DX COMPUTER ROOM AIR CONDITIONING

INDOOR EVAPORATOR UNIT											OUTDOOR CONDENSING UNIT @ 105 DEF F AMBIENT				
		COOLING				HEATING	HUMID.	ELECTRIC			EQUAL TO		ELECTRICAL			EQUAL TO
DESIG.	CFM	DB/WB	SENS MBH	TOTAL MBH	ESP	MBH/KW	LBS/HR	FLA	OPD	VOLT/PH	MANUF & MODEL NUMBER	DESIG.	MCA	OPD	VOLT/PH	MANUF. & MODEL NUMBER
CRAC-5-1	1250	72/60	26.2	31.8	0.3	35.2/10.3	4.3/2.0	16.9	25	480/3	LIEBERT MMD036	CU-5-1	8.1	15	460/3	LIEBERT PFH036A
CRAC-5-2	1250	72/60	26.2	31.8	0.3	35.2/10.3	4.3/2.0	16.9	25	480/3	LIEBERT MMD036	CU-5-2	8.1	15	460/3	LIEBERT PFH036A

NOTES:
1) REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2) PROVIDE CONDENSATE PUMP EQUAL TO LITTLE GIANT MODEL EC-OP-K
3) ROUTE CONDENSATE PIPING, COPPER TYPE K, TO NEAREST MOP SINK VIA APPROVED AIR GAP.
4) UNIT SHALL BE COMPLETE WITH POWER CONNECTED VIA FACTORY NON-AUTOMATIC, NON-LOCKING DISCONNECT SWITCH.
5) APPROVED MANUFACTURER'S ARE: LIEBERT, AAON, DATA-AIRE, MCQUAY.
6) ALL SUBSTITUTIONS SHALL BE APPROVED IN WRITING PRIOR TO BID.

GRILLES - REGISTERS - DIFFUSERS

DESIG	DUTY	TYPE	MOUNTING LOCATION	MATERIAL	VOLUME CONTROL	FINISH	AIR PATTERN CONTROL	METHOD OF SUPPORT	EQUAL TO MANUFACTURER AND MODEL NO.	REMARKS
A	SUPPLY	PLAQUE	LAY-IN CLG	STEEL	YES	OFF WHITE	YES	T-BAR	TITUS OMNI 24X24 FACE	SEE NOTE 1,2
B	RETURN	PERFORATED	LAY-IN CLG	STEEL	NO	OFF WHITE	NO	T-BAR	TITUS PAR 24X24 FACE	SEE NOTE 2
C	SUPPLY	SLOT	LAY-IN CLG	STEEL	YES	BLACK	YES	T-BAR	TITUS TBD80 (3)1" SLOTS	SEE NOTES 1,2,3,5
C1	SUPPLY	SLOT	GYP BD CLG	STEEL	YES	BLACK	YES	SURFACE	TITUS TBD80 (3)1" SLOTS	SEE NOTE 1,2,3,5,9
D	RETURN	EGGCRATE	SIDEWALL	ALUMINUM	NO	PRIMER	NO	SURFACE	TITUS 50FF (FILTERED)	SEE NOTE 4,6
E	SUPPLY	FIXED LOUVERED	SIDEWALL	ALUMINUM	YES	PRIMER	YES	SURFACE	TITUS 272FS	SEE NOTE 4,6
F	SUPPLY	LINEAR SLOT	GYP BD CLG	ALUMINUM	YES	PRIMER	YES	SURFACE	TITUS FL-10 (2)-" SLOTS	SEE NOTE 6,7
G	RETURN	LINEAR SLOT	GYP BD CLG	ALUMINUM	NO	PRIMER	NO	SURFACE	TITUS FLR-10 (2)1" SLOTS	SEE NOTE 6,8
H	SUPPLY	ADUSTABLE	DUCT	ALUMINUM	YES	PRIMER	YES	SURFACE	TITUS 300FS	SEE NOTE 4,6
H1	SUPPLY	ADUSTABLE	SIDEWALL	ALUMINUM	YES	PRIMER	YES	SURFACE	TITUS 300FS	SEE NOTE 4,6
I	RETURN	FIXED	SIDEWALL	ALUMINUM	NO	PRIMER	NO	SURFACE	TITUS 350RL	SEE NOTE 4,6

NOTES:
1) NECK SIZES AS FOLLOWS:

DESIGNATION "A"		DESIGNATION "C" & "C1"		
CFM RANGE	NECK SIZE	CFM RANGE	NECK SIZE	LENGTH
000-300	8"RD	000-195	8"RD	2'-0"
305-435	10"RD	200-260	8"RD	4'-0"
440-600	12"RD	000-220	10"RD	2'-0"
605-700	18X18	14"RD		

2) NOTIFY ENGINEER OF ANY DISCREPENCIES BETWEEN NEW MODEL NUMBER AND EXISTING NUMBER PRIOR TO PURCHASE.
3) COORDINATE NEW INACTIVE SECTIONS NEXT TO SLOT DIFFUSER WITH ARCHITECT PRIOR TO BIDDING.
4) REFER TO DRAWINGS FOR GRILLE/NECK SIZES.
5) INACTIVE SECTIONS OF SLOT DIFFUSERS SHALL HAVE SHEET METAL LIGHTPROOF SIGHT GUARDS AND SHALL BE USED FOR RETURN AIR.
6) EXPOSED, NON-ADJUSTABLE, PRIME AND PAINT AS REQUIRED. COORDINATE PAINT COLOR WITH ARCHITECT.
7) PROVDE NUMBER OF SUPPLY AIR PLENUMS AS SHOWN WITH AN 8"RD NECK FOR EACH PLENUM. COORDINATE EXACT LENGTH OF SLOT WITH ARCHITECT. SUPPLY AIR PLENUMS TO BE FABRICATED BY TITUS. CONFIRM BORDER TYPE 22 WITH ARCHITECT.
8) INSTALL GRILLE AND PROVIDE BLACK SHEET METAL LIGHTSHIELD FOR CONTINUOUS LOOK. COORDINATE EXACT LENGTH OF SLOT WITH ARCHITECT. COORDINATE BORDER TYPE WITH ARCHITEC
9) PROVIDE WITH PF-TBD SLOT MOUNTING FRAME FOR INSTALLATION IN SHEETROCK CEILINGS.
10) APPROVED MANUFACTURERS: PRICE, TITUS, NAILOR, & KRUEGER.

VRF DX - FAN COIL UNIT

DESIG.	SERVES	DESIGN COOLING CFM	OUTSIDE AIR CFM	NOMINAL COOLING CAPCITY BTUH	NOMINAL HEATING CAPCITY	VOLTAGE	HERTZ	MCA	MOCP	EQUAL TO MANUFACTURER	MODEL NO.
FCU-5-12	BOARD ROOM 103	810	280	24000	20000	208/1	60	2.73	15	MITSUBISHI	TPEFY-P024NMA143A
FCU-5-13	OFFICES 105-107	1035	80	30000	34000	208/1	60	2.73	15	MITSUBISHI	TPEFY-P030NMA143A
FCU-5-14	CEO OFFICE 108	1060	80	30000	34000	208/1	60	2.73	15	MITSUBISHI	TPEFY-P030NMA143A
FCU-5-15	CONFERENCE 111	240	160	6000	6700	208/1	60	1.05	15	MITSUBISHI	TPEFY-P008NMA143A
FCU-5-16	CONFERENCE 112	240	160	6000	6700	208/1	60	1.05	15	MITSUBISHI	TPEFY-P008NMA143A
FCU-5-17	OPEN OFFICE 113	1350	400	36000	40000	208/1	60	3.50	15	MITSUBISHI	TPEFY-P036NMA143A
FCU-5-18	ROOMS 101,102,104,114-118	1120	240	30000	34000	208/1	60	2.73	15	MITSUBISHI	TPEFY-P030NMA143A
FCU-5-19	OPEN OFFICE 113	1800	100	48000	54000	208/1	60	3.51	15	MITSUBISHI	TPEFY-P048NMA143A
FCU-5-20	COPY AREA 124	1700	180	48000	54000	208/1	60	3.51	15	MITSUBISHI	TPEFY-P048NMA143A
FCU-5-21	ROOMS 119,121-123,124,125-129	1425	400	48000	54000	208/1	60	3.51	15	MITSUBISHI	TPEFY-P048NMA143A
FCU-5-22	ROOMS 131-137	1070	240	30000	34000	208/1	60	2.73	15	MITSUBISHI	TPEFY-P030NMA143A
FCU-5-23	CAFÉ 141	900	240	30000	34000	208/1	60	2.73	15	MITSUBISHI	TPEFY-P030NMA143A
FCU-5-24	OPEN OFFICE 148	1800	200	48000	54000	208/1	60	3.51	15	MITSUBISHI	TPEFY-P048NMA143A
FCU-5-25	OPEN OFFICE 148	1380	480	36000	40000	208/1	60	3.50	15	MITSUBISHI	TPEFY-P036NMA143A
FCU-5-26	FOUNDER OFFICE 147	640	20	15000	17000	208/1	60	1.45	15	MITSUBISHI	TPEFY-P015NMA143A
FCU-5-27	CONFERENCE 146	230	160	6000	6700	208/1	60	1.05	15	MITSUBISHI	TPEFY-P008NMA143A
FCU-5-28	ROOMS 139,142-145	650	140	15000	17000	208/1	60	1.45	15	MITSUBISHI	TPEFY-P015NMA143A

NOTES:
1) NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67 F (DB/WB), OUTDOOR OF 95 DEGREES F (DB).
2) NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70 DEGREES F (DB), OUTDOOR OF 43 DEGREES F (WB)
3) SEE OUTDOOR UNIT SCHEDULE FOR OUTDOOR AMBIENT CONDITIONS, CONNECTED CAPACITY, AND OTHER FACTORS ASSOCIATED WITH CORRECTED CAPACITIES.
4) FULL DEMAND CORRECTED CAPACITY INCLUDES DE-RATE ASSOCIATED WITH INDOOR VS OUTDOOR CONNECTED CAPACITY INDICATED ON OUTDOOR UNIT SCHEDULE FOR ASSOCIATED SYSTEM. PARTIAL CORRECTED CAPACITY ASSUMES SUFFICIENT DIVERSITY EXISTS SUCH THAT THE CONNECTED CAPACITY DE-RATE
5) CONTROLS TO BE CLIMATEC DDC CONTROLS. REFER TO SEQUENCE OF OPERATION FOR VRF CONTROLS AND CONNECTION TO BMS.
6) APPROVED MANUFACTURER'S ARE: MITSUBISHI, SAMSUNG, CARRIER, DAIKIN, TRANE AND LG.

DALLAS GREEN BUILDING RQMTS.

SECTION 802.1 SCOPE. TO FACILITATE THE OPERATION AND MAINTENANCE OF THE COMPLETED BUILDING, THE BUILDING AND ITS SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF SECTIONS 802.2 AND 802.3.

802.2 AIR HANDLING SYSTEM ACCESS: THE ARRANGEMENT AND LOCATION OF AIR HANDLING SYSTEM COMPONENTS, INCLUDING, BUT NOT LIMITED TO, DUCTS, AIR HANDLING UNITS, FANS, COILS, AND CONDENSATE PANS, SHALL ALLOW ACCESS FOR CLEANING AND REPAIR OF AIR HANDLING SURFACES OF SUCH COMPONENTS ACCESS PORTS SHALL BE INSTALLED IN THE AIR HANDLING SYSTEM TO PERMIT SUCH CLEANING AND REPAIRS. PIPING, CONDUITS, AND OTHER BUILDING COMPONENTS SHALL NOT BE LOCATED SO AS TO OBSTRUCT THE REQUIRED ACCESS PORTS.

802.3 AIR HANDLING SYSTEM FILTRATION AND BYPASS PATHWAYS: AIR HANDLING EQUIPMENT AND HVAC EQUIPMENT SHALL BE DESIGNED AND INSTALLED TO LIMIT THE AMOUNT OF AIRFLOW THAT BY PASSES THE AIR FILTERS AND SHALL COMPLY WITH THE FOLLOWING:
1. CHANNELS, RACKS AND OTHER FILTER-RETAINING CONSTRUCTIONS THAT DO NOT SEAL TIGHTLY TO THE FILTER FRAME BY MEANS OF FRICTION FIT SHALL BE PROVIDED WITH A MEANS TO SEAL THE FILTER FRAME TO THE FILTER-HOLDING CONSTRUCTION.
2. WHERE STANDARD SIZE FILTERS ARE INSTALLED IN BANKS OF MULTIPLE FILTERS, GASKETS SHALL SEAL THE GAP BETWEEN THE FRAMES OF ADJACENT FILTERS.
3. AS AN ALTERNATIVE TO GASKETS, THE FRAMES OF ADJACENT FILTERS SHALL BE COMPRESSED TIGHTLY TOGETHER BY MEANS OF SPRING ELEMENTS THAT ARE BUILT INTO THE FILTER RETAINING CONSTRUCTION.
4. CHANNELS, RACKS AND OTHER FILTER-RETAINING CONSTRUCTIONS SHALL BE SEALED TO THE DUCT OR HOUSING OF THE HVAC EQUIPMENT SERVED BY THE FILTERS.
5. FILTER ACCESS DOORS IN DUCTS AND HVAC EQUIPMENT SHALL BE DESIGNED TO LIMIT THE AMOUNT OF AIRFLOW THAT BYPASSES THE FILTERS.
6. FIELD OR SHOP-FABRICATED SPACERS SHALL NOT BE INSTALLED FOR THE PURPOSE OF REPLACING THE INTENDED SIZE FILTER WITH A SMALLER SIZE FILTER.
7. GASKETS AND SEALS SHALL BE ACCESSIBLE FOR REPAIR, MAINTENANCE AND REPLACEMENT.

803.1 CONSTRUCTION PHASE REQUIREMENTS. THE VENTILATION OF BUILDINGS DURING THE CONSTRUCTION PHASE SHALL BE IN ACCORDANCE WITH SECTIONS 803.1.1 THROUGH 803.1.3.

803.1.1 DUCT OPENINGS. DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL, OR SHALL BE CLOSED BY AN APPROVED METHOD TO REDUCE THE AMOUNT OF DUST AND DEBRIS THAT COLLECTS IN THE SYSTEM FROM THE TIME OF ROUGH-IN INSTALLATION AND UNTIL STARTUP OF THE HEATING AND COOLING EQUIPMENT. DUST AND DEBRIS SHALL BE CLEANED FROM DUCT OPENINGS PRIOR TO SYSTEM FLUSH OUT AND BUILDING OCCUPANCY.

803.1.2 INDOOR AIR QUALITY DURING CONSTRUCTION. TEMPORARY VENTILATION DURING CONSTRUCTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 803.1.2.1 THROUGH 803.1.2.3.

803.1.2.1 VENTILATION. VENTILATION DURING CONSTRUCTION SHALL BE ACHIEVED THROUGH OPENINGS IN THE BUILDING ENVELOPE USING ONE OR MORE OF THE FOLLOWING METHODS:
1. NATURAL VENTILATION IN ACCORDANCE WITH THE PROVISIONS OF THE INTERNATIONAL BUILDING CODE OR THE INTERNATIONAL MECHANICAL CODE.
2. FANS THAT PRODUCE A MINIMUM OF THREE AIR CHANGES PER HOUR.
3. EXHAUST IN THE WORK AREA AT A RATE OF NOT LESS THAN 0.05 CFM/FT2 (0.24 L/S/IN2) AND NOT LESS THAN 10 PERCENT GREATER THAN THE SUPPLY AIR RATE SO AS TO MAINTAIN NEGATIVE PRESSURIZATION OF THE SPACE.

803.1.2.2 PROTECTION OF HVAC SYSTEM OPENINGS. HVAC SUPPLY AND RETURN DUCT AND EQUIPMENT OPENINGS SHALL BE PROTECTED DURING DUST-PRODUCING OPERATIONS.

803.1.2.3 RETURN AIR FILTERS. WHERE A FORCED AIR HVAC SYSTEM IS USED DURING CONSTRUCTION, NEW RETURN AIR FILTERS SHALL BE INSTALLED PRIOR TO SYSTEM FLUSH OUT AND BUILDING OCCUPANCY.

803.1.3 CONSTRUCTION PHASE DUCTLESS SYSTEM OR FILTER. WHERE SPACES ARE CONDITIONED DURING THE CONSTRUCTION PHASE, SPACE CONDITIONING SYSTEMS SHALL BE OF THE DUCTLESS VARIETY, OR FILTERS FOR THE DUCTED SYSTEMS SHALL BE RATED AT MERV 8 O R HIGHER IN ACCORDANCE WITH ASHRAE 52.2, AND SYSTEM EQUIPMENT SHALL BE DESIGNED TO BE COMPATIBLE, DUCT SYSTEM DESIGN SHALL ACCOUNT FOR PRESSURE DROP ACROSS THE FILTER.

803.2 THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY. BUILDING SHALL BE DESIGNED IN COMPLIANCE WITH ASHRAE 55, SECTIONS 6.1, "DESIGN" AND 6.2, "DOCUMENTATION."

EXCEPTION: SPACES WITH SPECIAL REQUIREMENTS FOR PROCESSES, ACTIVITITES, OR CONTENTS THAT REQUIRE A THERMAL ENVIRONMENT OUTSIDE OF THAT WHICH HUMANS FIND THERMALLY ACCEPTABLE, SUCH AS FOOD STORAGE, NATATORIUMS, SHOWER ROOMS, SAUNAS AND DRYING ROOMS.

803.3 ISOLATION OF POLLUTANT SOURCES. THE ISOLATION OF POLLUTANT SOURCES RELATED TO PRINT, COPY AND JANITORIAL ROOMS, GARAGES AND HANGERS SHALL BE IN ACCORDANCE WITH SECTION 803.3.1.

803.3.1 PRINTER, COPIER AND JANITORIAL ROOMS. ENCLOSED ROOMS OR SPACES THAT ARE OVER 100 SQUARE FEET (9.3 M2) IN AREA AND THAT ARE USED PRIMARILY AS A PRINT OR COPY FACILITY CONTAINING FIVE OR MORE PRINTERS, COPY MACHINES, SCANNERS, FACSIMILE MACHINES OR SIMILAR MACHINES IN ANY COMBINATION, AND ROOMS USED PRIMARILY AS JANITORIAL ROOMS OR CLOSETS WHERE THE USE OR STORAGE OF CHEMICALS OCCURS, SHALL COMPLY WITH ALL OF THE FOLLOWING:

1. THE ENCLOSING WALLS SHALL EXTEND FROM THE FLOOR SURFACE TO THE UNDERSIDE OF THE FLOOR, ROOF DECK OR SOLID CEILING ABOVE AND SHALL BE CONSTRUCTED TO RESIST THE PASSAGE OF AIRBORNE CHEMICAL POLLUTANTS AND SHALL BE CONSTRUCTED AND SEALED AS REQUIRED FOR 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION ASSEMBLIES. ALTERNATIVELY, FOR JANITORIAL ROOMS AND CLOSETS, ALL CHEMICALS SHALL BE STORED IN APPROVED CHEMICAL SAFETY STORAGE CABINETS.
2. DOORS IN THE ENCLOSING WALLS SHALL BE AUTOMATIC OR SELF-CLOSING.
3. AN HVAC SYSTEM SHALL BE PROVIDED THAT: PROVIDES SEPARATE EXHAUST AIRFLOW TO THE OUTDOORS AT A RATE OF NOT LESS THAN 0.50 CFM PER SQUARE FOOT (2.4 L/S/M2); THAT MAINTAINS A NEGATIVE PRESSURE OF NOT LESS THAN 7 PA WITHIN THE ROOM; AND THAT PROHIBITS THE RE-CIRCULATION OF AIR FROM THE ROOM TO OTHER PORTIONS OF THE BUILDINGS.

803.4 FILTERS. FILTERS FOR AIR CONDITIONING SYSTEMS THAT SERVE OCCUPIED SPACES SHALL BE RATED AT MERV 11 OR HIGHER, IN ACCORDANCE WITH ASHRAE STANDARD 52.2, AND SYSTEM EQUIPMENT SHALL BE DESIGNED TO BE COMPATIBLE. THE AIR HANDLING SYSTEM DESIGN SHALL ACCOUNT FOR PRESSURE DROP ACROSS THE FILTER. THE PRESSURE DROP ACROSS CLEAN MERV 11 FILTERS SHALL BE NOT GREATER THAN 0.45 IN. W.C. AT 500 FPM (412 PA AT 2.54 M/S) FILTER FACE VELOCITY. FILTER PERFORMANCE SHALL BE SHOWN ON THE FILTER MANUFACTURER'S DATA SHEET.

EXCEPTION: FILTERS FOR AIR CONDITIONING SYSTEMS THAT SERVE OCCUPIED SPACES IN MUTI-FAMILY RESIDENTIAL UNITS OR LIGHT COMMERCIAL SPACES SHALL BE RATED AT MERV 6 FOR SYSTEMS RATED AT 30,000 BTU/H OR LESS AND MERV 8 FOR SYSTEMS RATED OVER 30,000 BTU/H BUT NO GREATER THAN 60,000 BTU/H.

HVAC SYMBOLS

SYMBOL	DESCRIPTION
150	REDISTRIBUTE AIR TO EXISTING DIFFUSER AS INDICATED ON PLAN
10X10 100 A	INDICATES SIZE, CFM, AND DIFFUSER TYPE
	NEW CEILING SUPPLY DIFFUSER
	NEW RETURN AIR/EXHAUST GRILLE
	EXISTING RETURN AIR/EXHAUST GRILLE
	NEW SLOT DIFFUSER
	POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
E	EXISTING TO REMAIN
	REMOVE EXISTING AS INDICATED
	CAP EXISTING DUCT
	MANUAL VOLUME CONTROL DAMPER
	DUCT TRANSITION
FD T	FIRE (SMOKE) DAMPER (24V ACTUATOR)
	NEW OR RELOCATED THERMOSTAT
T	EXISTING THERMOSTAT
	FLEXIBLE DUCT CONNECTION
	INDICATES A WALL TO DECK (FOR COORDINATION PURPOSE ONLY-REFER TO ARCHITECTS PLANS FOR REQUIREMENTS)

GENERAL NOTES:

A. ALL WORK SHALL COMPLY WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES, RULES, REGULATIONS AND REQUIREMENTS.

B. ALL WORK SHALL COMPLY WITH THE BUILDING TENANT CONSTRUCTION GUIDE. COORDINATE WITH BUILDING MANAGEMENT/OWNER FOR ACCESS TO ANY TENANT LEASE SPACES THAT MIGHT BE REQUIRED FOR THE INSTALLATION. . UNLESS DIRECTED BY LANDLORD ALL EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR 1 YEAR.

C. EXISTING CONDITIONS ARE BASED ON INFORMATION PROVIDED BY SITE SURVEY AND PREVIOUS RECORD DRAWINGS. HOWEVER, IT IS NOT INTENDED TO BE A TRUE REPRESENTATION OF ACTUAL CONDITIONS. CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BIDDING TO ASCERTAIN EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO BID.

D. CONTRACTOR SHALL ENGAGE AN INDEPENDENT AIR BALANCING COMPANY TO OBTAIN AIR QUANTITIES SHOWN ON DRAWING. AT COMPLETION OF AIR BALANCE, BALANCING DAMPER SHALL BE TIGHTENED AND PROPERLY SEALED WITH FOIL TAPE.

E. ALL MEDIUM AND LOW PRESSURE DUCTWORK SHALL BE GALVANIZED SHEET METAL, FABRICATED. INSTALL AND SEAL MEDIUM PRESSURE DUCTWORK FOR 3"W.G. AND LOW PRESSURE DUCTWORK FOR 1"W.G. IN ACCORDANCE WITH SMACNA STANDARD. DUCTWORK SHALL BE INSULATED WITH FIBERGLASS BLANKET WITH FOIL FACED VAPOR BARRIER TO MEET IECC REQUIREMENT (MIN R5 VALUE).

F. ALL SUPPLY AND RETURN DUCT SIZES ARE FREE AREAS.

G. INDIVIDUAL DUCT RUN-OUTS TO EACH DIFFUSER SHALL BE SIZED IN ACCORDANCE TO THE DIFFUSER NECK SIZE FOUND IN THE GRILLES-REGISTERS-DIFFUSERS SCHEDULE UNLESS NOTED OTHERWISE

H. OFFSET DUCTS INTO JOIST SPACE FOR CLEARANCE WHERE SPACE ABOVE CEILING IS NOT SUFFICIENT FOR DUCTS TO CROSS OTHER DUCTS OR WORK OF OTHER TRADES.

I. INSULATED FLEX DUCT IN THE LOW PRESSURE SYSTEM SHALL BE LIMITED TO AN OVERALL LENGTH OF SIX (6) FEET WITH A MAXIMUM OF A 90 DEGREE CHANGE IN DIRECTION. SUPPORTS SHALL BE SADDLE BANDED TO STRUCTURE. SUPPORTING FROM FIRE PROTECTION PIPING, ELECTRICAL CONDUIT OR CEILING SUPPORT WIRES IS NOT ACCEPTABLE.

J. ENSURE NEC CLEARANCES ARE MAINTAINED INCLUDING 36" IN FRONT OF 0-208V POWER AND 42" IN FRONT OF 277/480V POWER.

K. ALL ENCLOSED ROOMS (INTERIOR AND PERIMETER) SHALL HAVE RETURN AIR PATH. ROOMS WITH ALL WALLS TO DECK SHALL HAVE LINED SHEET METAL RETURN AIR BOOTS PLACED IN WALL ABOVE CEILING SIZED FOR 500 FPM MAXIMUM. FIRE RATED WALLS SHALL HAVE FIRE DAMPERS WITHIN THE DUCT PER LOCAL CODE REQUIREMENTS. FIRE DAMPERS AND FIRE-SMOKE DAMPERS SHALL BE FREE AREA/OUT OF AIRSTREAM TYPE. ALL MOTORIZED DAMPERS SHALL BE FREE AREA/OUT OF AIRSTREAM TYPE.

L. PIPES AND DUCTS TO BE COORDINATED ON JOB WITH BUILDING STRUCTURE AND WORK OF OTHER CONTRACTORS. ROUTE AS HIGH AS PHYSICALLY POSSIBLE.

M. COORDINATE CEILING DIFFUSERS AND GRILLES WITH LIGHTING FIXTURES. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.

N. THERMOSTATS TO BE MOUNTED 48" ABOVE FINISHED FLOOR LEVEL UNLESS NOTED OTHERWISE ON THE PLANS. CONTRACTOR SHALL COORDINATE LOCATION OF THERMOSTATS WITH ARCHITECT IN FIELD

O. REPAIR AND PATCH CONSTRUCTION DAMAGED DUE TO THE DEMOLITION OF THIS PROJECT, USING SAME METHODS AND MATERIALS TO MATCH EXISTING.

P. EVAPORATORS SHALL HAVE A PRIMARY INSULATED CONDENSATE DRAIN LINE SLOPED 1/8"/FT, EXTENDED TO NEAREST FLOOR DRAIN IN MECHANICAL ROOM OR MOP SINK. GALVANIZED SHEET METAL SECONDARY DRAIN PANS SHALL HAVE LEAK DETECTION TAPE IN PAN AND ROUTE THE PAN'S INSULATED CONDENSATE DRAIN LINE SLOPED 1/8"/FT NEXT TO BUT INDEPENDENT OF PRIMARY DRAIN LINES.

Q. PROVIDE TEMPORARY HIGH EFFICIENCY FILTER MEDIA ON MAIN RETURN AIR AND EXHAUST FROM FLOOR AT BEGINNING OF PROJECT AND REPLACED AT TWO (2) WEEK INTERVALS UNTIL PROJECT COMPLETION AT WHICH TIME THE FILTER MEDIA SHALL BE REMOVED.

R. FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX: TYPE M-KE. FLEXIBLE DUCTS SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.

S. FLEXIBLE DUCT BETWEEN DUCT AND AC UNITS AND EXHAUST FANS SHALL BE EQUAL TO VENTFABRICS "VENTGLAS",

T. AIR CONDITIONING COOLING CONDENSATE PIPING TO BE ONE-HALF INCH THICK ARMAFLEX. FITTINGS SHALL BE PRE-MOLDED OF THE SAME MATERIAL. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

U. DUCTLINER SHALL BE 1-INCH ACOUSTICAL DUCT LINING IN ACCORDANCE WITH SMACNA STANDARDS. DUCT LINING SHALL BE OWENS-CORNING FIBERGLAS "AEROFLEX" NO. 200 OR EQUAL.

V. ALL EXISTING DUCTWORK SHALL BE FIELD VERIFIED TO BE INSULATED AND IN GOOD CONDITION, ANY TORN, DAMAGED OR MISSING INSULATION WILL BE REPLACED. EXISTING CONTROLS SHALL BE CONFIRMED TO BE IN WORKING CONDITION.

OPTYM

3401 OLYMPUS BLVD.
SUITE 510
DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

REVISION LOG

DATE	DESCRIPTION	DELTA

OBRIEN

5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972 . 788 . 1010
www.obrienarch.com

STATE OF TEXAS
TODD M. JOHNSON
88955
LICENSED PROFESSIONAL ENGINEER
5/11/2020

DATE SEAL:	ARCH. PROJ. #:	SCALE:
05.01.2020	202015	REF. DRAWING

SHEET NO.

M0.01

MECHANICAL NOTES & SYMBOLS

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Purdy - McGuire
Mechanical - Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511

Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguire.com

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PMI JOB NO. 20039.005
PROJECT MGR. TODD JOHNSON

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DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

SECTION 230500 - COMMON WORK RESULTS
PART 1 - GENERAL
1.1 GENERAL NOTES AND SCOPE OF WORK
A. REFER TO SECTION 220500 FOR INFORMATION RELATED TO HVAC GENERAL CONDITIONS, MISCELLANEOUS EQUIPMENT AND MATERIALS, AND CONSTRUCTION REQUIREMENTS.
1.2 RELATED SECTIONS
A. SECTIONS 230523, 230529, 230553 AND 230700 ARE APPLICABLE BUT THEY DO NOT APPEAR IN THESE DIVISION 23 SPECIFICATIONS. REFER TO GENERAL NOTES.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 230548 - VIBRATION CONTROLS
PART 1 - GENERAL
1.1 SCOPE OF WORK
A. REFER TO SECTION 230500.

PART 2 - PRODUCTS
2.1 EQUIPMENT PADS
A. PADS SHALL BE 3/4 INCH WATER RESISTANT NEOPRENE WITH WAFFLE PATTERN, MASON TYPE WSW, OR EQUAL.
2.2 ELASTOMERIC HANGERS
A. HANGER SHALL CONSIST OF RODS WITH STEEL BOX HOUSING NEOPRENE ISOLATION ELEMENT AND SPRING, MASON SERIES 30N, OR EQUAL.
2.3 RESTRAINED SPRING ISOLATORS
A. ISOLATORS SHALL UTILIZE A STEEL BASE WITH WAFFLED NEOPRENE PAD, WELDED STEEL ENCLOSURE WITH SPRING AND RESTRAINING BOLTS, MASON TYPE SLR, OR EQUAL.
2.4 ROOF CURB ISOLATORS
A. AS PART OF THE ROOF CURB, PROVIDE SPRING ISOLATORS WITH WATER-TIGHT DESIGN, RETRAINED SPRINGS AND NEOPRENE PADS, MASON TYPE RSC, OR EQUAL.
2.5 INERTIA BASES
A. PROVIDE STEEL POURING FORM FOR REINFORCED CONCRETE BLOCKS WITH FLOOR MOUNTED SPRINGS, MASON KSL, OR EQUAL.

PART 3 - EXECUTION
3.1 SCHEDULE
A. EQUIPMENT PADS - SMALL FLOOR MOUNTED EQUIPMENT OR PACKAGED EQUIPMENT WITH INTERNAL ISOLATION.
B. ELASTOMERIC HANGERS - SUSPENDED AIR HANDLING UNITS, EXHAUST FANS, TERMINAL UNITS, HEAT PUMPS, PUMPS, ETC.
C. RESTRAINED SPRING ISOLATORS - FLOOR MOUNTED FANS GREATER THAN ¾ HP.
D. ROOF CURB ISOLATORS - FACTORY FABRICATED ROOFTOP UNITS.
E. INERTIA BASES - FLOOR MOUNTED PUMPS GREATER THAN ½ HP.
3.2 INSTALLATION
A. INSTALL VIBRATION CONTROLS PER THE MANUFACTURER'S INSTRUCTIONS.

END OF SECTION

SECTION 230553 - IDENTIFICATION
PART 1 - GENERAL
1.1 SCOPE OF WORK
A. REFER TO SECTION 230500.
B. LABEL ALL NEW EQUIPMENT AND PIPING SYSTEMS.

PART 2 - PRODUCTS
2.1 PIPE LABELS
A. PRETENSION PIPE LABELS OF SEMI-RIGID PLASTIC FORMED TO COVER THE FULL CIRCUMFERENCE OF PIPE.
B. IDENTIFY THE SERVICE AND DIRECTION OF FLOW. LABELS SHALL CONTAIN AT LEAST ½ INCH HIGH LETTERING AND BE PLACED SO THEY ARE EASY TO READ.
2.2 VALVE TAGS
A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND CHAIN FOR ATTACHMENT TO VALVE.
2.3 EQUIPMENT LABELS
A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND HOLES FOR ATTACHMENT TO EQUIPMENT.

PART 3 - EXECUTION
3.1 PIPE LABELS
A. INSTALL PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE AN ACCESSIBLE CEILING AT MAXIMUM 20 FT. CENTERS.
3.2 VALVE TAGS
A. ATTACH TAGS TO VALVES USING CHAIN. PROVIDE A VALVE SCHEDULE FOR MOUNTING IN THE MECHANICAL ROOM.
3.3 EQUIPMENT LABELS
A. PERMANENTLY ATTACH LABELS TO EQUIPMENT. LOCATE WHERE LABEL CAN BE EASILY SEEN AND READ.

END OF SECTION.

SECTION 230593 - TESTING ADJUSTING AND BALANCING
PART 1 - GENERAL
1.1 SCOPE OF WORK
A. THE WORK INCLUDED IN THIS SECTION CONSISTS OF FURNISHING ALL LABOR, MATERIALS, INSTRUMENTS, TOOLS, AND SERVICES REQUIRED IN CONNECTION WITH THE TESTING, ADJUSTING AND BALANCING (TAB) OF THE HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS AS DESCRIBED IN THE MECHANICAL SPECIFICATIONS AND/OR SHOWN ON THE MECHANICAL PLANS, OR REASONABLY IMPLIED THERE FROM.
B. THE TAB FIRM SHALL HAVE A LICENSED PROFESSIONAL ENGINEER SUPERVISING ALL WORK AND THE FIRM SHALL HOLD A CURRENT AABC OR NEHB CERTIFICATION.
C. REFER TO SECTION 230500.
1.2 START-UP, TEST AND ADJUST
A. PROVIDE ALL TESTS OF EQUIPMENT AND SYSTEMS REQUIRED TO PROVE COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS. OWNER SHALL BE MADE COMPLETELY FAMILIAR WITH THE COMPLETE WORKING OF ALL THE MECHANICAL SYSTEMS.
B. THE TESTS SHALL DEMONSTRATE THE SPECIFIED CAPACITIES AND OPERATION OF ALL EQUIPMENT AND MATERIALS COMPRISING THE SYSTEMS. ALL DATA REQUIRED BY THESE SPECIFICATIONS SHALL BE PREPARED ON TYPED FORMS AND SUBMITTED TO THE ENGINEER FOR APPROVAL. COMPLETE APPROVAL WILL BE NECESSARY BEFORE FINAL PAYMENT CAN BE MADE. THE CONTRACTOR SHALL THEN MAKE AVAILABLE SUCH INSTRUMENTS NECESSARY FOR SPOT CHECKS ON THE SYSTEM.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION
3.1 HVAC SYSTEM
A. THE HVAC CONTRACTOR SHALL WORK IN CONJUNCTION WITH THE TAB CONTRACTOR TO START-UP AND OPERATE ALL EQUIPMENT NECESSARY TO PROVIDE A COMPLETE AIR AND WATER TEST AND BALANCE REPORT.
B. TAB CONTRACTOR SHALL MEASURE CFM AT ALL DIFFUSERS, REGISTERS AND GRILLES, AND HVAC UNITS, AS WELL AS WATER FLOWS AT COILS AND PUMPS, TO ASSURE THAT THEY MATCH THE QUANTITIES SHOWN ON THE PLANS (PLUS OR MINUS 5 PERCENT). CONFIRM ALL SEQUENCES OF OPERATION ARE PERFORMING CORRECTLY.
C. TAB CONTRACTOR SHALL CALIBRATE ALL EQUIPMENT AND SENSORS TO WORK PROPERLY AND GIVE CORRECT INFORMATION TO THE BMS SYSTEM.

END OF SECTION

SECTION 230900 - CONTROLS
PART 1 - GENERAL
1.1 SCOPE OF WORK
A. REFER TO SECTION 230500.

PART 2 - PRODUCTS
2.1 CONTROLS SYSTEM
A. PROVIDE NEW, MODIFY OR EXTEND AUTOMATIC TEMPERATURE CONTROLS TO ALL NEW EQUIPMENT SHOWN ON THE DRAWINGS.
B. REFER TO THE DRAWINGS FOR ANY SPECIAL SEQUENCES OF CONTROL AND LOCATION OF EQUIPMENT.
C. REMODEL PROJECTS SHALL UTILIZE EQUIPMENT BY THE SAME MANUFACTURER AS CURRENTLY EXISTS.

PART - EXECUTION
3.1 DESIGN AND LAYOUT
A. THE CONTROL SYSTEM DESIGN AND LAYOUT SHALL BE PERFORMED BY A FACTORY AUTHORIZED AGENT OF THE MANUFACTURER USED.
3.2 SYSTEM OPERATION
A. AT THE CONCLUSION OF WORK, ALL EQUIPMENT AND SYSTEMS SHALL BE PROVEN TO THE ENGINEER TO OPERATE IN ACCORDANCE WITH THE NEW OR EXISTING MAIN CONTROL PANEL AND NEW/EXISTING SEQUENCES OF OPERATION ON THE DRAWINGS.
B. PROVIDE ALL WIRING REQUIRED TO CONNECT INPUT/OUTPUT DEVICES TO CONTROL PANELS.
C. TEST AND ADJUST ALL DEVICES AND DOCUMENT CALIBRATION.
D. PROVIDE NECESSARY INSTRUCTION TO THE OWNER'S PERSONNEL.

END OF SECTION

SECTION 233113 - DUCTWORK
PART 1 - GENERAL
1.1 SCOPE OF WORK
A. REFER TO SECTION 230500.

PART 2 - PRODUCTS
2.1 GENERAL
A. CONCEALED DUCTWORK SHALL BE CONSTRUCTED OF NEW, PRIME GRADE, CONTINUOUS HOT-DIP MILL GALVANIZED, LOCK-FORMING, QUALITY STEEL. REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
B. WHERE DUCTS EXPOSED TO VIEW PASS THROUGH WALLS, FLOORS OR CEILINGS, PROVIDE SHEET METAL COLLARS TO COVER VOIDS AROUND THE DUCTS.
C. SQUARE AND ROUND ELBOWS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA STANDARDS. ELBOWS NOT CONSTRUCTED WITH A CENTERLINE RADIUS OF AT LEAST 50 PERCENT OF THE DUCT WIDTH OR DIAMETER SHALL BE PROVIDED WITH TURNING VANES IN ACCORDANCE WITH SMACNA STANDARDS.
D. "FIBERBOARD" DUCTWORK WILL NOT BE ACCEPTED ON THIS PROJECT.
2.2 MEDIUM PRESSURE DUCT CONSTRUCTION
A. UNLESS NOTED OTHERWISE, MEDIUM PRESSURE DUCTS SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF THREE (3) INCHES WG POSITIVE.
B. ALL ROUND MEDIUM PRESSURE DUCTS SHALL BE SPIRAL TYPE.
2.3 LOW PRESSURE DUCT CONSTRUCTION
A. LOW PRESSURE DUCTS CONNECTING SMALL AIR HANDLING EQUIPMENT, SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF TWO (2) INCHES WG, POSITIVE OR NEGATIVE AS APPROPRIATE. THESE LOW PRESSURE ROUND DUCTS SHALL BE SPIRAL TYPE.
B. DUCTWORK DOWN STREAM OF AIR TERMINAL UNITS SHALL BE CONSTRUCTED TO A PRESSURE CLASSIFICATION OF ONE (1) INCHES WG POSITIVE. THESE LOW PRESSURE ROUND DUCTS MAY BE SPIRAL OR SNAP-LOCK TYPE.
C. SHOP FABRICATED DUCTS SHALL BE CONSTRUCTED, BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA STANDARDS.
2.4 DUCT SEALING
A. SEAL ALL DUCTWORK ON THE PROJECT TO SMACNA CLASSIFICATION A.
2.5 FLEXIBLE DUCTS
A. FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX TYPE M-KE AND SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.
B. FLEXIBLE DUCTS SHALL BE FACTORY INSULATED WITH A NOMINAL 1 INCH THICKNESS OF FIBERGLASS INSULATION, PRODUCING A THERMAL CONDUCTANCE ("C") OF 0.23. DUCTS SHALL HAVE A POSITIVE INTERIOR AIR SEAL PERMANENTLY BONDED TO A COATED HIGH CARBON SPRING STEEL HELIX, ALL SHEATHED IN AN OUTER VAPOR BARRIER OF FIBERGLASS REINFORCED FILM LAMINATE.
C. FLEXIBLE DUCTS SHALL BE RATED FOR OPERATING PRESSURE OF PLUS 6 INCHES WG THROUGH 10 INCH DIAMETER, PLUS 4 INCHES WG THROUGH 16 INCH DIAMETER AND - 2 INCHES WG FOR ALL SIZES.
A. FLEXIBLE DUCTS TO DIFFUSERS AND GRILLES SHALL BE LIMITED TO 6 FOOT LENGTHS AND A MAXIMUM OF ONE (1) 90 DEGREE CHANGE IN DIRECTION. MEDIUM PRESSURE DUCTS SERVING TERMINAL UNITS SHALL BE LIMITED TO 2 FOOT LENGTHS WITH NO ELBOWS.
2.6 FLEXIBLE DUCT FABRIC
A. PROVIDE VENTFABRICS "VENTGLAS", OR EQUAL, 30 OZ PER SQ YD, BETWEEN SHEET METAL DUCTS AND AIR HANDLING EQUIPMENT, INCLUDING ALL FANS, AND POWER TYPE VENTILATORS.
2.7 DAMPERS
A. DAMPER AND SPLITTER HARDWARE FOR LOW PRESSURE DUCTS SHALL BE:
END BEARINGS - VENTLOK #607
REGULATOR FINISHED AREAS - VENTLOK #666, PLAIN COVER
REGULATOR UNFINISHED AREAS - VENTLOK #640, 3/8 INCH.
B. VOLUME DAMPERS SHALL BE LOCATED AT BRANCH TAKE-OFFS AT MAIN TRUNK DUCT. NO DAMPERS (SPLITTER DAMPERS) SHALL BE LOCATED IN THE CENTER OF DUCTS.

PART 3 - EXECUTION
3.1 FABRICATION
A. DUCTWORK SHOWN ON THE DRAWINGS, SPECIFIED, OR REQUIRED FOR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS SHALL BE CONSTRUCTED AND ERECTED IN A FIRST CLASS MANNER.
B. DUCTS SHALL BE REINFORCED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS TO PREVENT BUCKLING, BREATHING, VIBRATION AND UNNECESSARY NOISE.
C. PROVIDE MANUALLY OPERATED VOLUME CONTROL DAMPERS IN DUCT BRANCHES, FOR PROPER BALANCING OF AIR DISTRIBUTION. DAMPERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.
D. PROVIDE HINGED ACCESS DOORS IN DUCTWORK FOR ACCESS TO ALL SMOKE DETECTORS, SENSORS, AND OTHER CONTROL DEVICES, MANUAL DAMPERS, AND FOR CLEANING OPERATIONS. FACTORY FABRICATED DOORS SIMILAR AND EQUAL TO MILCOR AND MEETING THESE SPECIFICATIONS SHALL BE ACCEPTABLE.
E. WHERE DUCTS CONNECT TO FANS, INCLUDING ROOF EXHAUSTERS PROVIDE FLEXIBLE DUCT FABRIC CONNECTIONS. PROVIDE A MINIMUM OF ½ INCH SLACK IN THE CONNECTIONS, AND A MINIMUM OF 2-1/2 INCH DISTANCE BETWEEN THE EDGES OF THE DUCTS, PLUS AN ADDITIONAL MINIMUM IF 1 INCH OF SLACK FOR EACH INCH OF STATIC PRESSURE ON THE FAN SYSTEM.
F. PROVIDE SCREENS ON DUCTS, FANS AND OPENINGS WHICH LEAD TO, OR ARE OUTDOORS. SCREENS SHALL BE 16 GAUGE, ½ INCH MESH, IN REMOVABLE GALVANIZED STEEL FRAMES.
G. FURNISH TEST OPENINGS WITH COVERS IN EACH DUCT FOR TAKING READINGS OF AIR VELOCITIES AND PRESSURES IN DUCTS. REFER TO THE APPROPRIATE SMACNA STANDARD FOR COVER CONSTRUCTION.
3.2 DUCT SUPPORTS
A. HORIZONTAL AND VERTICAL SHEET METAL DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.
B. HANGER DESIGN AND METHODS OF HANGING AND SUPPORTING SHALL BE COMPATIBLE WITH THE STRUCTURE.

END OF SECTION

SECTION 233713 - DIFFUSERS, REGISTERS AND GRILLES
PART 1 - GENERAL
1.1 GENERAL NOTES
A. REFER TO SECTION 230500

PART 2- PRODUCTS
2.1 AIR INLETS AND OUTLETS
A. GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE AS INDICATED ON THE DRAWING, AND SHALL BE PROVIDED WITH HEAVY DUTY SPONGE, OR SOFT FELT GASKETS. THE THROW SHALL BE SUCH THAT THE VELOCITY AT THE END OF THE THROW IN THE FIVE (5) FOOT OCCUPANCY ZONE WILL NOT BE MORE THAN 50 FPM NOT LESS THAN 25 FPM. NOISE LEVELS (NC CURVE) SHALL NOT EXCEED 40.
B. IF PRODUCTS OF A MANUFACTURER OTHER THAN THE ONES INDICATED ON THE DRAWINGS ARE USED, THE SIZES SHOWN ON THE DRAWING SHALL BE CHECKED FOR PERFORMANCE, NOISE LEVEL, FACE VELOCITY, THROW AND PRESSURE DROP BEFORE THE SUBMITTAL IS MADE. SELECTIONS SHALL MEET THE MANUFACTURER'S OWN PUBLISHED DATA FOR THE ABOVE PERFORMANCE CRITERIA. SHOULD DEVICES OTHER THAN THOSE SCHEDULED BY NAME BE FURNISHED, THE MANUFACTURER SHALL DEMONSTRATE COMPLIANCE WITH NOISE CRITERIA, ON REQUEST, TO THE ARCHITECT'S SATISFACTION.
C. WHERE CALLED FOR IN SCHEDULES, THE GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE PROVIDED WITH DEFLECTING DEVICES AND MANUAL DAMPERS. THESE SHALL BE STANDARD PRODUCTS OF THE MANUFACTURER, SUBJECT TO REVIEW BY THE ARCHITECT, AND SHALL BE SIMILAR AND EQUAL TO THOSE SCHEDULED.

PART 3 - EXECUTION
3.1 INSTALLATION
A. LOCATIONS OF OUTLETS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE THE EXACT LOCATION WITH REFLECTED CEILING PLAN AND OTHER TRADES.
B. VERIFY THE TYPE OF CEILING SYSTEM AND MATERIAL INTO EACH OF THE AIR INLETS AND OUTLETS IS TO BE INSTALLED, AND PROVIDE EQUIPMENT, WHICH PROPERLY "FITS" WHETHER SPECIFICALLY, SO INDICATED OR NOT ON THE DRAWINGS.

END OF SECTION

OPTYM

3401 OLYMPUS BLVD.
SUITE 510
DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

REVISION LOG

DATE	DESCRIPTION	DELTA

OBRIEN

5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972 . 788 . 1010
www.obrienarch.com

STATE OF TEXAS
TODD M. JOHNSON
86955
LICENSED
PROFESSIONAL ENGINEER
5/11/2020

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M1.01

MECHANICAL SPECIFICATIONS

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Purdy – McGuire
Mechanical – Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511

Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguire.com

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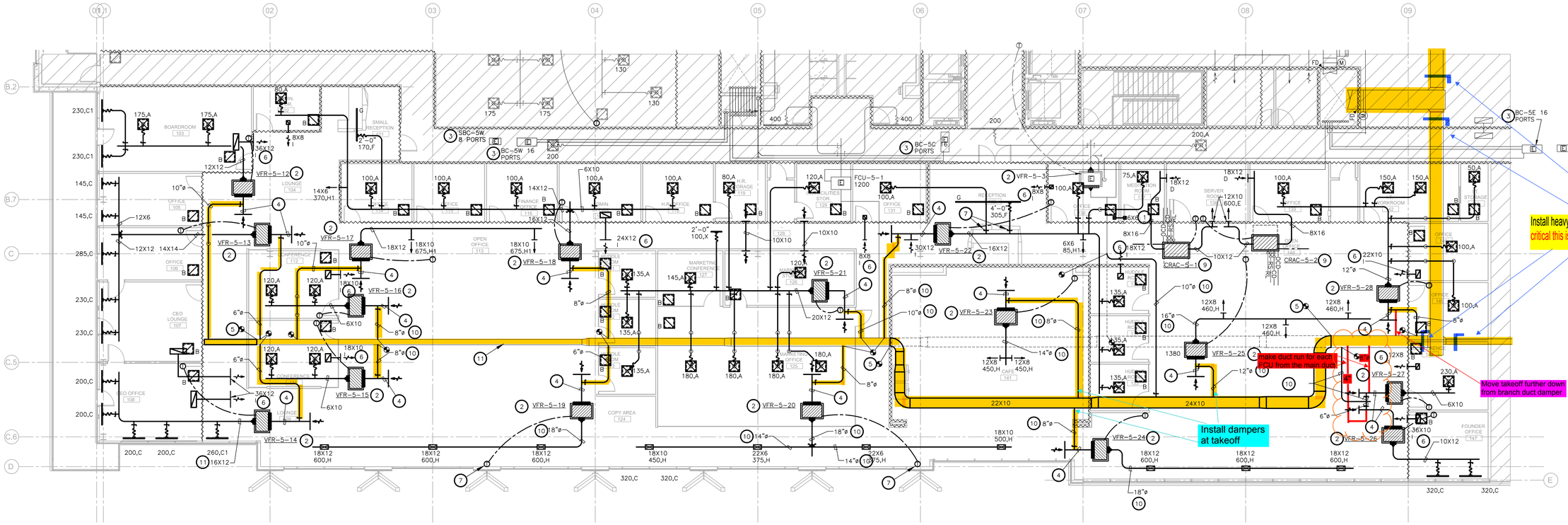

1 LEVEL 05 MECHANICAL PLAN
SCALE: 1/8"=1'-0"

SEQUENCE OF OPERATION REDUDANCY

PRIMARY AC UNITS SHALL RUN DURING OPERATING HOURS. ONE AC UNIT SHALL BE CONSIDERED AS A BACKUP AND ITS COMPRESSOR AND FAN SHALL BE OFF. THE BACKUP UNIT SHALL BE ACTIVATED BY FAILURE OF ANY ONE OF THE PRIMARY UNITS VIA LIEBERT AC4 CONTROLLER. ONCE THE PRIMARY UNIT IS OPERATIONAL, THE BACKUP UNIT'S FAN AND COMPRESSOR SHALL CEASE TO OPERATE. AC4 CONTROL PANEL SHALL PROVIDE LEAD/LAG CAPABILITY SO BACKUP UNIT CAN ROTATE AT A CONSISTANCE TIME PERIOD.

NOTES BY SYMBOL ⓧ:

1. PROVIDE ACOUSTICALLY LINED RETURN AIR BOOT THRU WALL TO DECK AS HIGH AS POSSIBLE ABOVE CEILING WITH INLET ELBOW AND OUTLET 90° ELBOW FACING UPWARD. SIZE PER PLANS. REFER TO DETAIL 01/M0.01 FOR MORE INFORMATION.
2. FC UNIT TO BE SUSPENDED FROM STRUCTURE. PROVIDE A GALVANIZED SHEET METAL SECONDARY DRAIN PAN THAT IS A MINIMUM OF 3" LARGER (ON EACH SIDE) THAN ANY DIMENSION OF THE UNIT AND MUST EXTEND UNDER THE CONDENSATE PUMPS. EXTEND FULL SIZED RETURN AIR PLENUM AS INDICATED ON DRAWINGS. PROVIDE MANUAL DAMPER AT OUTSIDE AIR DUCT CONNECTION TO PLENUM.
3. EXISTING BRANCH CONTROLLER SUSPENDED FROM STRUCTURE WITH ISOLATION SPRINGS.
4. EXTEND FULL SIZED RETURN PLENUM FROM FAN COIL UNIT AS SHOWN. PROVIDE WIRE MESH AT RETURN AIR OPENING IN PLENUM. CONNECT OUTSIDE AIR DUCT WITH BALANCING DAMPER AS SHOWN ON DETAIL LOCATED ON SHEET M3.01.
5. EXTEND NEW FULL SIZE DUCT SAME SIZE AND MATERIALS TO MATCH EXISTING DUCT. DUCT TO BE PRIMED FOR PAINTING. VERIFY SIZE AT JOB SITE PRIOR TO BIDDING.
6. PROVIDE ACOUSTICALLY LINED RETURN AIR BOOT FROM GRILLE THRU WALL TO DECK AS HIGH AS POSSIBLE.
7. PROVIDE YOUNG REGULATOR FOR VOLUME DAMPER CONTROLS. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION.
8. PROVIDE INSULATION PAD TO BE INSTALLED BETWEEN THERMOSTAT AND PERIMETER WALL FOR THERMOSTATS MOUNTED ON EXTERIOR COLUMN/WALLS.
9. AC UNIT TO BE SUSPENDED FROM STRUCTURE WITH ISOLATION SPRINGS. REFER TO PLUMBING SHEET FOR WATER REQUIREMENTS. PROVIDE A GALVANIZED SHEET METAL SECONDARY DRAIN PAN THAT IS A MINIMUM OF 3" LARGER (ON EACH SIDE) THAN ANY DIMENSION OF THE UNIT AND MUST EXTEND UNDER THE CONDENSATE PUMPS.
10. ALL EXPOSED ROUND DUCTWORK SHALL BE DOUBLE WALL INSULATED SPIRAL DUCT, MOUNTED AT HEIGHT REQUIRED TO MAINTAIN GRILLES AT NO LOWER THAN ANY LIGHT FIXTURE.
11. NEW AND EXISTING EXPOSED RECTANGULAR DUCT TO PRIMED FOR PAINTING. NEW LOW PRESSURE DUCT SHALL BE INTERNALLY LINED.

REFER TO SHEET M0.01 FOR GENERAL NOTES, SCHEDULES AND SYMBOLS.

OPTYM

3401 OLYMPUS BLVD.
SUITE 510
DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

REVISION LOG

DATE	DESCRIPTION	DELTA

OBRIEN

5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972 . 788 . 1010
www.obrienarch.com

STATE OF TEXAS
TODD M. JOHNSON
86955
LICENSED
PROFESSIONAL ENGINEER
5/1/2020

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M2.05

LEVEL 05
MECHANICAL
PLAN

Purdy – McGuire
Mechanical – Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248–1147
Firm Registration # F–1511
Tel: 972/239–5357
Fax: 972/239–5231
www.purdy–mcguire.com

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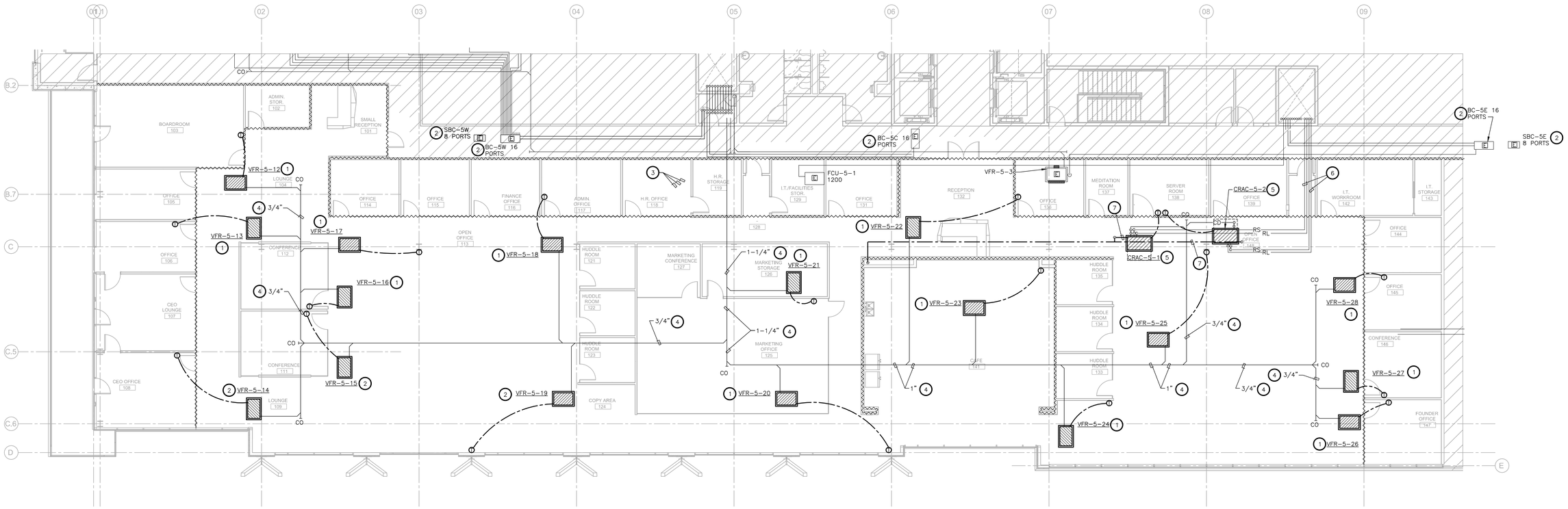

1 LEVEL 05 MECHANICAL PLAN
SCALE: 1/8"=1'-0"

SEQUENCE OF OPERATION

UPON LEAK DETECTION ALARM, SIGNAL SHALL ALARM AND CLOSE A LINE SIZE 2-POSITION SOLENOID VALVE IN HUMIDIFIER SUPPLY LINE (IF PRESENT IN SCOPE) DOWNSTREAM OF SUPPLY LINE SHUTOFF VALVE.

NOTES BY SYMBOL (X):

1. FC UNIT TO BE SUSPENDED FROM STRUCTURE. PROVIDE A GALVANIZED SHEET METAL SECONDARY DRAIN PAN THAT IS A MINIMUM OF 3" LARGER (ON EACH SIDE) THAN ANY DIMENSION OF THE UNIT AND MUST EXTEND UNDER THE CONDENSATE PUMPS.
2. EXISTING BRANCH CONTROLLER SUSPENDED FROM STRUCTURE WITH ISOLATION SPRINGS.
3. COORDINATE WITH MANUFACTURER'S SPECIFICATIONS FOR REFRIGERANT REQUIREMENTS. COORDINATE ROUTING FROM FC UNIT TO BRANCH CONTROLLER. LOCATION OF FCU SHALL NOT EXCEED 150' OF PIPING BETWEEN UNITS.
4. PROVIDE A 3/4" INSULATED CONDENSATE DRAIN AND OVERFLOW PIPING ABOVE CEILING. EXTEND AND DISCHARGE TO NEAREST JANITORS MOP SINK. ALL PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE, AND SLOPED AT 1/8" PER FOOT TOWARDS FLOOR DRAIN. PROVIDE CONDENSATE PUMP CAPABLE OF A MINIMUM OF 10' OF HEAD PRESSURE WITH UNIT IF REQUIRED SLOPE IS UNATTAINABLE.
5. AC UNIT TO BE SUSPENDED FROM STRUCTURE WITH ISOLATION SPRINGS. REFER TO PLUMBING SHEET FOR WATER REQUIREMENTS. PROVIDE A GALVANIZED SHEET METAL SECONDARY DRAIN PAN THAT IS A MINIMUM OF 3" LARGER (ON EACH SIDE) THAN ANY DIMENSION OF THE UNIT AND MUST EXTENDS UNDER THE CONDENSATE PUMPS.
6. INSTALL CONDENSING UNIT ON SUPPORTS EQUAL TO BIGFOOT SYSTEMS IN PITCH PAN ON ROOF. VERIFY EXACT LOCATION WITH ARCHITECT AND BUILDING REPRESENTATIVE. SIZE AND INSTALL REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATION. COORDINATE WITH MANUFACTURER'S SPECIFICATIONS FOR REFRIGERANT REQUIREMENTS. COORDINATE ROUTING FROM AC UNIT TO ROOF WHERE CONDENSING UNIT IS LOCATED. LOCATION OF CU SHALL NOT EXCEED 150' OF PIPING BETWEEN UNITS.
7. HUMIDIFIER CONNECTION. REFER TO PLUMBING SHEET FOR WATER REQUIREMENTS. (IF THERE IS NO PLUMBING SHEET: PROVIDE 1/2" COLD WATER WITH SHUTOFF AND SOLENOID VALVE AND EXTEND 1/4" COPPER TUBING TO AHU. PROVIDE REDUCED PRESSURE ZONE ASSEMBLY (RPZ) EQUAL TO WATTS 009 SERIES. EXTEND WATER LINE TO NEAREST DOMESTIC COLD WATER LINE 3/4" OR LARGER. VERIFY ROUTING AT JOB SITE PRIOR TO ROUGH-IN.)

REFER TO SHEET M0.01 FOR GENERAL NOTES, SCHEDULES AND SYMBOLS.

OPTYM

3401 OLYMPUS BLVD.
SUITE 510
DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

REVISION LOG

DATE	DESCRIPTION	DELTA

O'BRIEN

5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972 . 788 . 1010
www.obrienarch.com

STATE OF TEXAS
TODD M. JOHNSON
86955
LICENSED PROFESSIONAL ENGINEER
5/1/2020

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M2.15

LEVEL 05
MECHANICAL PLAN -
REFRIGERANT PIPING

Purdy – McGuire
Mechanical – Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511

Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguire.com

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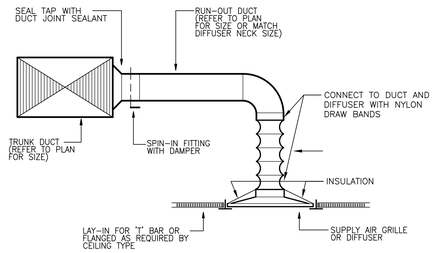

1 DIFFUSER CONNECTION DETAIL
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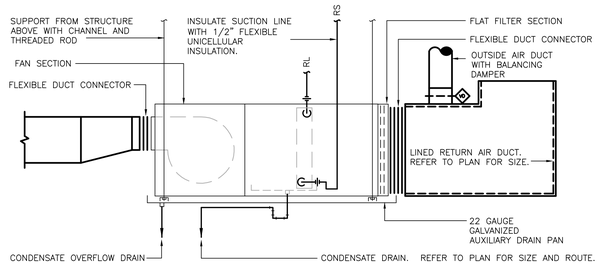
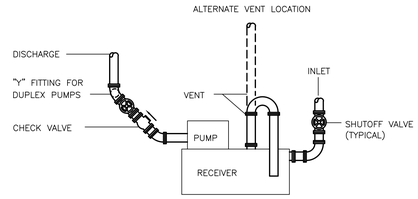
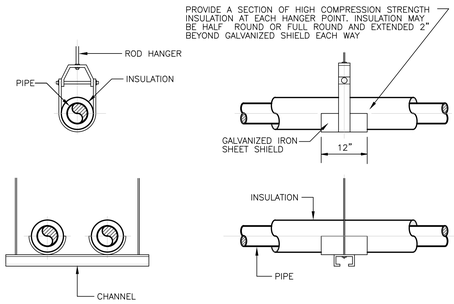


NOTE: REFER TO COIL PIPING DETAILS FOR ADDITIONAL REQUIREMENTS.

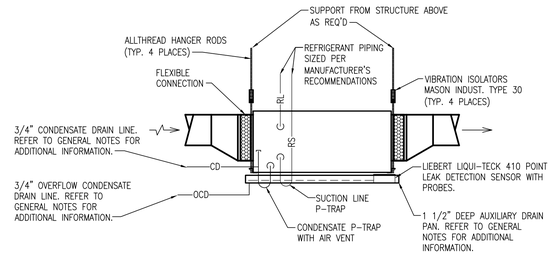
2 VFR UNIT INSTALLATION DETAILS
SCALE: NOT TO SCALE



3 CONDENSATE PUMP DETAIL
SCALE: NOT TO SCALE



4 PIPE HANGING SUPPORT DETAILS
SCALE: NOT TO SCALE



5 SUSPENDED DX CRAC UNIT INSTALLATION DETAIL
SCALE: NO SCALE

OPTYM

3401 OLYMPUS BLVD.
SUITE 510
DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

REVISION LOG

DATE	DESCRIPTION	DELTA

O'BRIEN

5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972 . 788 . 1010
www.obrienarch.com

STATE OF TEXAS
TODD M. JOHNSON
86955
LICENSED PROFESSIONAL ENGINEER
5/1/2020

DATE SEAL:	ARCH. PROJ. #:	SCALE:
05.01.2020	202015	REF. DRAWING

SHEET NO.

M3.01

MECHANICAL DETAILS

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Purdy – McGuire
Mechanical – Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511

Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguire.com

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