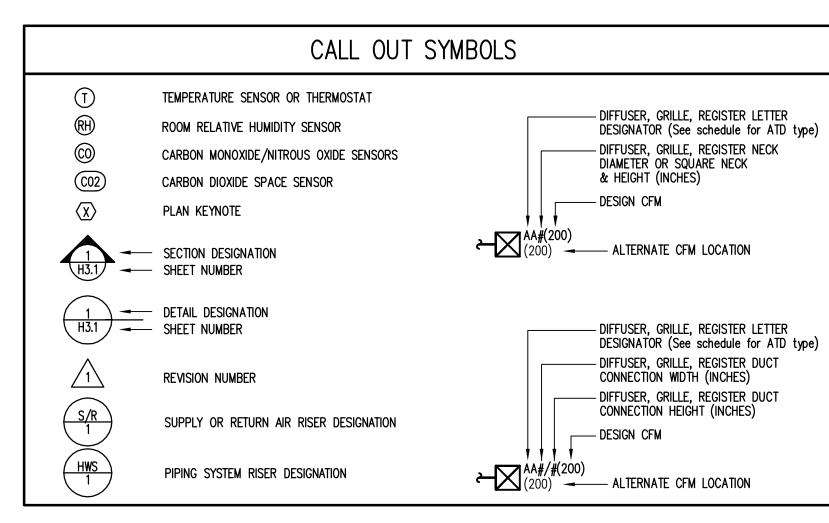


## EQUIPMENT SHORT CIRCUIT CURRENT RATINGS

- THE FOLLOWING EQUIPMENT IS REQUIRED TO BE MARKED WITH AN OVERALL ASSEMBLY SHORT CIRCUIT CURRENT RATING (SCCR) IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC):
- EQUIPMENT CONTROL PANELSAIR-CONDITIONING AND REFRIGERATION EQUIPMENT
- MOTOR CONTROLLERSEQUIPMENT REQUIRED TO BE LISTED TO UL508A
- PROVIDE EQUIPMENT LISTED ABOVE WITH A MINIMUM SCCR AS FOLLOWS:
- 65kA FOR EQUIPMENT RATED 480/277V
  10kA FOR EQUIPMENT RATED 208/120V

CONFIRM EQUIPMENT SHORT CIRCUIT RATINGS ARE ADEQUATE AS PART OF THE PROJECT'S SHORT-CIRCUIT AND PROTECTION COORDINATION STUDY REQUIRED UNDER DIVISION 26. COORDINATE EQUIPMENT RATINGS WITH VENDOR SELECTED TO PERFORM THE STUDY, AND ENSURE THAT EQUIPMENT LISTED ABOVE IS INCLUDED IN THE EQUIPMENT SHORT-CIRCUIT EVALUATION TABLE PROVIDED AS PART OF THE STUDY. COORDINATE WITH APPROVED EQUIPMENT SUBMITTALS.

	FLOW DIAGRAM AND CONTROL	DIAGRAM	EQUIP SYMBOLS
	FILTER BANK	(C)	INLINE CENTRIFUGAL FAN
H	REHEAT, HEATING OR PRECONDITIONING COIL		UPBLAST PROPELLAR FAN
			UPBLAST CENTRIFUGAL FAN
	COOLING COIL	<u> </u>	ROOF FAN
			AIR VALVE
5	CABINET HEATER		OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
		₲ <del>/\/\/\/\/</del>	OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
	UNIT HEATER	D <del>/////</del>	PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR
	UNIT HEATER	₲ <del>-//////</del>	PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
VFD	VARIABLE FREQUENCY DRIVE	mm	BACKDRAFT DAMPER
<del></del>	FINNED TUBE RADIATION		AIR TERMINAL BOX
$-\bigcirc$	PUMP		
	FAN		AIR TERMINAL BOX WITH REHEAT COIL

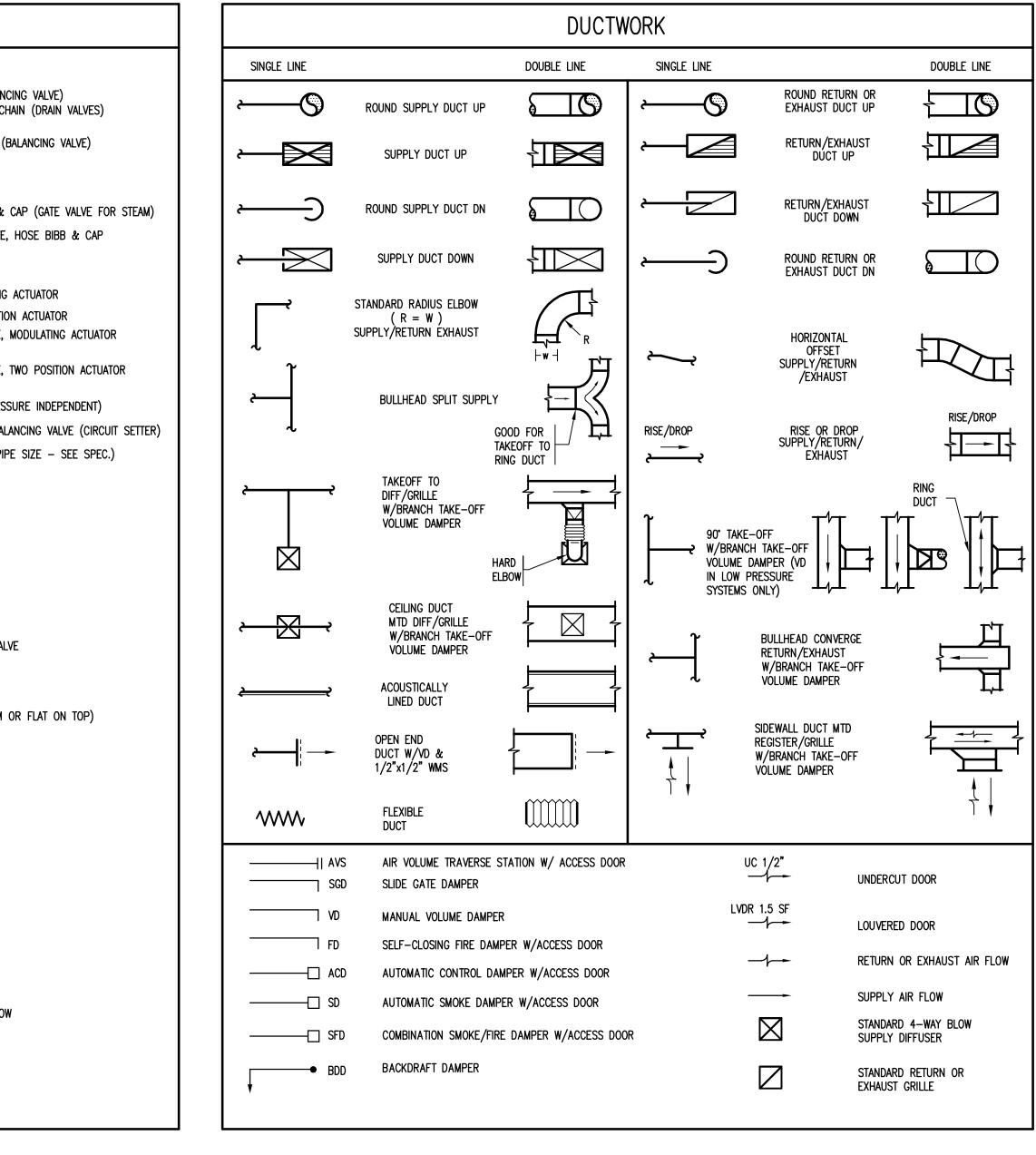


	HYDRONIC SYSTEM S	SPECIFIC A	ABBREVIATIONS
AS AAV	AIR SEPARATOR AUTOMATIC AIR VENT	MAV	MANUAL AIR VENT
CDR	CONDENSATE DRAIN	NPSH	NET POSITIVE SUCTION HEAD
CHEM			
CHW	CHILLED WATER	0S&Y	outside stem and yoke
CHWR		0301	OUTSIDE STEM AND TOKE
CHWS	CHILLED WATER SUPPLY	Р	PUMP
		, PHX	PLATE HEAT EXCHANGER
DOV	DRAIN OFF VALVE	PROCHW	
ET	EXPANSION TANK	PROCHWR	
EWT	ENTERING WATER TEMPERATURE	PROCHWS	
GHWR	GLYCOL RETURN	S(XXX)	SECONDARY (SYSTEM DEPENDANT PRE
GHWS	GLYCOL SUPPLY	SČHWŚ	
HB	HOSE BIBB CONN W/CHAINED CAP	SCHWR	SECONDARY CHILLED WATER RETURN
HW	HOT WATER		
HWCUH	HOT WATER CABINET UNIT HEATER	T(XXX)	TERTIARY (SYSTEM DEPENDANT PREFIX
HWHC	HOT WATER HEATING COIL	TĎH	TOTAL DYNAMIC HEAD
HWPHC	HOT WATER PREHEAT COIL		
HWRHC	HOT WATER REHEAT COIL	UV	UNIT VENTILATOR
HWR		•••	
HWS		WCC	WATER COOLED CONDENSER
HWUH	HOT WATER UNIT HEATER	WCCU	WATER COOLED CONDENSING UNIT
LWT	LEAVING WATER TEMPERATURE	WPD	WATER PRESSURE DROP

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•F •C ø	degrees fahrenheit Degrees celsius Diameter	id In Insul	INSIDE DIAMETER INCHES INSULATION
ACD	AUTOMATIC CONTROL DAMPER	INSUL IU	INSULATION INDUCTION UNIT
CV D	AUTOMATIC CONTROL VALVE ACCESS DOOR	KW KVA	KILOWATT KILOVOLT AMPERE
VDJ VDDL	ADJUSTABLE ADDITIONAL	kva L	KILOVOLT AMPERE
NFF NFG	ABOVE FINISHED FLOOR ABOVE FINISHED GRADE	L LB LAB	POUND LABORATORY
NLT NP	ALTERNATE	LF LVG	LINEAR FEET LEAVING
RCH	ACCESS PANEL ARCHITECT	M	ONE THOUSAND
ATC ATV	AUTOMATIC TEMPERATURE CONTROL ATMOSPHERIC VENT	Max MBH	Maximum Thousand British Thermal Units Per Hour
WG	AVERAGE	MCA	MINIMUM CIRCUIT AMPS
3FF 3HP	Below Finished Floor Brake Horsepower	MECH MFR	MECHANICAL MANUFACTURER
BLDG BOD	BUILDING BOTTOM OF DUCT	min MTD	MINIMUM MOUNTED
Bop BSMT	Bottom of Pipe Basement	MU N/A	MAKEUP WATER NOT APPLICABLE
BTU BTUH	British Thermal Unit British Thermal Unit Per Hour	NC NC	NORMALLY CLOSED NOISE CRITERIA
)	CONVECTOR	NIC NIC NO	NOISE CHIENRA NOT IN CONTRACT NORMALLY OPEN
A CAP	COMPRESSED AIR CAPACITY	NO.	NUMBER
ንፑ ንL	CEILING FAN CENTERLINE	NOM NTS	NOMINAL NOT TO SCALE
CLG CO	CEILING CLEAN-OUT	OB	OCTAVE BAND
COL	COLUMN	OC OD	ON CENTER OUTSIDE DIAMETER
CONC	CONCRETE CONNECTION	OFCI OFOI	OWNER FURNISHED CONTRACTOR INSTALLED OWNER FURNISHED OWNER INSTALLED
Contr Corr	CONTRACTOR CORRIDOR	OV	OUTLET VELOCITY
CUF CUH	CUBIC FEET CABINET UNIT HEATER	PCF PD	POUNDS PER CUBIC FOOT PRESSURE DROP
YL	CYLINDER	PH	PHASE
) )B	DRAIN DRY BULB TEMPERATURE	PLBG	PLUMBING
)C )DC	DRY COOLER DIRECT DIGITAL CONTROL	POS PRESS	PRESSURE
DIA DIM	DIAMETER DIMENSION	PSIG PVC	POUNDS PER SQUARE INCH GAUGE POLYVINYL CHLORIDE
N	DOWN	QNTY	QUANTITY
)WG	DRAWING	ret Reqd	RETURN REQUIRED
A FF	EACH EFFICIENCY	REQS	REQUIRED REQUIREMENTS RELATIVE HUMIDITY
ilec Ilev	ELECTRICAL ELEVATION	RM RP	ROOM
MER MS	EMERGENCY ENERGY MANAGEMENT SYSTEM	rp RPM	RADIANT PANEL REVOLUTIONS PER MINUTE
ENT	ENTERING	SCH SENS	SCHEDULE SENSIBLE
QUIP	EQUIPMENT	SOV	SOLENOID OPERATED VALVE
UH	ELECTRIC UNIT HEATER	SP SPECS	STANDBY POWER SPECIFICATIONS
EXH EXP	EXHAUST EXPANSION	SQ SQFT	SQUARE SQUARE FEET
TR	FINNED TUBE RADIATION	SS STD	STAINLESS STEEL STANDARD
TCV TG	FLOW CONTROL VALVE FIBERGLASS	STDBY STL	STANDBY STEEL
'LEX 'LR	FLEXIBLE FLOOR	SUP	SUPPLY
LRDR P	FLOOR DRAIN FIRE PROTECTION	TA TAV	TRANSFER AIR THERMOSTATIC AIR VENT
РМ Т	FEET PER MINUTE FEET	TEFC TEMP	TOTALLY ENCLOSED FAN COOLED TEMPERATURE
T/SEC	FEET PER SECOND	TOD	TOP OF DUCT TOP OF PIPE
URN VNR	FURNISHED FULL VOLTAGE NON-REVERSING	TYP	TYPICAL
; ;A	GAS GAUGE	V VEL	VENT VELOCITY
SAL SALV	GALLONS	VERT	VERTICAL
SC .	GALVANIZED GENERAL CONTRACTOR	VFD VTR	VARIABLE FREQUENCY DRIVE VENT THROUGH ROOF
SND SPH	GROUND GALLONS PER HOUR	W W /	WIDTH WITH
sp <b>m</b> Srd	GALLONS PER MINUTE GRADE (GROUND LEVEL)	W/ W/O	WITHOUT
SWB	GYPSUM WALL BOARD	WB WC	WET BULB TEMPERATURE WATER COLUMN
H HD	HEIGHT HEAD	WG	WATER GAUGE
IP IR	HORSEPOWER		
łZ	HERTZ		
	AIR SYSTEM SPE	CIFIC A	BBREVIATIONS
0		LAT	LEAVING AIR TEMPERATURE
CC CCU	AIR COOLED CONDENSER AIR COOLED CONDENSING UNIT	LD LUVR	LINEAR DIFFUSER LOUVER
CD CU	AUTOMATIC CONTROL DAMPER AIR CONDITIONING UNIT	LVDR	LOUVERED DOOR
- - 	AIR FOIL AIR HANDLING UNIT	OA OAI	OUTSIDE AIR OUTSIDE AIR INTAKE
D	ACOUSTICALLY LINED DUCTWORK	OBD OED	OPPOSED BLADE DAMPER OPEN END DUCT
D D D	AIR PRESSURE DROP AIR TERMINAL DEVICE		
/S	AIR VOLUME TRAVERSE STATION	PHC	PREHEAT COIL
DD I	BACKDRAFT DAMPER BACKWARD INCLINED	RA RD	RETURN AIR REFRIGERANT DISCHARGE (HOT GAS)
		RF	
ACU C	COMPUTER ROOM AIR CONDITIONING UNIT	RHC	REHEAT COIL
D F <b>M</b>	Ceiling Diffuser Cubic Feet Per Minute	RL RLF	REFRIGERANT LIQUID RELIEF
		RR RS	RETURN REGISTER REFRIGERANT SUCTION
		RTU RV	ROOF TOP UNIT ROOF VENT
IFF WDI	DIFFUSER DOUBLE WIDTH DOUBLE INLET	11.1	SUPPLY AIR
FF WDI WSI			OUT LE / MIN
IFF WDI WSI X	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION	SA SATT	SOUND ATTENUATOR
IFF WDI WSI X AT	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN	SA SATT SCR	SCREEN SMOKE DAMPER
IFF WDI WSI X AT F G HC	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN	SA SATT SCR	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN
IFF WDI WSI X AT 	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN	SA SATT SCR	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER
IFF WDI WSI X AT F G HC PHC R RHC SP	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN	SA SATT SCR	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN
IFF WDI WSI X AT F G HC PHC R RHC SP	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXHAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN	SA SATT SCR SD SDET SEF SFD  SG SGD	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER
IFF WDI WSI X AT F G HC PHC R RHC SP &B B	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXTAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX	SA SATT SCR SD SDET SEF SFD  SG SGD SM SP	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE
IFF WDI WSI X F G HC PHC R HC SP &B SP &B SC A	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXHAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA	SA SATT SCR SD SDET SEF SFD  SG SGD SM SP SR SWDI	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER SINGLE WIDTH DOUBLE INLET
IFF WDI WSI X AT F GHC R RHC SP &B C A CU D	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXTAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA FAN COIL UNIT FIRE DAMPER (W/ ACCESS DOOR)	SA SATT SCR SD SDET SEF SFD  SG SGD SM SP SR	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER
IFF WDI WSI X AT F GHC R RHC SP &B C A CU D LTR	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXHAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA FAN COIL UNIT	SA SATT SCR SD SDET SEF SFD  SG SGD SM SP SR SWDI SWSI TE	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER SINGLE WIDTH DOUBLE INLET SINGLE WIDTH SINGLE INLET TOILET EXHAUST
IFF WDI WSI X F G HCC R RHC SP & B C A CU LTR PI	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA FAN COIL UNIT FIRE DAMPER (W/ ACCESS DOOR) FILTER FINS PER INCH	SA SATT SCR SD SDET SEF SF SFD  SG SGD SM SP SR SWDI SWSI TE TF TG	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER SINGLE WIDTH DOUBLE INLET SINGLE WIDTH SINGLE INLET TOILET EXHAUST TRANSFER FAN TRANSFER GRILLE
IFF WDI WSI X AT F GHC R RHC SP &B C A CU D LTR	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXHAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA FAN COIL UNIT FIRE DAMPER (W/ ACCESS DOOR) FILTER	SA SATT SCR SD SDET SEF SFD  SG SGD SM SP SR SWDI SWSI TE TF	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER SINGLE WIDTH DOUBLE INLET SINGLE WIDTH SINGLE INLET TOILET EXHAUST TRANSFER FAN
IFF WDI WSI X F G HC PR RHC B B C A C D LTR PI E H C	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA FAN COIL UNIT FIRE DAMPER (W/ ACCESS DOOR) FILTER FINS PER INCH GENERAL EXHAUST GRAVITY HOOD HEATING COIL	SA SATT SCR SD SDET SEF SF SFD  SG SGD SM SP SR SWDI SWSI TE TF TG TR	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER SINGLE WIDTH DOUBLE INLET SINGLE WIDTH SINGLE INLET TOILET EXHAUST TRANSFER FAN TRANSFER GRILLE TRANSFER
IFF WDI WSI F GHCC RHC SP &B C A CD LTR PI E H C EGA EPA	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXHAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA FAN COIL UNIT FIRE DAMPER (W/ ACCESS DOOR) FILTER FINS PER INCH GENERAL EXHAUST GRAVITY HOOD HEATING COIL HIGH EFFICIENCY GAS ABSORBER AIR FILTER HIGH EFFICIENCY PARTICULATE AIR FILTER	SA SATT SCR SD SDET SEF SFD  SG SGD SM SP SR SWDI SWSI TE TF TG TR TSP	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER SINGLE WIDTH DOUBLE INLET SINGLE WIDTH SINGLE INLET TOILET EXHAUST TRANSFER FAN TRANSFER GRILLE TRANSFER TOTAL STATIC PRESSURE UNDERCUT DOOR VOLUME DAMPER
IFF WDI WSI X F G HC PR RHC B B C A C D LTR PI E H C	DOUBLE WIDTH DOUBLE INLET DOUBLE WIDTH SINGLE INLET DIRECT EXPANSION ENTERING AIR TEMPERATURE EXHAUST FAN EXHAUST GRILLE ELECTRICAL HEATING COIL ELECTRICAL HEATING COIL ELECTRIC PREHEAT COIL EXHAUST REGISTER ELECTRIC REHEAT COIL EXTERNAL STATIC PRESSURE FAN FACE AND BYPASS FAN BOX FORWARD CURVED FREE AREA FAN COIL UNIT FIRE DAMPER (W/ ACCESS DOOR) FILTER FINS PER INCH GENERAL EXHAUST GRAVITY HOOD HEATING COIL HIGH EFFICIENCY GAS ABSORBER AIR FILTER	SA SATT SCR SD SDET SEF SFD  SG SGD SM SP SR SWDI SWSI TE TF TG TR TSP UC	SCREEN SMOKE DAMPER SMOKE DETECTOR SMOKE EXHAUST FAN SUPPLY FAN COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR SUPPLY GRILLE SLIDE GATE DAMPER SHEETMETAL STATIC PRESSURE SUPPLY REGISTER SINGLE WIDTH DOUBLE INLET SINGLE WIDTH DOUBLE INLET TOILET EXHAUST TRANSFER FAN TRANSFER GRILLE TRANSFER TOTAL STATIC PRESSURE UNDERCUT DOOR

		GATE VALVE BALL VALVE
	—	BALL VALVE WITH MEMORY STOP (BALANCING VALV BALL VALVE WITH HOSE BIBB, CAP & CHAIN (DRA
		BUTTERFLY VALVE BUTTERFLY VALVE WITH MEMORY STOP (BALANCING
	—— ↓ √ 	GLOBE VALVE PLUG VALVE
		CHECK VALVE STRAINER W/BALL VALVE, HOSE BIBB & CAP (GAT
		STRAINER, BASKET TYPE W/DRAIN VALVE, HOSE B
		SOLENOID VALVE
		AUTOMATIC CONTROL VALVE, MODULATING ACTUATO AUTOMATIC CONTROL VALVE, TWO POSITION ACTUAT
		THREE WAY AUTOMATIC CONTROL VALVE, MODULATI
		THREE WAY AUTOMATIC CONTROL VALVE, TWO POS
		AUTOMATIC FLOW CONTROL VALVE (PRESSURE IND
		COMBINATION FLOWMETER/SHUT OFF/BALANCING V UNION OR FLANGE (AS INDICATED BY PIPE SIZE -
		BLIND FLANGE
	] 	END CAP
	<u>T</u>	PRESSURE GAUGE WITH GAUGE CLOCK
	 VB	THERMOMETER
	т РТ	VACUUM BREAKER PRESSURE/TEMPERATURE WELL
	AAV ≮-MAV	AUTOMATIC AIR VENT WITH ISOLATION VALVE
		MANUAL AIR VENT THERMOSTATIC AIR VENT (STEAM ONLY)
		REDUCER (ECCENTRIC-FLAT ON BOTTOM OR FLAT
		REDUCER (CONCENTRIC) FLEXIBLE CONNECTION
	O 	RISE (SINGLE LINE – PLAN VIEW) DROP (SINGLE LINE – PLAN VIEW)
	 	TOP TAKEOFF BOTTOM TAKEOFF
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	PIPE BREAK (SINGLE LINE)
	<u>U</u>	DIRT LEG
		CLEAN-OUT FOR CONDENSATE DRAIN
		DIRECTION OF FLOW IN PIPE
		PITCH PIPE UP IN DIRECTION OF FLOW
	,	PITCH PIPE DOWN IN DIRECTION OF FLOW SUPPLY LINES
		RETURN LINES
	GENERAL NOTES 23.	, SYMBOLS AND DETAILS ARE APPLICAE
	23. DRAWINGS ARE	DIAGRAMMATIC, THEREFORE DETERMINE
	23. DRAWINGS ARE COMPONENTS IN	DIAGRAMMATIC, THEREFORE DETERMINE
	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD.
	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC READ SPECIFICA PROVIDE INFORM	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD. ORK OF THIS SECTION WITH THAT OF O
	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC READ SPECIFICA PROVIDE INFORM STEEL PLATFORM COORDINATE PE	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD. ORK OF THIS SECTION WITH THAT OF O ITIONS FOR REQUIREMENTS PERTAINING MATION AND HARDWARE AS NECESSARY
	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC READ SPECIFICA PROVIDE INFORM STEEL PLATFORM COORDINATE PE REQUIREMENTS.	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD. ORK OF THIS SECTION WITH THAT OF O ITIONS FOR REQUIREMENTS PERTAINING MATION AND HARDWARE AS NECESSARY IS REQUIRED FOR MECHANICAL WORK.
	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC READ SPECIFICA PROVIDE INFORM STEEL PLATFORM COORDINATE PE REQUIREMENTS. SHEET METAL F WITHOUT PRIOR	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD. ORK OF THIS SECTION WITH THAT OF O ATIONS FOR REQUIREMENTS PERTAINING MATION AND HARDWARE AS NECESSARY AND AND HARDWARE AS NECESSARY AS REQUIRED FOR MECHANICAL WORK. NETRATIONS WITH WORK OF OTHER SEC ITTINGS SHOWN ARE TO BE PROVIDED.
	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC READ SPECIFICA PROVIDE INFORM STEEL PLATFORM COORDINATE PE REQUIREMENTS. SHEET METAL F WITHOUT PRIOR RUN DUCTS ANI INSERTS. ALL DU	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD. ORK OF THIS SECTION WITH THAT OF O TIONS FOR REQUIREMENTS PERTAINING MATION AND HARDWARE AS NECESSARY IS REQUIRED FOR MECHANICAL WORK. NETRATIONS WITH WORK OF OTHER SEC ITTINGS SHOWN ARE TO BE PROVIDED.
	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC READ SPECIFICA PROVIDE INFORM STEEL PLATFORM COORDINATE PE REQUIREMENTS. SHEET METAL F WITHOUT PRIOR RUN DUCTS ANI INSERTS. ALL DU UNDERSIDE OF F REFER TO SPEC	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD. ORK OF THIS SECTION WITH THAT OF O ATIONS FOR REQUIREMENTS PERTAINING MATION AND HARDWARE AS NECESSARY AS REQUIRED FOR MECHANICAL WORK. NETRATIONS WITH WORK OF OTHER SEC ITTINGS SHOWN ARE TO BE PROVIDED. & CONSENT FROM ARCHITECT/ENGINEER D PIPING CONCEALED, UNLESS SPECIFIE JCTWORK SHALL BE INSTALLED AS CLO
).	23. DRAWINGS ARE COMPONENTS IN COORDINATE WC READ SPECIFICA PROVIDE INFORM STEEL PLATFORM COORDINATE PE REQUIREMENTS. SHEET METAL F WITHOUT PRIOR RUN DUCTS ANI INSERTS. ALL DU UNDERSIDE OF F REFER TO SPEC CLASSES.	DIAGRAMMATIC, THEREFORE DETERMINE THE FIELD. ORK OF THIS SECTION WITH THAT OF O ATIONS FOR REQUIREMENTS PERTAINING MATION AND HARDWARE AS NECESSARY AS REQUIRED FOR MECHANICAL WORK. NETRATIONS WITH WORK OF OTHER SEC ATTINGS SHOWN ARE TO BE PROVIDED. CONSENT FROM ARCHITECT/ENGINEER D PIPING CONCEALED, UNLESS SPECIFIE JCTWORK SHALL BE INSTALLED AS CLO BEAMS AND JOISTS. CIFICATIONS FOR DUCTWORK CONSTRUCT
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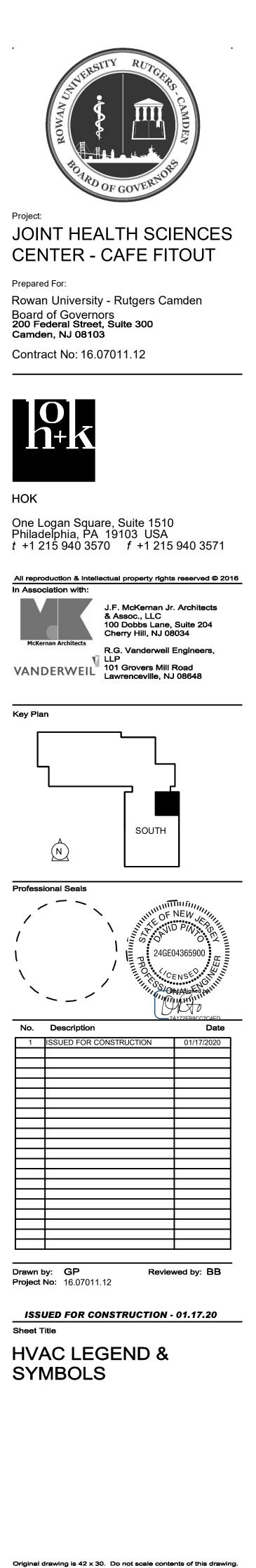
## GENERAL NOTES

- PPLICABLE TO ALL DRAWINGS WITHIN DIVISION
- OF OTHER SECTIONS.
- TAINING TO THESE DOCUMENTS. ESSARY TO COORDINATE CONCRETE PADS AND WORK.
- IER SECTIONS AND WITH FLASHING
- VIDED. NO SUBSTITUTES SHALL BE ALLOWED GINEER.
- SPECIFIED OTHERWISE, AND CLEAR OF CEILING AS CLOSE AS POSSIBLE TO WALL AND
- STRUCTION CLASSES, SEAL, AND LEAKAGE
- ADA CODE) ABOVE FINISHED FLOOR OR AS
- AWINGS. PROVIDE MANUAL ADJUSTABLE -OFF OR SPLIT, AND IN BRANCH DUCTS FOR N DEVICES OR OPEN ENDED DUCTS. PROVIDE JCTS CONNECT TO STUB-OUTS FROM RISERS MOTELY ADJUSTABLE VOLUME DAMPERS WHERE NGS. COORDINATE WITH ARCHITECTURAL
- RADES INVOLVED. OFFSETS IN PIPING AND FIONS AROUND OBSTRUCTIONS SHALL BE IER.
- UFACTURER'S CERTIFIED DRAWINGS. VERIFY ID QUANTITIES OF CONNECTIONS TO RDINATE ALL DIMENSIONS BEFORE FABRICATION. I COILS AND SERVICE DAMPERS, HEATERS,
- RK FROM BUILDING STRUCTURE TO PROVIDE A T AND STRUCTURAL ENGINEER OF ALL
- WIRED TO THE FIRE ALARM SYSTEM UNDER SOCIATED WITH FIRE/SMOKE DAMPERS SHALL I THEIR RESPECTIVE DAMPERS (WIRED TO THE IR DIVISION 23 MOUNT THE DETECTORS IN RE THE DETECTORS TO THE BAS SYSTEM AND
- THE DIVISION 23 WORK. DAMPERS SHALL BE
- PLANS FOR EXACT LOCATIONS OF AIR
- OR DUCTS. CONTRACTOR SHALL INCREASE SIZE

## STER AND GRILLE SIZE ARE NOMINAL.

- IBINATION FIRE / SMOKE DAMPERS, AND DRAWINGS AND WHERE REQUIRED BY IBC , FLOORS AND PARTITIONS PROVIDE SLEEVES TO SURFACE PENETRATED. ENCLOSE
- PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO FANS AND AIR CONDITIONING UNITS NOT HAVING INTERNAL VIBRATION ISOLATION. ALL DUCTS TO BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.

- 24. ELBOWS IN DUCT SYSTEMS SHALL BE FULL RADIUS (CENTERLINE RADIUS = 1.5 DUCT WIDTH) WHERE SPACE PERMITS. WHERE LIMITED CLEARANCE OCCURS, PROVIDE SHORT RADIUS ELBOW WITH FULL LENGTH SPLITTER VANES PER SMACNA. MITERED SQUARE ELBOWS WITH TURNING VANES MAY BE UTILIZED ONLY WHERE SHOWN ON DRAWINGS.
- ALL RETURN AIR OPENINGS ABOVE CEILING SHALL BE PROVIDED WITH A HEAVY GAGE 1/2" MESH ALUMINUM SCREEN (80% FREE AREA MINIMUM).
   INSULATE PIPING AND DUCTWORK AS SPECIFIED: PERFORM TESTS SPECIFIED BEFORE INSULATING.
- 27. PROVIDE HANGERS, CLAMPS, OFFSETS, EXPANSION LOOPS, ANCHORS AND GUIDES AS
- NECESSARY TO PREVENT STRESS ON PIPING. 28. PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
- 29. PROVIDE AT LEAST THREE-ELBOW SWING FOR PIPE TAKE-OFFS TO TERMINAL EQUIPMENT AND RISERS.
- 30. PITCH PIPING 1 INCH IN 40 FEET IN DIRECTION OF FLOW TO ALLOW FOR DRAINING PER ASHRAE.
- 31. ALL CONDENSATE DRAIN LINES SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, CONNECTED TO PLUMBING OR AS INDICATED ON DRAWINGS.
- 32. ALL BRANCH PIPING TO INDIVIDUAL TERMINAL UNITS, REHEAT COILS AND INDUCTION UNITS SHALL BE 3/4" UNLESS OTHERWISE NOTED.
- 33. PROVIDE OFFSETS IN DUCTWORK AND RISES/DROPS AS REQUIRED, FOR COORDINATION WITH PIPES, OTHER DUCTS, AND OTHER TRADES. UTILIZE THE BEAM SPACE AND RISE/DROP BETWEEN BEAMS WHERE NECESSARY FOR COORDINATION WITH CEILING HEIGHTS, EVEN WHERE NOT SHOWN ON PLANS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS.
- 34. PROVIDE ACOUSTIC FLEX DUCTS AT CONNECTIONS TO AIR FOR SUPPLY AND GENERAL EXHAUST DEVICES AT A MAXIMUM LENGTH 6 FT. AND A MINIMUM LENGTH OF 5 FT. PROVIDE FLEXMASTER USA TYPE 8M, THERMAFLEX TYPE MKE OR EQUIVALENT.
- 35. ISOLATION AND BALANCING VALVES IN PIPING SYSTEMS ARE NOT SHOWN ON PLANS. PROVIDE AT ALL PIPE BRANCHES AT RISERS, SPLITS IN MAINS, AND AT CONNECTIONS TO EQUIPMENT. ALSO REFER TO DETAIL SHEETS AND RISER DIAGRAMS.
- 36. PROVIDE DUCT TRANSITIONS AND QUANTITIES OF CONNECTIONS AS REQUIRED FOR CONNECTIONS TO FUME HOODS AND OTHER EQUIPMENT REQUIRING EXHAUST.
- 37. PROVIDE PIPE REDUCERS AND ENLARGERS AS REQUIRED AT AUTOMATIC VALVES. COORDINATE WITH BAS CONTRACTOR.
- 38. PROVIDE PIPE REDUCERS AND ENLARGERS AT AUTOMATIC FLOW CONTROL VALVES AND BALANCING VALVES (CIRCUIT SETTERS).



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