

SECTION 23 03 00.00 20

BASIC MECHANICAL MATERIALS AND METHODS

01/07

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM B 117 (2007a) Standing Practice for Operating Salt Spray (Fog) Apparatus

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2007; Errata 2007; INT 2008) National Electrical Safety Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1 (2007; Errata 2008) Standard for Motors and Generators

NEMA MG 10 (2001; R 2007) Energy Management Guide for Selection and Use of Fixed Frequency Medium AC Squirrel-Cage Polyphase Induction Motors

NEMA MG 11 (1977; R 2007) Energy Management Guide for Selection and Use of Single Phase Motors

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2007; AMD 1 2008) National Electrical Code - 2008 Edition

1.2 RELATED REQUIREMENTS

This section applies to all sections of Divisions: 22, PLUMBING; and 23, HEATING, VENTILATING, AND AIR CONDITIONING of this project specification, unless specified otherwise in the individual section.

1.3 QUALITY ASSURANCE

1.3.1 Material and Equipment Qualifications

Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and

materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

1.3.2 Alternative Qualifications

Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

1.3.3 Service Support

The equipment items shall be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.3.4 Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.3.5 Modification of References

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Contracting Officer.

1.3.5.1 Definitions

For the International Code Council (ICC) Codes referenced in the contract documents, advisory provisions shall be considered mandatory, the word "should" shall be interpreted as "shall." Reference to the "code official" shall be interpreted to mean the "Contracting Officer." For Navy owned property, references to the "owner" shall be interpreted to mean the "Contracting Officer." For leased facilities, references to the "owner" shall be interpreted to mean the "lessor." References to the "permit holder" shall be interpreted to mean the "Contractor."

1.3.5.2 Administrative Interpretations

For ICC Codes referenced in the contract documents, the provisions of Chapter 1, "Administrator," do not apply. These administrative requirements are covered by the applicable Federal Acquisition Regulations (FAR) included in this contract and by the authority granted to the Officer in Charge of Construction to administer the construction of this project. References in the ICC Codes to sections of Chapter 1, shall be applied appropriately by the Contracting Officer as authorized by his administrative cognizance and the FAR.

1.4 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.5 ELECTRICAL REQUIREMENTS

Furnish motors, controllers, disconnects and contactors with their respective pieces of equipment. Motors, controllers, disconnects and contactors shall conform to and have electrical connections provided under Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Furnish internal wiring for components of packaged equipment as an integral part of the equipment. Extended voltage range motors will not be permitted. Controllers and contactors shall have a maximum of 120 volt control circuits, and shall have auxiliary contacts for use with the controls furnished. When motors and equipment furnished are larger than sizes indicated, the cost of additional electrical service and related work shall be included under the section that specified that motor or equipment. Power wiring and conduit for field installed equipment shall be provided under and conform to the requirements of Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

1.6 ELECTRICAL INSTALLATION REQUIREMENTS

Electrical installations shall conform to IEEE C2, NFPA 70, and requirements specified herein.

1.6.1 New Work

Provide electrical components of mechanical equipment, such as motors, motor starters [(except starters/controllers which are indicated as part of a motor control center)], control or push-button stations, float or pressure switches, solenoid valves, integral disconnects, and other devices functioning to control mechanical equipment, as well as control wiring and conduit for circuits rated 100 volts or less, to conform with the requirements of the section covering the mechanical equipment. Extended voltage range motors shall not be permitted. The interconnecting power wiring and conduit, control wiring rated 120 volts (nominal) and conduit, [the motor control equipment forming a part of motor control centers,] and the electrical power circuits shall be provided under Division 26, except internal wiring for components of package equipment shall be provided as an integral part of the equipment. When motors and equipment furnished are larger than sizes indicated, provide any required changes to the electrical service as may be necessary and related work as a part of the work for the section specifying that motor or equipment.

1.6.2 Modifications to Existing Systems

Where existing mechanical systems and motor-operated equipment require modifications, provide electrical components under Division 26.

1.6.3 High Efficiency Motors

1.6.3.1 High Efficiency Single-Phase Motors

Unless otherwise specified, single-phase fractional-horsepower

alternating-current motors shall be high efficiency types corresponding to the applications listed in NEMA MG 11.

1.6.3.2 High Efficiency Polyphase Motors

Unless otherwise specified, polyphase motors shall be selected based on high efficiency characteristics relative to the applications as listed in NEMA MG 10. Additionally, polyphase squirrel-cage medium induction motors with continuous ratings shall meet or exceed energy efficient ratings in accordance with Table 12-6C of NEMA MG 1.

1.6.4 Three-Phase Motor Protection

Provide controllers for motors rated one one horsepower and larger with electronic phase-voltage monitors designed to protect motors from phase-loss, undervoltage, and overvoltage. Provide protection for motors from immediate restart by a time adjustable restart relay.

1.7 INSTRUCTION TO GOVERNMENT PERSONNEL

When specified in other sections, furnish the services of competent instructors to give full instruction to the designated Government personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work.

Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than 4 man-days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system.

When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.8 ACCESSIBILITY

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PAINTING OF NEW EQUIPMENT

New equipment painting shall be factory applied or shop applied, and shall be as specified herein, and provided under each individual section.

3.1.1 Factory Painting Systems

Manufacturer's standard factory painting systems may be provided subject to certification that the factory painting system applied will withstand 125 hours in a salt-spray fog test, except that equipment located outdoors shall withstand 500 hours in a salt-spray fog test. Salt-spray fog test shall be in accordance with ASTM B 117, and for that test the acceptance criteria shall be as follows: immediately after completion of the test, the paint shall show no signs of blistering, wrinkling, or cracking, and no loss of adhesion; and the specimen shall show no signs of rust creepage beyond 0.125 inch on either side of the scratch mark.

The film thickness of the factory painting system applied on the equipment shall not be less than the film thickness used on the test specimen. If manufacturer's standard factory painting system is being proposed for use on surfaces subject to temperatures above 120 degrees F, the factory painting system shall be designed for the temperature service.

3.1.2 Shop Painting Systems for Metal Surfaces

Clean, pretreat, prime and paint metal surfaces; except aluminum surfaces need not be painted. Apply coatings to clean dry surfaces. Clean the surfaces to remove dust, dirt, rust, oil and grease by wire brushing and solvent degreasing prior to application of paint, except metal surfaces subject to temperatures in excess of 120 degrees F shall be cleaned to bare metal.

Where more than one coat of paint is specified, apply the second coat after the preceding coat is thoroughly dry. Lightly sand damaged painting and retouch before applying the succeeding coat. Color of finish coat shall be aluminum or light gray.

- a. Temperatures Less Than 120 Degrees F: Immediately after cleaning, the metal surfaces subject to temperatures less than 120 degrees F shall receive one coat of pretreatment primer applied to a minimum dry film thickness of 0.3 mil, one coat of primer applied to a minimum dry film thickness of one mil; and two coats of enamel applied to a minimum dry film thickness of one mil per coat.
- b. Temperatures Between 120 and 400 Degrees F: Metal surfaces subject to temperatures between 120 and 400 degrees F shall receive two coats of 400 degrees F heat-resisting enamel applied to a total minimum thickness of 2 mils.
- c. Temperatures Greater Than 400 Degrees F: Metal surfaces subject to temperatures greater than 400 degrees F shall receive two coats of 600 degrees F heat-resisting paint applied to a total minimum dry film thickness of 2 mils.

-- End of Section --

ACH 550 Series Adjustable Frequency AC Drives

Submittal

Project: SOF Riverine & Combatant Craft Operations

Specification Section:15000

Architect:Dammon Engineering, Inc.

Submitted By:
Automated Control Systems, Inc.
Paul Reuter

Contractor: Gallo Mechanical Contr

Engineer: Damien P Serauskas

Customer: Stennis Space Center

Date: April 13th, 2009



Submittal Schedule

This schedule includes the products supplied as part of this submittal.

Item	Schedule		Motor Data ¹			Drive Data			
	Qty	Tag / Equipment ID	HP	FLA	Voltage	Product ID	HP	Output Amps	Voltage
1	1	AHU-2	7.5	11	460 VAC	ACH550-BCR-012A-4+B055+F267	7.5	11.9	480 VAC
2	3	AHU-1 P-1 P-2	2	3.4	460 VAC	ACH550-BCR-04A1-4+B055+F267	2	4.1	480 VAC

Notes: 1. AC Motor Data is per National Electrical Code Table 430.250 for typical motors used in most applications and is provided as typical data only. DC motor data is per typical industry standards. Actual motor data may vary.

Clarifications and Exceptions to Specification and Terms

The comments and clarifications that follow are offered in response to the specification items identified below. Please refer to the specification section and paragraph indicated. Any contract executed based on this proposal is done based acceptance of the exceptions noted herein.

Item ID	Title	Clarifications and Exceptions
P-1, P-2		Field provided disconnect by division 16 shall include auxiliary contacts for field interlock wiring requirements. Auxiliary contact should be interlocked to VFD located in the mechanical room.

Submittal Schedule Details for AHU-2

Item	Tag / Equipment ID	Product ID
1	AHU-2	ACH550-BCR-012A-4+B055+F267

Item Description
Input Voltage: 480 VAC Rated Output Current: 11.9 AMPS Construction: E-clipse-Bypass, Circuit Breaker Enclosure: NEMA 12 UL Type 12 Nominal Horsepower: 7.5 Frame Size: R1 Input Disconnecting Means: Circuit Breaker Bypass: E-Clipse Bypass Input Impedance: 5% Short Circuit Current Rating: 100 kA Communication Protocols: Johnson Controls N2, Siemens Buildings Technologies FLN (P1), Modbus RTU, BACnet Other Options: Service Switch

Drive Input Fuse Ratings ¹	
(Note: Drive is UL approved without the need for input fuses. Fuse rating information provided for customer reference)	
Amps (600 V)	Bussmann Type
15	KTK-R-15

Wire Size Capacities of Power Terminals				
Circuit Breaker	Disconnect Switch	Terminal Block	Overload Relay	Ground Lug
#8 40 in-lbs	N/A N/A	#8 15 in-lbs	N/A N/A	#8 35 in-lbs

Dimensions and Weights				
Height in / mm	Width in / mm	Depth in / mm	Weight lbs / kg	Dimension Drawing
33.2 / 842	17.4 / 443	13.5 / 343	78 / 35.4	3AUA0000016376 1

Heat Dissipation & Airflow Requirements			
Power Losses		Airflow	
Watts	BTU/Hr	CFM	CM/Hr
172	587	26	44

Reference Drawings		
Power Wiring	Connection Diagram	Dimension Detail
BCVCR012PW-C	BCBDR018CC-A	3AUA0000016376

Submittal Schedule Details for AHU-1 P-1 P-2

Item	Tag / Equipment ID	Product ID
2	AHU-1 P-1 P-2	ACH550-BCR-04A1-4+B055+F267

Item Description
<p>Input Voltage: 480 VAC Rated Output Current: 4.1 AMPS Construction: E-clipse-Bypass, Circuit Breaker Enclosure: NEMA 12 UL Type 12 Nominal Horsepower: 2 Frame Size: R1 Input Disconnecting Means: Circuit Breaker Bypass: E-Clipse Bypass Input Impedance: 5% Short Circuit Current Rating: 100 kA Communication Protocols: Johnson Controls N2, Siemens Buildings Technologies FLN (P1), Modbus RTU, BACnet Other Options: Service Switch</p>

Drive Input Fuse Ratings ¹	
(Note: Drive is UL approved without the need for input fuses. Fuse rating information provided for customer reference)	
Amps (600 V)	Bussmann Type
15	KTK-R-15

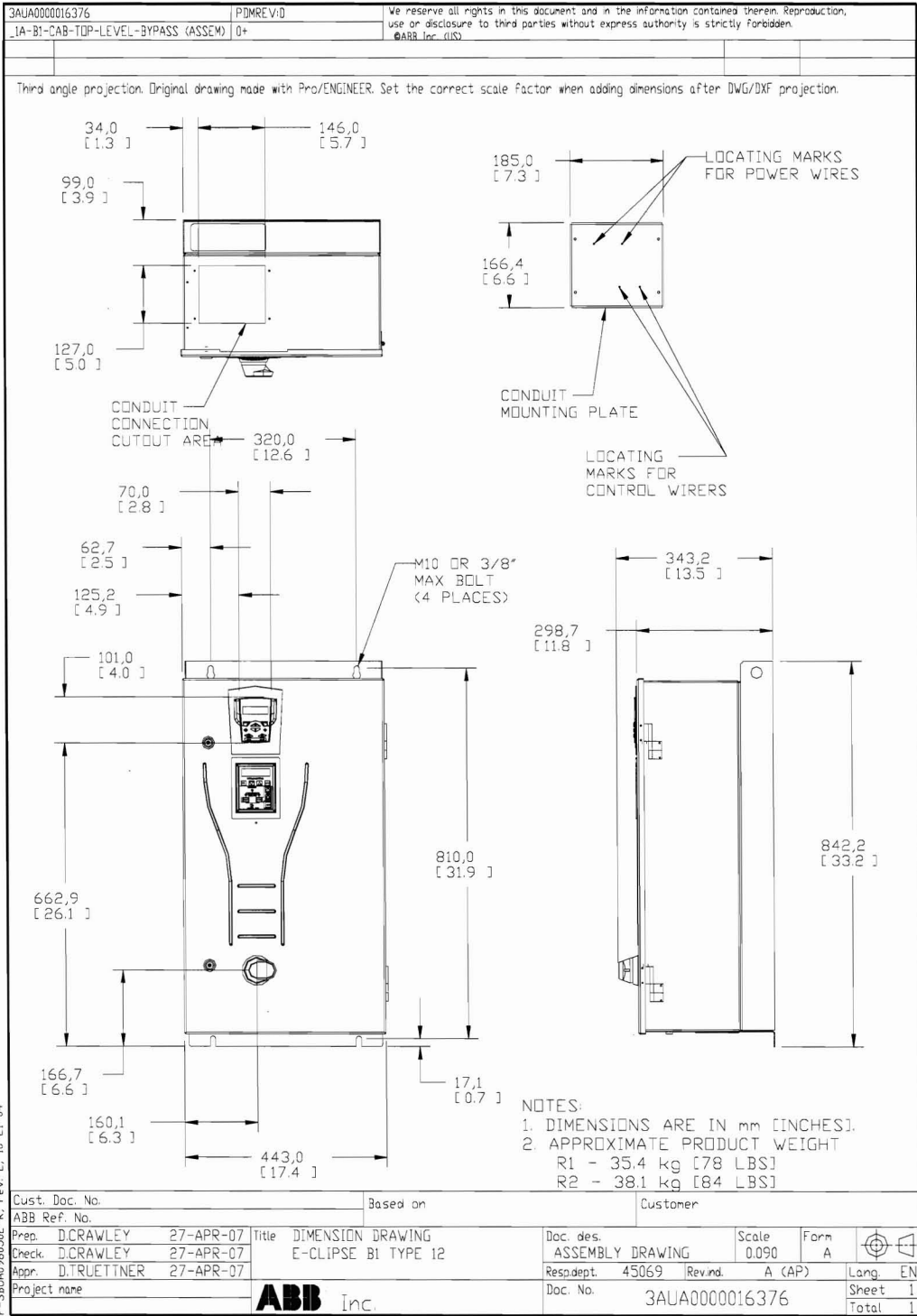
Wire Size Capacities of Power Terminals				
Circuit Breaker	Disconnect Switch	Terminal Block	Overload Relay	Ground Lug
#8 40 in-lbs	N/A N/A	#8 15 in-lbs	N/A N/A	#8 35 in-lbs

Dimensions and Weights				
Height in / mm	Width in / mm	Depth in / mm	Weight lbs / kg	Dimension Drawing
33.2 / 842	17.4 / 443	13.5 / 343	78 / 35.4	3AUA0000016376 1

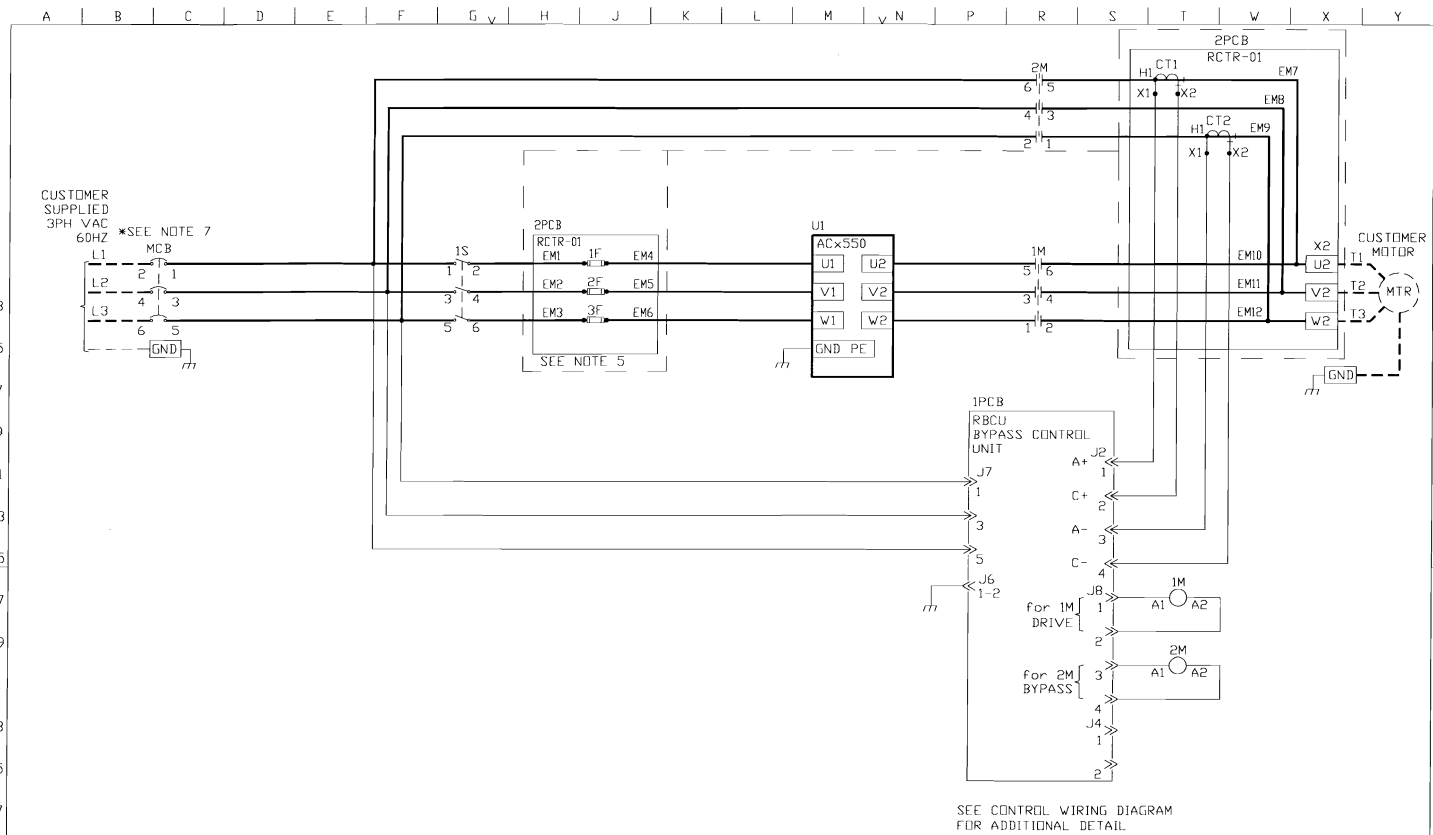
Heat Dissipation & Airflow Requirements			
Power Losses		Airflow	
Watts	BTU/Hr	CFM	CM/Hr
52	177	26	44

Reference Drawings		
Power Wiring	Connection Diagram	Dimension Detail
BCVCR012PW-C	BCBDR018CC-A	3AUA0000016376

Dimension Drawing for AHU-2, AHU-1 P-1 P-2



F-3BU0098502-k, rev. 2, 10-21-04

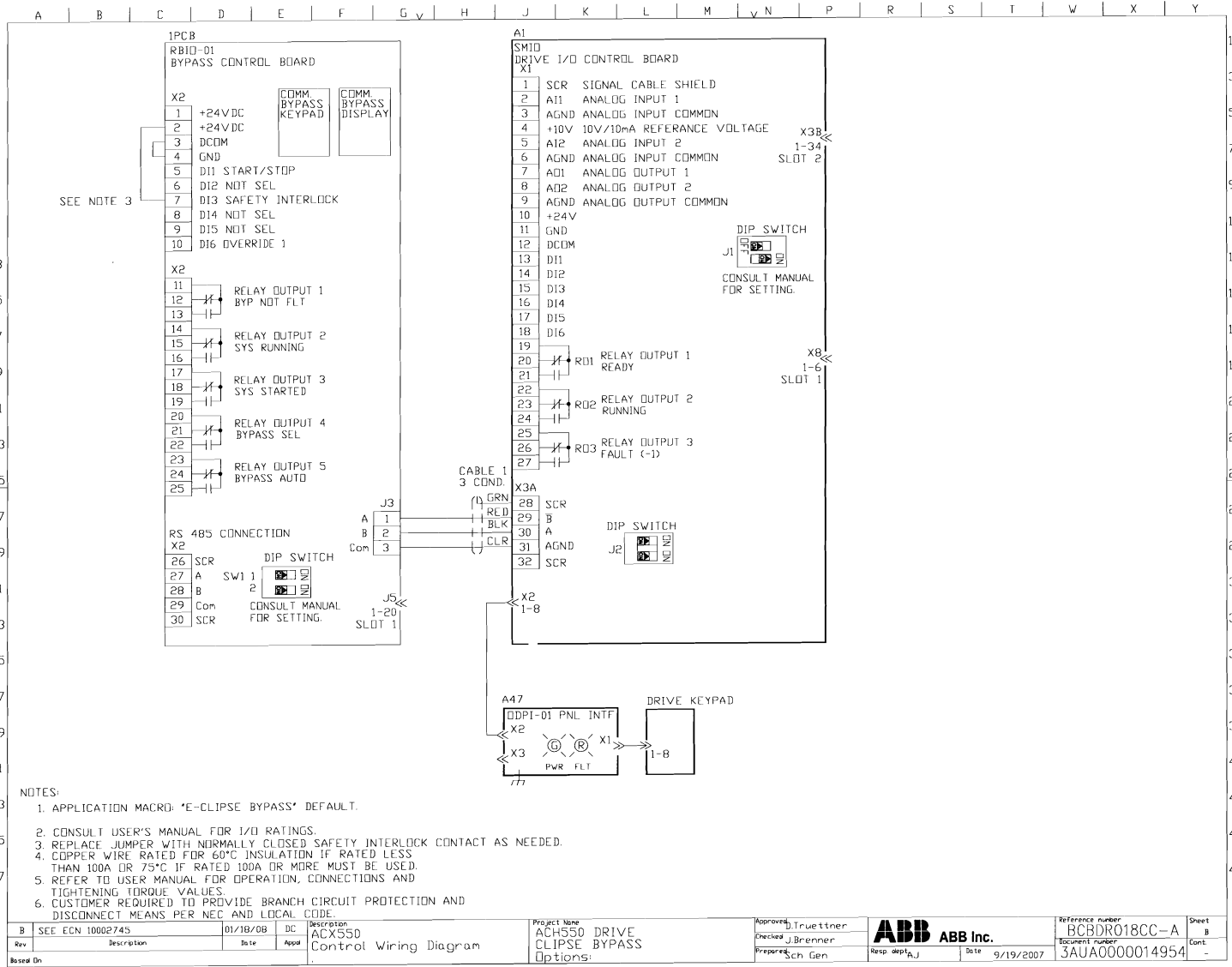


SEE CONTROL WIRING DIAGRAM FOR ADDITIONAL DETAIL

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- NOTES:
1. PROGRAMMING:
DRIVE MACRO = E-CLIPSE, BYPASS MACRO = HVAC DEFAULT.
 2. DASH LINES INDICATE CUSTOMER INSTALLED DEVICES AND WIRING
 3. COPPER WIRE RATED FOR 60°C INSULATION IF RATED LESS THAN 100A OR 75°C IF RATED 100A OR MORE MUST BE USED.
 4. REFER TO USER MANUAL FOR OPERATION, CONNECTIONS AND TIGHTENING TORQUE VALUES.
 5. FUSE RATING LABEL IS NEAR DEVICE.
 6. CUSTOMER REQUIRED TO PROVIDE BRANCH CIRCUIT PROTECTION AND DISCONNECT MEANS PER NEC AND LOCAL CODE.
 7. SHORT CIRCUIT CURRENT: 100kA RMS SYMMETRICAL 480V MAXIMUM.

Rev	DESCRIPTION	DATE	APPROVAL	DESCRIPTION	PROJECT NAME	APPROVED	CHECKED	PREPARED	RESP. DEPT.	DATE	REFERENCE NUMBER	DOCUMENT NUMBER	SHEET
B	SEE ECN 10002745	01/18/08	DC	ACX550 Power Wiring Diagram	ACH550 DRIVE E-CLIPSE BYPASS Options:+F267	D. Truettner	J. Brenner	Sch Gen	A	9/19/2007	BCVCR012PW-C	3AUA0000014954	A
Based On													
												Cont.	
												B	



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- NOTES:
1. APPLICATION MACRO: 'E-CLIPSE BYPASS' DEFAULT.
 2. CONSULT USER'S MANUAL FOR I/O RATINGS.
 3. REPLACE JUMPER WITH NORMALLY CLOSED SAFETY INTERLOCK CONTACT AS NEEDED.
 4. COPPER WIRE RATED FOR 60°C INSULATION IF RATED LESS THAN 100A OR 75°C IF RATED 100A OR MORE MUST BE USED.
 5. REFER TO USER MANUAL FOR OPERATION, CONNECTIONS AND TIGHTENING TORQUE VALUES.
 6. CUSTOMER REQUIRED TO PROVIDE BRANCH CIRCUIT PROTECTION AND DISCONNECT MEANS PER NEC AND LOCAL CODE.

Rev	Description	Date	Appr	Description	Project No	Approved	Reference number	Sheet
B	SEE ECN 10002745	01/18/08	DC	ACH550 Control Wiring Diagram	ACH550 DRIVE CLIPSE BYPASS Options:	D.Truttner J.Brenner	BCBDR018CC-A	B
Based On						Sch Gen	3AUAA0000014954	Cont

ABB Inc.
 Date: 9/19/2007