ONLY)



NOTES:
1. REFER TO STRUCTURAL DRAWINGS FOR CORRECT BEAM SIZES AND LOCATIONS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR CORRECT CEILING HEIGHT.

CEILING HEIGHT	18" BEAM		16" BEAM		14" BEAM		12" BEAM		10" BEAM		NO BEAM	
	A	B	A	B	A	B	A	B	A	B	C	D
8'-0"	41.5"	44.5"	43.5"	46.5"	45.5"	48.5"	47.5"	50.5"	49.5"	52.5"	59.5"	62.5"
8'-6"	35.5"	38.5"	37.5"	40.5"	39.5"	42.5"	41.5"	44.5"	43.5"	46.5"	53.5"	56.5"
9'-0"	29.5"	32.5"	31.5"	34.5"	33.5"	36.5"	35.5"	38.5"	37.5"	40.5"	47.5"	50.5"
10'-0"	17.5"	20.5"	19.5"	22.5"	21.5"	24.5"	23.5"	26.5"	25.5"	28.5"	35.5"	38.5"
10'-6"	11.5"	14.5"	13.5"	16.5"	15.5"	18.5"	17.5"	20.5"	19.5"	22.5"	29.5"	32.5"

NOTE: DEDUCT 6" FROM COLUMNS A & C WHEN CAN LIGHTS OCCUR.

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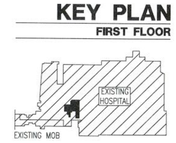
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Project # 306660005

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KEY PLAN
FIRST FLOOR





Revisions

NO.	ISSUE	DATE

Sheet Information

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GENERAL INFORMATION MECHANICAL

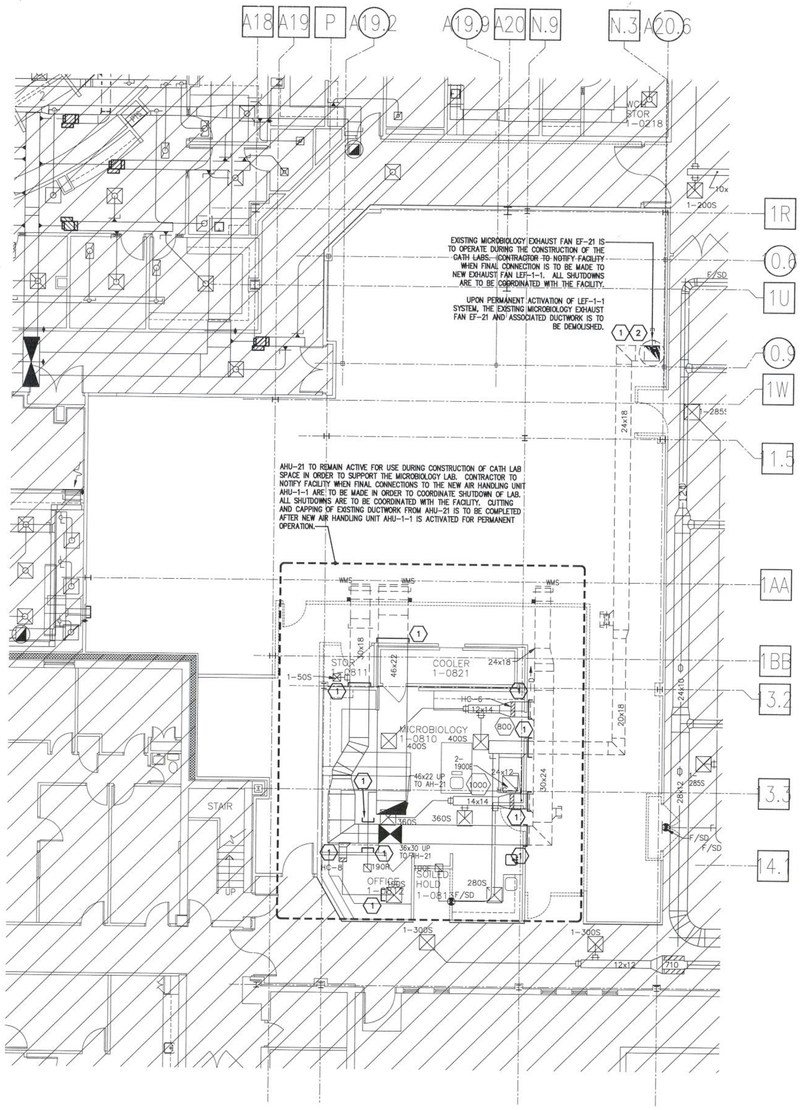
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M-0001

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01 PARTIAL FIRST FLOOR DEMOLITION PLAN - DUCTWORK

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET M-0000 FOR GENERAL NOTES.

LEGEND NOTES

(1) REMOVE EXISTING DUCT AND CONNECTED AIR DEVICES AS SHOWN, INCLUDING THERMOSTATS, CONTROL WIRING, ETC. TO THIS POINT. CAP & SEAL ALL ABANDONED TAPS AIR TIGHT.

(2) REMOVE EXISTING EQUIPMENT AND CONNECTED POWER, THERMOSTATS, CONTROL WIRING, ETC.

This sheet of drawings has not been reviewed for code compliance.

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Medical Center of Aurora

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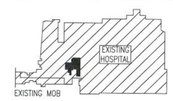
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KEY PLAN

FIRST FLOOR



COLORADO LICENSED 31031 PROFESSIONAL ENGINEER
3/6/09

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DUCTWORK DEMOLITION PLAN FIRST FLOOR

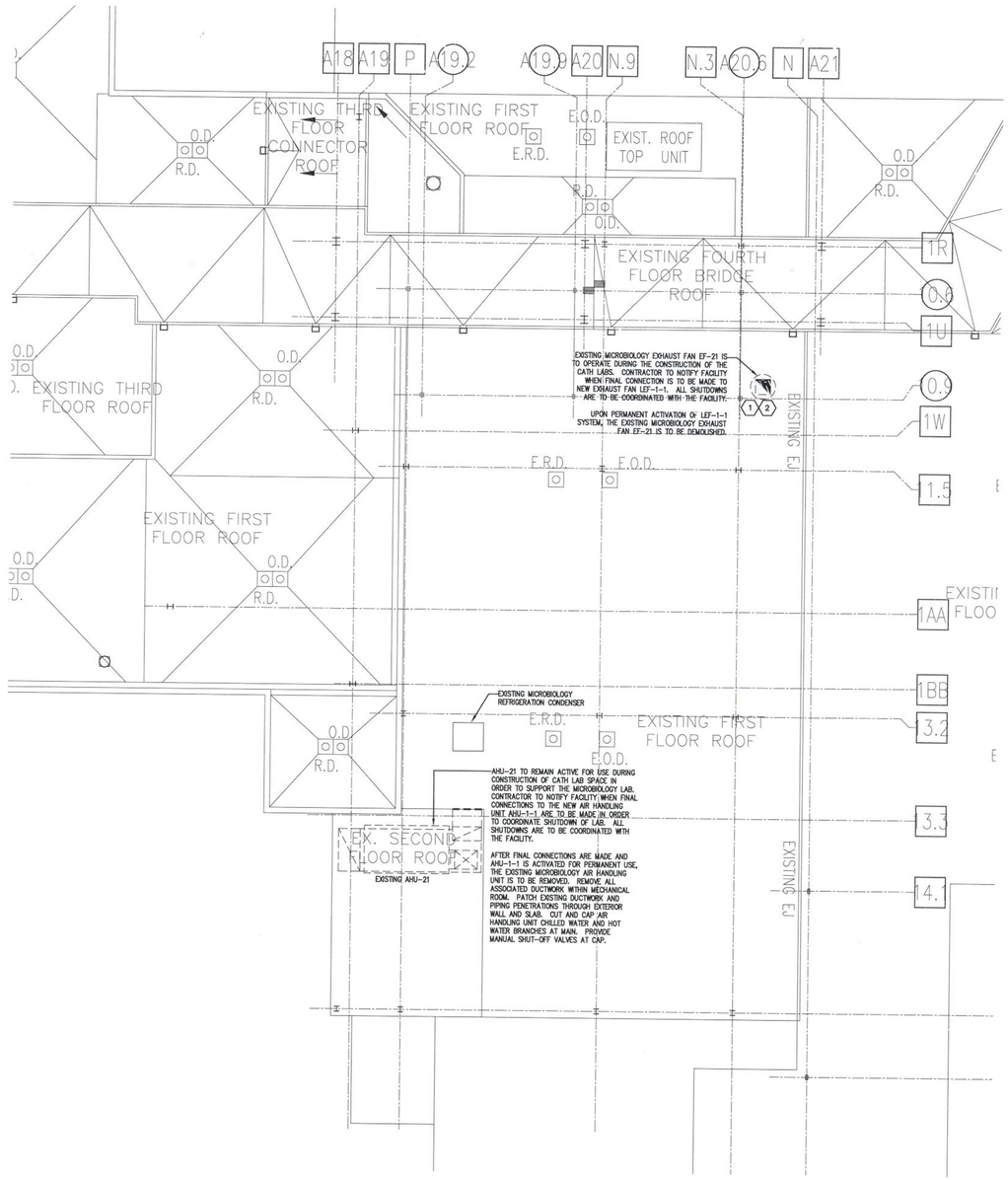
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01 DUCTWORK DEMOLITION PLAN - ROOF
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET M-0000 FOR GENERAL NOTES.

LEGEND NOTES

1. REMOVE EXISTING DUCT AND CONNECTED AIR DEVICES AS SHOWN, INCLUDING THERMOSTATS, CONTROL WIRING, ETC. TO THIS POINT. CAP & SEAL ALL ABANDONED TAPS AIR AND WEATHER TIGHT.
2. REMOVE EXISTING EQUIPMENT AND CONNECTED POWER, THERMOSTATS, CONTROL WIRING, ETC.

This sheet of drawings has not been reviewed for code compliance.

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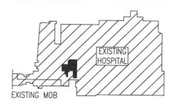
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KEY PLAN
FIRST FLOOR





Revisions

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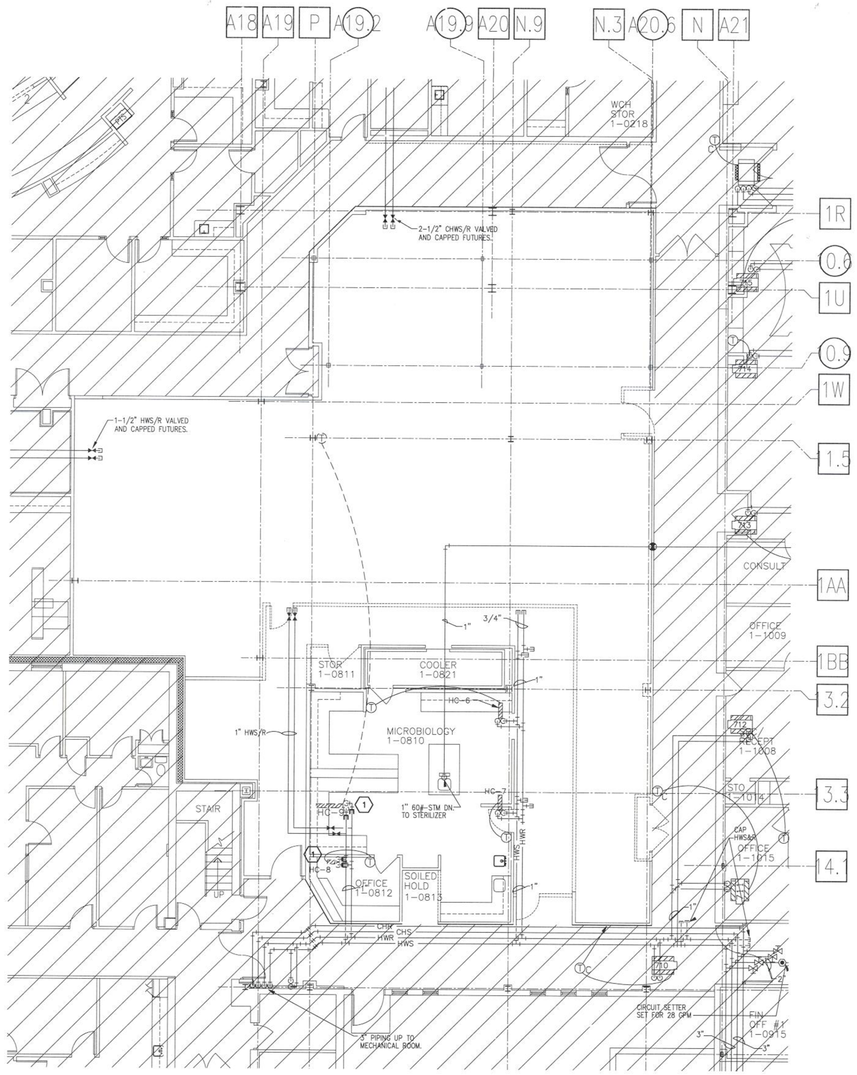
DUCTWORK DEMOLITION PLAN ROOF

Sheet

MD-2002

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01 PARTIAL FIRST FLOOR DEMOLITION PLAN - PIPING

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET M-0000 FOR GENERAL NOTES.

B. PROVIDE PIPE HANGERS AS REQUIRED TO ACCOMMODATE EXISTING PIPING TO REMAIN.

LEGEND NOTES

(1) CUT AND CAP HOT WATER PIPING AT LOCATIONS SHOWN. PROVIDE VALVE AT CAP LOCATION. DEMOLITION OF PIPING AND COILS TO TAKE PLACE AFTER NEW AIR HANDLING AHU-1-1 IS ACTIVATED FOR PERMANENT OPERATION. COORDINATE ALL REQUIRED SHUTDOWNS WITH FACILITY.

This sheet of drawings has not been reviewed for code compliance.

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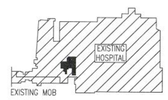
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FIRST FLOOR



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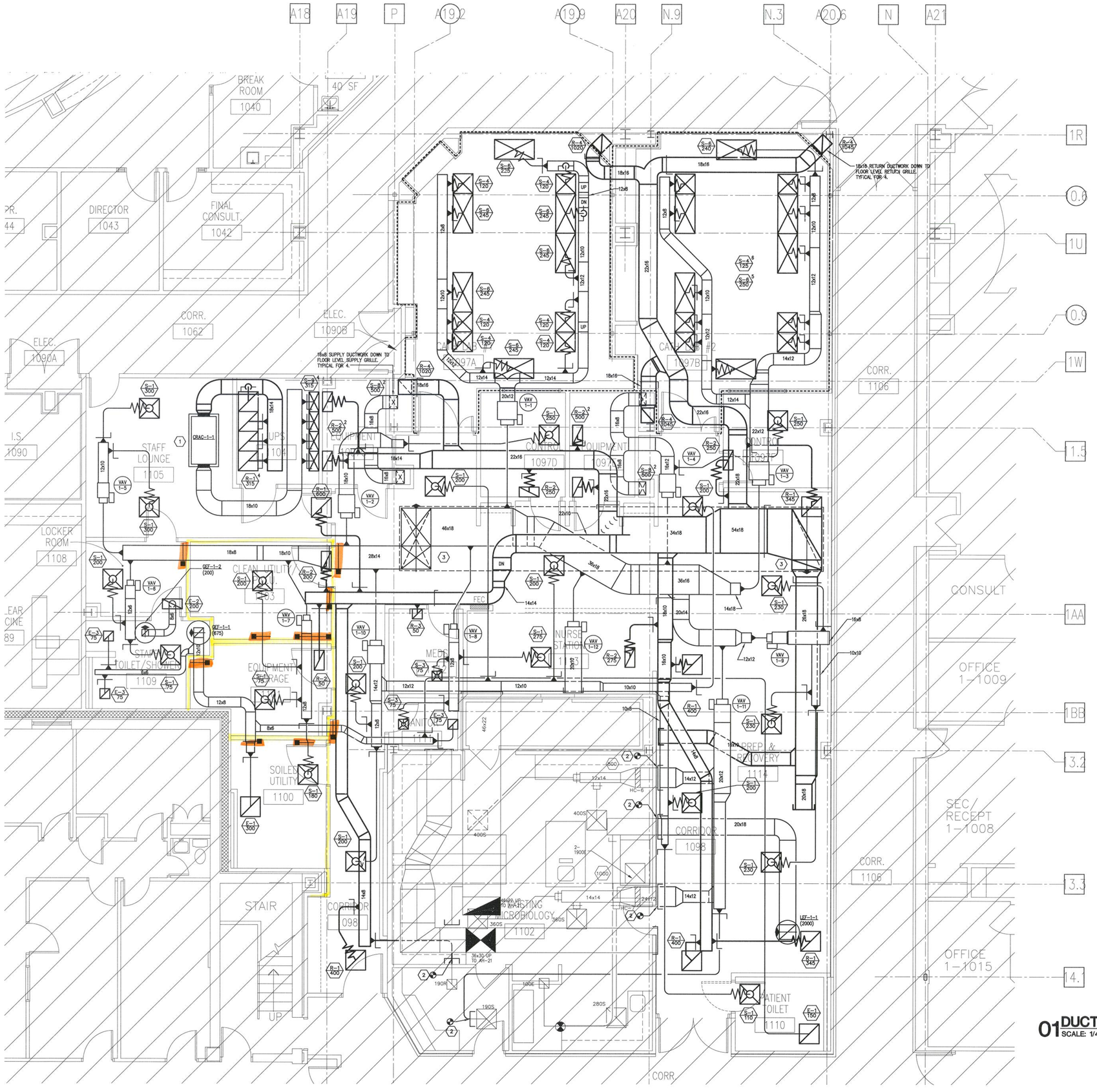
PIPING DEMOLITION PLAN FIRST FLOOR

Sheet

MD-3001

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GENERAL NOTES

A. REFER TO SHEET M-0000 FOR GENERAL NOTES.

B. REBALANCE ALL EXISTING AIR OUTLETS, AIR HANDLING UNITS AND TERMINAL BOXES AFFECTED BY SCOPE OF RENOVATION AND NEW CONSTRUCTION.

LEGEND NOTES

1. PROVIDE AUXILIARY DRIP PAN WITH LEAK DETECTOR FOR COMPUTER ROOM AIR HANDLER. TIE LEAK DETECTOR INTO FMS AND LIEBERT UNIT CONTROL PANEL.
2. CONNECT TO EXISTING DUCTWORK AT LOCATION SHOWN. NEW DUCTWORK TO MATCH DUCTWORK SIZE AT POINT OF CONNECTION.
3. PROVIDE DUCT SMOKE DETECTORS ON AHU SUPPLY AND RETURN AIR HANDLING UNIT OUTLETS.

01 DUCTWORK PLAN - FIRST FLOOR

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

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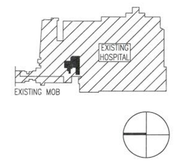
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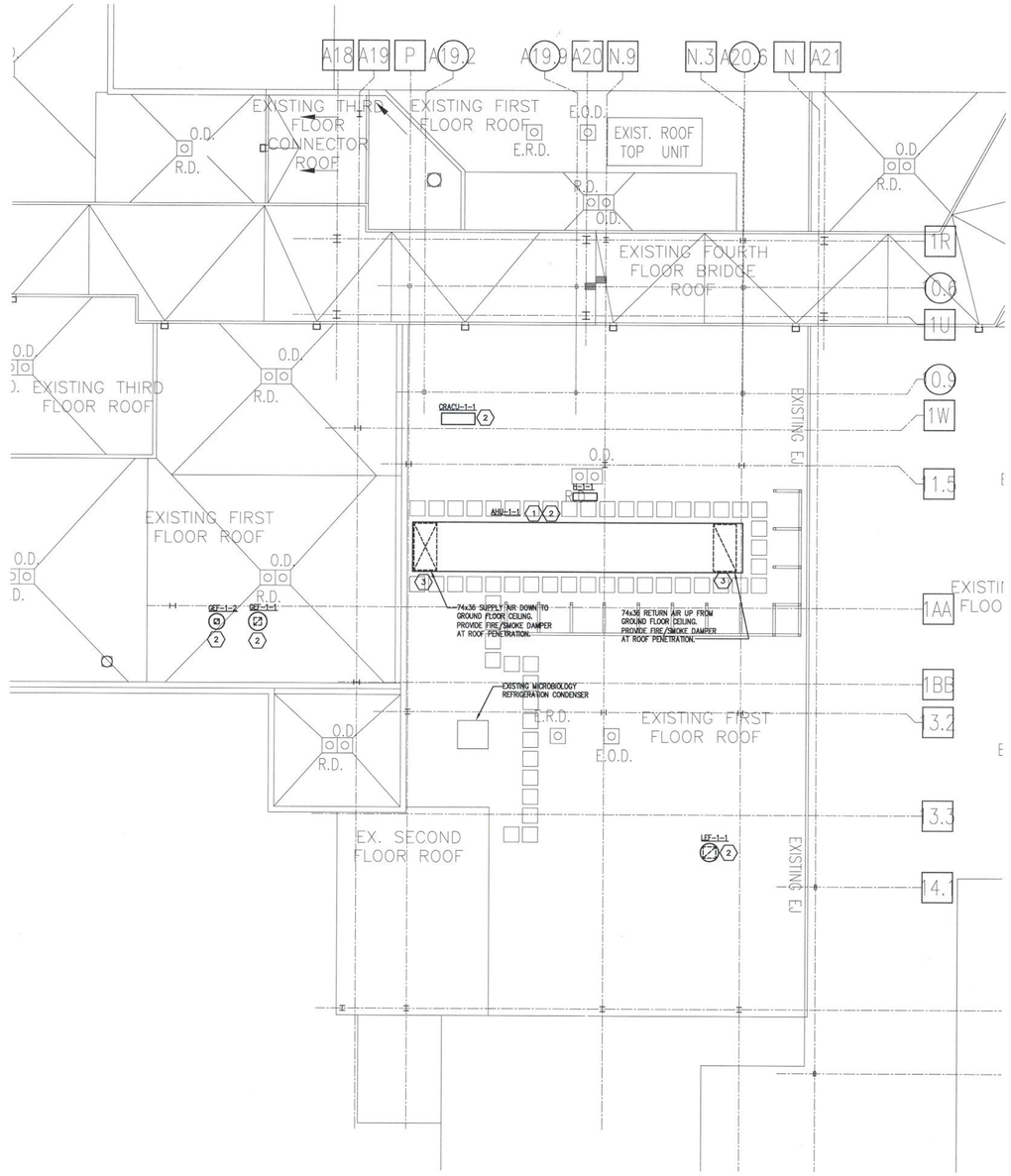
DUCTWORK PLAN FIRST FLOOR

Sheet

M-2001

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01 DUCTWORK PLAN - ROOF
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET M-0000 FOR GENERAL NOTES.

B. REBALANCE ALL EXISTING AIR OUTLETS, AIR HANDLING UNITS AND TERMINAL BOXES AFFECTED BY SCOPE OF RENOVATION AND NEW CONSTRUCTION.

LEGEND NOTES

1. ROUTE CONDENSATE FROM COOLING COIL TO NEAREST ROOF DRAIN.
2. PROVIDE INSULATED ROOF CURB FOR EQUIPMENT. COORDINATE REQUIREMENTS WITH MANUFACTURER AND STRUCTURAL ENGINEER.
3. PROVIDE DUCT SMOKE DETECTORS ON AHU SUPPLY AND RETURN UNIT OUTLETS.

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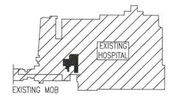
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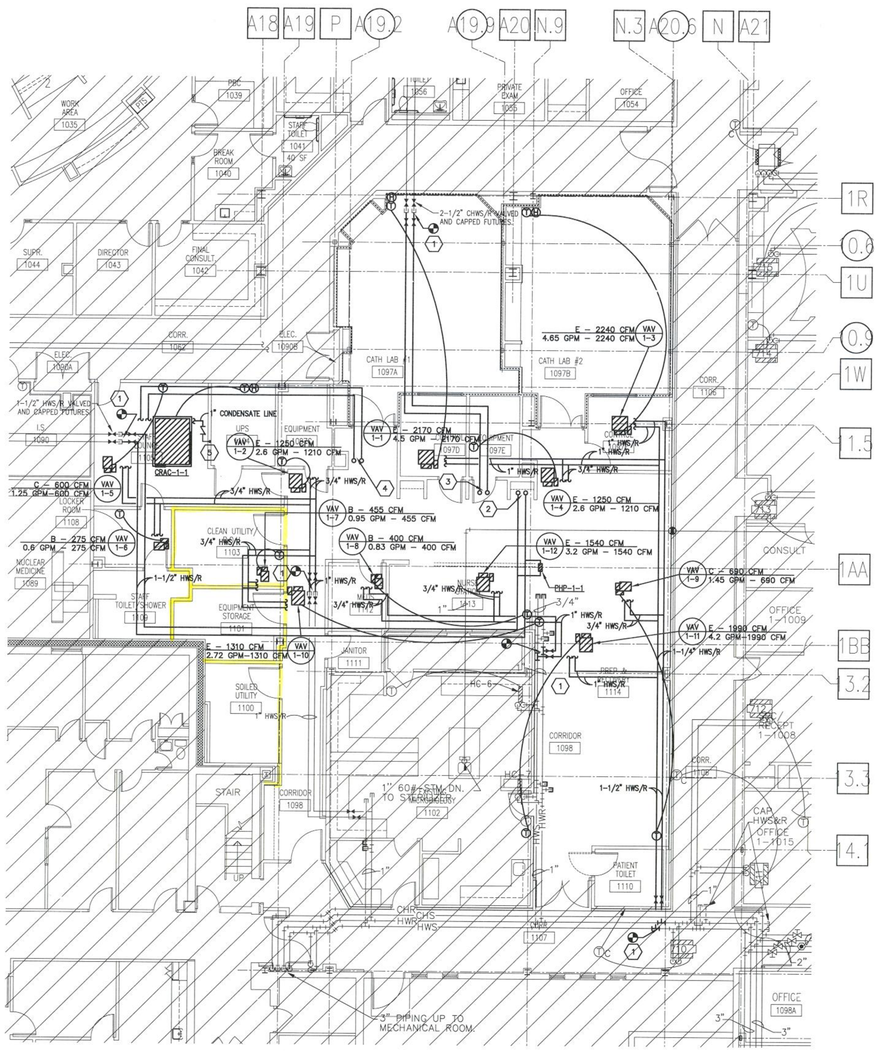
DUCTWORK PLAN ROOF

Sheet

M-2002

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01 PIPING PLAN - FIRST FLOOR
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET M-0000 FOR GENERAL NOTES.

B. PROVIDE BACKFLOW PREVENTER FOR ALL DOMESTIC WATER PIPING LINES ROUTED TO HVAC EQUIPMENT.

LEGEND NOTES

1. CONNECT TO EXISTING PIPING AT LOCATION SHOWN. PROVIDE MANUAL SHUT-OFF VALVES AT EACH CONNECTION POINT.
2. 1-1/2" HWS/R UP TO ROOF. EXTERIOR PIPING TO BE HEAT TRACED. PROVIDE MANUAL SHUT OFF VALVE IN CEILING AT ROOF PENETRATION.
3. 2-1/2" CHWS/R UP TO ROOF. EXTERIOR PIPING TO BE HEAT TRACED. PROVIDE MANUAL SHUT OFF VALVE IN CEILING AT ROOF PENETRATION.
4. REFRIGERANT PIPING DOWN TO CEILING OF FLOOR BELOW. COORDINATE EXACT SIZE AND ROUTING REQUIREMENTS WITH MANUFACTURER.
5. ROUTE CONDENSATE TO FUNNEL DRAIN LOCATED UNDER STAFF LOUNGE SINK.

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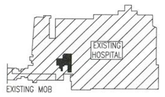
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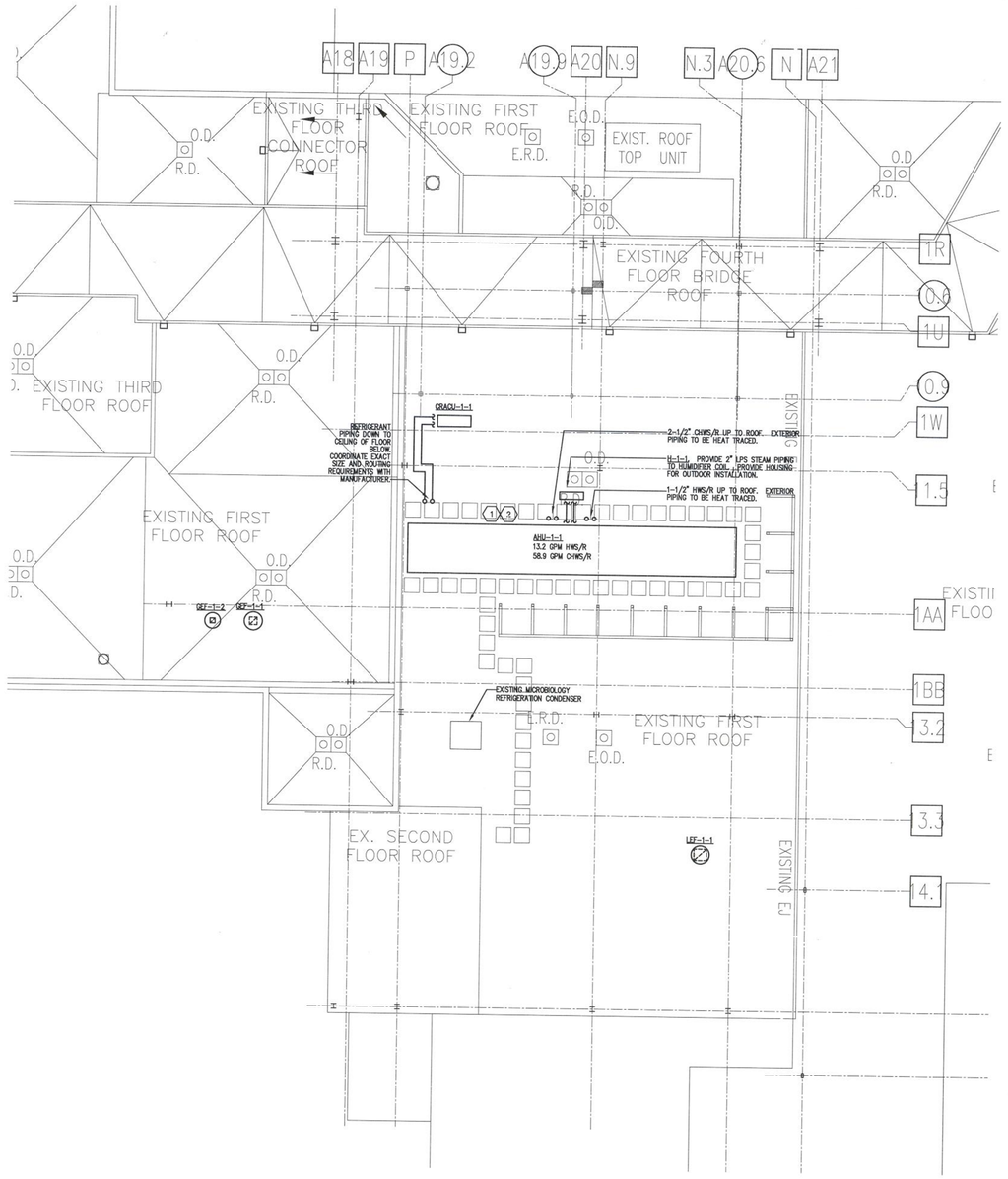
PIPING PLAN FIRST FLOOR

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01 PIPING PLAN - ROOF
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET M-0000 FOR GENERAL NOTES.

B. PROVIDE HEAT TRACING FOR ALL EXTERIOR CHILLED WATER, HOT WATER, AND DOMESTIC COLD WATER PIPING.

C. PROVIDE BACKFLOW PREVENTER FOR ALL DOMESTIC WATER PIPING LINES ROUTED TO HVAC EQUIPMENT.

LEGEND NOTES

1. ROUTE CONDENSATE FROM COOLING COIL TO NEAREST ROOF DRAIN.
2. ROUTE 2" CONDENSATE FROM HUMIDIFIER TO MOP SINK LOCATED IN THE JANITOR CLOSET AT THE FLOOR BELOW. PROVIDE DRAIN COOLER FOR HUMIDIFIER CONDENSATE.

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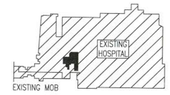
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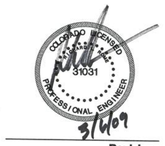
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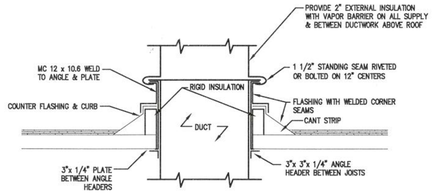
PIPING PLAN ROOF

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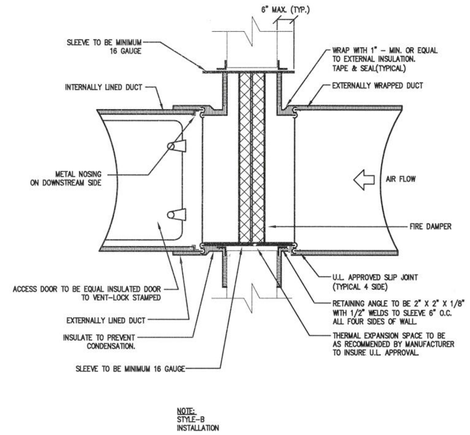
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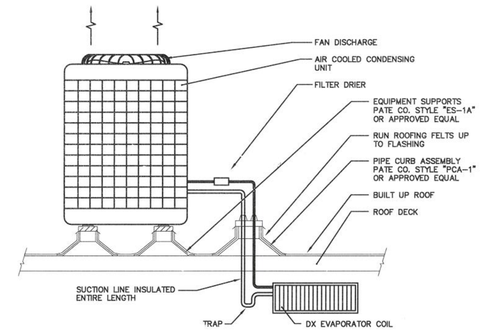
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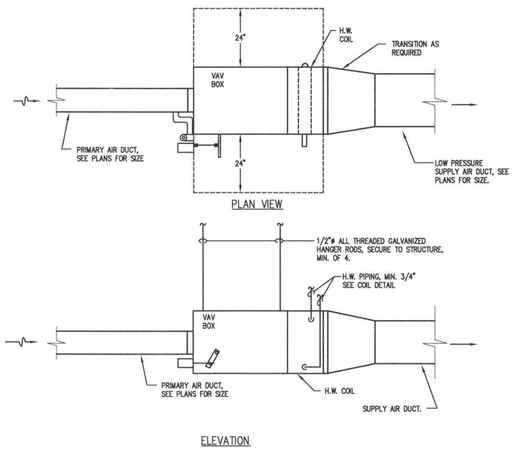
07 DUCT THRU ROOF DETAIL
NO SCALE



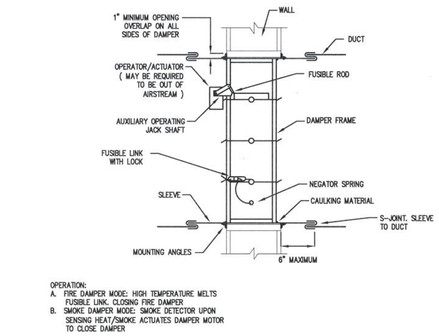
04 FIRE DAMPER INSTALLATION DETAIL
NO SCALE



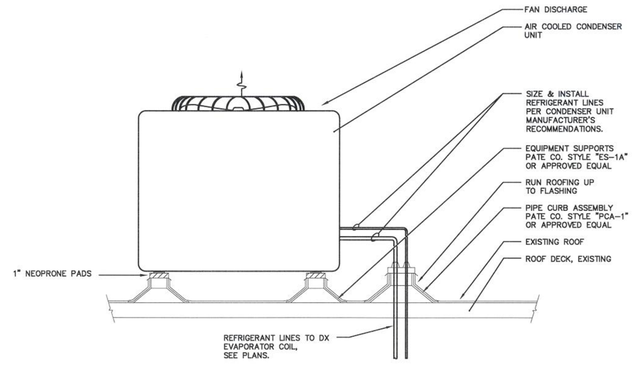
01 SPLIT REFRIGERANT CIRCUIT DETAIL
NO SCALE



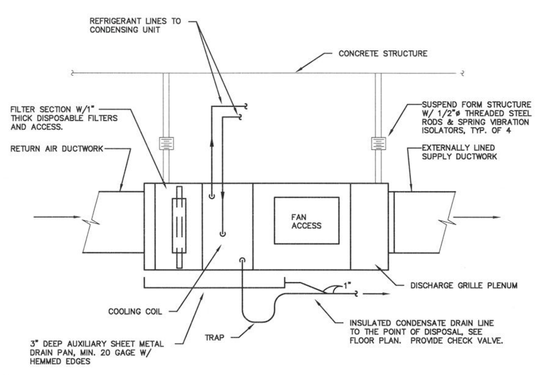
08 VAV w/ REHEAT COIL INSTALLATION DETAIL
NO SCALE



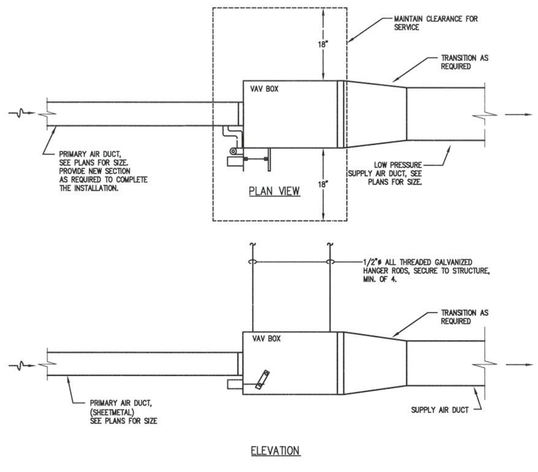
05 SMOKE/FIRE DAMPER INSTALLATION
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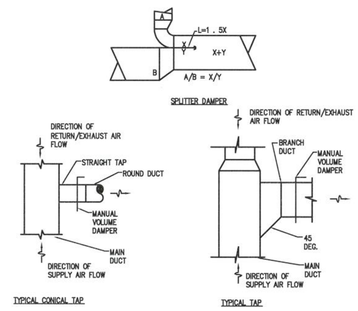
02 ROOF MOUNTED CONDENSING UNIT
NO SCALE



09 DX FAN COIL UNIT
NO SCALE



06 VAV BOX INSTALLATION DETAIL
NO SCALE



03 LOW PRESSURE DUCT DETAILS
NO SCALE

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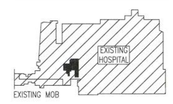
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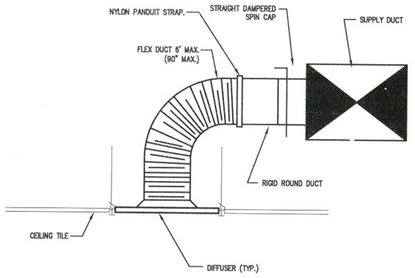
MECHANICAL DETAILS SHEET 1 OF 3

Sheet

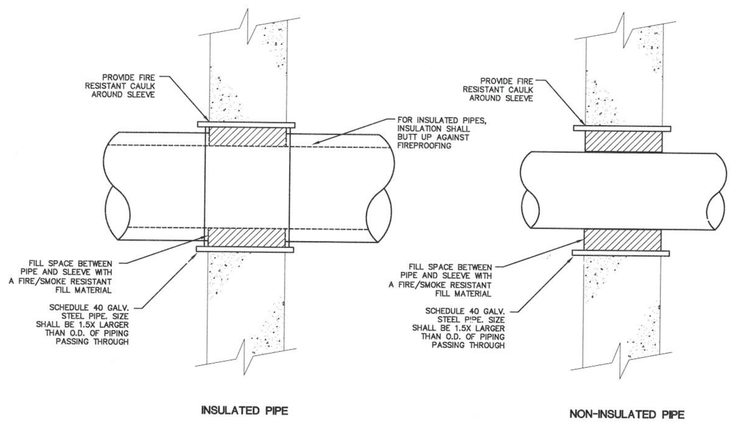
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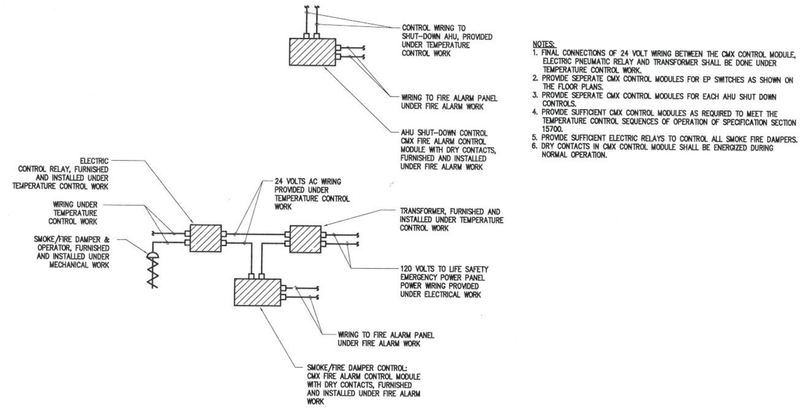
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06 DIFFUSER CONNECTION DETAIL
NO SCALE

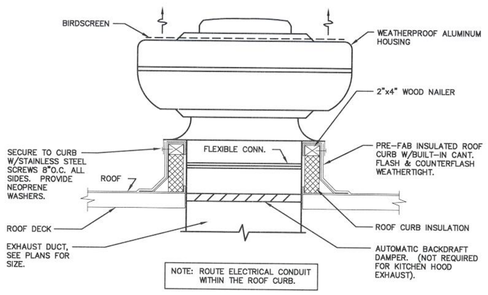


04 PIPE SLEEVE THRU RATED PARTITION
NO SCALE

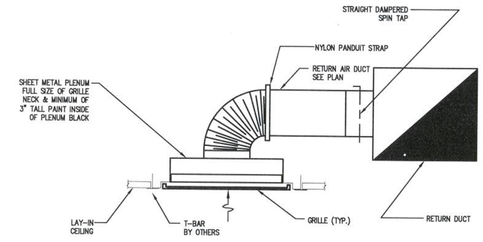


NOTES:
1. FINAL CONNECTIONS OF 24 VOLT WIRING BETWEEN THE CMX CONTROL MODULE, ELECTRIC PNEUMATIC RELAY AND TRANSFORMER SHALL BE DONE UNDER TEMPERATURE CONTROL WORK.
2. PROVIDE SEPERATE CMX CONTROL MODULES FOR EP SWITCHES AS SHOWN ON THE FLOOR PLANS.
3. PROVIDE SEPERATE CMX CONTROL MODULES FOR EACH AHU SHUT DOWN CONTROLS.
4. PROVIDE SUFFICIENT CMX CONTROL MODULES AS REQUIRED TO MEET THE TEMPERATURE CONTROL SEQUENCES OF OPERATION OF SPECIFICATION SECTION 15700.
5. PROVIDE SUFFICIENT ELECTRIC RELAYS TO CONTROL ALL SMOKE FIRE DAMPERS.
6. DRY CONTACTS IN CMX CONTROL MODULE SHALL BE ENERGIZED DURING NORMAL OPERATION.

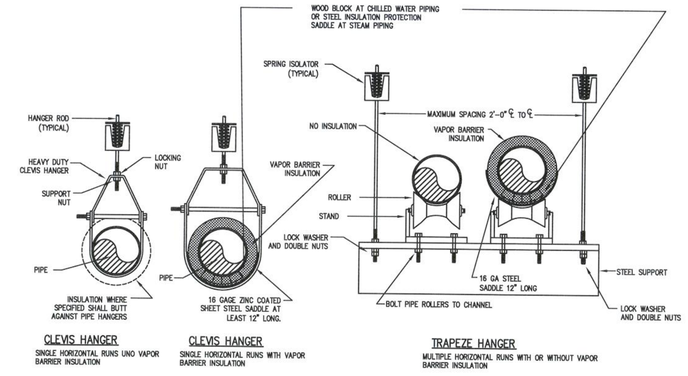
01 FIRE ALARM SYSTEM INTERFACE DETAILS
NO SCALE



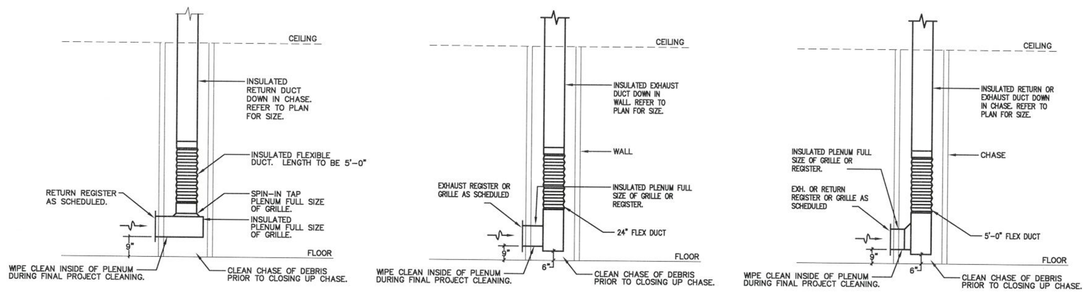
07 TYPICAL UPBLAST TYPE EXHAUST FAN
NO SCALE



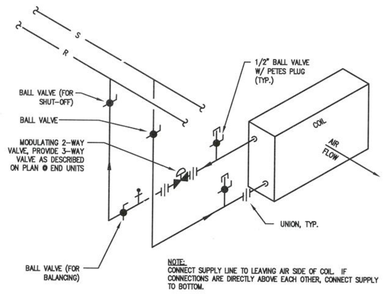
05 RETURN AIR GRILLE DUCT CONNECTION
NO SCALE



02 PIPE SUPPORTS DETAIL
NO SCALE



08 LOW RETURN OR EXHAUST GRILLE OR REGISTER IN WALL DETAIL
NO SCALE



03 TERMINAL BOX COIL PIPING DETAIL
NO SCALE

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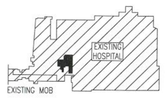
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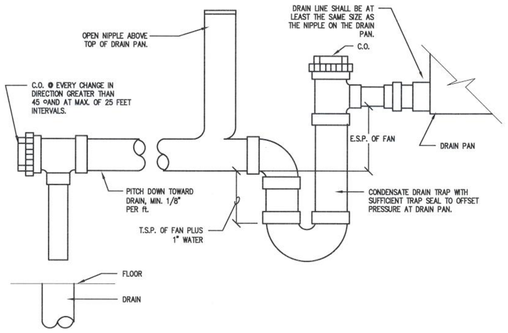
MECHANICAL DETAILS SHEET 2 OF 3

Sheet

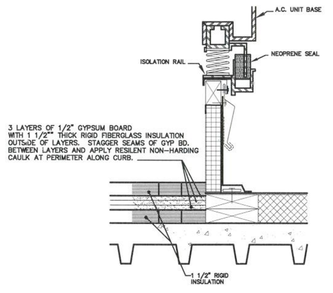
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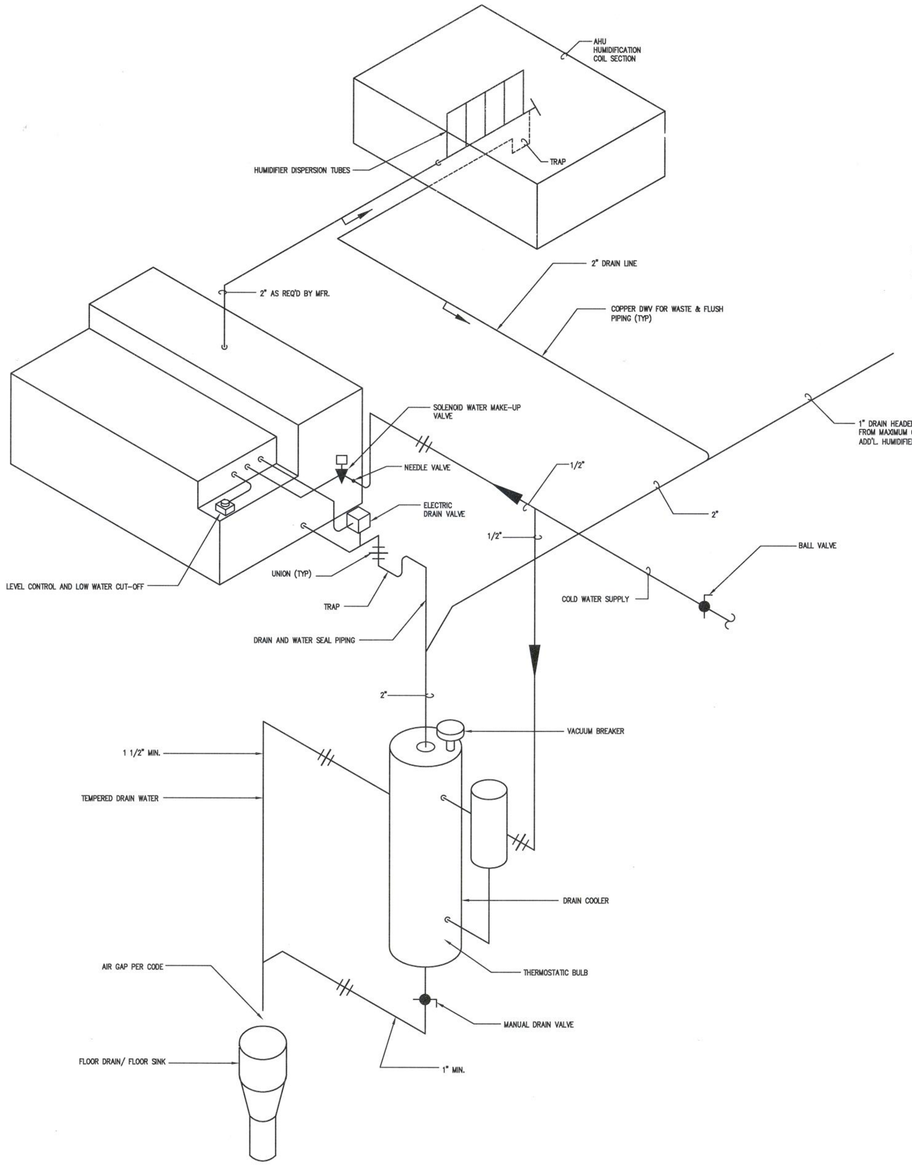
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04 CONDENSATE DRAIN TRAP DETAIL
NO SCALE

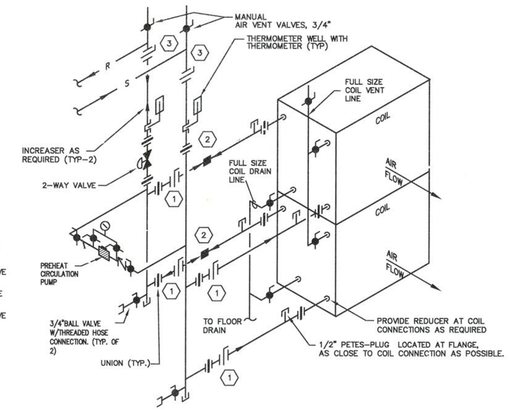


05 TYPICAL RTU CURB WITH ISOLATION RAIL
NO SCALE



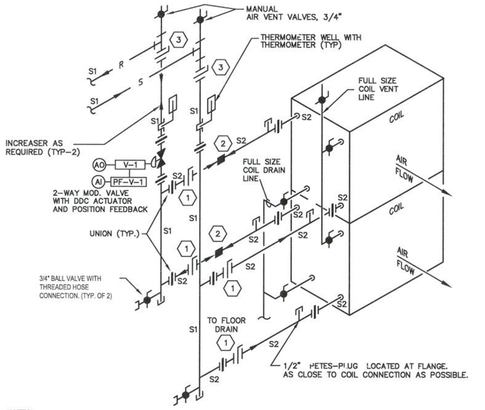
03 ELECTRIC HUMIDIFIER DETAIL
NO SCALE

VALVE LEGEND
1. COIL SECTION ISOLATION VALVE
2. COIL SECTION BALANCE VALVE
3. UNIT ISOLATION VALVE



NOTES: 1. COIL SHALL BE PIPED COUNTER FLOW REGARDLESS OF VERTICAL CONNECTION CONFIGURATION.
2. STACKED COILS INDICATED. SINGLE COILS PIPED SIMILARLY.
3. PIPING CONFIGURATION SHALL ALLOW REMOVAL OF EACH COIL SECTION.
4. REFER TO SPECIFICATIONS FOR VALVE TYPES.

01 AIR HANDLING UNIT PREHEAT WATER COIL W/ PUMP
NO SCALE



NOTES:
1. COIL SHALL BE PIPED COUNTER FLOW REGARDLESS OF VERTICAL CONNECTION CONFIGURATION.
2. STACKED COILS INDICATED. SINGLE COILS PIPED SIMILARLY.
3. PIPING CONFIGURATION SHALL ALLOW REMOVAL OF EACH COIL SECTION WHILE OTHER SECTION REMAINS CONNECTED.
4. REFER TO SPECIFICATIONS FOR VALVE TYPES.

PIPE SIZING
S1 – PIPE SIZE AS SHOWN ON PLANS TO SERVE UNIT
S2 – SAME SIZE AS MANUFACTURER'S COIL CONNECTION.

VALVE LEGEND
REFER TO VALVE SCHEDULE ON M1.00
1. COIL SECTION ISOLATION VALVE
2. COIL SECTION BALANCE VALVE
3. UNIT ISOLATION VALVE

02 AIR HANDLING UNIT CHILLED WATER COIL
NO SCALE

HCA:083103

CITY OF AURORA
BUILDING DIVISION
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DATE APPROVED APR 13 2009

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KEY PLAN
FIRST FLOOR



COLORADO LICENSED MICHAEL MEDINA 31031 PROFESSIONAL ENGINEER 3/6/09

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MECHANICAL DETAILS SHEET 3 OF 3

Sheet

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AIR DEVICE SCHEDULE

DESIG.	FACE SIZE	OBD	FINISH	THROW	NECK SIZE	MANUFACTURER /MODEL NO.	MAX. NC NOTE B	REMARKS/NOTES
S1	24"X24"	NO	OFF WHITE	4-WAY	NOTE - 1	PRICE/ASCD	35	CEILING S.A. DIFFUSER, LOUVER FACE/G
S2	24"X12"	NO	OFF WHITE	4-WAY	NOTE - 1	PRICE/PDS	35	CEILING S.A. DIFFUSER, LOUVER FACE/G
S3	12"X12"	NO	OFF WHITE	4-WAY	NOTE - 1	PRICE/ASCD	35	CEILING S.A. DIFFUSER, LOUVER FACE/G
S4	24"X24"	YES	OFF WHITE	LAMINAR	NOTE - 4	PRICE/LFDC	30	CEILING O.R. SUPPLY REGISTER/G,6
S5	12"X12"	NO	OFF WHITE	-	NOTE - 1	PRICE/ MSPG	30	CEILING S.A. GRILLE, PERFORATED FACE/G
S6	48"X24"	YES	OFF WHITE	LAMINAR	NOTE - 4	PRICE/LFDC	30	CEILING O.R. SUPPLY REGISTER/G,6
S7	24"X24"	YES	OFF WHITE	4-WAY	NOTE - 1	PRICE/ASCD	35	CEILING S.A. DIFFUSER, LOUVER FACE/G
S8	DUCT SIZE + 1 3/4"	YES	OFF WHITE	-	SEE PLANS	PRICE/520	25	SIDEWALL SUPPLY REGISTER/G,2
S9	DUCT SIZE + 1 3/4"	YES	OFF WHITE	-	SEE PLANS	PRICE/500	28	CEILING SUPPLY REGISTER/G,2
R1	24"X24"	NO	OFF WHITE	-	22"X22"	PRICE/535L	35	CEILING R.A. GRILLE/G,5
R2	24"X12"	NC	OFF WHITE	-	22"X10"	PRICE/535L	35	CEILING R.A. GRILLE/G,5
R3	12"X12"	NO	OFF WHITE	-	NOTE - 5	PRICE/535L	35	CEILING R.A. GRILLE/G,5
R4	DUCT SIZE + 1 3/4"	NO	OFF WHITE	-	SEE PLANS	PRICE/535L	35	SIDEWALL R.A. GRILLE/G,3
R5	SEE PLANS	NO	OFF WHITE	-	SEE PLANS	PRICE/ MSPG	30	CEILING R.A. GRILLE, PERFORATED FACE/G
R6	SEE PLANS	YES	OFF WHITE	-	SEE PLANS	PRICE/ MSPG	30	CEILING R.A. GRILLE, PERFORATED FACE/G
E1	24"X24"	NO	OFF WHITE	-	22"X22"	PRICE/535L	35	CEILING EXHAUST REGISTER/G,5
E2	24"X12"	NO	OFF WHITE	-	22"X10"	PRICE/535L	35	CEILING EXHAUST GRILLE/G,5
E3	12"X12"	NO	OFF WHITE	-	NOTE - 5	PRICE/535L	35	CEILING EXHAUST GRILLE/G
E4	24"X24"	YES	OFF WHITE	-	22"X22"	PRICE/535L	35	CEILING EXHAUST REGISTER/G,5

NOTES:

1.

MARK "S1" - "S6"		
NECK SIZE (INCHES)	MAXIMUM CFM	DUCT SIZE (INCHES)
6" DIA	100	6" DIA
8" DIA	225	8" DIA
10" DIA	400	10" DIA
12" DIA	600	12" DIA
14" DIA	900	14" DIA
15" DIA	1000	15" DIA

2. TWO SETS OF BLADES, 0.75" SPACING.
3. 45 DEGREE BLADES, 0.5" SPACING.
4. PRICE LFDC NECK SIZE AS INDICATED BELOW, LAMINAR FLOW, ALL ALUMINUM, PERFORATED DAMPER ADJUSTMENT THROUGH FACE. INTERNAL AIR DISTRIBUTION BAFFLES AND HEPA FILTER.

CFM	NECK SIZE	MIN. DUCT SIZE
UP TO 200	8" Ø	8" Ø
201 TO 300	10" Ø	10" Ø
301 TO 400	12" Ø	12" Ø

5.

MARK "R1","R2","R3", &"E1","E2","E3"			
NECK SIZE (INCHES)	MAXIMUM CFM	APPLICATION	
6" DIA	100	WHERE INDICATED	
8" DIA	225	WHERE INDICATED	
10" DIA	400	WHERE INDICATED	
12" DIA	500	WHERE INDICATED	
14" DIA	650	WHERE INDICATED	
16" DIA	800	WHERE INDICATED	
22/10	1000	WHERE INDICATED	
22/22	2000	WHERE INDICATED	

6. PROVIDE FACTORY INSULATION BLANKET.

GENERAL NOTES(AIR DEVICES):

A. FRAME TYPE SHALL MATCH CEILING TYPE AND CEILING MODULE DIMENSIONS.
B. NC LEVEL = 45 MAXIMUM IN PUMP, CHILLER, FAN AND GENERATOR ROOMS.
C. INDICATED NECK SIZES SHALL NOT BE REDUCED.
D. PROVIDE OBD WHERE INDICATED ON FLOOR PLANS.
E. DUCT MOUNTED AIR DEVICES SHALL BE FLANGE MOUNTED.
F. NO MOUNTING SCREWS SHALL BE VISIBLE EXCEPT ON EXPOSED DUCTWORK.
G. OFF WHITE POWDER COAT FINISH IN CEILINGS, FIELD PAINTED IN OTHER LOCATIONS TO MATCH ADJACENT SURFACES.
H. AIR DEVICE IN SHOWER ROOMS, TUB ROOMS, WHIRLPOOLS, ETC. (EXCLUDING PATIENT ROOM TOILETS) SHALL BE ALUMINUM.
I. NOT ALL AIR DEVICE LISTED ARE USED, REFER TO PLANS.
J. ALL RETURN AIR GRILLES USED FOR PLENUM RETURN SHALL BE PROVIDED W/ SITE BAFFLE.

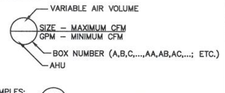
VAV & CAV BOX W/ HOT WATER COIL SCHEDULE

SIZE	VAV VALVE SIZE (IN)	VAV CFM RANGE COOLING MIN.-MAX.	VAV INLET DUCT SIZE (INCHES)	VAV OUTLET PLENUM WIDTH x HEIGHT (INCHES) (NOTE 10)	VAV VALVE MAX. A.P.D. IN. W.G.	MAX. N.C.	EAT. °F DB	H.W. COIL MIN. MBH	H.W. COIL GPM	H.W. COIL EWT °F	H.W. COIL LWT °F	H.W. COIL MAX. P.D. AIR IN. W.G. AT COOLING CFM	H.W. COIL MAX. WATER P.D. (FT.)	H.W. COIL MIN. # ROWS (NOTE 13)	ENVIROTECH MODEL NO.	NOTES
A	6"	0-400	8"	10/12	0.25	35	53	NOTE 1	NOTE 1	175	145	0.25	10	2	SDR-WC-6	ALL
B	8"	0-700	10"	12/12	0.25	35	53	NOTE 1	NOTE 1	175	145	0.40	10	2	SDR-WC-8	ALL
C	10"	0-1000	10"	14/12	0.25	35	53	NOTE 1	NOTE 1	175	145	0.40	10	2	SDR-WC-10	ALL
D	12"	0-1450	12"	16/16	0.25	35	53	NOTE 1	NOTE 1	175	145	0.50	10	2	SDR-WC-12	ALL
E	14"	0-2000	16"	18/16	0.25	35	53	NOTE 1	NOTE 1	175	145	0.50	10	2	SDR-WC-14	ALL
F	16"	0-3000	18"	20/18	0.25	35	53	NOTE 1	NOTE 1	175	145	0.60	10	2	SDR-WC-16	ALL

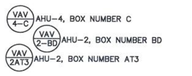
NOTES:

1. REFER TO PLANS FOR H.W. COIL OPERATING GPM; MBH= GPM x 15
2. REFER TO PLANS FOR ACTUAL MAX. COOLING CFM AND MINIMUM CFM.
3. BOX COOLING AND HEATING CFM'S ARE PER PLANS.
   COOLING CFM = BOX MAXIMUM CFM.
   HEATING CFM = MINIMUM COOLING CFM = BOX MINIMUM CFM.
4. UNIT MOUNTED/WIRED FACTORY CONTROL PANEL:
   PROVIDE INTEGRAL 277V/24 V CONTROL TRANSFORMER WITH BOX.
5. PRESSURE INDEPENDENT CONTROLS COMPATIBLE WITH BUILDING CONTROL SYSTEMS.
6. CONSTANT AIR VOLUME (CAV) BOXES SHALL BE IDENTICAL TO VARIABLE AIR VOLUME (VAV) BOXES.
7. FACTORY INTERNAL INSULATION: 1 INCH THICK, 2LB DENSITY, FOIL FACED AND SEALED FROM AIRSTREAM.
8. CFM DELIVERY SHALL BE ACCURATE WITHIN 5% FROM 100% TO 25% FLOW RATE.
9. HW COIL SHALL BE LOCATED AT DISCHARGE SIDE OF BOX.
10. OUTLET PLENUM BY CONTRACTOR.
    PROVIDE PLENUM WHERE INDICATED ON PLANS.
    DIMENSIONS ARE MINIMUM. COORDINATE WITH RUNOUT DUCT SIZES TO AIR DEVICES.
    PROVIDE TRANSITION FROM BOX OUTLET TO THE PLENUM.
11. CONTROLS SHALL BE FURNISHED AND SHIPPED TO VAV BOX FACTORY BY TEMPERATURE CONTROLS CONTRACTOR. CONTROLS SHALL BE INSTALLED AT VAV BOX FACTORY BY VAV BOX MANUFACTURER.
12. NOT USED
13. SHOP DRAWING:
    SUBMIT TABULATION (SPREADSHEET GENERATED) FOR EVERY BOX IN PROJECT SHOWING COMPLIANCE TO REQUIRED CFM'S, GPM'S, ETC., ON PLANS AND IN SCHEDULE. ONE BOW HW COILS MAY BE UTILIZED WHERE MBH ALLOWS IT. HW COILS SHALL BE CONTAINED WITHIN THE BOX AS MANUFACTURED.

VAV BOX LEGEND:



EXAMPLES:



LIEBERT A/C UNIT SCHEDULE

AIR HANDLER DESIGNATION		CRAC-1-1	
SERVES		UPS ROOM	
OUTSIDE AIR CFM		-	
FAN COIL UNIT DATA	SUPPLY CFM	1250	
	EXT. S.P. ("WG)	0.3	
	FAN MOTOR HP	0.5	
	VOLTS/PH	460/3	
	FLA	13.2	
	MOCP	20	
	WEIGHT LBS	250	
COOLING DATA	EAT DB/WB (°F)	80/67	
	SENS. HEAT (MBH)	27.8	
	TOTAL HEAT (MBH)	33.4	
HTG. DATA	KW	7.3	
	REHEAT MBH OUTPUT	24.9	
CONDENSING UNIT DESIGNATION		CRACU-1-1	
CU DATA	VOLTS/PH	460/3	
	FLA	7.4	
	MOCP	15	
	WEIGHT LBS	360	
MANUFACTURER		LIEBERT	
MODEL NO.	AIR HANDLING UNIT	MMD36EAHE	
	CONDENSING UNIT	PFH037A-H	
REMARKS/NOTES		ALL	

NOTES:

(1) CAPACITY AT 105°F O.A.T.
(2) 10.0 MIN. SEER RATING.
(3) CONDENSATE PUMP.
(4) LOW AMBIENT TO 20°F.
(5) 1.5 KW HUMIDIFIER, 4.3 LBS/HR
(6) PROVIDE DISCONNECT SWITCHES.

FAN SCHEDULE

MARK	TYPE	SERVES	CFM	MAX. dBA	EXT. S.P.	FAN TYPE (NOTE 1)	FAN RPM	DRIVE	WHEEL TYPE	ELECTRICAL MOTOR DATA H.P. (MIN)	RPM	VOLTS/PHASE	APPROX. WEIGHT (LBS.)	MANUFACTURER/MODEL NO. (GREENHECK)	NOTES
GEF-1-1	GEF-1-1	CATH LAB TOILET ROOMS	675	75	1.0	A	1472	BELT	-	1/4	1725	120/1	84	CUBE 141-HP	5, 6, 11
GEF-1-2	GEF-1-2	CATH LAB LOCKER ROOM	200	75	0.6	A	1406	BELT	-	1/4	1725	120/1	58	CUBE 101-HP	5, 6, 11
LEF-1-1	LEF-1-1	MICROBIOLOGY LAB	2000	75	1.0	A	1223	BELT	-	3/4	1725	460/3	87	CUBE 161	5, 6, 11

NOTES (FAN SCHEDULE):

1. FAN TYPES:
   A. ROOFTOP CENTRIFUGAL
   B. ROOFTOP PROPELLER
   C. WALL PROPELLER
   D. SWSI
   E. ROOFTOP CENTRIFUGAL UPBLAST
   F. VANE AXIAL
   G. ROOFTOP FILTERED LOUVERED DOWN BLAST CENTRIFUGAL
   H. CABINET CENTRIFUGAL
   J. TUBE AXIAL UPBLAST
2. WALL MOUNTED VFD PER SPECS.
3. SOUND TRAP HOUSING, MOTOR MOUNTED AT 4:30 CLOCK POSITION.
4. BOTTOM HORIZONTAL DISCHARGE
   SCROLL DRAIN PLUG
   ALL WELDED FAN HOUSING, STEEL
   AU, WELDED FAN WHEEL, STEEL
   CLEAN OUT PLATE ON FAN HOUSING
   95% SPRING & RUBBER VIBRATION ISOLATORS
   MOTOR & DRIVE COVER
   FLANGED DUCT OUTLET
5. STARTER/DISCONNECT SWITCH.
6. 24" HIGH STEEL CURB, INSULATED, SLOPED BASE, LEVEL TOP.
7. 2" WASHABLE FILTERS.
8. RATED FOR 500°F OPERATION FOR 4 HOURS 1000°F FOR 15 MINUTES OF OPERATION. (UL LISTED FOR SMOKE CONTROL SYSTEMS)
9. HERESITE COATING ON AIRSTREAM COMPONENTS.
10. TWO SPEED MOTOR.
11. GRAVITY BACKDRAFT DAMPER
12. STAINLESS STEEL SHAFT.
13. INLET PLENUM, SIDE ACCESS DOOR
14. ISOLATION FANS SHALL RUN CONTINUOUSLY DURING A FIRE ALARM
15. ELEVATOR SMOKE FANS SHALL RUN CONTINUOUSLY DURING A FIRE ALARM
16. MOTORIZED BACK DRAFT DAMPER
17. FAN DISCARGE TO BE 40" ABOVE FINISHED ROOF (MIN.).
18. UL/CUL 702 LISTED.
19. SPARK PROOF MOTOR.
20. VENTED CURB EXTENSION.
21. HINGE KIT.
22. GREASE DRAIN AND TRAP.

LEGEND (FANS)
GEF = GENERAL EXHAUST FAN
LEF = LAB EXHAUST FAN

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED
DATE APPROVED APR 13 2009

GENERAL NOTES

A. SELECT ALL EQUIPMENT FOR 5331 FEET ABOVE SEA LEVEL.
B. MOTORS FOR USE WITH A VFD SHALL BE INVERTER DUTY RATED AND NAMEPLATED.
C. 460/3 PHASE POWER FOR ALL MOTORS 3/4 HP AND LARGER.
D. BELT DRIVES SHALL BE RATED 1.5 TIMES MOTOR H.P.
E. PROVIDE MAGNETIC MOTOR STARTER FOR ALL NON-VFD MOTORS.

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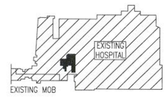
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Title

MECHANICAL SCHEDULES SHEET 1 OF 2

Sheet

M-5001

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AIR HANDLING UNIT SCHEDULE

DESIGNATION		AHU-1-1
LOCATION		CATH LAB ROOF
SERVICE		CATH LAB AND MICROBIOLOGY
SUPPLY FAN	CFM (MAX)	14,800
	ESP / TSP ("WG)	3.00
	FAN MOTOR HP (MIN)	30
	POWER (VOLTS / PH)	460 / 3
	FAN WHEEL DIAMETER (IN)	22
	FAN WHEEL TYPE	AF
	DRIVE	VFD
	FAN RPM	2244
RETURN FAN	CFM (MAX / MIN)	14,800
	ESP / TSP ("WG)	2.0
	FAN MOTOR HP (MIN)	10
	POWER (VOLTS / PH)	460/3
	FAN WHEEL DIAMETER (IN)	25
	FAN WHEEL TYPE	FC
	DRIVE	VFD
	FAN RPM	678
COOLING COIL DATA	TYPE / SQ FT (MIN)	CHW / 13.3
	CFM	14,800
	MAX FACE VEL (FPM)	500
	MAX AIR P.D. ("WG)	3.0
	TOTAL / SENS / LAT (MBH) (MIN) / SHR	414.14 / 414.13 / 0.01 / 1.0
	EAT °F DB/WB	79 / 58
	LAT °F DB/WB	48 / 46
	EWT °F/ LWT °F	42 / 56
	GPM (MAX)	58.95
	WATER P.D. (FT)	12.0
	MIN ROWS / MAX FINS PER FOOT	8 / 122
GLYCOL COIL DATA	TYPE / SQ FT (MIN)	NONE
	CFM	
	MAX FACE VEL (FPM)	
	MAX AIR P.D. ("WG)	
	TOTAL / SENS / LAT (MBH) (MIN) / SHR	
	EAT °F DB/WB	
	LAT °F DB/WB	
	EWT °F/ LWT °F	
	GPM (MAX)	
	WATER P.D. (FT)	
	MIN ROWS / MAX FINS PER FOOT	
HEATING COIL DATA	TYPE / POSITION	HW / PREHEAT
	CFM	14,800
	MAX FACE VEL (FPM)	653
	MAX AIR P.D. ("WG)	0.16
	SENS (MBH)	198
	EAT °F DB	40
	LAT °F DB	55
	EWT °F/ LWT °F	180 / 150
	GPM (MAX)	13.2
	WATER P.D. (FT)	0.22
	MIN ROWS / MAX FINS PER FOOT	2 / 82
HUMIDIFICATION MODULE DATA	CFM	14,800
	STEAM (LBS/HR)	189.5
	ERH/LRH	26/41.5
	EWB/LWB	58/64
	CONTROL TYPE	ELECTRONIC
OUTSIDE AIR CFM (MIN) (AT FULL COOLING)		2,960
FIRST FILTER DATA	CFM	14,800
	TYPE	CARTRIDGE
	EFFICIENCY (%) (ASHRAE 52)	MERV 8
	MAX. VELOCITY (FPM)	450
	P.D. (DIRTY / CLEAN)	1.0 / 0.3
FINAL FILTER DATA	CFM	14,800
	TYPE	HEPA
	EFFICIENCY (%) (ASHRAE 52)	99.75%
	MAX. VELOCITY (FPM)	450
	P.D. (DIRTY / CLEAN)	1.5 / 0.5
BASED ON (MANUF / MODEL NO.)		TRANE MCCB025
WEIGHTS (INCLUDING PLENUMS)		–
REMARKS / NOTES		1 – 18

NOTES:

1. CLEAN FILTERS. ISP EQUALS AHU SP LOSS WITH CLEAN FILTERS. TSP EQUALS ESP + ISP. TSP LISTED IS FOR REFERENCE ONLY.
2. FAN MOTOR NAMEPLATE HP SHALL NOT BE EXCEEDED AT SCHEDULED CFM AND TSP
3. IF MANUFACTURERE'S COOLING COIL PROMOTES MOISTURE CARRYOVER AT THE ALLOWABLE MAX FACE VELOCITY, THEY SHALL OVERSIZE THE COIL FACE AREA TO PREVENT MOISTURE CARRYOVER AT THESE CONDITIONS.
4. COILS SHALL NOT BE COATED UNLESS OTHERWISE INDICATED.
5. COOLING COIL SENSIBLE HEAT RATIO (SHR) TOLERANCE EQUALS PLUS OR MINUS 0.3. EXAMPLE: CSHR = 0.79 MAX = 0.78 MIN=0.82
6. 5/8" OD TUBES
7. PROVIDE VAPOR-TIGHT FLUORESCENT LIGHT FIXTURE IN EACH ACCESSIBLE SECTION. PROVIDE ONE 3-WAY SWITCH WITH PILOT LIGHT ON EACH SIDE OF AHU TO ENERGIZE ALL LIGHTS. FACTORY WIRE ALL FIXTURES AND SWITCHES TO EXTERNAL JUNCTION BOX FOR FIELD CONNECTION TO A 277V CIRCUIT
8. HEATING COIL SHALL BE SAME SIZE AS CHW COIL UNLESS OTHERWISE INDICATED.
9. PRE-FILTERS SHALL BE SNAP-IN TYPE WITH SUPPORTS ON ALL FOUR SIDES. FILTER BANK SHALL BE FULL-SIZE. BLANK-OFF PLATES SHALL NOT BE USED. FILTERS AS MFG BY 3M/FILTRETE 800 ES PREMIUM.
10. REFER TO HUMIDIFIER SCHEDULE FOR HUMIDIFCATION SECTION.
11. HORIZONTAL DRAW-THRU
12. DOUBLE WALL CONSTRUCTION: 2" THICK, 3# INSULATION.
13. INTERNALLY ISOLATED FAN, DRIVE, AND MOTOR.
14. VARIABLE FREQUENCY DRIVES FOR EACH FAN MOTOR.
15. AHU SECTION WITH HUMIDIFIERS
    RETURN FAN SECTION
    BLANK SECTION
    BLANK SECTION
    BLANK SECTION
    AIR MIXING/SMOKE PURGE/RELIEF AIR
    AIR MIXING / FILTER SECTION
    AIR BLENDER SECTION
    HEATING COIL SECTION
    ACCESS SECTION
    HUMIDIFICATION SECTION
    COOLING COIL SECTION
    ACCESS SECTION
    MOISTURE ELIMINATOR SECTION
    SUPPLY FAN SECTION
    DIFFUSER SECTION
    FINAL FILTER SECTION
    DISCHARGE PLENUM
16. OUTSIDE AIR INTAKE SHALL BE 3'-0" MINIMUM ABOVE ADJACENT ROOF LEVEL.
17. FURNISH MOTORIZED CONTROL DAMPERS FOR SA, RA, SMOKE PURGE, RELIEF AIR AND OA WITH UNIT.
18. PROVIDE SUPPLY FAN WITH FACTORY INSTALLED AIR FLOW MEASURING PORTS.

PUMP SCHEDULE

DESIGNATION	SERVES	LOCATION	TYPE	MIN EFF %	GPM	TDH FT	ELECTRICAL HP	ELECTRICAL BHP	ELECTRICAL RPM	ELECTRICAL VOLT / PH	MANUFACTURER MODEL #	NOTES
PHP-1-1	AHU PREHEAT PUMP	CATH LAB EXPANSION	IN-LINE	70	15	15	0.25	–	1750	277/1	B&G-SERIES 60 (1X1X5 1/4))	4

NOTES:

1. VARIABLE FREQUENCY DRIVE WITH INVERTER DUTY RATED MOTOR AND BYPASS SWITCH.
2. BASE MOUNTED.
3. STEEL OR CAST IRON BASE WITH DRAIN PAN AND DRAIN PIPE CONNECTION.
4. CONSTANT SPEED PUMP
5. ONE AS STANDBY

GENERAL NOTES:

A. NAMEPLATE HORSEPOWER SHALL BE NON-OVERLOADING ON CURVE.
B. PROVIDE 1750 RPM MOTORS UNLESS OTHERWISE INDICATED.
C. OUTDOOR MOTORS SHALL BE TEFC PER DIV 23 SPECS.

ELECTRIC STEAM GENERATION HUMIDIFIER SCHEDULE

MARK	EQUIPMENT SERVED	CFM	MINIMUM HUMIDIFIER OUTPUT (LBS / HR)	MINIMUM NO. OF TUBES	MAX. ABSORPTION DISTANCE	MANUF. / MODEL	NOTES	ELECTRICAL DATA
H-1-1	AHU-1-1	14,800	188.0	6" SPACING	24", NO EXCEPTIONS	ARMSTRONG/HC-6500	ALL	480/3/60, 72kW

NOTES:

1. MULTI-TUBE DISPERSION. FOR UNITS IN AHU'S, REFER TO SCHEDULE FOR AVAILABLE COIL AREA. ALLOW 18" HEIGHT ALONG BOTTOM OF COIL FACE AREA FOR GRID CONDENSATE DRAINAGE. HUMIDIFIER GRIDS SHALL BE INSTALLED AT AHU FACTORY, COMPLETE WITH PIPING.
2. 15 PSIG STEAM INLET PRESSURE.
3. ARMSTRONG ULTASORB GRID.
4. OTHER REQUIRED COMPONENTS:
   STEAM TRAPS.
   ELECTRIC MODULATING STEAM VALVES.
   STRAINERS.
   DUCT HIGH LIMIT HUMIDISTAT.
   AIR FLOW SWITCH.
   DRAIN COOLER, HORIZONTAL STYLE.
5. PROVIDE HOUSING FOR HUMIDIFIER FOR OUTDOOR INSTALLATION.

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED
DATE APPROVED APR 1 8 2009

GENERAL NOTES

A. SELECT ALL EQUIPMENT FOR 5331 FEET ABOVE SEA LEVEL.
B. MOTORS FOR USE WITH A VFD SHALL BE INVERTER DUTY RATED AND NAMEPLATED.
C. 480/3 PHASE POWER FOR ALL MOTORS 3/4 HP AND LARGER.
D. BELT DRIVES SHALL BE RATED 1.5 TIMES MOTOR H.P.
E. PROVIDE MAGNETIC MOTOR STARTER FOR ALL NON-VFD MOTORS.

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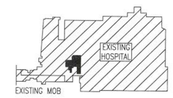
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KEY PLAN
FIRST FLOOR





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MECHANICAL SCHEDULES SHEET 2 OF 2

Sheet

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