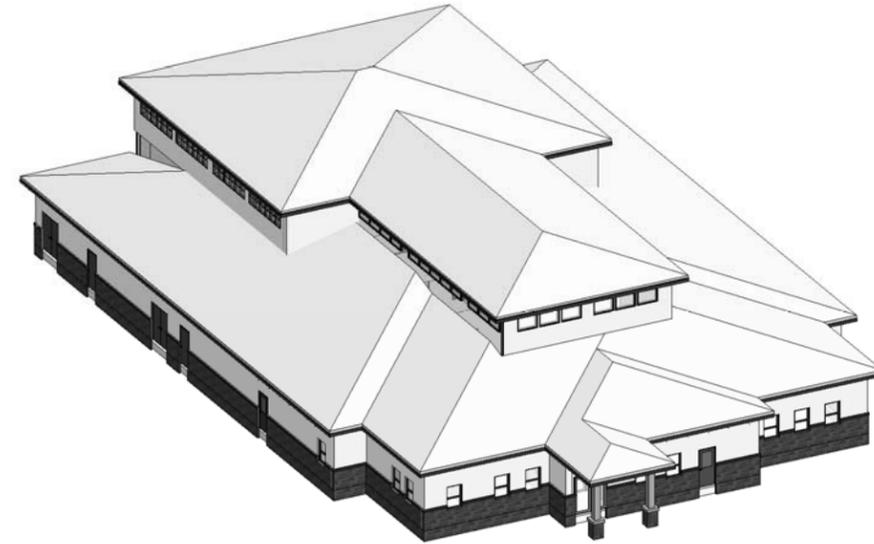




**US Army Corps of  
Engineers®**  
ENGINEERING AND SUPPORT CENTER  
HUNTSVILLE, AL



# CHILD DEVELOPMENT CENTER (CDC) STANDARD DESIGN, SMALL 6 - 10 YEARS OLD

## CENTER OF STANDARDIZATION

LOCATION:

CONTRACT NUMBER : N/A

SOLICITATION NUMBER : N/A

PREPARED: JUNE 2014

STATUS: 65% ENERGY CONSERVATION  
DESIGN PACKAGE

\*ENERGY CONSERVATION MEASURES AND LEED/SUSTAINABLE DESIGN FEATURES  
HAVE BEEN CONSIDERED FOR THIS PROJECT.

ANTICIPATE LEED: 56 CREDIT POINTS.

U.S. ARMY CORPS OF ENGINEERS ENGINEERING AND SUPPORT CENTER, HUNTSVILLE			
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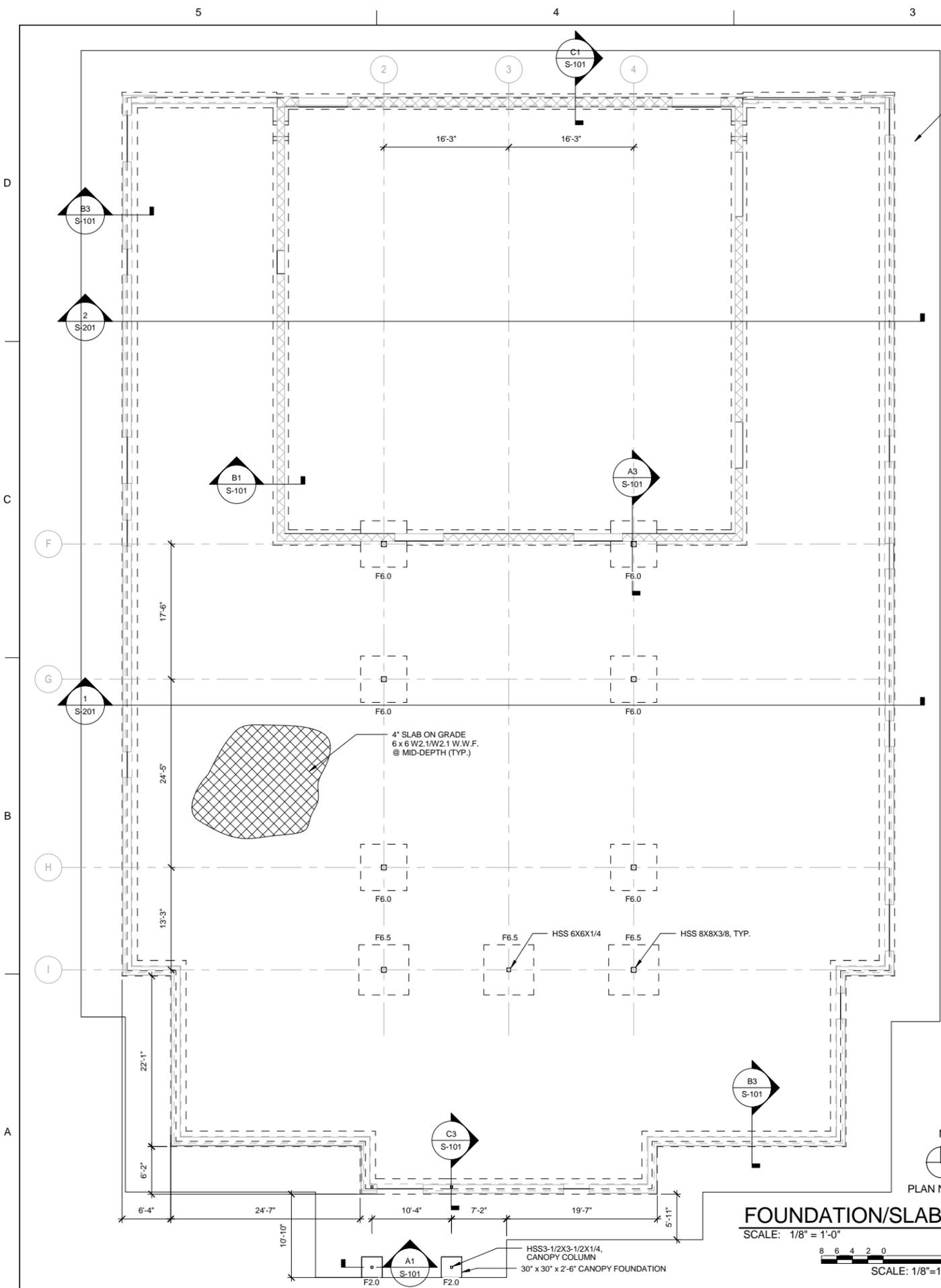
APPROVALS	SIGNATURES
BCOE BY	
REVIEWED BY (DIVISION CHIEF-MECH/ELEC)	
REVIEWED BY (DIVISION CHIEF-CIVIL/STRUC)	
RECOMMENDED BY (DIR OF ENGINEERING)	
APPROVED BY (COMMANDER)	

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THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152 AND CEHNC 1110-1-1.

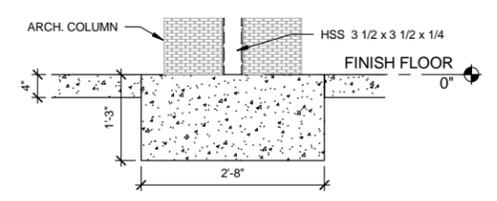
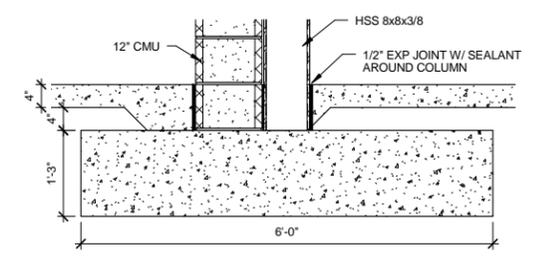
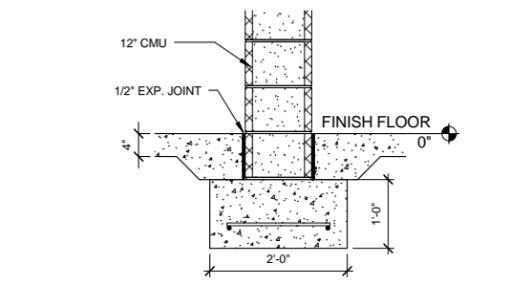
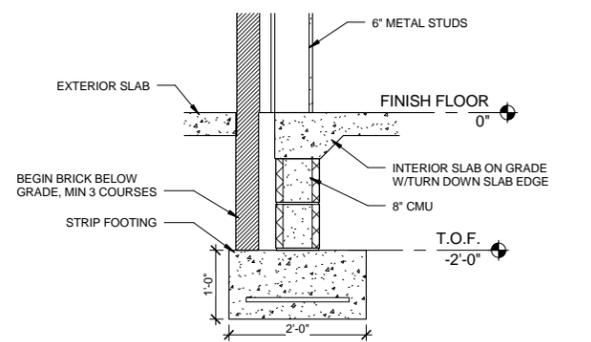
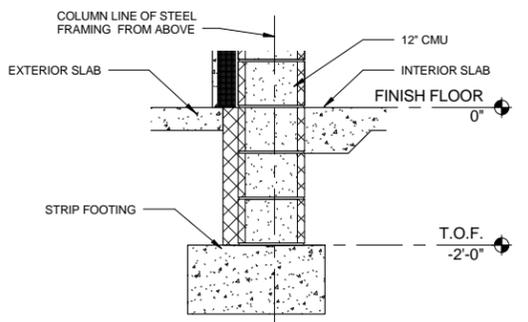
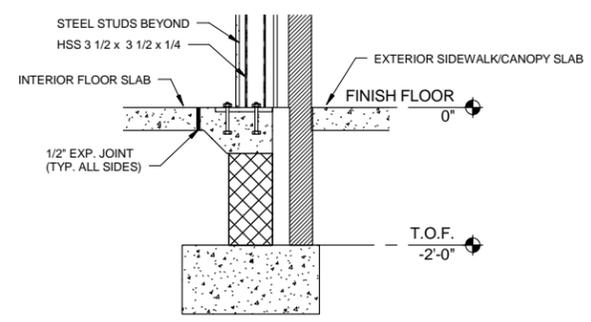






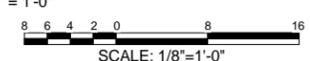


CONCRETE SIDEWALK AROUND PERIMETER



- NOTES**
- SEE SHEET S-001 FOR STRUCTURAL NOTES.
  - ALL EXTERIOR FOOTINGS T.O.C. ELEVATIONS ARE 2'-0" BELOW FINISHED GRADE.  
INTERIOR STRIP AND SPREAD FOOTINGS T.O.C. ELEVATIONS ARE 0'-8" BELOW FINISHED GRADE.
  - CONTROL JOINTS SHOULD BE USED WITH A MAXIMUM SPACING OF 15' O.C.

**FOUNDATION/SLAB PLAN**  
SCALE: 1/8" = 1'-0"



WALL FOOTING SCHEDULE									
Mark	TYPE	DIMENSIONS			VOLUME	REINFORCING			
		WIDTH	LENGTH	THICKNESS		LONGITUDINAL		TRANSVERSE	
						QTY	SIZE	SIZE	SPACING
F2	CANOPY FOOTING	2'-8"	2'-8"	1'-3"	18 CF	2	6	6	1'-0"
F6.0	INTERIOR FOOTING	6'-0"	6'-0"	1'-3"	270 CF	5	6	6	1'-0"
F6.5	INTERIOR FOOTING	6'-6"	6'-6"	1'-3"	158 CF	5	6	6	1'-0"
SF	Strip Footing	2'-0"		1'-0"	1277 CF	2	6	4	2'-0"
Grand total									



DATE	DESCRIPTION	BY
JUNE 2014	FOUNDATION PLAN	

DESIGN BY: RBR	DATE: JUNE 2014	CONTRACT NO.:
DRAWN BY: JAU	SOLICITATION NO.:	CONTRACT NO.:
REVISIONS:	NO.:	DATE:
DATE:	DATE:	DATE:
DATE:	DATE:	DATE:

U.S. ARMY CORPS OF ENGINEERS  
ENGINEERING AND SUPPORT CENTER  
4820 UNIVERSITY SQ  
HUNTSVILLE, AL 35816





















































































ABBREVIATIONS

SYMBOLS

GENERAL NOTES:

A	AIR CONDITION (-ING, -ER, -ED)	KW	KILOWATT
ABS	ABSOLUTE	KWH	KILOWATT-HOUR
AC UNIT	AIR CONDITIONING UNIT	L	LOUVER
ACH	AIR CHANGES PER HOUR	LAT	LEAVING AIR TEMPERATURE
ADA	AMERICANS WITH DISABILITIES ACT	LB	POUNDS
ADP	APPARATUS DEW POINT	LF	LINEAR FEET
AFF	ABOVE FINISHED FLOOR	LG	LENGTH
AHU	AIR HANDLING UNIT	LHG	HEAT GAIN, LATENT
ALT	ALTITUDE	LMTD	LEAST MEAN TEMPERATURE DIFFERENCE
AMB	AMBIENT	LPS	LOW PRESSURE STEAM
APPROX	APPROXIMATE	LWT	LEAVING WATER TEMPERATURE
AS	AIR SEPARATOR	M	MAXIMUM
ATM	ATMOSPHERE	MAX	MAXIMUM
AUX	AUXILIARY	MBH	1000 * BRITISH THERMAL UNIT
AVG	AVERAGE	MIN	MINUTE
B	BOILER	MIN	MINIMUM
BBD	BOILER BLOWDOWN	MPS	MEDIUM PRESSURE STEAM
BF	BOILER FEED SYSTEM	N	NOT APPLICABLE
BHP	BRAKE HORSEPOWER	NA	NOT APPLICABLE
BLDG	BUILDING	NC	NOISE CRITERIA
BOD	BOTTOM OF DUCT	NC	NORMALLY CLOSED
BOP	BOTTOM OF PIPE	NC	NOT IN CONTRACT
BP	BOILING POINT	NO	NORMALLY OPEN
BP	BOILER PUMP	NO / #	NUMBER
BT	BUFFER TANK	NTS	NOT TO SCALE
BTU	BRITISH THERMAL UNIT	O	OUTSIDE AIR
CFM	FLOW, CUBIC FEET PER MINUTE	OA	OUTSIDE AIR
CH	CHILLER	OAT	OUTSIDE AIR TEMPERATURE
CHWR	CHILLED WATER, SUPPLY	OZ	OUNCE
CHWR	CHILLED WATER, RETURN	P	PRIMARY CHILLED WATER PUMP
CLG LOAD	COOLING LOAD	PCHWP	PRIMARY CHILLED WATER PUMP
CMPR	COMPRESSOR	PCWP	PRIMARY CONDENSER WATER PUMP
CO	CARBON MONOXIDE	PH	PHASE, ELECTRICAL
CO2	CARBON DIOXIDE	PHWP	PRIMARY HOT WATER PUMP
COEF	COEFFICIENT	PPM	PARTS PER MILLION
COND	CONDENS(-ER, -ING, -ATION)	PRESS	PRESSURE
CRP	CONDENSATE RETURN PUMP	PRV	PRESSURE REDUCING VALVE
CT	COOLING TOWER	PSF	POUNDS PER SQUARE FOOT
CT	COOLING TOWER	PSI	POUNDS PER SQUARE IN
CU FT	CUBIC FEET	PSIA	PSI, ABSOLUTE
CU IN	CUBIC INCH	R	THERMAL RESISTANCE
CV	COEFFICIENT, VALVE FLOW	RA	RETURN AIR
CWR	CONDENSER WATER, RETURN	RAT	RETURN AIR TEMPERATURE
CWS	CONDENSER WATER, SUPPLY	REFR	REFRIGERANT
D	DAMPER	RG	RETURN AIR GRILLE
DB	DRY BULB TEMPERATURE	RH	RELATIVE HUMIDITY
DBA	DECIBEL	RPM	REVOLUTION PER MINUTE
DEG	DEGREE	S	ENTROPY
DENS	DENSITY	SA	SUPPLY AIR
DIA	DIAMETER	SAT	SUPPLY AIR TEMPERATURE
DIFF	DIFFERENCE	SC	SHADING COEFFICIENT
DP	DIFFERENTIAL PRESSURE	SCFM	CFM, STANDARD CONDITIONS
DPT	DEW POINT TEMPERATURE	SCFS	CUBIC FEET PER SECOND, STANDARD
DX	DIRECT EXPANSION	SCHWP	SECONDARY CHILLED WATER PUMP
E	EXHAUST AIR	SD	SUCTION DIFFUSER
EA	ENTERING AIR TEMPERATURE	SD	SUPPLY AIR DIFFUSER
EER	ENERGY EFFICIENCY RATIO	SF	SUPPLY FAN
EF	EXHAUST FAN	SF	SAFETY FACTOR
EFF	EFFICIENCY	SG	SPECIFIC GRAVITY
EG	EXHAUST AIR GRILLE	SG	SUPPLY AIR GRILLE
ENT	ENTERING	SHG	SENSIBLE HEAT GAIN
ESP	EXTERNAL STATIC PRESSURE	SHGC	SENSIBLE HEAT GAIN COEFFICIENT
ET	EXPANSION TANK	SHR	SENSIBLE HEAT RATIO
EVAP	EVAPOR(-E, -ING, -ED, -OR)	SHWP	SECONDARY HOT WATER PUMP
EWT	ENTERING WATER TEMPERATURE	SP	STATIC PRESSURE
EXP	EXPANSION	SP HT	SPECIFIC HEAT
F	TEMPERATURE FARENHEIT	SPEC	SPECIFICATION
FA	FREE AREA	SQ	SQUARE
FC	FLUID COOLER	STD	STANDARD
FC	FLEX CONNECTOR	SUCT	SUCTION
FFM	FEET PER MINUTE	T	THERMOSTAT
FPS	FEET PER SECOND	T STAT	THERMOSTAT
FT	FEET	TAB	TEST AND BALANCE
G	GALLONS	TEMP	TEMPERATURE
GAL	GALLONS	TG	TRANSFER AIR GRILLE
GPH	FLOW, GALLONS PER HOUR	TON	TON OF REFRIGERATION (12,000 BTU)
GPM	FLOW, GALLONS PER MINUTE	TXV	THERMOSTATIC EXPANSION VALVE
GR	GRAINS	U	UNIT HEATER
GSHP	GROUND SOURCE HEAT PUMPE	UH	UNIT HEATER
H	ENTHALPY	V	VALVE
HG	MERCURY	VAV	VARIABLE AIR VOLUME
HGT	HEIGHT	VD	VOLUME DAMPER
HP	HEAT PUMP	VENT	VENTILATION
HPS	HIGH PRESSURE STEAM	VFD	VARIABLE FREQUENCY DRIVE
HR	HOUR	VP	VELOCITY PRESSURE
HTHW	HIGH TEMPERATURE HOT WATER (>200 F)	VSD	VARIABLE SPEED DRIVE
HVU	HEATING VENTILATING UNIT	W	WATT
HWR	HYDRONIC HOT WATER, RETURN	WB	WET BULB TEMPERATURE
HWS	HYDRONIC HOT WATER, SUPPLY	WC	WATER COLUMN
HX	HEAT EXCHANGER	WSHP	WATER SOURCE HEAT PUMP
HZ	FREQUENCY	WT	WEIGHT
I	INVERT ELEVATION	Y	YARD
I.E.	INFRARED HEATER	YD	YARD
IH	INCH	YR	YEAR
IN	INCH		
K	THERMAL CONDUCTIVITY		
K	THERMAL CONDUCTIVITY		

PIPING		DUCTWORK	
	BALL VALVE		EXISTING DUCTWORK TO BE REMOVED
	BUTTERFLY VALVE		RECTANGULAR DUCT. FIRST DIMENSION IS SIDE SHOWN. DIMENSIONS ARE FREE AREA
	CHECK VALVE		45 DEG BRANCH TAKE-OFF
	GATE VALVE		DUCT TRANSITION
	AUTOMATIC FLOW CONTROL VALVE		MITERED ELBOW WITH TURNING VANES
	MANUAL CALIBRATED BALANCE VALVE		RECT. TO ROUND SPIN-IN FITTING W/DAMPER
	GLOBE VALVE		ROUND DUCT WITH DIAMETER SIZE DIMENSIONS ARE FREE AREA
	PRESSURE REDUCING VALVE		FLEXIBLE DUCT
	3-WAY CONTROL VALVE, DDC		SUPPLY /OUTDOOR AIR DUCT
	2-WAY CONTROL VALVE, DDC		RETURN AIR DUCT
	WYE STRAINER		EXHAUST AIR DUCT
	PRESSURE GAUGE		MANUAL VOLUME DAMPER
	THERMOSTAT		CONTROL/MOTORIZED DAMPER
			FIRE DAMPER
			THERMOSTAT
			EMERGENCY SHUTDOWN SWITCH
			TEMPERATURE SENSOR
			CARBON DIOXIDE SENSOR
			HUMIDITY SENSOR/HUMIDISTAT

A	"HVAC GENERAL NOTES" APPLY TO HVAC DRAWINGS. "PLAN NOTES" APPLY ONLY TO THE SHEETS ON WHICH THEY APPEAR. THE WORD "PROVIDE" MEANS "FURNISH AND INSTALL".	R	REFRIGERANT LINE SIZES PROVIDED ARE PRELIMINARY. COORDINATE LINE SIZES WITH MANUFACTURER'S RECOMMENDATIONS FOR ACTUAL EQUIPMENT INSTALLED. A FILTER DRIER, SOLENOID VALVE, SIGHT GLASS, AND THERMAL EXPANSION VALVE SHALL BE INSTALLED IN THE LIQUID LINE UPSTREAM OF THE EVAPORATOR. A FILTER DRIER SHALL BE INSTALLED IN THE SUCTION LINE UPSTREAM OF THE CONDENSING UNIT.
B	MECHANICAL DRAWINGS ARE DIAGRAMMATIC TO SHOW DESIGN INTENT. PROVIDE ANY ADDITIONAL DROPS, RISES, OR OFFSETS REQUIRED FOR A COMPLETE SYSTEM INSTALLATION. COORDINATE EXACT ROUTING OF MECHANICAL WORK WITH ALL OTHER TRADES AND OBSTRUCTIONS PRIOR TO BEGINNING WORK. COORDINATE EXACT LOCATIONS OF CEILING MOUNTED EQUIPMENT WITH LIGHTS, CEILING GRID, SPRINKLERS AND OTHER OBSTRUCTIONS. FIELD VERIFY EXISTING CONDITIONS IF APPLICABLE.	S	AIR CONDITIONING UNITS INSTALLED ABOVE A CEILING SHALL BE PROVIDED WITH CONDENSATE OVERFLOW DETECTION TO DE-ENERGIZE UNIT AND ALARM DDC SYSTEM. COMMUNICATION ROOM AC UNITS SUSPENDED FROM STRUCTURE SHALL BE PROVIDED WITH AN AUXILIARY DRAIN PAN AND OVERFLOW DETECTION BELOW THE UNIT. COLD WATER PIPES INSTALLED ABOVE ELECTRICAL EQUIPMENT SHALL HAVE INSULATED AUXILIARY DRAIN PANS WITH OVERFLOW DETECTION THAT ALARMS THE DDC SYSTEM. COORDINATE WITH ELECTRICAL CONTRACTOR TO PREVENT ROUTING CHILLED WATER, COLD WATER, AND CONDENSATE PIPE OVER ELECTRIC EQUIPMENT WHERE POSSIBLE.
C	EQUIPMENT SHOWN ON THE DRAWINGS WAS OBTAINED FROM COMMON MANUFACTURERS OF HVAC EQUIPMENT AND ACCOUNTS FOR CLEARANCES AND OVERALL DIMENSIONS. SELECT AND PROVIDE HVAC EQUIPMENT THAT WILL FIT IN THE MECHANICAL SPACES PROVIDED, WHILE MAINTAINING MANUFACTURER'S MAINTENANCE CLEARANCES.	T	EQUIPMENT DESIGNATED TO HAVE A FACTORY MOUNTED DISCONNECT SWITCH SHALL BE SIZED FOR THE ELECTRICAL CHARACTERISTICS OF THAT PIECE OF EQUIPMENT. EQUIPMENT THAT DOES NOT HAVE A FACTORY MOUNTED DISCONNECT SHALL HAVE A FIELD INSTALLED DISCONNECT PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL PROVIDE VARIABLE FREQUENCY DRIVES AND STARTERS WHERE NOT PROVIDED BY EQUIPMENT MANUFACTURER. VARIABLE FREQUENCY DRIVES AND STARTERS SHALL BE INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR.
D	COORDINATE WITH ROOF CONTRACTOR WATERPROOFING OF ROOF PENETRATIONS AND SUPPORTS OF ROOF MOUNTED EQUIPMENT. PROVIDE FLASHING FOR ROOF CURBS AND DUCTWORK. PROVIDE BOOTHS FOR PIPES. PROVIDE PITCH POCKETS FOR REFRIGERANT LINES AND ROOF SUPPORTS THAT ARE NOT PIPES OR CURBS.	U	SUPPLY CONTROL POWER TRANSFORMERS. ALL LOW VOLTAGE WIRING, AND WIRING FROM POWER SUPPLY TO CONTROL TRANSFORMERS AND DEVICES. HUMIDISTATS SHALL BE WALL MOUNTED IN THE SPACE TO BE CONTROLLED. FURNISH, INSTALL, AND WIRE THERMOSTATS, EXCEPT WHERE PROVIDED BY THE FACTORY. THERMOSTATS SHALL AVOID CASEWORK. SUPPLY CURRENT SENSORS TO ELECTRICAL CONTRACTOR FOR INSTALLATION IN POWER WIRING.
E	ROUTE HORIZONTAL DUCT AS HIGH AS POSSIBLE & AVOID INTERFERENCE WITH OTHER DUCTS, PIPING, LIGHTS, AND STRUCTURE. ROUTE HORIZONTAL PIPES PARALLEL TO WALLS AND ABOVE CEILINGS & AVOID INTERFERENCE AND CONTACT WITH DUCTS, OTHER PIPING, LIGHTS, AND STRUCTURE.	V	UNLESS OTHERWISE NOTED, WALL THERMOSTATS/TEMPERATURE SENSORS SHALL BE MOUNTED ON THE WALL A MINIMUM HEIGHT OF 54" ABOVE FINISHED FLOOR.
F	DO NOT INSTALL ANY EQUIPMENT OR FABRICATE ANY DUCTWORK PRIOR TO VERIFICATION OF ROUTING AND AVAILABILITY OF SPACE. COORDINATE SPACE REQUIREMENT WITH ALL OTHER TRADES.	W	FIRE BARRIERS ARE SHOWN ON LIFE SAFETY/FIRE PROTECTION DRAWINGS. PIPE PENETRATIONS THRU FIRE BARRIERS SHALL BE SEALED WITH FIRE STOP SUITABLE FOR THE RATING OF THE WALL OR FLOOR BEING PENETRATED. DUCT PENETRATIONS THRU FIRE BARRIERS SHALL HAVE A FIRE DAMPER INSTALLED AT THE PENETRATION SUITABLE FOR THE RATING OF THE WALL OR FLOOR BEING PENETRATED. REFER TO FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
G	PROVIDE SUPPORT FOR ALL DUCTWORK, PIPING, AND MECHANICAL EQUIPMENT. FIELD VERIFY ALL EQUIPMENT DIMENSIONS PRIOR TO FABRICATION OF EQUIPMENT SUPPORTS. WHERE INDICATED ON DRAWINGS, FLOOR MOUNTED EQUIPMENT SHALL HAVE HOUSEKEEPING PADS EXTENDING 4 INCHES OUTSIDE THE EQUIPMENT ENVELOPE AND MINIMUM 4 INCHES HIGH FOR EQUIPMENT WITHOUT DRAINS OR 6 INCHES HIGH FOR EQUIPMENT WITH DRAINS.	X	DUCT-MOUNTED SMOKE DETECTORS SHALL BE PROVIDED ON AIR DISTRIBUTION SUPPLY SYSTEMS HAVING A CAPACITY GREATER THAN 2000 CFM. SMOKE DETECTOR SHALL BE MOUNTED DOWNSTREAM OF THE AIR FILTERS AND AHEAD OF ANY BRANCH CONNECTIONS. RETURN SYSTEM DUCT-MOUNTED SMOKE DETECTORS SHALL NOT BE REQUIRED WHERE THE ENTIRE SPACE SERVED BY THE AIR DISTRIBUTION SYSTEM IS PROTECTED BY A SYSTEM OF AREA SMOKE DETECTORS. DUCT-MOUNTED SMOKE DETECTORS TO BE FURNISHED AND WIRED TO FIRE ALARM SYSTEM BY QUALIFIED FIRE ALARM SYSTEM INSTALLER. COORDINATE TYPE AND LOCATION WITH FIRE ALARM SYSTEM INSTALLER.
H	COORDINATE WITH GENERAL CONTRACTOR ACCESS PANEL LOCATIONS IN WALLS AND DRYWALL CEILINGS FOR ACCESS TO VALVES, DAMPERS, CONTROLS, EQUIPMENT REQUIRING SERVICING, AND DUCTWORK ACCESS PANELS. DUCTWORK ACCESS PANELS SHALL BE PROVIDED FOR FIRE DAMPERS, AND ACTUATORS IN THE DUCTWORK. PANEL SIZE SHALL BE AS REQUIRED PER THE SPECIFICATIONS.	Y	CONSTRUCT DUCTWORK TO THE FOLLOWING STATIC PRESSURE CLASSIFICATIONS: SUPPLY DUCT (DOAS, MUA) +2 IN WG SUPPLY DUCT (HP) +0.5 IN WG RETURN DUCT (HP) -0.5 IN WG OUTSIDE AIR DUCT (DOAS, MUA) -2 IN WG EXHAUST DUCT (UPSTREAM OF FAN) -2 IN WG EXHAUST DUCT (DOWNSTREAM OF FAN) +0.5 IN WG
I	DUCT DIMENSIONS NOTED ON THE DRAWINGS ARE INSIDE FREE AREA DIMENSIONS. DIFFUSER AND GRILLE NECK SIZES ARE THE SAME DIMENSIONS AS THE DUCTWORK RUN-OUT TO THE DEVICE, UNLESS OTHERWISE NOTED.	Z	COMMISSION HVAC SYSTEMS AND EQUIPMENT AND SYSTEMS REQUIRING COMMISSIONING FOR LEED FUNDAMENTAL COMMISSIONING IN ACCORDANCE WITH ASHRAE GUIDELINE 1 AND LEED REQUIREMENTS. THE COMMISSIONING AGENT SHALL BE CERTIFIED BY AABC, NEBB, OR TABB AS DESCRIBED IN GUIDELINE 1.
J	INSULATED FLEXIBLE DUCT SHALL BE USED TO CONNECT SUPPLY AIR DIFFUSERS, UNLESS SHOWN OTHERWISE. THE MAXIMUM LENGTH OF RUN FOR FLEXIBLE DUCT SHALL BE 5'-0" AND SHALL BE INSTALLED FREE OF KINKS AND ABRUPT TURNS. MAXIMUM UNSUPPORTED LENGTH SHALL BE 3'-0". FLEXIBLE DUCT TO DIFFUSER SHALL BE SAME SIZE AS DIFFUSER NECK, UNLESS OTHERWISE NOTED.	AA	WORK INDICATED ON DRAWINGS IS NEW UNLESS OTHERWISE NOTED ON THE DRAWINGS.
K	BRANCH TAPS SHALL USE EITHER A 45 DEGREE OR BELL ENTRY. BRANCH EXTRACTORS ARE NOT TO BE USED. PROVIDE TRANSITIONS AT ALL CHANGES IN DUCT SIZE, INCLUDING DIFFUSERS AND GRILLES, UNLESS SHOWN OR NOTED OTHERWISE. FLEXIBLE DUCT CONNECTIONS SHALL BE USED TO ISOLATE ALL FAN-POWERED EQUIPMENT.	BB	SOME SYMBOLS/ABBREVIATIONS INDICATED ON THIS LEGEND SHEET MAY NOT APPEAR IN THE DRAWINGS.
L	SUPPLY, RETURN AND EXHAUST DIFFUSERS/GRILLES SHALL HAVE BALANCE DAMPERS IN THE DUCT. UNLESS DAMPERS ARE NOTED IN THE AIR DEVICE SCHEDULE. LOCATE BALANCE DAMPERS AS NEAR AS POSSIBLE TO DUCT BRANCH TAKEOFF WHILE MINIMIZING ACCESS DIFFICULTIES. DAMPERS TO AIR DEVICES SHALL BE LOCKING QUADRANT TYPE, WITH A STAND-OFF FOR DUCTS WITH INSULATION.	CC	DO NOT LOCATE MECHANICAL WORK IN ELECTRICAL OR COMMUNICATION ROOMS, EXCEPT FOR RUNOUTS SPECIFICALLY SERVING THE RESPECTIVE ROOM.
M	REFER TO ARCHITECTURAL DRAWINGS AND PLANS FOR EXACT LOCATIONS OF DIFFUSERS, LINEAR SLOT DIFFUSERS, REGISTERS, GRILLES AND LOUVERS.	DD	MATERIALS INSTALLED IN A RETURN AIR PLENUM (CEILING OR ROOM) MUST BE RATED FOR AIR PLENUM INSTALLATION. COORDINATE WITH ALL OTHER TRADES ACCORDINGLY.
N	EXPOSED DUCT IN OCCUPIED SPACES TO BE PAINTED, COLOR TO BE SELECTED BY ARCHITECT.		
O	RUN-OUT PIPES TO COILS 3/4" UNLESS OTHERWISE NOTED. NOTED PIPE SIZES THE SAME IN DIRECTION OF DECREASING FLOW TILL CHANGED BY ANOTHER PIPE SIZE NOTE.		
P	USE FITTINGS FOR ALL PIPE CHANGES IN DIRECTION AND SIZE AND BRANCH CONNECTIONS. EXTRUDED TEE CONNECTIONS AND BUSHINGS SHALL NOT BE USED. PROVIDE ISOLATION VALVES ON ALL BRANCHES OFF MAIN PIPE.		
Q	FOR HYDRONIC PIPES, INSTALL MANUAL AIR VENTS AT HIGH POINTS AND DRAIN VALVES AT THE LOW POINTS OF THE PIPE. FOR EQUIPMENT WITH DRAINS, PROVIDE DRAIN PIPE FROM THE EQUIPMENT TO A FLOOR DRAIN OR MOP SINK.		

DESIGNER NOTES:

- PLEASE NOTE THAT THE MECHANICAL DESIGN PROVIDED HEREIN IS FOR INFORMATION ONLY. THE MECHANICAL DRAWINGS ARE NOT MANDATORY AND ARE PROVIDED TO GIVE DESIGNERS SUGGESTIONS ON HOW A CHILD DEVELOPMENT CENTER(CDC) COULD BE MECHANICALLY DESIGNED.
- THE MECHANICAL DESIGNER WILL BE ENTIRELY RESPONSIBLE FOR SELECTING THE APPROPRIATE EQUIPMENT AND SYSTEMS FOR ANY SPECIFIC SITE DESIGN.
- THE DESIGN PROVIDED HEREIN IS BASED UPON A FICTIONAL SITE LOCATED IN FORT BRAGG, NORTH CAROLINA.
- THE DESIGNER OF RECORD SHALL VERIFY VENTILATION REQUIREMENTS MEET ASHRAE 62.1 FOR EACH SPACE WITHIN THE BUILDING. OCCUPANCIES USED FOR VENTILATION CALCULATIONS SHOULD BE VERIFIED WITH THE CUSTOMER AS SITE SPECIFIC REQUIREMENTS MAY VARY FROM THOSE USED IN THIS STANDARD DESIGN.

ATFP NOTES:

- EXTERIOR EQUIPMENT: LOCATE A MINIMUM OF 33 FEET FROM BUILDING. IF CONDITIONS REQUIRE THAT EQUIPMENT BE LOCATED LESS THAN 33 FEET FROM THE BUILDING, THEN THE EQUIPMENT SHALL BE LOCATED AND ARRANGED SO THAT AN OBJECT OVER SIX INCHES INHEIGHT WOULD BE READILY OBSERVED BY BUILDING OCCUPANTS.
- AIR INTAKES: LOCATE A MINIMUM OF 10 FEET ABOVE THE GROUND.
- EMERGENCY SHUTOFF SWITCH: PROVIDE A SHUTOFF SWITCH IN THE HVAC CONTROL SYSTEM THAT CAN IMMEDIATELY SHUT DOWN THE AIR DISTRIBUTION SYSTEMS THROUGHOUT THE BUILDING. LOCATE THE SWITCH TO BE EASILY ACCESSIBLE BY BUILDING OCCUPANTS.
- DAMPERS: FIT OUTSIDE AIR INTAKES, RELIEF, AND EXHAUST OPENINGS WITH LOW LEAKAGE DAMPERS THAT AUTOMATICALLY CLOSE WHEN THE AIR SHUTOFF SWITCH IS ACTIVATED. THE LOW LEAKAGE DAMPERS SHALL HAVE A LEAKAGE RATE OF LESS THAN 3 CFM/SQUARE FOOT AT A PRESSURE DIFFERENTIAL OF 3.0 INCHES STATIC PRESSURE.
- OVERHEAD EQUIPMENT WEIGHING OVER 30 POUNDS: DESIGN ALL EQUIPMENT MOUNTINGS TO RESIST A FORCE 0.5 TIMES THE WEIGHT OF THE EQUIPMENT IN ANY HORIZONTAL DIRECTION AND 1.5 TIMES THE EQUIPMENT WEIGHT IN THE DOWNWARD DIRECTION. THIS REQUIREMENT IS SEPARATE FROM OTHER MOUNTING REQUIREMENTS FOR SEISMIC OR OTHER FORCES.

US Army Corps of Engineers  
HUNTSVILLE CENTER

DATE: JUNE 2014	SOLICITATION NO.:	CONTRACT NO.:	CATEGORY CODE:	DESIGN PACKAGE:
DESIGN BY: JCS	DRAWN BY: JAS	CHECKED BY: JAS	FILE NAME:	SIZE: D 27" x 34"

HVAC LEGEND

CHILD DEVELOPMENT CENTER (CDC) STANDARD DESIGN, SMALL 6 - 10 YEARS OLD

PLATE REFERENCE NUMBER  
**M-001**

SHEET 48 OF 73













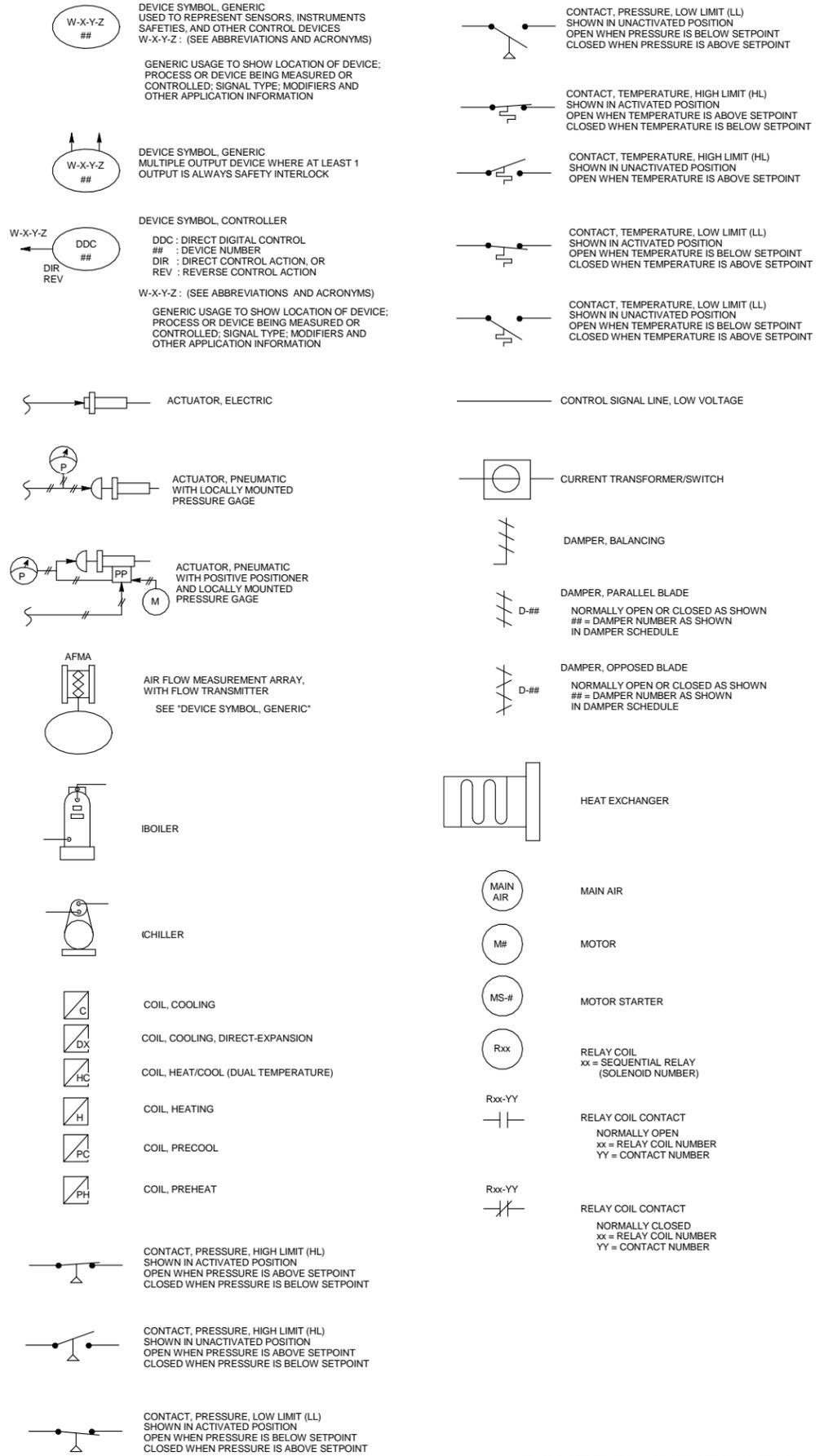




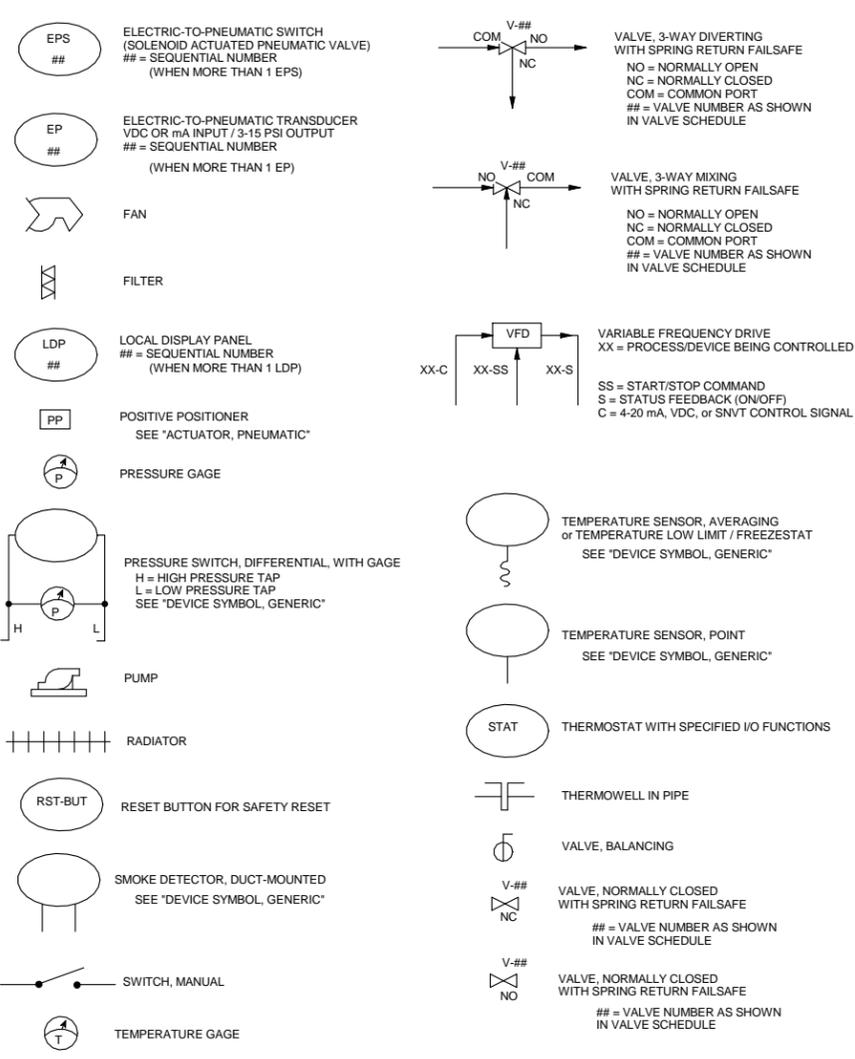




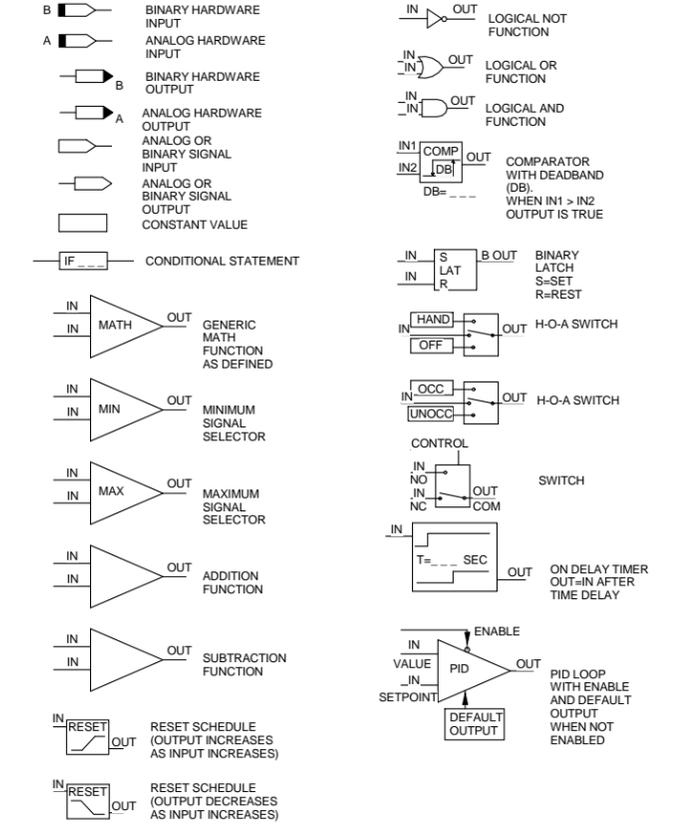




### CONTROL SCHEMATIC SYMBOLS



- GENERAL NOTES:** TYPICAL ALL CONTROL DRAWINGS
- CONTRACTOR SHALL AFFIX PERMANENT TAGS/LABELS TO ALL DEVICES AS SPECIFIED
  - CONTRACTOR SHALL LABEL ALL DDC I/O SIGNAL LINES: 4-20 mA, VDC, OR SNVT
  - CONTRACTOR SHALL SHOW A UNIQUE IDENTIFIER FOR EACH DEVICE. WHERE MULTIPLE IDENTICAL DEVICES ARE SHOWN (FOR EXAMPLE: DDC CONTROLLER, OA SENSOR, OR EP TRANSDUCER) EACH SHALL BE SEQUENTIALLY NUMBERED. WHERE SEPERATE DDC CONTROLLER BUBBLES ARE USED TO REPRESENT/SHOW A COMMON (OR SINGLE) CONTROLLER EACH BUBBLE SHALL USE THE SAME IDENTIFIER AND NUMBER. DEVICE AND SIGNAL IDENTIFIERS SHALL BE CONSISTENT BETWEEN DRAWINGS.
  - CONTRACTOR SHALL UNIQUELY NUMBER ALL ANSI 709.1 DEVICES. THIS NUMBERING SHALL BE CONSISTENT BETWEEN ALL DRAWINGS



### CONTROL LOGIC DIAGRAM SYMBOLS

2P	TWO-POSITION (CONTROL SIGNAL)	I/O	INPUT/OUTPUT PANEL
ADJ	ADJUSTABLE	LDP	LOCAL DISPLAY PANEL
AFMA	AIRFLOW MEASUREMENT ARRAY	LL	LOW LIMIT
ALM	ALARM	M&C	MONITORING & CONTROL (SOFTWARE)
BA	BYPASS AIR	MA	MIXED AIR
BLDG	BUILDING	MINOA	MINIMUM OUTSIDE AIR
BUT	BUTTON	MS	MOTOR STARTER
C	COMMAND (MODULATING CONTROL SIGNAL)	MTHW	MEDIUM TEMPERATURE HOT WATER
CD	COLD DECK	N/A	NOT APPLICABLE
CHLR	CHILLER	NC	NORMALLY CLOSED
CLG	COOLING	NO	NORMALLY OPEN
CO2	CARBON DIOXIDE	OA	OUTSIDE AIR
COM	COMMON	OCC	OCCUPIED
COMP	COMPARATOR	ODT	ON DELAY TIMER
CR	CONDENSER WATER RETURN	OVS	OPERATOR WORKSTATION
CS	CONDENSER WATER SUPPLY	P	PRESSURE
CT	CURRENT TRANSFORMER/SWITCH	PC	PRE-COOLING
CWR	CHILLED WATER RETURN	PCW	PRIMARY CHILLER WATER
CWS	CHILLED WATER SUPPLY	PCWR	PRIMARY CHILLER WATER RETURN
CW	CHILLED WATER	PCWS	PRIMARY CHILLER WATER SUPPLY
D	DAMPER	PH	PREHEAT
DA	DISCHARGE AIR	PMP	PUMP
DB	DEADBAND	PP	POSITIVE POSITIONER
DDC	DIRECT DIGITAL CONTROL(LER)	R	RELAY
DIFF	DIFFERENCE	RA	RETURN AIR
DIR	DIRECT (CONTROL ACTION)	REV	REVERSE (CONTROL ACTION)
DIS	DISABLE	RF	RETURN FAN
DT	DUAL TEMP	RH	RELATIVE HUMIDITY
DTWR	DUAL TEMP WATER RETURN	RLA	RELIEF AIR
DTWS	DUAL TEMP WATER SUPPLY	RM	ROOM
DX	DIRECT EXPANSION (UNIT)	RST	RESET
EA	EXHAUST AIR	S	STATUS
ECO	ECONOMIZER	SA	SUPPLY AIR
EF	EXHAUST FAN	SEC	SECONDARY
ENA	ENABLE	SF	SUPPLY FAN
EP	ELECTRIC TO PNEUMATIC TRANSDUCER	SMK	SMOKE
EPS	ELECTRIC TO PNEUMATIC SWITCH	SP	SETPOINT
ESS	EMERGENCY SHUTOFF SWITCH	SS	START/STOP COMMAND
F	FLOW	STAT	THERMOSTAT
FAP	FIRE ALARM PANEL	SYS	SYSTEM
FLT	FILTER	SCHD	SCHEDULER
HD	HOT DECK	T	TEMPERATURE
HL	HIGH LIMIT	TAP	TAP, PRESSURE
HTG	HEATING	UNOCC	UNOCCUPIED
HTHW	HIGH TEMPERATURE HOT WATER	V	VALVE
HUM	HUMIDIFIER	VAV	VARIABLE AIR VOLUME
HV	HOT WATER	VFD	VARIABLE FREQUENCY DRIVE
HWR	HOT WATER RETURN	WB	WET BULB (TEMPERATURE)
HWS	HOT WATER SUPPLY	ZN	ZONE
HX	HEAT EXCHANGER		

### ABBREVIATIONS AND ACRONYMS

**US Army Corps of Engineers® HUNTSVILLE CENTER**

DATE: JUNE 2014	SOLICITATION NO.:	DESIGN BY: BOB	DESIGNER:
NO	NA	BOB	U.S. ARMY CORPS OF ENGINEERS
CONTRACT NO.:	CONTRACT NO.:	DRAWN BY: BOB	ENGINEERING AND SUPPORT CENTER, HUNTSVILLE
NA	NA	BOB	
FILE NAME:	FILE NAME:	FILE NAME:	FILE NAME:
60% DESIGN PACKAGE	60% DESIGN PACKAGE	60% DESIGN PACKAGE	60% DESIGN PACKAGE

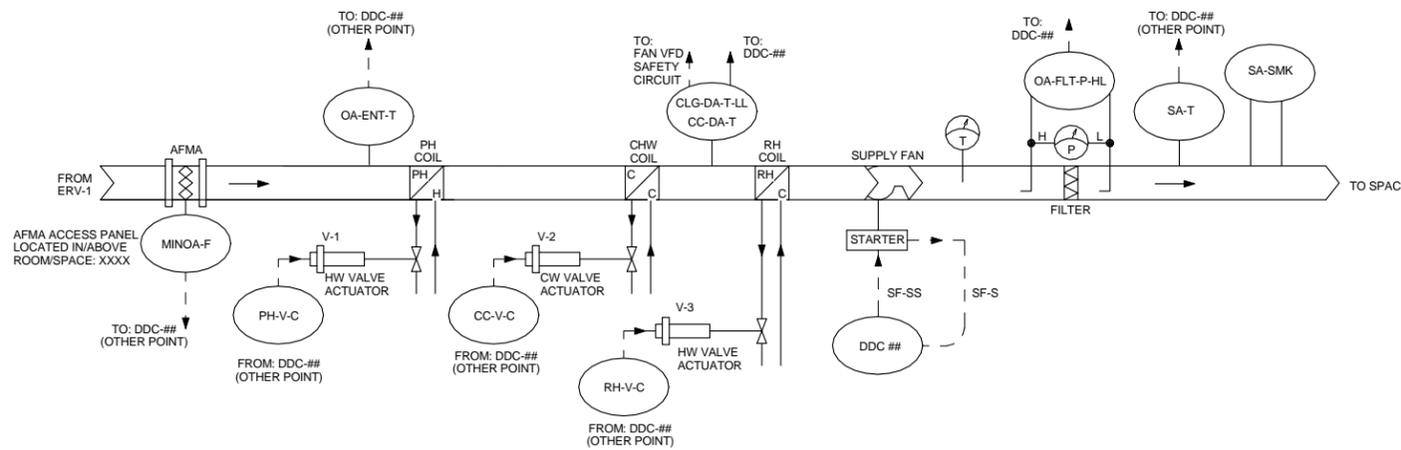
**CHILD DEVELOPMENT CENTER (CDC) STANDARD DESIGN, SMALL 6 - 10 YEARS OLD**

**HVAC CONTROLS LEGEND**

PLATE REFERENCE NUMBER  
**M1801**

SHEET 60 OF 73





DEDICATED OUTDOOR AIR UNIT SCHEMATIC: DOAS-1

NOT TO SCALE

DEDICATED OUTDOOR AIR UNIT CONTROL POINTS (DOAS-1)

NODE: <DDC#>
NODE LOCATION: < >
NODE ADDRESS: Domain = < >, Subnet = < >, Node = < >
NODE ID: < >

Table with 8 columns: FUNCTION, NAME, DESCRIPTION, SETTING (WITH UNITS), RANGE (WITH UNITS), nc/CPT NAME, IO TYPE, HOA REQ'D. Rows include PROOFS & SAFETIES, START/STOP, VALVE CONTROL, and AIR TEMPERATURE.

Notes:

- 1) THE CONTRACTOR SHALL COMPLETE THE POINTS SCHEDULE AS SPECIFIED AND AS DESCRIBED IN THE POINTS SCHEDULE INSTRUCTIONS DRAWING.
2) UNIT MANUFACTURERS PROOFS AND SAFETIES: THE CONTRACTOR SHALL SHOW EACH PROOF AND SAFETY AS A SEPARATE ROW.
3) SYS-OCC: AS DESCRIBED IN THE POINTS SCHEDULE INSTRUCTIONS, OVERRIDE OF SYS-OCC IS ACCOMPLISHED THROUGH THE SYSTEM SCHEDULER.
4) ALARM CONDITIONS MARKED WITH AN ASTERISK (\*) SHALL BE ACTIVE ONLY WHEN THE SYSTEM IS IN OCCUPIED MODE AND HAS BEEN IN OCCUPIED MODE FOR MORE THAN: \* = 5 MINUTES \*\* = 30 MINUTES
5) UNIT STATUS: SERVES AS A MONITORED POINT AT THE M&C SOFTWARE (FRONT-END) AND AS A HEATING/COOLING REQUEST TO THE BOILER, HEAT EXCHANGER, AND/OR CHILLER SERVING THIS SYSTEM.

LDP AND M&C DISPLAY table with columns: LDP VIEW REQ'D, M&C DISP REQ'D, TREND REQ'D, SNVT NAME, SNVT TYPE. Rows show requirements for various control points.

OVERRIDES table with columns: LDP OVRD REQ'D, M&C OVRD REQ'D, SNVT NAME, SNVT TYPE. Shows override requirements for control points.

ALARMS table with columns: ALARM CONDITION (SEE NOTES), ALARM PRIORITY, M&C ROUTING. Lists various alarm conditions like fan proof failed and temperature limits.

Revision table with columns: SYMBOL, DESCRIPTION, DATE, BY. Shows a list of revisions for the drawing.

Design and project information table with fields: DATE, SOLICITATION NO., CONTRACT NO., CATEGORY, CSFE, 60% DESIGN PACKAGE, DESIGN BY, CHECK BY, DRAWN BY, PLOT DATE, PLOT SCALE, FILE NAME.

CHILD DEVELOPMENT CENTER (CDC) STANDARD DESIGN, SMALL 6 - 10 YEARS OLD
DOAS CONTROLS(CONT.)
PLATE REFERENCE NUMBER M1803
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