HVAC SPECIFICATIONS

1. ALL WORK AND EQUIPMENT SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, ETC., OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO: THE INTERNATIONAL MECHANICAL CODE, THE LOCAL FIRE MARSHAL, UNDERWRITERS LABORATORY (UL), IRI, FM, OSHA, AND THE NATIONAL ELECTRICAL CODE (NEC). MODIFICATIONS REQUIRED BY THE ABOVE SAID AUTHORITIES TO BRING THE SPACE UNDER CONTRACT UP TO CODE SHALL BE MADE WITHOUT ADDITIONAL CHARGE. WHERE CONTRACT DOCUMENT REQUIREMENTS ARE IN EXCESS OF CODE REQUIREMENTS, THE CONTRACT DOCUMENTS SHALL GOVERN. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

2. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.

3. CONTRACTOR SHALL VERIFY ALL POINTS OF CONNECTION BEFORE COMMENCING WORK. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES. CONTRACTOR SHALL REMOVE ALL WASTE MATERIALS, DEBRIS, AND RUBBISH FROM SITE AND LEGALLY DISPOSE OF IT. ALL UNUSED EQUIPMENT SERVING THIS AREA SHALL BE REMOVED AND RETURNED TO THE OWNER.

4. CONTRACTOR SHALL CONFIRM THE REQUIREMENTS FOR PREMIUM TIME OR SPECIAL PROCEDURES WITH THE OWNER AND INCLUDE THE COST IN HIS BID PROPOSAL. THE CONTRACTOR, BY SUBMITTING HIS BID PROPOSAL AGREES TO ACCEPT ALL EXISTING SITE CONDITIONS NOT SPECIFICALLY EXCEPTED. ALL EXCEPTIONS SHALL BE PROVIDED IN WRITING TO THE ARCHITECT AND ENGINEER.

5. CONTRACTOR SHALL COORDINATE, PREPARE AND SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR THEIR APPROVAL. SHOP DRAWINGS TO BE SUBMITTED INCLUDE: SHEETMETAL, DIFFUSERS, GRILLES, REGISTERS, FIRE DAMPERS, AND ALL EQUIPMENT. SHEETMETAL SHOP DRAWINGS SHALL BE COORDINATED WITH ALL DISCIPLINES AND SHOW DUCT ELEVATIONS. PROVIDE RISES, DROPS AND OFFSETS AS REQUIRED. BRING AREAS OF POTENTIAL CONFLICT TO THE ENGINEERS ATTENTION.

6. A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED IN THE GENERAL CONTRACTOR'S OFFICE AT THE JOB SITE. ACTUAL LOCATIONS OF ALL EQUIPMENT, PIPING, DUCTWORK, ETC., AND ALL DEVIATIONS OF THE WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS SHALL BE MARKED ON THE RECORD/COORDINATION DRAWINGS. EACH TRADE SHALL REVIEW THE COORDINATION DRAWINGS AND RESOLVE ANY POTENTIAL CONFLICTS WITH OTHER TRADES PRIOR TO INSTALLING ANY PORTION OF THEIR WORK. CONTRACTOR SHALL NOT CORE, DRILL, OR CUT CONCRETE SLABS FOR ANY REASON WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE STRUCTURAL ENGINEER AND THE OWNER.

7. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY.

8. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTOR'S PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

9. THE GENERAL CONTRACTOR SHALL BRING TO THE ATTENTION OF THE MECHANICAL CONTRACTOR ANY SLAB-TO-SLAB PARTITIONS IN ORDER TO PRESERVE RETURN AIR PATHWAYS. ALL PENETRATIONS OF SLAB-TO-SLAB PARTITIONS SHALL BE SEALED AIRTIGHT. CONTRACTOR SHALL VERIFY PARTITION RATING AND PROVIDE FIRE DAMPER AND ACCESS DOOR AS REQUIRED. CURTAIN TYPE DAMPERS SHALL BE W/ THE CURTAIN OUT OF THE AIR STREAM.

10. WHEREVER FIRE RATED PARTITIONS ARE PENETRATED FOR WIRE, DUCT, OR PIPE PASSAGE, SEAL PASSAGES WITH CODE APPROVED, LABORATORY TESTED AND LABELED SEALANT OF FIRE RESISTANCE RATING NOT LESS THAN THAT OF PENETRATED ASSEMBLY THAT WILL PREVENT PASSAGE OF FIRE AND SMOKE.

11. CONTRACTOR SHALL VERIFY THAT THE LOCATION OF CEILING MOUNTED DIFFUSERS, GRILLES, AND REGISTERS SHOWN ON THE DRAWINGS ARE ACCEPTABLE TO THE ARCHITECT PRIOR TO INSTALLATION.

12. ALL NEW RECTANGULAR DUCTWORK SHALL BE 1 INCH W.G. CONSTRUCTION, CONSTRUCTED OF LOCK FORMING GALVANIZED STEEL IN ACCORDANCE WITH THE LATEST EDITION OF THE "DUCT MANUAL AND SHEET METAL CONSTRUCTION FOR VENTILATING AND AIR CONDITIONING SYSTEMS," PUBLISHED BY THE "SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION INC. (SMACNA)." VOLUME DAMPERS SHALL BE PROVIDED IN ALL BRANCH TAKE OFFS, SPIN-INS OR OTHER CONNECTIONS TO INDIVIDUAL AIR DISTRIBUTION DEVICES. ALL 90 DEGREE ELBOWS SHALL BE RADIUS, OR RECTANGULAR WITH TURNING VANES . DUCTWORK SHALL BE HUNG FROM THE BUILDING STRUCTURE WITH HANGER ASSEMBLIES IN ACCORDANCE WITH "SMACNA" REQUIREMENTS. ALL DUCTWORK SHALL BE SEALED USING HARDCAST TAPE AND ADHESIVE (2 PART SYSTEM). CONTRACTOR SHALL USE APPROPRIATE SYSTEM FOR OUTDOOR OR INDOOR APPLICATION. IRON GRIP MAY BE USED AS AN ALTERNATE FOR SEALING INDOOR DUCTWORK. ALL DUCT, REGARDLESS OF PRESSURE CLASS, SHALL BE SEALED PER SMACNA CLASS "A" REQUIREMENTS.

13. ALL NEW RIGID SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK SHALL BE EXTERNALLY INSULATED WITH 1-1/2 INCH THICK FIBERGLASS FLEXIBLE BLANKET INSULATION WITH FACTORY FOIL JACKET(RATED FIRE=25, SMOKE=50) SECURED TO THE DUCTWORK WITH BENJAMIN FOSTER NO. 85-20 ADHESIVE AND PUSH PINS ON 12 INCH CENTERS. EXTERNAL INSULATION IS NOT REQUIRED WHERE DUCTWORK IS INTERNALLY SOUNDLINED.

14. THE FIRST 15 FEET OF SUPPLY AND RETURN DUCTWORK SHALL BE INTERNALLY LINED WITH 1 INCH, 2LB, FIBERGLASS, FIRE=25, SMOKE=50, UNLESS OTHERWISE NOTED. DUCT DIMENSIONS INDICATED ON THE DRAWINGS ARE CLEAR INSIDE DIMENSIONS.

15. ALL FLEXIBLE DUCTWORK SHALL BEAR THE UL 181 LABEL (CLASS 1 AIR DUCT) AND SHALL BE FACTORY INSULATED (1-1/2 INCH, 0.6 LB., FIBERGLASS, FIRE = 25, SMOKE = 50) ATCO UPC #076 I OR EQUAL. FLEXIBLE DUCTWORK SHALL COMPLY W/ NFPA 90A, AND NFPA 90B. ALL FLEXIBLE DUCTWORK CONNECTED TO DIFFUSERS SHALL NOT BE LESS THAN THE NECK SIZE OF THE DIFFUSER. MINIMUM FLEXIBLE DUCT BEND RADIUS OF CURVATURE SHALL BE 3 DUCT DIAMETERS, MAXIMUM LENGTH SHALL BE 8'-0", NO MORE THAN THE EQUIVALENT OF TWO (2) 90 DEGREE BENDS WILL BE ACCEPTABLE.

16. ALL NEW ROUND SHEET METAL DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH FIGURES 3-1 THROUGH 3-56 AND TABLE 3-2 OF THE "SMACNA" MANUAL. SNAP LOCK LONGITUDINAL SEAMS AND DRAW BAND JOINT CONNECTIONS ARE NOT ACCEPTABLE.

17. KITCHEN HOOD EXHAUST DUCT SHALL BE CONSTRUCTED OF 16 GA. BLACK STEEL WITH CONTINUOUS, LIQUID TIGHT, EXTERNAL WELDED JOINTS AND SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS, NFPA 96. PROVIDE ENTIRE DUCT WITH 3" THICK (TWO 1 1/2" LAYERS) 2 HR RATED PYROSCAT DUCT WRAP TESTED TO UL 1978 (INTERNAL GREASE FIRE AT ZERO CLEARANCE TO COMBUSTIBLES) AND CLASSIFIED IN THE 1994 UL FIRE PROTECTION EQUIPMENT DIRECTORY UNDER GREASE DUCT ENCLOSURES. WRAP SHALL HAVE FLAME SPREAD = 5 AND SMOKE DEVELOPED = 5 AND BE INSTALLED ON ALL FOUR SIDES OF EXHAUST DUCT. CONTRACTOR SHALL SUBMIT CUT SHEETS FOR THE INSTALLATION OF THE WRAP TO THE BUILDING DEPT. EXTEND WRAP THRU THE ROOF TO THE TOP OF THE CURB. SYSTEM NO. CAJ7018 SHALL BE UTILIZED FOR PENETRATIONS THROUGH FIRE-RATED PARTITIONS. WELDS SHALL BE INSPECTED AS WELL AS INSTALLATION OF EACH LAYER OF WRAP. ELBOWS SHALL BE RADIUS TYPE. SLOPE HORIZONTAL DUCT RUNS 1/4" PER FOOT TOWARDS HOOD. PROVIDE RESIDUE TRAP AT BASE OF VERTICAL RISER WITH PROVISION FOR CLEANOUT. PROVIDE ACCESS DOORS FOR INSPECTION AND CLEANING PURPOSES. CLEANOUT OPENINGS SHALL BE PROVIDED IN SIDE OF HORIZONTAL DUCT RUNS EVERY 20 FEET AND AT EVERY CHANGE IN DIRECTION.

18. DRYER VENT ROUND DUCTWORK SHALL BE 22 GAUGE (MINIMUM) ALUMNUM CONSTRUCTION WITH DIESTAMPED OR FABRICATED FITTINGS. DUCTS SHALL BE CONSTRUCTED FOR LOW PRESSURE OPERATION WITH LONGITUDINAL SEAM UP. FABRICATED ELBOWS SHALL BE THE MULTI-PIECE TYPE WITH EACH SEGMENT NOT EXCEEDING 22-1/2 DEGREES. THROAT RADIUM OF ALL ELBOWS SHALL BE EQUAL TO THE DUCT DIAMETER. TEES SHALL BE THE CONCEALED TYPE. JOINTS SHALL BE THE SLIP OF FLANGED TYPE. DO NOT USE DRIVE SLIP COUPLING BANDS. MAKE-UP SLIP JOINTS WITH DUCT SEALER. DUCTS FOR EXHAUSTING CLOTHES DRYERS SHALL NOT BE ASSEMBLED WITH SCREWS OR OTHER FASTENING MEANS THAT EXTEND INTO THE DUCT AND THAT WOULD CATCH LINT. PROVIDE NFPA 90 A APPROVED FLEXIBLE DUCT SECTION AT CONNECTION OF DRYER TO DUCTWORK. PROVIDE AND INSTALL EXTRUDED ALUMINUM DRYER FLAPPER VENT AT TERMINATION OF EACH DRYER VENT. WHERE CLOTHES DRYER VENT DUCTS PASS THROUGH WALLS, FLOORS, OR PARTITIONS, THAT SPACE AROUND THE DUCT SHALL BE SEALED WITH NON-COMBUSTIBLE MATERIAL AND FIRESTOPPED.

19. ALL AUTOMATIC TEMPERATURE CONTROL SYSTEM WORK AND INSPECTION SHALL BE ACCOMPLISHED BY THIS CONTRACTOR. THERMOSTATS SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS UNDER THIS CONTRACT. STANDARD MOUNTING HEIGHT TO TOP OF THERMOSTAT IS 48" ABOVE FINISHED FLOOR OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS. DO NOT INSTALL THERMOSTATS NEAR DIMMER SWITCHES. WIRING OF ALL MOTORIZED OPERATORS AND THERMOSTATS (REGARDLESS OF VOLTAGE) ARE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

20. CONTRACTOR SHALL MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTORS, FITTINGS, VALVES, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM WITH DIVISION 16.

21. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE HEATING, VENTILATION AND AIR CONDITIONING SYSTEM SO AS TO INSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING, STRUCTURE OR OCCUPIED AREAS. THE DECISION OF THE ENGINEER AS TO THE QUIETNESS OF THE SYSTEM AND EQUIPMENT SHALL BE FINAL. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY SYSTEM OR EQUIPMENT AS REQUIRED.

22. CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS SHALL BE MADE WITH SUITABLE DIELECTRIC INSULATING UNIONS. ISOLATE COPPER PIPING FROM DISSIMILAR METALS, SUCH AS METAL STUDS AND VENT PIPING.

23. PROVIDE VALVES AND UNIONS WHERE NEEDED TO PERMIT DISCONNECTIONS OF EACH PIECE OF EQUIPMENT FOR REPAIRS.

24. HVAC WATER PIPING 2 INCHES AND SMALLER SHALL BE TYPE "L" COPPER TUBING, HARD DRAWN, WITH CAST BRASS OR WROUGHT COPPER FITTINGS MADE WITH 95-5 TYPE SOLDER. INSULATE PIPING WITH 1 INCH THICK FIBERGLASS INSULATION WITH STANDARD VAPOR BARRIER JACKET OR WITH 1 INCH THICK FLEXIBLE UNICELLULAR ("ARMAFLEX"). ALL CONDENSATE DRAINS SHALL BE TRAPPED TO A DEPTH EQUAL TO 4 TIMES THE TOTAL STATIC PRESSURE OF THE SYSTEM.

25. HVAC WATER PIPING 2-1/2 INCHES AND LARGER SHALL BE SCHEDULE 40, WELDED BLACK STEEL (ASTM A53) WITH BLACK WROUGHT STEEL, BUTT WELDING TYPE (ASTM B16.9) FITTINGS. INSULATE ALL PIPING WITH 2 INCH THICK FIBERGLASS INSULATION WITH STANDARD VAPOR BARRIER JACKET.

26. REFRIGERANT PIPING SHALL BE REFRIGERATION GRADE (SEALED) TYPE "L" COPPER WITH WROUGHT COPPER, SOLDER JOINT FITTINGS MADE WITH SILVER-COPPER-CDMIUM-ZINC BRAZING ALLOY (45-15-24-16) TYPE SOLDER. BALL VALVES SHALL BE TWO PIECE, CONVENTIONAL PORT, FORGED BRASS BODY, 500 PSIG WORKING PRESSURE, AS MANUFACTURED BY HENRY VALVE COMPANY. CHARGING AND PURGE VALVES SHALL BE HENRY VALVE COMPANY TYPE 643. MOISTURE LINE INDICATORS SHALL BE HENRY VALVE COMPANY MODEL 3003. FILTER-DRIERS SHALL BE HENRY VALVE COMPANY MODEL 87-C CARTRIDGE WITH TYPE 77, 78, OR 79 UNIT SHELL AS APPLICABLE. PRESSURE TEST ALL PIPING, THEN EVACUATE AND CHARGE THE SYSTEM. INSULATE ALL PIPING, VALVES, FITTINGS, AND FLEXIBLE CONNECTIONS WITH 1 INCH THICK FLEXIBLE FOAMED PLASTIC INSULATION.

27. INSULATE FITTINGS, JOINTS, AND VALVES WITH INSULATION OF LIKE MATERIAL AND THICKNESS AS ADJOINING PIPE. FINISH WITH GLASS CLOTH OR PVC FITTING COVERS.

28. ALL PRODUCTS LOCATED WITHIN PLENUM AREAS, INCLUDING BUT NOT LIMITED TO INSULATION AND ADHESIVE SYSTEMS, SHALL HAVE A COMPOSITE FIRE HAZARD RATING NOT TO EXCEED 25 FLAME SPREAD AND 50 SMOKE DEVELOPED AS DETERMINED BY THE APPLICABLE UL OR ASTM STANDARD.

29. SUPPORT ALL PIPING FROM STRUCTURE WITH UL LISTED HANGERS AND SUPPORTS SUITABLE FOR THE INTENDED INSTALLATION. DESIGN, SELECTION, SPACING, AND APPLICATION OF HANGERS AND SUPPORTS SHALL COMPLY WITH ANSI B31.1 AND MSS SP-69.

30. HYDRONIC SYSTEMS SHALL BE PRESSURE TESTED AND THOROUGHLY CLEANED WITH LOW FOAMING DETERGENT CLEANSER, PRIOR TO ANY BALANCING OR CHEMICAL TREATMENT.

31. ALL PIPING SYSTEMS, VALVES, DAMPERS AND EQUIPMENT SHALL BE PROPERLY IDENTIFIED. ALL DAMPERS AND VALVES SHALL HAVE THEIR NORMAL (IN OPERATION) POSITION IDENTIFIED, SUCH AS "NORMALLY OPEN" OR "NORMALLY CLOSED".

32. ALL PACKAGED EQUIPMENT SHALL BE INDEPENDENTLY THIRD PARTY LABELED AS A SYSTEM FOR ITS INTENDED USE BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) IN ACCORDANCE WITH OSHA FEDERAL REGULATIONS 29CFR1910.303 AND .399, AS WELL AS NFPA PAMPHLET NO. 70, AND THE NATIONAL ELECTRICAL CODE (NEC), ARTICLE 90-7.

33. CLEAN ALL MECHANICAL EQUIPMENT AND DUCTWORK OF ALL CONSTRUCTION DUST AT PROJECT COMPLETION. REPLACE ALL FILTERS PRIOR TO AIR BALANCING. PROVIDE ONE SPARE SET OF FILTERS FOR EACH PIECE OF EQUIPMENT TO THE OWNER.

34. AIR AND WATER BALANCING SHALL BE PERFORMED BY AN AABC CERTIFIED CONTRACTOR. THIS CONTRACTOR SHALL BE ACCEPTABLE UPON APPROVAL OF THE ENGINEER. GPM'S SHALL BE BALANCED WITHIN 10% OF DESIGN. AFTER ALL AIR SYSTEMS ARE INSTALLED, EACH SUPPLY AIR OUTLET SHALL BE AIR BALANCED TO WITHIN 10% OF THE CFM SHOWN WITH AIR PATTERNS SET AS INDICATED ON DRAWINGS (OR WITHIN 10 CFM WHEN BELOW 100 CFM). FAN RPM'S AND ZONE DAMPERS SHALL BE ADJUSTED AND SHEAVES SHALL BE REPLACED AS REQUIRED TO ACHIEVE AIR BALANCE. AABC ASHRAE FORMAT AIR BALANCE REPORTS SHALL BE CERTIFIED BY THE BALANCING AGENCY AND SUBMITTED TO THE ENGINEER. SHOULD THE AIR BALANCE REPORT INDICATE UNACCEPTABLE DUCT LEAKAGE, AS DETERMINED BY THE ENGINEER, THEN DUCT LEACKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH AABC STANDARDS. DUCT SHALL BE RESEALED AND/OR REPAIRED AS REQUIRED TO MEET DESIGN REQUIREMENTS. ALL, OR PORTIONS OF THE SYSTEM SHALL BE REBALANCED AS REQUIRED UNTIL ALL SYSTEMS ARE WITHIN THE PERFORMANCE STANDARDS LISTED ABOVE.

MISCELLANEOUS EQUIPMENT SPECIFICATIONS:

PERFORATED FACE DIFFUSERS - TITUS MODEL PSS-AA OR APPROVED EQUAL. 24"X24" FACE SIZE WITH ROUND NECK. SEE SCHEDULE FOR NECK & FLEX DUCT SIZE.

RETURN AIR & EXHAUST GRILLES & REGISTERS - TITUS MODEL 350 FL OR APPROVED EQUAL. BLADES SHALL HAVE 3/4" SPACING & 34° FIXED DEFLECTION. BLADES SHALL BE PARALLEL TO LONG DIMENSION. REGISTERS TO HAVE OPPOSED BLADE DAMPER.

SUPPLY REGISTERS - TITUS MODEL 300 FS OR APPROVED EQUAL. DOUBLE DEFLECTION BLADES SHALL HAVE 3/4" SPACING, FRONT BLADES PARALLEL TO SHORT DIMENSION. PROVIDE OPPOSED BLADE DAMPER. ALL BLADES INDIVIDUALLY ADJUSTABLE.

CEILING DIFFUSER - TYPES MODEL TDC OR APPROVED EQUAL. FIXED LOUVERED FACE WITH ROUND NECK. SEE SCHEDULE FOR NECK & FLEX DUCT SIZE.

ELECTRIC HEATER SCHEDULE

DESIGNATION	KW	VOLT/PHASE	TYPE	BASIS OF DESIGN	REMARKS
WH-1, 2	1.5	208/1	FAN - FORCED WALL HEATER	Q MARK TYPE AWH-4000	1
UH-1, 2, 3	2.2	208/1	FAN - FORCED UNIT HEATER	Q MARK TYPE MUH	1

REMARKS:
1. PROVIDE DISCONNECT AND INTEGRAL THERMOSTAT.

DIFFUSER & RUNOUT SCHEDULE

CFM RANGE	NECK SIZE	MAX. LENGTH
0-100	6"Ø	8'0"
101-230	8"Ø	8'0"
231-420	10"Ø	8'0"
421-500	12"Ø	8'0"
NOTE: ALL FLEXIBLE DUCT DIAMETERS SHALL EQUAL DIFFUSER NECK SIZE.		

ELECTRIC INFRARED RADIANT HEATER SCHEDULE

UNIT DES.	LOCATION	TYPE	OUTPUT KW	NO. OF LAMPS	ELECTRICAL VOLTS / PHASE	BASIS OF DESIGN	REMARKS
RH-1 THRU RH-6	SORTING	SUSPENDED	3	2	277/1	MARKEL-222	1
RH-7	BALING	SUSPENDED	3	2	277/1	MARKEL-222	2

REMARKS:
1. 30 DEG. SYMMETRIC PATTERN.
2. 60 DEG. ASYMMETRIC PATTERN.

MECHANICAL LEGEND

SYMBOL	ABRV.	DESCRIPTION
		NEW EQUIPMENT OR DUCTWORK
		NEW EQUIPMENT OR DUCTWORK
		90° ELBOW WITH TURNING VANES
1		DRAWING NOTE
225		24/24 PERFORATED FACE DIFFUSER ROUND NECK, CFM AS INDICATED. SCHEDULE FOR NECK SIZE.
		24/24 PERFORATED FACE RETURN AIR GRILLE
		SPIN TAP WITH VOLUME CONTROL DAMPER
	VCD	VOLUME CONTROL DAMPER
— — — B.D.	B.D.	BACKDRAFT DAMPER
— — — M	M.D.	MOTORIZED DAMPER
T	T-STAT	THERMOSTAT
— — — F.D.	F.D.	FIRE DAMPER
— D —	COND. DR.	CONDENSATE DRAIN SLOPE IN THE DIRECTION OF ARROW
— R —		REFRIGERANT PIPING
	EF-1	EXHAUST FAN DESIGNATION
	SF-1	SUPPLY FAN DESIGNATION
	AHU-1	AIR HANDLER UNIT DESIGNATION
	RTU-1	ROOF TOP UNIT DESIGNATION
	CRU-1	COMPUTER ROOM UNIT DESIGNATION
	B-1	BOILER DESIGNATION
	P-1	PUMP DESIGNATION
	OA	OUTSIDE AIR
	SA	SUPPLY AIR
	RA	RETURN AIR
	DBWB	DRY BULB / WET BULB
	E.A.T.	ENTERING AIR TEMPERATURE
	E.S.P.	EXTERNAL STATIC PRESSURE
	T.S.P.	TOTAL STATIC PRESSURE
	E.W.T.	ENTERING WATER TEMPERATURE
	L.W.T.	LEAVING WATER TEMPERATURE
	IN. W.G.	INCHES WATER GAUGE
	FT. W.G.	FEET WATER GAUGE
	GR	GRILLE
	REG	REGISTER
	TR. GR.	TRANSFER GRILLE
	TR	TOP REGISTER
	CR	CEILING REGISTER
	UNO	UNLESS NOTED OTHERWISE
	EF	EXHAUST FAN

SPLIT SYSTEM HEAT PUMP SCHEDULE

DESIG	SERVING	SENS. CAP MBH	TOTAL CAP MBH	E.A.T. DB/WB	REVERSE CYCLE HEAT CAP. MBH	INDOOR UNIT							OUTDOOR UNIT			REMARKS
						CFM	O.A. CFM	E.S.P. IN. W.G.	FAN HP	HEATER KW	CARRIER MODEL	VOLTS / PHASE	NOM TONS	CARRIER MODEL	VOLTS / PHASE	
HP-1	MAINTENCE RM. BREAK RM, OFFICE	13.9	22.2	80/67	22.7	700	140	0.3	1/4	11.3	FB4A024	208/1	2.0	38YCC024	208/3	1 THRU 5

REMARKS:
1. PROVIDE ALL ACCESSORIES REQUIRED FOR PROPER YEAR ROUND OPERATION.
2. ELECTRIC RESISTANCE HEATER CAPACTITY IS BASED ON 208V/1Ø AND SHALL BE PROVIDED INTEGRAL WITHIN INDOOR UNITS.
3. REVERSE CYCLE HEATING CAPACITY BASED ON 47° OUTDOOR AMBIENT TEMPERATURE.
4. PROVIDE FLEX CONNECTIONS AT SUPPLY AND RETURN OPENINGS ON ALL INDOOR UNITS.
5. REFRIGERANT PIPING TO BE SIZED BY UNIT MANUFACTURER.

FAN SCHEDULE

UNIT DES.	SERVICE	LOCATION	CFM	E.S.P. IN W.G.	RPM	MOTOR HP (WATTS)	ELECTRICAL VOLTS/PHASE	TYPE	BASIS OF DESIGN	REMARKS
EF-1,2,3,4	HOLDING & SORTING	ROOF	13660	0.125	905	5	208/3	DOME	PENN DX30B	1, 2, 5, 6
EF-5	MEN'S TOILET	CEILING	370	0.125	1550	(132)	120/1	CABINET	PENN Z8H	2, 4, 5
EF-6	WOMEN'S TOILET	CEILING	220	0.125	1050	(75)	120/1	CABINET	PENN Z8S	2, 4, 5
EF-7	ELECTRICAL ROOM	CEILING	220	0.125	1050	(75)	120/1	CABINET	PENN Z8S	2, 4, 5

REMARKS:
1. PROVIDE ROOF CURB, BACKDRAFT DAMPER, AND FACTORY MOUNTED SPEED CONTROLLER.
2. PROVIDE DISCONNECT SWITCH AND SPEED CONTROLL FOR BALANCING..
3. PROVIDE COOLING ONLY THERMOSTAT AND MANUAL OVERRIDE SWITCH.
4. PROVIDE FLEX CONNECTIONS BETWEEN FAN AND DUCT WORK.
5. PROVIDE SEPARATE SWITCH FOR MANUAL OPERATION.
6. INTERLOCK EF-1 THRU EF-4 FOR SIMULTANEOUS OPERATION.

Allen & Shariff
CORPORATION
7061 Deepage Dr
Columbia, Md 21045
410-381-7100 Fax: 410-381-7110
1-800-ASC-4-MEP
(1-800-272-4637)

STATE OF MARYLAND GEOFFREY A. TIZARD 15453 REGISTERED PROFESSIONAL ENGINEER

REVISIONS | NO. | DATE | BY | DESCRIPTION

SEAL: STATE OF MARYLAND PROFESSIONAL ENGINEER 5/31/02

CENTRAL LANDFILL FACILITY SITE
MUNICIPAL SOLID WASTE RECOVERY FACILITY
WORCESTER COUNTY, MARYLAND

MECHANICAL SPECIFICATIONS, LEGENDS AND SCHEDULES

EA ENGINEERING, SCIENCE, AND TECHNOLOGY
LOVETON CENTER
15 LOVETON CIRCLE
SPARKS, MARYLAND 21152
(410) 771-4950

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