

STANDARD SYMBOLS LEGEND			
	EQUIPMENT TAG		POINT OF NEW CONNECTION
	REVISION TAG		PHOTO VIEW POINT
	COLUMN LINE TAG		SECTION/DETAIL IDENTIFIER
			SECTION CUT
			SHEET LOCATION
N.I.C.	NOT IN CONTRACT	U.N.O.	UNLESS NOTED OTHERWISE

DUCTWORK SYMBOLS LEGEND			
	S/A DIFFUSER	EX	- EXISTING
	R/A DIFFUSER	BV	- B-VENT
	SLOT DIFFUSER	PV	- PLUMBING VENT
	FLEXIBLE DUCT	RD	- ROOF DRAIN
	SPIN COLLAR	MOD	- MOTOR OPERATED DAMPER
	THERMOSTAT	MVD	- MANUAL VOLUME DAMPER
	REMOTE SENSOR	FD	- FIRE DAMPER
	VEHICLE EXHAUST SENSOR	OBD	- OPPOSED BLADE DAMPER
	HUMIDISTAT	PBD	- PARALLEL BLADE DAMPER
	CO2 SENSOR	BDD	- BACK DRAFT DAMPER
	STATIC PRESSURE SENSOR		
	SMOKE DETECTOR		
	SPEED CONTROLLER		
	QUANTITY		
	CFM		
	NECK SIZE		
	GRD MODEL TAG		
	RADIUS=1/2xw		
	DO NOT INSTALL SQUARE THROAT ELBOWS UNDER ANY CONDITIONS		
	DO NOT INSTALL SQUARE THROAT ELBOWS W/O VANES UNDER ANY CONDITIONS (U.N.O.)		
	SINGLE THICKNESS VANE		

ROOFTOP UNIT SCHEDULE				
	TAG	RTU-1	RTU-2	RTU-3
LOCATION SERVING	SALES/STOCK	SALES/STOCK	STOCK	
MANUFACTURER	CARRIER	CARRIER	CARRIER	
MODEL	48GCTM06	48HCSD08	48GCTM06	
TONS (NOMINAL)	5	7.5	5	
COOLING ENERGY EFFICIENCY	16 SEER	12 EER	16 SEER	
REFRIGERANT TYPE	R-410A	R-410A	R-410A	
SUPPLY FAN DATA	CFM	1,500	2,250	1,500
	ESP (DUCT ONLY)	1	1	1
	RPM	1895	846	1895
	BHP	0.72	1.08	0.72
	MBH	61	90	61
COOLING COIL DATA	EAT (DB/WB)	81.5/67	81.5/67	81.5/67
	COIL LAT (DB/WB)	54/53.5	54/53.5	54/53.5
	UNIT LAT (DB/WB)	55.5/54.5	55.5/54.5	55.5/54.5
	STAGES	1	2	1
	INPUT (MBH) (MAX)	115	125	115
HEATING DATA (MIN. REQ'D)	OUTPUT (MBH) (MAX)	93	103	93
	STAGES	2	2	2
HEATING DATA (ALTERNATE)	INPUT (MBH) (MAX)	150	180	150
	OUTPUT (MBH) (MAX)	120	150	120
ELECTRICAL DATA	STAGES	2	2	2
	MCA / MOCP	29/40	41/50	29/40
	VOLT	208	208	208
	PHASE	3	3	3
	OUTDOOR AIR (CFM)	430	640	430
	UNIT WEIGHT (LBS)	1,000	1,350	1,000
REMARKS / ACCESSORIES	1-19, 22	1,2,4-21,22	1-19, 22	

- NEW
- INSULATED CURB - FIELD PROVIDED
- DRIVE (DIRECT)
- ENTHALPY ECONOMIZER W/BAROMETRIC RELIEF
- FDD (ECONOMIZER FAULT DETECTION & DIAGNOSTICS) W/ HONEYWELL 7220 CONTROLLER
- THROWAWAY FILTERS (2")
- LOUVERED COIL GUARDS
- STAINLESS STEEL HEAT EXCHANGER
- SEPARATELY WIRED CONVENIENCE OUTLET
- CO2 SENSOR WITH LED DISPLAY AND NO OVERRIDE
- MEDIUM STATIC
- TENANT PROVIDED AND FIELD INSTALLED ACCESSORIES: NON-FUSED DISCONNECT SWITCH, GRIDPOINT THERMOSTAT
- RTU RESPONSIBILITIES:

A) ALL HVAC UNITS ARE OWNER SUPPLIED BY O'REILLY AUTOMOTIVE.

B) MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ALL HVAC UNITS.

C) MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE FIRST YEAR LABOR WARRANTY ON ALL OWNER SUPPLIED EQUIPMENT.

D) MECHANICAL CONTRACTOR MUST CALL "CARRIER CORPORATION'S NATIONAL ACCOUNTS" DEPARTMENT FOR CONFIRMATION OF ORDERS ONLY! CUSTOMER SERVICE REP, MARIA CAMPANELLO. PH: 315-432-3946, Maria.campanello@carrier.utc.com or StrategicAccounts2@carrier.utc.com

E) MECHANICAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING, SHIPPING & RECEIVING OF ALL CARRIER UNITS FROM CARRIER NATIONAL ACCOUNTS. CONTACT CUSTOMER SERVICE REP.

F) VERIFY ALL RESPONSIBILITIES WITH THE G.C.

- RETURN SMOKE DETECTOR
- REMOTE TEST/RESET STATION (#SD-TRM4, CRSDTEST001A00)
- ALARM/STROBE (#6536-G5, CRSDHNSB001A00)
- CONDENSATE OVERFLOW SWITCH
- THRU THE BOTTOM ELECTRIC AND GAS

THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING AND CONNECTIONS REQUIRED BETWEEN THE SMOKE DETECTOR AND THE UNIT, AND SHALL PROVIDE SMOKE TESTING TO VERIFY PROPER OPERATION AND UNIT SHUT DOWN PRIOR TO OCCUPANCY.

- SPEED FAN CONTROL
- DRIVE (BELT)
- PROVIDE ALTERNATE HEAT IF ACCEPTABLE BY LOCAL CODE

FAN SCHEDULE			
	TAG	EF-1	EF-2
LOCATION SERVING	RESTRROOMS	OFFICE	
MANUFACTURER	COOK	COOK	
MODEL	GN-642	GN-642	
TYPE	INLINE EXHAUST	INLINE EXHAUST	
	CFM	500	500
ESP (DUCT ONLY)	0.375	0.375	
FAN RPM	1482	1482	
FAN MOTOR DATA	WATTS	165	165
	VOLT	120	120
	PHASE	1	1
UNIT WEIGHT (LBS)	40	40	
REMARKS / ACCESSORIES	1-6	1-4,7	

- NEW
- ACCEPTABLE ALTERNATES (NO EXCEPTIONS): GREENHECK, CARNES
- DAMPER (GRAVITY)
- DISCONNECT SWITCH
- ALUMINUM WALL CAP (WCA-6)
- SPEED CONTROLLER (UNIT MOUNTED)
- SPEED CONTROLLER (WALL MOUNTED)

PROJECT NAME: O'REILLY - DOLTON PROJECT NUMBER: 1957-1

IMC Ventilation		ROOM INPUT		OCCUPANCY		VENTILATION		EXHAUST		EQUIPMENT	
ROOM NUMBER & NAME	AREA (S.F.)	Ref. No.	CLASSIFICATION	P/1000	PEOPLE	CFM/P	CFM	CFM/SF	CFM	Vbz	CFM
100A-VESTIBULE	40	58	PS-CORRIDORS					0.06	2	2	
100-PARTS A	2,850	72	RET-SALES	15	42.8	43	7.5	0.12	342	665	
101-PARTS B	2,000	77	RET-STORAGE ROOMS					0.12	240	240	
102-OFFICE	85	53	OFF-OFFICE SPACES	5	0.4	1	5	0.06	5	10	
103-RESTROOM	60	63	PS-TOILET ROOMS (INT) (Jan Clo+1 WC)								
104-RESTROOM	60	63	PS-TOILET ROOMS (INT) (Jan Clo+1 WC)								
105-PARTS C	1,650	77	RET-STORAGE ROOMS					0.12	198	198	
106-BREAK	90	33	F&B-DINING ROOMS	70	6.3	4	7.5	0.18	16	46	
	6,835				49	48			1,161		
					Ps =	48			D =	1	

PRIOR TO INSTALLATION, VERIFY ALL DUCTWORK, PIPING, WIRING, CONDUITS AND EQUIPMENT LOCATIONS SHOWN ON DRAWINGS TO AVOID CONFLICTS WITH THE BUILDING STRUCTURE, WALLS, CEILING, LIGHTS, ELECTRICAL ITEMS AND/OR OTHER TRADE ITEMS. NOTIFY DESIGN ENGINEER IN WRITING PRIOR TO ANY CHANGES.

DIVISION 23 (HVAC)

1) GENERAL:

- JOB SPECIFICATIONS ARE AS FOLLOWS:

- CODE - CONTRACTOR TO LOCATE, REVIEW AND COMPLY WITH ALL LOCAL, STATE AND/OR NATIONAL CODES. CONTRACTOR TO SPECIFICALLY LOCATE, REVIEW AND COMPLY WITH ALL LOCAL CODE AMENDMENTS.

- WORKMANSHIP/WARRANTY - CONTRACTOR IS RESPONSIBLE FOR ALL MEANS, MATERIALS, METHODS, TECHNIQUES, SEQUENCES AND DETAILS TO PERFORM ITS WORK. ALL MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM OF ONE (1) YEAR FROM THE DATE THE EQUIPMENT/SYSTEMS ARE PLACED INTO OPERATION AND ACCEPTED BY THE OWNER. WARRANTY TO INCLUDE LABOR & MATERIALS REQUIRED FOR WARRANTY ISSUES.

- EQUIPMENT MANUFACTURER INSTRUCTIONS - CONTRACTOR TO FOLLOW EQUIPMENT MANUFACTURER'S INSTALLATION, OPERATION AND MAINTENANCE (IOM) MANUALS FOR ALL NEW EQUIPMENT. EQUIPMENT MANUFACTURER'S IOM INSTRUCTIONS SUPERSEDE ANY CONFLICTS WITH THESE DRAWINGS.

- SCHEDULED EQUIPMENT - CONTRACTOR PRICING TO BE BASED ON THE SCHEDULED EQUIPMENT. SUBSTITUTIONS TO BE SUBMITTED AS DEDUCTS (OR ADDS) TO THE BASE CONTRACT ALONG WITH A DESCRIPTION OF THE DIFFERENCES. ALL SUBSTITUTIONS WILL REQUIRE THE CONTRACTOR TO SUBMIT REVISED DIGITAL SHOP DRAWINGS (IN AUTOCAD FORMAT) FOR REVIEW PRIOR TO INSTALLATION. THE REVISED DRAWINGS TO INCLUDE (BUT ARE NOT LIMITED TO) THE REVISED EQUIPMENT SPECIFICATION SCHEDULES, LOCATIONS, WEIGHTS, DUCTWORK, PIPING, WIRING, BREAKERS (ETC.). THE REVISED DRAWINGS TO SHOW THE ENTIRE SYSTEM AS THE SYSTEM WILL BE INSTALLED BY THE CONTRACTOR.

- SUBMITTALS - CONTRACTOR TO COORDINATE SUBMITTAL SCHEDULE WITH OWNER IMMEDIATELY AFTER ACCEPTANCE OF CONTRACT. AS SOON AS POSSIBLE BEFORE CONSTRUCTION, CONTRACTOR TO EMAIL NEW EQUIPMENT, FIXTURES AND/OR SHOP DRAWING SUBMITTALS (INCLUDING ALL ACCESSORIES). NO NEW EQUIPMENT, FIXTURES AND/OR SHOP DRAWING ITEMS ARE TO BE INSTALLED UNTIL SUBMITTED INFORMATION IS APPROVED.
- SHOP DRAWINGS - BEFORE INSTALLATION, PROVIDE 1/4" SCALE "SHOP DRAWINGS" FOR COORDINATION AND APPROVAL. "SHOP DRAWINGS" TO SHOW DIMENSIONS, ELEVATIONS AND LOCATIONS OF ALL EQUIPMENT, DUCTWORK, PIPING, WIRING AND CONDUIT. INSTALLATION TO START ONLY AFTER WRITTEN APPROVAL FROM ENGINEER. ALL CONTRACTOR PROVIDED DRAWINGS TO BE MADE WITH "AUTO CAD" DRAFTING SOFTWARE AND SUBMITTED IN BOTH AUTOCAD AND ADOBE DIGITAL FORMAT. [NOTE - DESIGN DRAWINGS, NOTES AND/OR ADDENDUMS ARE NOT TO BE COPIED OR REPRODUCED IN ANY WAY FOR USE AS CONTRACTOR SUBMITTED DRAWINGS.] PROVIDE (4) PAPER HARD COPIES OF SHOP DRAWINGS.

- AS BUILT DRAWINGS - UPON COMPLETION OF THE INSTALLATION WORK, PROVIDE "AS BUILT" CHANGES CLEARLY SHOWING THE FINAL DIMENSIONS, ELEVATIONS AND LOCATIONS OF ALL EQUIPMENT, DUCTWORK, PIPING, WIRING AND CONDUIT. ALL AS BUILT DRAWING CHANGES TO BE MADE WITH "AUTO CAD" DRAFTING SOFTWARE AND SUBMITTED IN BOTH AUTOCAD AND ADOBE DIGITAL FORMAT. [NOTE - DESIGN DRAWINGS, NOTES AND/OR ADDENDUMS ARE NOT TO BE COPIED OR REPRODUCED IN ANY WAY FOR USE AS CONTRACTOR SUBMITTED DRAWINGS.] PROVIDE (4) PAPER HARD COPIES OF SHOP DRAWINGS.
- POST CONSTRUCTION DOCUMENTS - CONTRACTOR TO EMAIL A MICROSOFT WINDOWS FORMAT FOLDER INCLUDING ALL REQUIRED PROJECT CLOSE OUT DOCUMENTS. THE WINDOWS FORMAT FOLDER TO INCLUDE SUB-FOLDERS AND TO BE LABELLED AS PER BELOW. [ALSO PROVIDE (3) EXACT PRINTED COPIES IN SEPARATE HARD BINDERS.]
 - TRADE NAME
 - WARRANTY - WARRANTY LETTER INCLUDING THE AGREED UPON START DATE
 - EQUIPMENT - COMPLETE LIST OF MODEL NUMBERS AND SERIAL NUMBERS FOR EACH PIECE OF EQUIPMENT
 - IOM - INSTALLATION, OPERATION AND/OR MAINTENANCE (IOM) MANUALS. INCLUDE PARTS LIST FOR EACH PIECE OF EQUIPMENT
 - VENDERS LIST - LIST OF CONTACT INFORMATION INCLUDING CONTACT NAME, PHONE NUMBER AND EMAIL ADDRESS FOR EQUIPMENT.
 - POST CONSTRUCTION DOCUMENTS - AS BUILT DRAWING INCLUDING FINAL LOCATION FOR EACH PIECE OF EQUIPMENT

- TEST & BALANCE REPORT - REPORT OF ALL FINAL TESTED AND BALANCED AIR AND WATER SYSTEMS. SEE DIVISION 23 NOTES.
- ACCESS DOORS - CONTRACTOR TO FURNISH AND INSTALL ACCESS DOORS AS REQUIRED. EACH TRADE TO COORDINATE WITH CARPENTRY CONTRACTOR THE LOCATION OF ACCESS DOORS IN ALL CEILINGS, SOFFITS AND WALLS FOR ACCESS TO EQUIPMENT, VALVES, DAMPERS, FIRE DAMPERS, CLEAN OUTS, SWITCHES, CONTROLS, ETC.
- STRUCTURE PROTECTION - THE BUILDING OR STRUCTURE SHALL NOT BE WEAKENED BY THE INSTALLATION OF ANY NEW SYSTEMS. WHERE FLOORS, WALLS, CEILINGS OR ANY OTHER PORTION OF THE BUILDING OR STRUCTURE ARE REQUIRED TO BE ALTERED OR REPLACED IN THE PROCESS OF INSTALLING OR REPAIRING ANY SYSTEM, THE BUILDING OR STRUCTURE SHALL BE LEFT IN A SAFE STRUCTURAL CONDITION IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR NATIONAL CODES.
- FIRE RESISTANT ASSEMBLIES - PENETRATIONS OF WALL/FLOOR/CEILING ASSEMBLIES AND ASSEMBLIES REQUIRED TO HAVE A FIRE-RESISTANCE RATING SHALL BE PROTECTED IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR NATIONAL CODES.
- ACCESSIBILITY - MANUAL ACCESSIBLE ITEMS IN OCCUPIED SPACES (SUCH AS CONTROLS, THERMOSTATS, SWITCHES AND ELECTRICAL OUTLETS) TO BE LOCATED NO HIGHER THAN 48" AND NO LOWER THAN 15" PER THE AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. VERIFY LOCAL ACCESSIBILITY CODE REQUIREMENTS OVER AND ABOVE THE ADA REQUIREMENTS. COORDINATE FINAL MOUNTING HEIGHTS WITH OWNER.

2) GENERAL HVAC CONDITIONS:

- KEEP OUTSIDE AIR INTAKES A MINIMUM OF 10'-0" AWAY FROM CONTAMINANT SOURCES.
- KEEP B-VENTS A MINIMUM OF 3'-0" ABOVE ROOF PENETRATION AND/OR 2'-0" ABOVE ANY PART OF THE BUILDING WITHIN 10'-0". B-VENTS TO CLEAR COMBUSTIBLES BY 3" MIN.
- THERMOSTATS, SENSORS AND CONTROL PANELS FOR HVAC EQUIPMENT SHALL BE LOCATED IN ACCORDANCE WITH THE MECHANICAL PLANS. FURNISH AND INSTALL CLEAR LOCKING COVERS FOR ALL T-STATS. ALL COVERS TO BE KEYED THE SAME.
- PROVIDE ENGRAVED TAGS FOR ALL HVAC EQUIPMENT.
- PROVIDE FACTORY START UP FOR ALL EQUIPMENT.

WORK ITEM SCHEDULE				
ITEM	PROVIDED BY	INSTALLED BY	WIRED BY	NOTES/REMARKS
T-STAT(S)	T	T	T	INSTALLED BY TENANT'S EMS CONTRACTOR
SMOKE DETECTOR(S)	MC	MC	MC	PROVIDED WITH UNIT(S)
REMOTE TEST STATION(S)	MC	MC	MC	PROVIDED WITH UNIT(S)
REMOTE ALARM(S)/STROBE(S)	MC	MC	MC	PROVIDED WITH UNIT(S)
EMS (GRIDPOINT)	T	T	T	INSTALLED BY TENANT'S EMS CONTRACTOR
CO2 SENSOR(S)	MC	MC	MC	RTU'S (PROVIDED WITH UNITS) COORDINATE WITH EMS CONTRACTOR
OCCUPANCY SENSOR(S)	EC	EC	EC	TOILET EF
SPEED CONTROLLER(S)	MC	EC	EC	OFFICE EF

MC - MECHANICAL CONTRACTOR

EC - ELECTRICAL CONTRACTOR

T - TENANT (MECHANICAL CONTRACTOR AND/OR GENERAL CONTRACTOR TO HIRE TENANT SUGGESTED EMS VENDOR.

SEE GRIDPOINT SCOPE OF WORK ON "EM" SHEETS FOR ADDITIONAL INFORMATION.)

GRILLE, REGISTER & DIFFUSER SCHEDULE

TAG	A	A1	B	C	E	F
MFGR.	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS
MODEL	TMS	TMSA	50F	300RL	350ZRL	T700L (STEEL)
TYPE	S/A DIFFUSER	S/A DIFFUSER	R/A GRILLE	REGISTER	E/A GRILLE	DOOR GRILLE
NECK SIZE	SEE PLAN	SEE PLAN	SEE PLAN	SEE PLAN	SEE PLAN	SEE PLAN
MOUNTING TYPE	LAY IN	SURFACE	LAY IN/SURFACE	SURFACE	SURFACE	SURFACE
DAMPER	-	-	-	OBD	OBD	-
REMARKS/ACCESSORIES	1,2	1,2,4	1,2	1,2	1,2	1,2,3

- VERIFY COLOR WITH ARCHITECT

- ACCEPTABLE ALTERNATES (NO EXCEPTIONS): PRICE, KRUEGER, TUTTLE & BAILEY, NAILOR, ARROW, CARNES, ANEMOSTAT

- GRILLE WITH BORDER ON BOTH SIDES OF DOOR

- DIRECTIONAL TABS

3) DUCTWORK:

- ALL DUCTWORK SHALL MEET S.M.A.C.N.A. STANDARDS AS LISTED IN THE INTERNATIONAL MECHANICAL CODE. DUCTWORK TO BE GALVANIZED SHEET METAL UNLESS NOTED OTHERWISE.
- ALL RECTANGULAR BRANCH DUCTS TO HAVE OPPOSED BLADE DAMPERS.
- ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK, SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS, OR TAPES. TAPE AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.

- LOW PRESSURE:
 - RTU S/A & R/A DROPS - 2" LINER
 - RECTANGULAR S/A - 2" LINER.
 - RECTANGULAR R/A - 2" LINER.
 - RECTANGULAR E/A - UNINSULATED.
 - ROUND S/A - 2" FIBERGLASS WRAP
 - ROUND R/A - 2" FIBERGLASS WRAP
 - ROUND E/A - UNINSULATED.
 - ROUND (EXPOSED) - UNINSULATED SPIRAL TYPE WITH GASKETED FITTINGS (LINDAB OR EQUAL)
 - FLEX S/A - INSULATED (5'-0" MAXIMUM LENGTH)
 - FLEX R/A - INSULATED (5'-0" MAXIMUM LENGTH)
 - FLEX E/A - UNINSULATED. (5'-0" MAXIMUM LENGTH)
 - RECT. DUCT LENGTHS - 59" WITH S&O JOINTS
 - DIMENSIONS - OUTSIDE DIMENSIONS SHOWN ON PLANS
 - ELBOW RADIUS - ONE HALF THE DUCT WIDTH [SEE DUCTWORK SYMBOLS LEGEND]
 - SHOE-TAPS - 6" LONG
 - BALANCING DAMPERS - AT ALL FINAL DIFFUSER & GRILLE TAP LOCATIONS (LOCKING TYPE)
 - RECT. BALANCING - OPPOSED FLAT BLADE, LOCKABLE (RUSKIN CD35S-0BD)
 - RECT. MIXING - PARALLEL FLAT BLADE, LOCKABLE (RUSKIN CD35S-PBD)
 - E/A AND O/A (MOD) - OPPOSED AIRFOIL BLADE, LOW LEAK, CLASS 1 (RUSKIN CD60)
 - BACKDRAFT DAMPER - ALUMINUM MEDIUM DUTY TYPE (RUSKIN B06)
 - BACKDRAFT DAMPER W/CB - ALUMINUM MEDIUM DUTY TYPE WITH COUNTER BALANCE. LOW LEAK BLADE EDGE SEALS (RUSKIN CBD4)
 - DUCT PRESSURE CLASS - 1" W.C. (LOW PRESSURE)
 - DUCT SEAL CLASS - CLASS A

- INSULATION & LINER:
 - MINIMUM R-6 FOR INTERIOR DUCTWORK. MINIMUM R-12 FOR EXTERIOR DUCTWORK.
 - ADD INSULATION TO LINED DUCTWORK IF NEEDED.
 - INSIDE DUCT LINER TO BE KNAUF SONIX XP DUCT LINER (1.5 PCF) OR OWENS CORNING EQUIVALENT.
 - DUCT WRAP FOR INTERIOR DUCTWORK TO BE KNAUF FRIENDLY FEEL DUCT WRAP (1.5 PCF) OR OWENS CORNING EQUIVALENT.

- CURBS:
 - CURBS TO BE INSULATED AND A MINIMUM 12" HIGH. CURBS TO BE PITCHED TO MATCH SLOPE OF ROOF.

5) PIPING:

- ALL HVAC PIPING AND PIPE MATERIALS TO MEET ASTM AND ASME STANDARDS AS LISTED IN THE INTERNATIONAL MECHANICAL CODE AND LOCAL CODES. CONTACT THE CITY/TOWNSHIP FOR THE PROPER EDITIONS AND AMENDMENTS OF THE ALL RELATIVE CODE PUBLICATIONS. ALL GAS PIPING AND MATERIALS TO MEET ASTM STANDARDS AS LISTED IN THE INTERNATIONAL FUEL GAS CODE.
- PRESSURE RATINGS - PIPE, FITTING AND VALVE PRESSURE RATINGS TO EXCEED MAXIMUM SYSTEM OPERATING PRESSURE BY A MINIMUM OF 20%. VERIFY EACH PIPE SYSTEM OPERATING PRESSURE BEFORE INSTALLATION.

GAS PIPING

- ALL ABOVE GROUND GAS PIPING TO BE SCH. 40 BLACK STEEL WITH SCREWED MALLEABLE FITTINGS FOR 2" AND SMALLER PIPING AND WELDED FOR 2 1/2" AND LARGER PIPING.
- DRAIN PIPING:
 - ALL DWV PIPING TO BE PLAIN END SCH. 40 DWV PVC WITH SOCKET TYPE DWV PVC FITTINGS.

6) ANCHORING, SUPPORT & ISOLATION (EQUIPMENT, PIPING & DUCTWORK):

- ANCHORING & SUPPORT:
 - ANCHOR ALL EQUIPMENT, DUCTWORK AND PIPING TO APPROVED STRUCTURES WITH UL LISTED AND FACTORY MUTUAL APPROVED ANCHORING AND SUPPORT PRODUCTS. APPROVED ANCHORING SYSTEMS INCLUDE CONCRETE DROP IN ANCHORS, TOP CHORD MOUNTED C-CLAMPS AND TOP CHORD MOUNTED BEAM CLIP DUCTWORK STRAP HANGERS. APPROVED SUPPORT SYSTEMS INCLUDE MINIMUM 3/8" THREADED ROD, MINIMUM 1" 20 GAUGE SHEET METAL DUCT STRAPS, U-CCHANNEL, ANGLE IRON AND/OR PIPE CLEVIS HANGERS. FOLLOW THE ABOVE REQUIREMENTS UNLESS NOTED OTHERWISE BY EQUIPMENT MANUFACTURER OR STAMPED STRUCTURAL SUPPORT DRAWINGS.
- EQUIPMENT VIBRATION ISOLATION:
 - FURNISH AND INSTALL VIBRATION ISOLATION TO PREVENT TRANSMISSION OF SOUND AND VIBRATION FROM MOTORIZED AND ROTATING EQUIPMENT TO THE BUILDING STRUCTURE. TYPICAL APPROVED VIBRATION ISOLATION PRODUCTS INCLUDE ISOLATION HANGERS, ISOLATION SPRINGS, ISOLATION PADS AND ISOLATION CURBS. PROVIDE THE ABOVE ISOLATION FOR ALL EQUIPMENT 1/2 HORSEPOWER OR GREATER OR AS PER THE MANUFACTURERS RECOMMENDATIONS. FURNISH AND INSTALL ISOLATION CURBS AND FLEXIBLE PIPING CONNECTIONS ONLY AS SPECIFICALLY NOTED ON PLANS.
 - FURNISH AND INSTALL EQUIPMENT DUCTWORK CONNECTIONS WITH SIX INCH (6") LONG DOUBLE THICK, AIR TIGHT, WATER TIGHT AND FIREPROOF FLEXIBLE CONNECTORS. (AIR HANDLING UNITS, INLINE FANS, UTILITY SETS, ROOF MOUNTED UNITS WITH ISOLATION PADS OR ISOLATION CURBS, ETC.)
- PIPING SUPPORT:
 - PIPING TO BE SUPPORTED WITH CLEVIS HANGERS AND INSULATION PROTECTORS WHERE INSULATED. ALLOW FOR EXPANSION AND DO NOT DIRECTLY ATTACH PIPE BETWEEN ANY TWO FIXED STRUCTURES.
 - ROOF MOUNTED PIPING SUPPORT TO BE CLOSED CELL MEDIUM DENSITY POLYETHYLENE FOAM BLOCK PIPE PIER (TOLCO BY NIBCO OR EQUAL).
 - MAXIMUM PIPE SUPPORT SPACING SHALL BE AS FOLLOWS.
 - STEEL PIPE - 12' HORIZONTAL, 15' VERTICAL
 - COPPER PIPE - 12' HORIZONTAL, 15' VERTICAL
 - PVC PIPE - 4' HORIZONTAL, 10' VERTICAL (MID-STORY GUIDE)
- DUCTWORK SUPPORT:
 - DUCTWORK TO BE SUPPORTED IN ACCORDANCE WITH S.M.A.C.N.A. STANDARDS. MAXIMUM OF 12' O.C. SUPPORT INTERVALS.

7) SMOKE DETECTORS AND REMOTE TEST STATIONS:

- SMOKE DETECTORS TO BE PROVIDED AS PER NFPA AND LOCAL CODES. SMOKE DETECTORS SHALL BE INSTALLED IN RETURN AIR SYSTEMS, WITH A DESIGN CAPACITY GREATER THAN 2000 CFM, IN THE RETURN AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS, EXHAUST AIR CONNECTIONS, OUTDOOR AIR CONNECTIONS OR DECONTAMINATION EQUIPMENT AND APPLIANCES. SAMPLING TUBES TO MATCH LONG DIMENSION OF DUCT PLENUM. DUCT SMOKE DETECTOR TO SHUT UNIT(S) DOWN UPON ALARM. SMOKE DETECTORS TO BE 4-WIRE PHOTOELECTRIC TYPE (SYSTEM SENSOR INNOVAIRFLEX SERIES OR EQUAL). REMOTE TEST STATION(S) TO BE EQUAL TO EDWARDS SIGNALING PRODUCTS MODEL SD-TRK4. FINAL MAKE AND MODEL TO BE COORDINATED WITH SMOKE DETECTORS FOR ALL UNITS.

8) FIRE DAMPERS:

- FIRE DAMPERS TO BE PROVIDED AS PER NFPA AND LOCAL CODES. MINIMUM 18x18 ACCESS DOOR TO BE