

INVITATION TO BID

HVAC REPLACEMENT - POLICE FIRE/RESCUE

CITY OF GREENVILLE
NORTH CAROLINA



Find yourself in good company

PRE-BID MEETING: THURSDAY, JANUARY 14, 2016 @ 10:00 AM
FIRE/RESCUE CONFERENCE ROOM
500 S. GREENE STREET, GREENVILLE, NC

BIDS DUE: WEDNESDAY, JANUARY 27, 2016 @ 2:00 PM
PUBLIC WORKS CONFERENCE ROOM
1500 BEATTY STREET, GREENVILLE, NC

CONTACT PERSONS:

QUESTIONS REGARDING THE BID PACKAGE:

Mrs. Angelene Brinkley
Purchasing Manager
Telephone: (252) 329-4462
Fax: (252) 329-4464
Email: abrinkley@greenvillenc.gov

QUESTIONS REGARDING THE SPECIFICATIONS:

Mr. Mike Watson
Building Facilities Coordinator
Telephone: (252) 329-4921
Fax: (252) 329-4844
Email: mwatson@greenvillenc.gov

**CITY OF GREENVILLE
ADVERTISEMENT FOR PROPOSALS
“HVAC Replacement – Police Fire/Rescue”**

The City of Greenville, NC is requesting proposals for the “HVAC Replacement – Police Fire/Rescue” located at the Police Fire/Rescue Building. The scope of work shall include but is not limited to the removal of the existing rooftop units, installation of new rooftop units and all electrical and other associated items.

This is a turn-key project.

A mandatory pre-bid meeting and site visit will be held at the Fire/Rescue Conference Room located at 500 S. Greene Street, Greenville, NC on Thursday, January 14, 2016 @ 10:00 AM.

A site visit is mandatory and the alternate dates for scheduled site visits will be Tuesday, January 19, 2016 @ 9:00 AM or Wednesday, January 20, 2016 @ 9:00 AM, by contacting Mike Watson @ (252) 329-4921.

Sealed proposals will be received by the City of Greenville until Wednesday, January 27, 2016 by 2:00 PM at the Public Works Reception Desk located at 1500 Beatty Street, Greenville, NC 27834.

Mailed bids must be delivered to 1500 Beatty Street, Greenville, NC 27834 on or before Wednesday January 27, 2016 @ 2:00 PM and addressed to Mr. Mike Watson, Building Facilities Coordinator, with the words *Bid Enclosed, HVAC Replacement – PFR* on the outside of the mail carrier envelope. Bids received after the deadline will not be opened.

All bids will be marked with the date and time they are received by reception staff. Bids will be opened and read aloud. A bid tabulation will be available upon request once the contract is awarded to the successful bidder.

The City of Greenville reserves the right to reject any or all bids, waive any informality and award contracts that appear to be in its best interest. The right is reserved to hold any or all proposals for a period of sixty (60) days from the bid opening thereof.

From the date of this advertisement until the date of opening the proposals, the plans and specifications of the proposed work and/or a complete description of the apparatus, supplies, materials or equipment are and will continue to be on file in the office of the City of Greenville Purchasing Manager, 201 W. 5th Street, Greenville, NC 27834, during regular business hours, and available to prospective bidders. Inquiries should be directed to the Purchasing Manager at the above address --- Telephone (252) 329-4462. Minority/Women owned business are encouraged to submit proposals.

*Angelene Brinkley, Purchasing Manager
City of Greenville
201 W. 5th Street
Greenville, NC 27834*

INSTRUCTIONS TO BIDDERS

**Proposal to Provide
HVAC Replacement – Police Fire/Rescue
500 S. Greene Street, Greenville, NC 27834**

- 1. Contractor is to provide verification to the City that the company's employees are covered under worker's compensation insurance coverage.**
- 2. It is expressly understood by the contractor offering a proposal after a written notice of award by the City, a written contract will be required to be executed and will serve together with this proposal, these instructions, and any detailed specifications as the entire form of contract between the parties.**
- 3. Each Contractor submitting a proposal is affirming that no official or employee of the City is directly or indirectly interested in this proposal for any reason of personal gain.**
- 4. Sales taxes may be listed on the proposal, but as a separate item. No charge will be allowed for Federal Excise and Transportation Tax from which the City is exempt.**
- 5. Questions regarding any procedure for submission of a proposal for the HVAC Replacement shall be directed by email to Mike Watson, Building Facilities Coordinator, @ mwatson@greenvillenc.gov. Questions shall be submitted by Thursday, January 21, 2016 by 2:00 PM.**
- 6. If the Contractor is unable to provide a proposal for any reason, please send an email with an explanation to mwatson@greenvillenc.gov.**
- 7. By submitting a proposal for HVAC REPLACEMENT – POLICE FIRE/RESCUE, the Contractor attests that it is in compliance with all items listed in the bid/proposal instructions. Furthermore, the Contractor attests that the City of Greenville accepts no responsibility for any injuries to the firm's employees, while on City property performing their duties.**
- 8. Contractor must comply with all OSHA requirements associated with the work within this contract.**
- 9. It is expected that work would begin sometime in March/April. However, such starting date is subject to change based on time needed to finalize contract documents.**
- 10. No work will be performed at any time without proper supervision. Names and experience of supervisors shall be provided.**
- 11. Staging areas for equipment and materials can be arranged on site during the pre-construction meeting conducted prior to the work starting.**
- 12. Work on this project will have to be performed so as to not disrupt operations of the buildings. Any work that the contractor feels that will be disruptive should be planned to be done after hours. This includes any closing of any streets around the buildings.**
- 13. All work must be performed Monday – Saturday from 7:00 AM to 7:00 PM. Other hours will have to be approved in advance.**

14. Parking for all vehicles will be at the Greene Street Parking Lot located at 4th and Pitt Streets.
15. The Contractor shall accompany a designated representative(s) of the City on inspections of work at any time during the contract period. The City reserves the right to make determinations as to whether service is performed satisfactorily. Deficiencies in work performance must be corrected immediately.

SPECIFICATIONS

1.0 SCOPE:

The scope of work shall include, but is not limited to:

- 1.1 The Contractor shall provide all labor, equipment, materials and insurance necessary to remove and replace the rooftop HVAC units and all necessary work to complete installation per the attached equipment specifications and drawings document, labeled as Exhibit "B".
- 1.2 New rooftop units shall be manufactured by Trane. No other manufacture will be accepted.
- 1.3 The new units will be placed on the existing curb and attached per instructions in Exhibit 'B'
- 1.4 The electrical panel at Unit #1 shall be moved to accommodate the new unit.
- 1.5 All electrical and duct connections shall be included.
- 1.6 New LON cards shall be included and installed by the unit manufacturer at the factory. The two existing LON cards will be removed by others.
- 1.7 The Contractor shall include up to eight (8) hours of integration assistance from the unit manufacturer to assist Schneider Electric with integrating the new units to the existing Schneider control system.
- 1.8 All areas of work shall be scheduled at least one (1) week in advance and be scheduled through the Building & Grounds Supervisor.

2.0 PAYMENT AND BID:

- 2.1 Bidders will comply with all local, state, and federal laws and ordinances governing said work including the Occupational Safety and Health Act of 1970.
- 2.2 By submitting a proposal, the firm is attesting that they are an Equal Opportunity Employer.

2.3 The City of Greenville has adopted an Affirmative Action Program. Firms submitting a proposal are attesting that they also have taken affirmative action to ensure equality of opportunity in all aspects of employment.

2.4 **Minority and/or Women Business Enterprise (MWBE) Program**

Refer to Exhibit "C" for all Minority and/or Woman Business Enterprise (MWBE) requirements.

Questions regarding the City's M/WBE Program should be directed to Denisha Harris in the M/WBE Office at (252) 329-4862.

2.5 The City of Greenville reserves the right to reject any and all bids, to waive any informalities and to accept the bid if seems most advantages to the City. Any bid submitted will be binding for sixty (60) days after the date of the bid opening.

2.6 **Equal Employment Opportunity Clause**

The City has adopted an Equal Employment Opportunity Clause, which is incorporated into all specifications, purchase orders, and contracts, whereby a vendor agrees not to discriminate against any employee or applicant for employment on the basis of race, color, religion, sex, national origin or ancestry. A copy of this clause may be obtained at the City Clerk's Office, City Hall, Greenville, NC. By submitting qualifications and/or proposals, the firm is attesting that they are an Equal Opportunity Employer. Federal law (Rehabilitation Act and ADA) prohibits handicapped discrimination by all governmental units. By submitting a proposal, the vendor is attesting to its policy of nondiscrimination regarding the handicapped.

2.7 If necessary, the contractor must complete a new vendor application and associated documents as required upon acceptance of this contract.

2.8 The contractor will develop a lump sum bid; that will include, but is not limited to all work, equipment, parts, and labor specified herein.

3.0 **WORKERS COMPENSATION AND INSURANCE:**

3.1 The contractor must maintain during the life of this contract, Worker's Compensation Insurance for all employees working at the project site under this contract, or as otherwise required by North Carolina General Statutes.

3.2 The Contractor shall have in place for the life of this contract public liability and property damage insurance and shall protect the City of Greenville from claims for damage or personal injury, which may arise from operations under this contract. The amounts of such insurance shall not be less than \$500,000 for injuries subject to the same limit per person and \$1,000,000 for property damage or otherwise needed to protect the interests of the owner. The Contractor awarded this contract is to provide a Certificate of Insurance showing the City of Greenville named as an additionally insured on all coverage. All insurance must be maintained during the duration of the contract.

3.3 OTHER INSURANCE:

The contractor shall furnish such additional insurance as may be required by the General Statutes of North Carolina, including motor vehicle insurance in amounts not less than statutory limits.

4.0 CANCELLATION:

4.1 Each certificate of insurance shall bear the provision that the policy cannot be altered or canceled in less than ten (10) days after mailing written notice to the assured of such alteration or cancellation, sent registered mail.

4.2 The contractor shall furnish the owner with satisfactory proof of insurance required before written approval of such insurance is granted by the owner. Executed contract documents, insurance certifications, invoices and other information requested, are to be sent to:

*Mike Watson, Building Facilities Coordinator
City of Greenville
1500 Beatty Street
Greenville, N.C. 27834
Email: mwatson@greenvillenc.gov*

5.0 DAMAGE TO CONTRACTORS PROPERTY:

5.1 The City of Greenville shall be under no obligation to replace or in any way compensate the contractor for fire, theft, vandalism or any other casualty, injury or damage to equipment or property belonging to the contractor while on City property.

5.2 The successful bidder agrees to indemnify or hold harmless the City of Greenville from and against any liability, loss, cost, damage suit, claim, or expense arising occurrence on the part of the successful bidder to include its officers, servants, agents or employees arising from its activities, operations, and performance of services while on City property and further agrees to release and discharge the City of Greenville and its Agents from all claims or liabilities arising from or caused by the successful bidder in fulfilling its obligations under this Agreement.

5.3 It is understood and agreed by the parties that the City of Greenville will assume no liability for damages, injury, or other loss to the successful bidder, its employees or property, tools or equipment, or to other persons or properties located on City facilities resulting from the successful bidder's activities and operations while performing those service enumerated herein. The successful bidder shall assume full and complete liability for any and all damages on City or private properties caused by or resulting from its activities, operations, and that of its employees, agents and officers.

6.0 ADDENDUM

- 6.1 Addendum: Any changes to the specifications will be issued as a written addendum. No oral statements, explanations, or commitments by whosoever shall be of any effect.**
- 6.2 Amendment: The contract may be amended from time to time through written agreement by both parties.**

7.0 LOCAL PREFERENCE AND SERVICE POLICIES:

- 7.1 The City of Greenville has adopted a Local Preference Policy, Resolution No. 056-13, and a Professional and other Services Policy, Resolution No. 057-13 that will pertain to this project. For more information, please see www.greenvillenc.gov/financialservices/purchasingdivision on the City of Greenville's webpage.**

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8.0 REFERENCE INFORMATION

All bidders must provide a list of three (3) client references of similar work. The reference information must include the company's name, a contact person's name with his or her title and their telephone number. Contractor must provide the information below with their bid sheet. Contractor must be experienced in projects of similar construction.

- 1. Company name: _____
Contact person: _____
Title: _____ Phone No. _____
- 2. Company name: _____
Contact person: _____
Title: _____ Phone No. _____
- 3. Company name: _____
Contact person: _____
Title: _____ Phone No. _____

9.0 CONTRACTOR INFORMATION

Contractor must provide the information below with the bid sheet.

**CITY OF GREENVILLE
NORTH CAROLINA
PROSPECTIVE CONTRACTOR DATA FORM**

Company Name: _____
Address: _____
Phone Number: _____ Mobile Phone Number: _____
Email: _____ Business Fax Number: _____
Tax ID# _____
NC General Contractors License# _____
Corporation or Partnership: _____
Number of Years in Business: _____

**CITY OF GREENVILLE
PUBLIC WORKS DEPARTMENT
REQUEST FOR BIDS**

In compliance with the request for bids by the City of Greenville and subject to all conditions and specifications thereof, the undersigned offers and agrees to furnish all equipment, labor and work site clean-up as provided in the above mentioned specifications.

Description

HVAC Replacement – Police Fire/Rescue:

Lump Sum Bid Total

\$ _____

Bid reviewed, prepared and submitted by-

Company Name: _____

Addenda Received:

Signed: _____

Print Name: _____

Date: _____



EXHIBIT "B"

Prepared For:

Greenville Public Works

Date: August 26, 2015

Job Name:

Greenville Police and Fire RTUs

Trane U.S. Inc. is pleased to provide the enclosed submittal for your review and approval.

Product Summary

Qty	Product
2	Commercial Rooftop Air Conditioning Units (Midrange)

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

David McDaniel
Trane
401 Kitty Hawk Drive
Morrisville, NC 27560
Phone: (919) 781-0458
Cell: (919) 632-0080
Fax: (919) 781-9195

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Tag Data - Commercial Rooftop Air Conditioning Units (Midrange) (Qty: 2)

Item	Tag(s)	Qty	Description	Model Number
A1	50 Ton	1	50 Ton	SAHLF504
A2	75 Ton	1	75 Ton	SAHLF754

Product Data - Commercial Rooftop Air Conditioning Units (Midrange)**All Units**

DX Cooling Only
 R410A Development sequence
 Ipak replacement or full perimeter curb
 460 Volt-60 Hertz-3 Phase
 0-100% Economizer w/ comparative enthalpy controls
 Extended grease lines
 2.00" Spring isolators beneath supply & exhaust fans
 Throwaway filters
 FC supply & exhaust fans
 900 rpm - Supply fan
 VAV- Discharge Temperature Control with VFD with out Bypass
 Standard ambient control
 cULus
 Nonfused Unit Disconnect Switch
 EISA Std Mtrs w/ Shaft Grounding Ring
 Double wall hinged access panels

Item: A1 Qty: 1 Tag(s): 50 Ton

50 Ton Unit
 100% Exhaust - 5 Hp with Statitrac
 500 rpm - Exhaust/return fan
 20 Hp supply fan motor
 High capacity unit
 Remote human interface (Fld)

Item: A2 Qty: 1 Tag(s): 75 Ton

75 Ton Unit
 100% Exhaust - 7 1/2 Hp with Statitrac
 600 rpm - Exhaust/return fan
 30 Hp supply fan motor
 Inter-Processor Communication Bridge

Performance Data - Commercial Rooftop Air Conditioning Units (Midrange)

Tags	50 Ton	75 Ton
Design airflow (cfm)	10800	18450
Exhaust Airflow (cfm)	9000	14760
Cooling EDB (F)	86.10	84.50
Cooling EWB (F)	67.90	65.70
Ambient DB (F)	95.00	95.00
Leaving Coil DB (F)	51.05	50.27
Leaving Coil WB (F)	50.23	49.27
Leaving Unit DB (F)	52.93	53.35
Leaving Unit WB (F)	51.04	50.63
Gross total capacity (MBh)	579.74	888.28
Gross sensible capacity (MBh)	429.36	729.20
Gross latent capacity (MBh)	150.38	159.07
Net total capacity (MBh)	557.11	824.89
Net sensible capacity (MBh)	406.73	665.82
Supply duct static pressure (in H2O)	1.500	2.000
Return duct static pressure (in H2O)	0.500	0.500
Component S.P. drop (in H2O)	0.386	0.952
Total static pressure (in H2O)	2.386	3.452
Supply motor BHP calculated (bhp)	8.16	23.17
Supply fan RPM calculated (rpm)	859	878
Exhaust static pressure (in H2O)	0.500	0.500
Exhaust motor BHP calculated (bhp)	1.47	3.03
Exhaust fan RPM calculated (rpm)	452	455
System power (kW)	54.57	95.56
EER @ AHRI (EER)	10.8	9.9
Minimum circuit ampacity (A)	127.88	193.30
Maximum overcurrent protection (A)	150.00	225.00
Minimum disconnect switch size (A)	139.00	211.00
Recommended dual element (A)	150.00	225.00
Compressor 1 count (Each)	2.00	2.00
Compressor 1 RLA (A)	20.20	37.20
Compressor 2 count (Each)	2.00	2.00
Compressor 2 RLA (A)	19.10	25.40
Supply fan motor FLA (A)	24.70	36.60
Supply motor count ()	1	1
Supply fan count (Each)	2.00	2.00
Condenser fan FLA (A)	10.80	10.80
Exhaust fan motor FLA (A)	6.60	9.40
Other FLA (A)	1.00	2.00
Evaporator face area (sq ft)	38.00	43.00
Fan motor heat (MBh)	22.64	63.39
Total installed weight (lb)	7950.4	10322.2
HFCF-410A refrigerant charge - circuit 1 (lb)	34.3	46.8
HFCF-410A refrigerant charge - circuit 2 (lb)	32.5	45.5
IEER (EER)	14.2	16.0

Mechanical Specifications - Commercial Rooftop Air Conditioning Units (Midrange)

Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

General - R410A

Units shall be specifically designed for outdoor rooftop installation on a roof curb and be completely factory assembled and tested, piped, internally wired, fully charged with R-410A compressor oil and shipped in one piece. Units shall be available for direct expansion cooling only, or direct expansion cooling with natural gas, electric, hot water or steam heating. Filters, outside air system, exhaust air system, optional non-fused disconnect switches and all operating and safety controls shall be furnished factory installed. All units shall be cULus approved and factory run tested. Cooling capacity shall be rated in accordance with AHRI Standard 360. All units shall have decals and tags to aid in service and indicate caution areas. Electrical diagrams shall be printed on long life water resistant material and shall ship attached to control panel doors.

Casing

Exterior panels shall be zinc coated galvanized steel, phosphatized and painted with a slate grey air-dry finish durable enough to withstand a minimum of 500 hours consecutive salt spray application in accordance with standard ASTM B117. Screws shall be coated with zinc-plus-zinc chromate. Heavy gauge steel hinged access panels with tiebacks to secure door in open position shall provide access to filters and heating sections. Refrigeration components, supply air fan and compressor shall be accessible through removable panels as standard. Unit control panel, filter section, and gas heating section shall be accessible through hinged access panels as standard. Optional Double Wall Construction hinged access doors shall provide access to filters, return/exhaust air, heating and supply fan section. All access doors and panels shall have neoprene gaskets. Interior surfaces or exterior casing members shall have 1/2" Tuf-Skin fiberglass insulation. Unit base shall be watertight with heavy gauge formed load bearing members, formed recess and curb overhang. Unit lifting lugs shall accept chains or cables for rigging. Lifting lugs shall also serve as unit tiedown points.

Compressors - R410A

The Trane 3-D Scroll compressors have a simple mechanical design with only three major moving parts. Scroll type compression provides inherently low vibration. The 3-D Scroll provides a completely enclosed compressor chamber with optimized scroll profiles which leads to increased efficiency. The 3-D Scroll includes a direct-drive, 3600 rpm, suction gas cooled hermetic motor. Dependent on the compressor model, motor protection is provided by either a patented motor cap and integral line break motor protector or an external 24 VAC module which provides protection against incorrect phase sequence, excess motor temperatures, over current protection, and phase loss. Trane 3-D compressor includes centrifugal oil pump, scroll tips seals, internal heat shield that lowers the heat transfer from discharge and suction gas, oil level sight glass and oil charge valve. Some compressor models also provide a dip tube that allows for oil draining, in addition to a low leakage internal discharge check valve to help prevent refrigerant migration. Each compressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

Phase Monitor

Protects 3-phase equipment from phase loss, phase reversal, and phase imbalance. Any fault condition shall produce a Failure Indicator LED and send the unit into an auto stop condition. cULus approved. Standard on 20-75T units.

Supply Fan

Supply fan motors are either open drip-proof or enclosed fan cooled. All supply fans shall be dynamically balanced in factory. Supply fan shall be test run in unit and shall reach rated rpm. All 60 Hz supply fan motors meet the Energy Independence Security Act of 2007 (EISA). All 50 Hz supply fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

Forward Curved Supply Fan

Supply fans shall have two double-inlet, forward-curved fans mounted on a common shaft with fixed sheave drive. Fans shall be factory-tested to reach rated rpm before the fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection rubber-in-shear isolators, or by optional 2" deflection spring isolation.

Evaporator Coil - R410A

Internally enhanced copper tubing of 3/8" or 1/2" O.D. shall be mechanically bonded to heavyduty aluminum fins of configured design. All coils shall be equipped with thermal expansion valves and factory pressure and leak tested.

Air-Cooled Condenser Coil - R410A

Condenser coils shall have all Aluminum Microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil is pressure tested to 650 psig. Subcooling circuit(s) shall be provided as standard.

Condenser Fans and Motors

All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with steel blades and zinc plated steel hubs. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built-in current and thermal overload protection and weathertight slingers over motor bearings.

Unit Controller

DDC microprocessor controls shall be provided to control all unit functions. The control system shall be suitable to control CV or VAV applications. The controls shall be factory-installed and mounted in the main control panel. All factory-installed controls shall be fully commissioned (run tested) at the factory. The unit shall have a Human Interface Panel with a 16 key keypad, a 2 line X 40 character clear English display as standard to provide the operator with full adjustment and display of control data functions. The unit controls shall be used as a stand-alone controller, or as part of a building management system involving multiple units.

The unit shall be equipped with a complete microprocessor control system. This system shall consist of temperature and pressure (thermistor and transducer) sensors, printed circuit boards (modules), and a unit mounted Human Interface Panel. Modules (boards) shall be individually replaceable for ease of service. All microprocessors, boards and sensors shall be factory mounted, wired and tested. The microprocessor boards shall be stand-alone DDC controls not dependent on communications with an on-site PC or a Building Management Network. The microprocessors shall be equipped with on-board diagnostics, indicating that all hardware, software and interconnecting wiring are in proper operating condition. The modules (boards) shall be protected to prevent RFI and voltage transients from affecting the board's circuits. All field wiring shall be terminated at separate, clearly marked terminal strip. Direct field wiring to the I/O boards is not acceptable. The microprocessor's memory shall be non-volatile EEPROM type requiring no battery or capacitive backup, while maintaining all data.

Zone sensors shall be available in several combinations with selectable features depending on sensor.

The Human Interface Panel's keypad display character format shall be 40 characters x 2 lines. The character font shall be 5 x 7 dot matrix plus cursor. The display shall be Supertwist Liquid Crystal Display (LCD) with blue characters on a ray/green background which provides high visibility and ease of interface. The display format shall be in clear English. Two or three digit coded displays are not acceptable.

The keypad shall be equipped with 16 individual touch-sensitive membrane key switches. The switches shall be divided into four separate sections and be password protected from change by unauthorized personnel. The six main menus shall be STATUS, SETPOINTS, DIAGNOSTICS, SETUP, CONFIGURATION and SERVICE MODE.

Throwaway Filters

Filters are 2" thick, UL Class 2, glass fiber type. Filters rated at 80% average synthetic dust weight arrestance when tested in accordance with ASHRAE 52-76 and 52.1 test methods. Filters mounted in galvanized steel rack.

Modulating 100 Percent Exhaust Fan with Statitrac Control

Two, double-inlet, forward-curved fans shall be mounted on a common shaft with fixed sheave drive. All fans shall be dynamically balanced and tested in factory before being installed in unit. Exhaust fan shall be test run as part of unit final run test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000-hour average life. Optional extended grease lines shall be provided to allow greasing of bearings from unit filter section. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection, rubber in shear isolators or spring isolation on motor sizes larger than five hp. For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers (or VFD) shall be modulated in response to building pressure. A differential pressure control system, (Statitrac), shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure. The FC exhaust fan shall be turned on when required to lower building static pressure setpoint. The (Statitrac) control system shall then modulate the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified dead band that shall be adjustable at the Human Interface Panel. All 60 Hz exhaust fan motors meet the Energy Independence Security Act of 2007 (EISA).

Variable Frequency Drive

General Description:

The AC Drive and all associated optional equipment are UL listed according to Power Conversation Equipment cULus. The AC Drive is designed, constructed and tested in accordance with NEMA ICS, NFPA, and IEC standards. The Drive is housed in a metal NEMA 1 enclosure. All standard and optional features are included within the Drive enclosure, unless otherwise specified. The Drive converts incoming fixed frequency three-phase AC power into a variable frequency and voltage for controlling the speed of three-phase AC motors. DC link reactors are provided on both the positive and negative rails of the DC bus equal to 3% impedance to minimize power line harmonics. Full load amp ratings meet or exceed NEC Table 430-150. The Drive provides full rated output current continuously, 110% of rated current for 60 seconds and 160% of rated current for up to 0.5 second while starting. Isolation is provided between the Drive's power circuitry and control circuitry to ensure operator safety and to protect connected electronic control equipment from damage caused by voltage spikes, current surges, and ground loop currents. Audible motor noise is minimized through the use of an adjustable carrier frequency. Carrier frequency is automatically adjusted to optimize motor and AC Drive efficiencies while reducing motor noise. Operating range, ambient temperature, -10 to 50C (14 to 104F), 0 to 95% relative humidity, non-condensing, AC line voltage variation, -10 to +10% of nominal with full output

Protective Features

Class 10 I2t electronic motor overload protection for single motor applications is provided. Protection against input transients, loss of AC line phase, output short circuit, output ground fault, over-voltage, under voltage, AC Drive over-temperature and motor over-temperature. All faults are displayed in plain English. Protection from AC Drive sustained power or phase loss. Full rated output with an input voltage as low as 90% of nominal. Continuous operation with reduced output with an input voltage as low as 164 V AC for 208/230 volt units, 313 V AC for 460 volt units, and 394 volts for 600 volts units. Semi-conductor rated input fuses to protect power components. A "signal loss detection" circuit senses the loss of an analog input signal such as 4 to 20 mA or 0 to 10 V DC, and is programmable to react as desired in such an instance. Default: After 10-second time out the Drive will shut off. Will function normally when the keypad is removed while the AC Drive is running and continue to follow remote commands. AC Drive catches rotating motor operating forward or reverse up to full speed. The AC Drive is rated for 100,000 amperes interrupting capacity (AIC). Includes current sensors on three output phases to detect and report phase loss to the motor. Identifies which of the output phases is low or lost. Continues to operate without faulting until input voltage reaches 300 V AC on 208/230 volt units, 539 V AC on 460 volt units, and 690 volts on 600 volt units

Interface Features

Off/Stop and Auto/Start selector switches provided to start and stop the AC Drive and determine the speed reference. On units with bypass, an AC Drive/Off/Bypass Hand selector switch will be provided in the unit control box. In case of an external current overload, a normally closed dry contact will stop the motor whether in DRIVE or BYPASS mode. In DRIVE mode speed reference is provided by a 0 to 10 V DC analog input. The display is programmable to display in 9 languages including English, Spanish and French. The display has four lines, with 20 characters on three lines and eight large characters on one line. The following points are controlled and/or accessible: AC Drive Start/Stop. Speed reference, Fault diagnostics, Meter points to include - Motor power in HP, Motor power in kW, Motor kW-hr, Motor current, Motor voltage, Hours run, DC link voltage, Thermal load on motor, Thermal load on AC Drive and Heatsink temperature. The AC Drive stores in memory the last 10 faults and related operational data. Four simultaneous displays are available, frequency or speed, run time, output amps and output power. The following displays are accessible from the keypad. Reference Signal Value, Output Frequency in Hz or percent, Output Amps, Motor HP, Motor kW, kW hour, Output Voltage, DC Bus Voltage, AC Drive Temperature in degrees, and Motor Speed in RPM.

Internal Shaft Grounding Ring

Motors have internal bearing protection for use with VFDs.

0-100 percent modulating economizer

Operated through the primary temperature controls to automatically utilize OA for "free" cooling. Automatically modulated return and OA dampers shall maintain proper temperature in the conditioned space. Economizer shall be equipped with an automatic lockout when the outdoor high ambient temperature is too high for proper cooling. Minimum position control shall be standard and adjustable at the Human Interface Panel or with a remote potentiometer or through the building management system. A spring return motor shall ensure closure of OA dampers during unit shutdown or power interruption. Mechanical cooling shall be available to aid the economizer mode at any ambient. Low leak economizer dampers shall be standard with a leakage rate of 2.5 percent of nominal airflow (400 CFM/ton) at 1" wg. static pressure.

Economizer Control with Comparative Enthalpy

Used with the fresh air economizer, two enthalpy sensors are provided to compare total heat content of the indoor air and outdoor air to determine the most efficient air source when economizing.

High Capacity Unit - R410A

Units are made high capacity through the use of larger compressors that provide higher refrigerant mass flowrates.

Remote Human Interface Panel (RHI)

Remote Human Interface Panel can perform all the same functions as unit mounted Human Interface Panel, except for the Service Mode. Up to 4 rooftop units can be monitored and controlled with a single Remote Human Interface Panel. This panel uses the same attractive enclosure as our Tracker_z building control panel. With features such as a 2 line X 40 character clear English display, a red LED light to indicate an alarm condition (alarm also shown on the two line display), a simple 16 key keypad that is used in conjunction with the display, to prompt the infrequent user when making desired changes and an attractive hinged door makes the RHI very suitable for mounting on any wall. The RHI can be mounted inside a building, up to 5,000 feet from the unit. The RHI is wired to the IPCB mounted in the rooftop with twisted wire pair communication wiring and 24V control wiring.

Inter-Processor Communication Bridge (IPCB)

This module provides an amplified and filtered version of the IPC link for connection to a Remote Human Interface Panel. Each rooftop that is tied into a Remote Human Interface Panel must have a IPCB installed into it.

Throwaway Filter, MERV 4

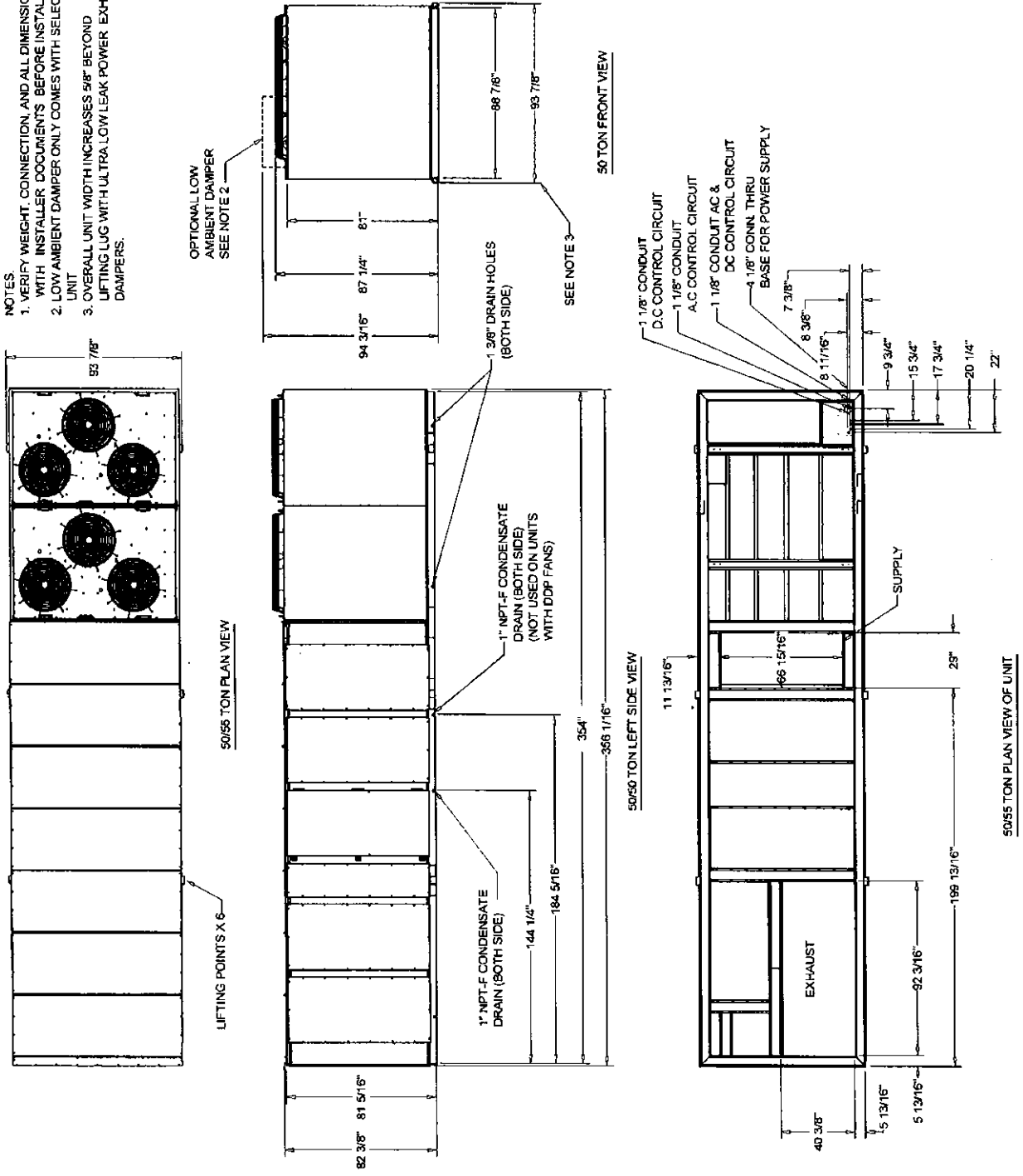
Filters are 2" thick, UL Class 2, glass fiber type. Filters rated at 80% average synthetic dust weight arrestance when tested in accordance with ASHRAE 52-76 and 52.1 test methods. Filters mounted in galvanized steel rack.

IntelliPak Replacement Unit (IRU)

The IntelliPak replacement solution shall include a condenser base pan, strengthening of the condenser section with welded reinforcement of condenser base rail, as well as welded integral supports to the condenser base. This additional strength shall allow the reuse of the existing pedestal as well as any Trane full perimeter curb and reduce installation risk and labor. Also optional with stainless steel.

Unit Dimensions - Commercial Rooftop Air Conditioning Units (Midrange)
 Item: A1 Qty: 1 Tag(s): 50 Ton

- NOTES
 1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION
 2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT
 3. OVERALL UNIT WIDTH INCREASES 5/8" BEYOND LIFTING LUG WITH ULTRA LOW LEAK POWER EXHAUST DAMPERS.



Unit Dimensions - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A1 Qty: 1 Tag(s): 50 Ton

ELECTRICAL / GENERAL DATA

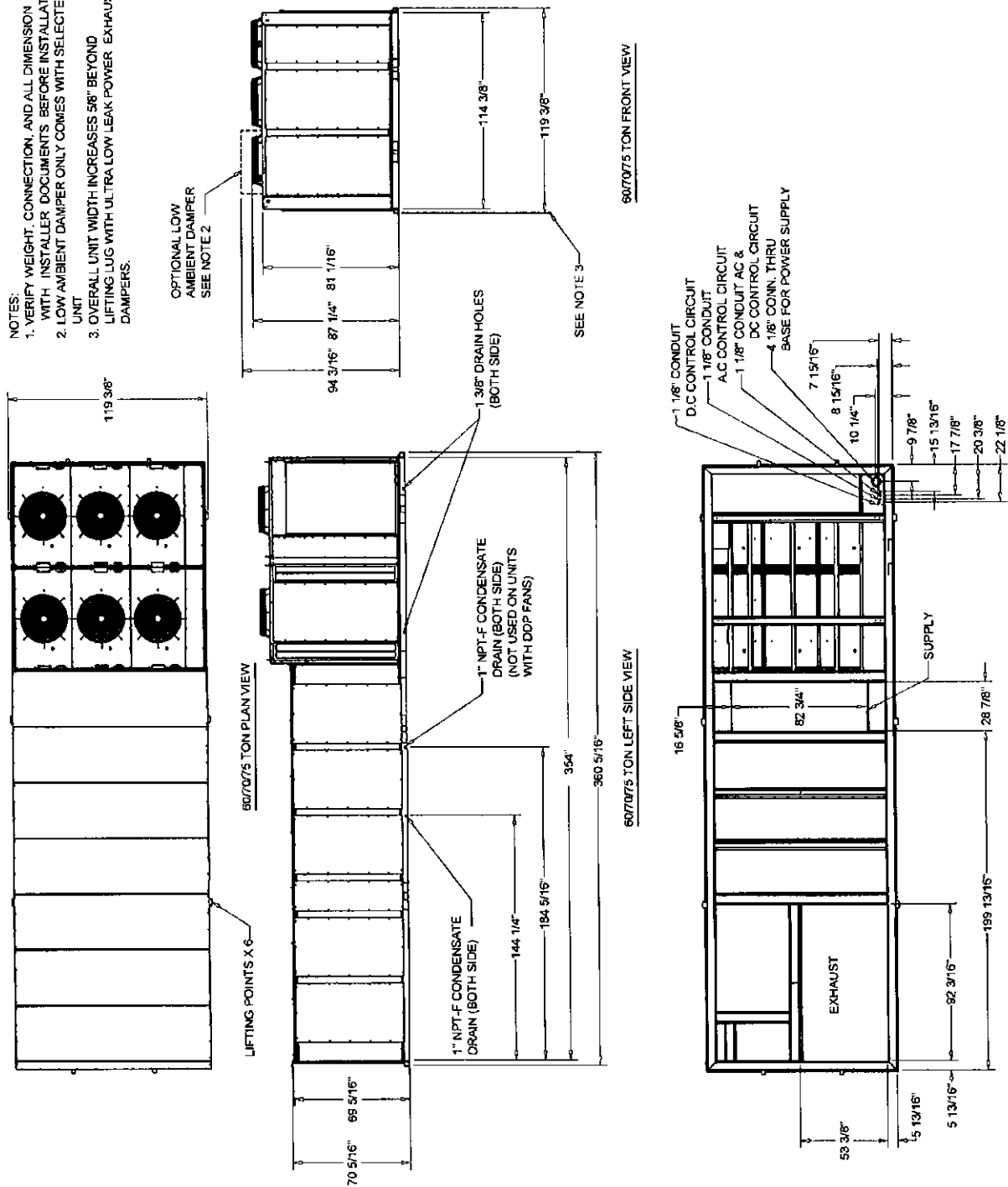
<p>TONS Model (Tonnage): SAHLF50 (50Ton) Unit Operating Voltage Range: 414-506 Unit Primary Voltage: 460 Unit Hertz: 60 Unit Phase: 3 EER: 10.8 EER IEER: 14.2 EER</p>	<p>GAS HEATING - PERFORMANCE Heating Input: Heating Output: Capacity Steps: HEATING - GENERAL DATA Gas inlet pressure: (in w.c.) Gas Pipe Connection Size:</p>
<p>COMPRESSOR Compressor 1 Count: 2.00 Each Compressor 1 RLA: 20.20 A Compressor 2 Count: 2.00 Each Compressor 2 RLA: 19.10 A Compressor 3 Count: Value not available Compressor 3 RLA: Value not available</p>	<p>ELECTRIC HEATER Electric Heater Kw: Electric Heater Full Load Amps:</p>
<p>SUPPLY FAN MOTOR Number of Fans: 2.00 Each Number of Motors: 1 Horsepower (Each): 20 Hp FC Supply Fan Motor Full Load Amps: 24.70 A Supply Fan Efficiency: 49.70 %</p>	<p>EXHAUST / RETURN FAN MOTOR Number: 1 Horsepower (Each): 5 Exhaust Fan Motor Full Load Amps: 6.6</p>
<p>CONDENSER FAN MOTOR Number: 6 Horsepower (each): 1.0 Condenser Fan Motor Full Load Amps (Total): 10.8</p>	<p>FILTERS - TYPE Type: Throwaway Furnished: YES Number: 20 Recommended Size: 20"x25"x 2"</p>
<p>EVAPORATIVE CONDENSER ⁽⁷⁾ Pump Horsepower: N/A Pump Full Load Amps: N/A Sump Heater Full Load Amps: N/A Sump Heater kW: N/A</p>	<p>PREFILTERS Furnished: Number: Recommended Size:</p>
<p>REFRIGERANT TYPE ⁽⁶⁾ Charge Type: R-410A Factory Charge (Circuit #1): 34.3 lb Factory Charge (Circuit #2): 32.5 lb</p>	<p>FINAL FILTERS - TYPE Type: Furnished: Number: Recommended Size: PREFILTERS Furnished: Number: Recommended Size:</p>
<p> </p>	

Notes:

- LOAD 1=Current of the largest motor (compressor or fan motor); LOAD 2=Sum of the currents of all remaining motors; LOAD 3 =Current of electric heaters
 LOAD 4 =Control Power Transformer (20-40 and 24-48 ton units add 3 FL amps for wire sizing formula, 50-75 and 59 - 89 ton units add 6 FL amps)
- For Electric Heat MCA, MOP, ROE values, calculate for both cooling and heating modes. (When determining LOADS, the compressors do not operate when the unit is in heating mode) (On 70-89 ton single source units, heating Load 4 = 12 amps on 200,230 volt units and 9 amps on 480,575 volt units)
- If selected Max Over Cur is less than the Min Cir Amp, then select the lowest maximum fuse size which is equal to or larger than the Min Cir Amp, provided the selected fuse size does not exceed 800 amps.
- If the selected Recommended Dual Element fuse size is greater than the selected Max Over Cur Protection value, then select the Recommended Dual Element fuse size value to equal the Max Over Protect on value.
- Compressor kW at AHRI rating conditions of 80/67 -95
- Refrigerant charge is an approx. value. For a more precise value, see unit nameplate and service instructions.
- Sump Heater is an optional feature.

Unit Dimensions - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A2 Qty: 1 Tag(s): 75 Ton

- NOTES:
 1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS, BEFORE INSTALLATION
 2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT
 3. OVERALL UNIT WIDTH INCREASES 5/8" BEYOND LIFTING LUG WITH ULTRA LOW LEAK POWER EXHAUST DAMPERS.



Unit Dimensions - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A2 Qty: 1 Tag(s): 75 Ton

ELECTRICAL / GENERAL DATA

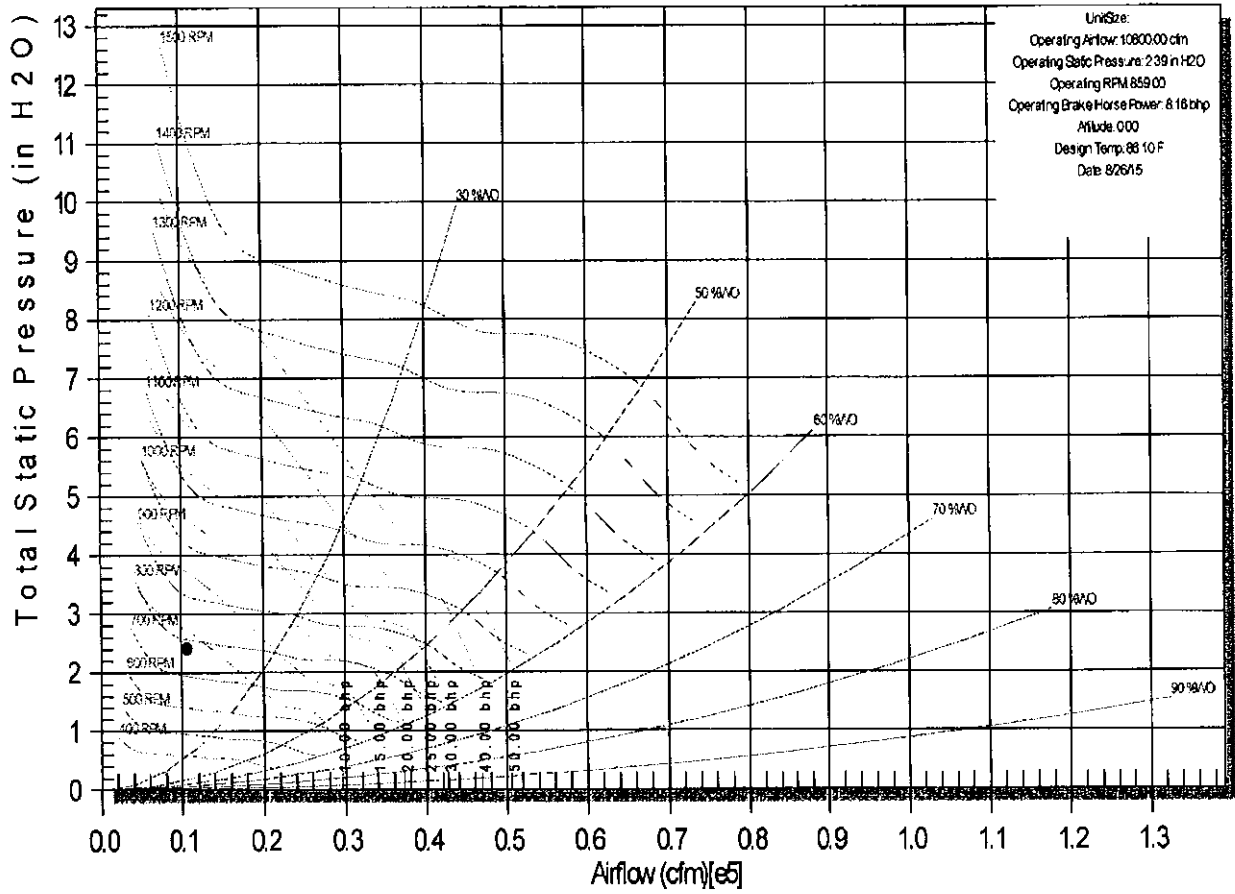
<p>TONS</p> <p>Model (Tonnage): SAHLF75 (75Ton) Unit Operating Voltage Range: 414-506 Unit Primary Voltage: 460 Unit Hertz: 60 Unit Phase: 3</p> <p>EER: 9.9 EER IEER: 16.0 EER</p>	<p>GAS HEATING - PERFORMANCE</p> <p>Heating Input: Heating Output: Capacity Steps:</p> <p>HEATING - GENERAL DATA</p> <p>Gas inlet pressure: (in w.c.) Gas Pipe Connection Size:</p>
<p>COMPRESSOR</p> <p>Compressor 1 Count: 2.00 Each Compressor 1 RLA: 37.20 A Compressor 2 Count: 2.00 Each Compressor 2 RLA: 25.40 A Compressor 3 Count: Value not available Compressor 3 RLA: Value not available</p>	<p>ELECTRIC HEATER</p> <p>Electric Heater Kw: Electric Heater Full Load Amps:</p>
<p>SUPPLY FAN MOTOR</p> <p>Number of Fans: 2.00 Each Number of Motors: 1 Horsepower (Each): 30 Hp FC Supply Fan Motor Full Load Amps: 36.60 A Supply Fan Efficiency: 43.26 %</p>	<p>EXHAUST / RETURN FAN MOTOR</p> <p>Number: 1 Horsepower (Each): 7.5 Exhaust Fan Motor Full Load Amps: 9.4</p>
<p>CONDENSER FAN MOTOR</p> <p>Number: 6 Horsepower (each): 1.0 Condenser Fan Motor Full Load Amps (Total): 10.8</p>	<p>FILTERS - TYPE</p> <p>Type: Throwaway Furnished: YES Number: 35 Recommended Size: 16" x20' x2"</p>
<p>EVAPORATIVE CONDENSER ⁽⁷⁾</p> <p>Pump Horsepower: N/A Pump Full Load Amps: N/A Sump Heater Full Load Amps: N/A Sump Heater kW: N/A</p>	<p>PREFILTERS</p> <p>Furnished: Number: Recommended Size:</p>
<p>REFRIGERANT TYPE ⁽⁶⁾</p> <p>Charge Type: R-410A Factory Charge (Circuit #1): 48.8 lb Factory Charge (Circuit #2): 45.5 lb</p>	<p>FINAL FILTERS - TYPE</p> <p>Type: Furnished: Number: Recommended Size:</p> <p>PREFILTERS</p> <p>Furnished: Number: Recommended Size:</p>

- Notes:
- LOAD 1=Current of the largest motor (compressor or fan motor); LOAD 2=Sum of the currents of all remaining motors; LOAD 3 =Current of electric heaters
 LOAD 4 =Control Power Transformer (20-40 and 24-48 ton units add 3 FL amps for wire sizing formula, 50-75 and 59 - 89 ton units add 6 FL amps)
 - For Electric Heat MCA, MOP, RDE values, calculate for both cooling and heating modes. (When determining LOADS, the compressors do not operate when the unit is in heating mode) (On 70-89 ton single source units, heating Load 4 = 12 amps on 200,230 volt units and 9 amps on 460,575 volt units)
 - If selected Max Over Cur is less than the Min Cir Amp, then select the lowest maximum fuse size which is equal to or larger than the Min Cir Amp, provided the selected fuse size does not exceed 800 amps.
 - If the selected Recommended Dual Element fuse size is greater than the selected Max Over Cur Protection value, then select the Recommended Dual Element fuse size value to equal the Max Over Protection value.
 - Compressor KW at AHRI rating conditions of 80/67 -95
 - Refrigerant charge is an approx. value. For a more precise value, see unit nameplate and service instructions.
 - Sump Heater is an optional feature

Fan Curve - Commercial Rooftop Air Conditioning Units (Midrange)

Item: A1 Qty: 1 Tag(s): 50 Ton

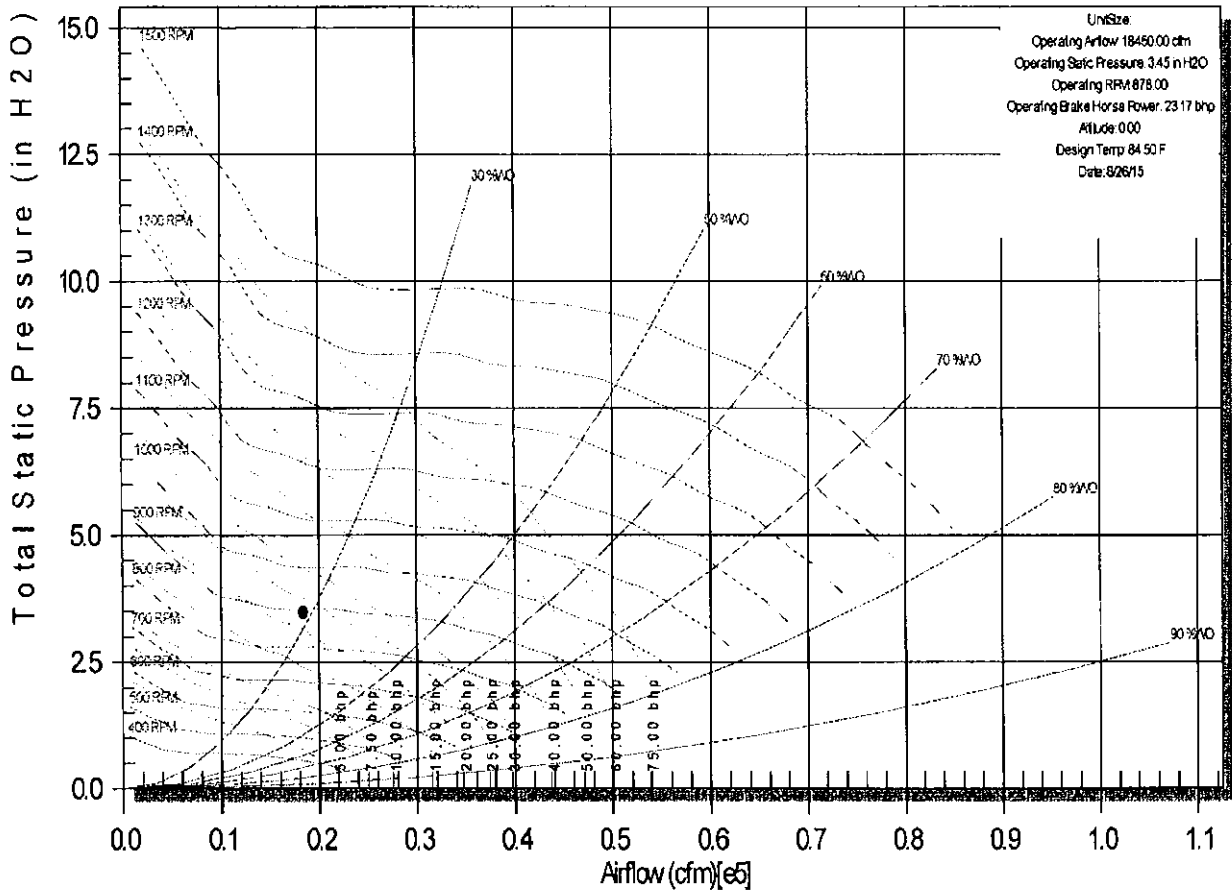
S03



Fan Curve - Commercial Rooftop Air Conditioning Units (Midrange)

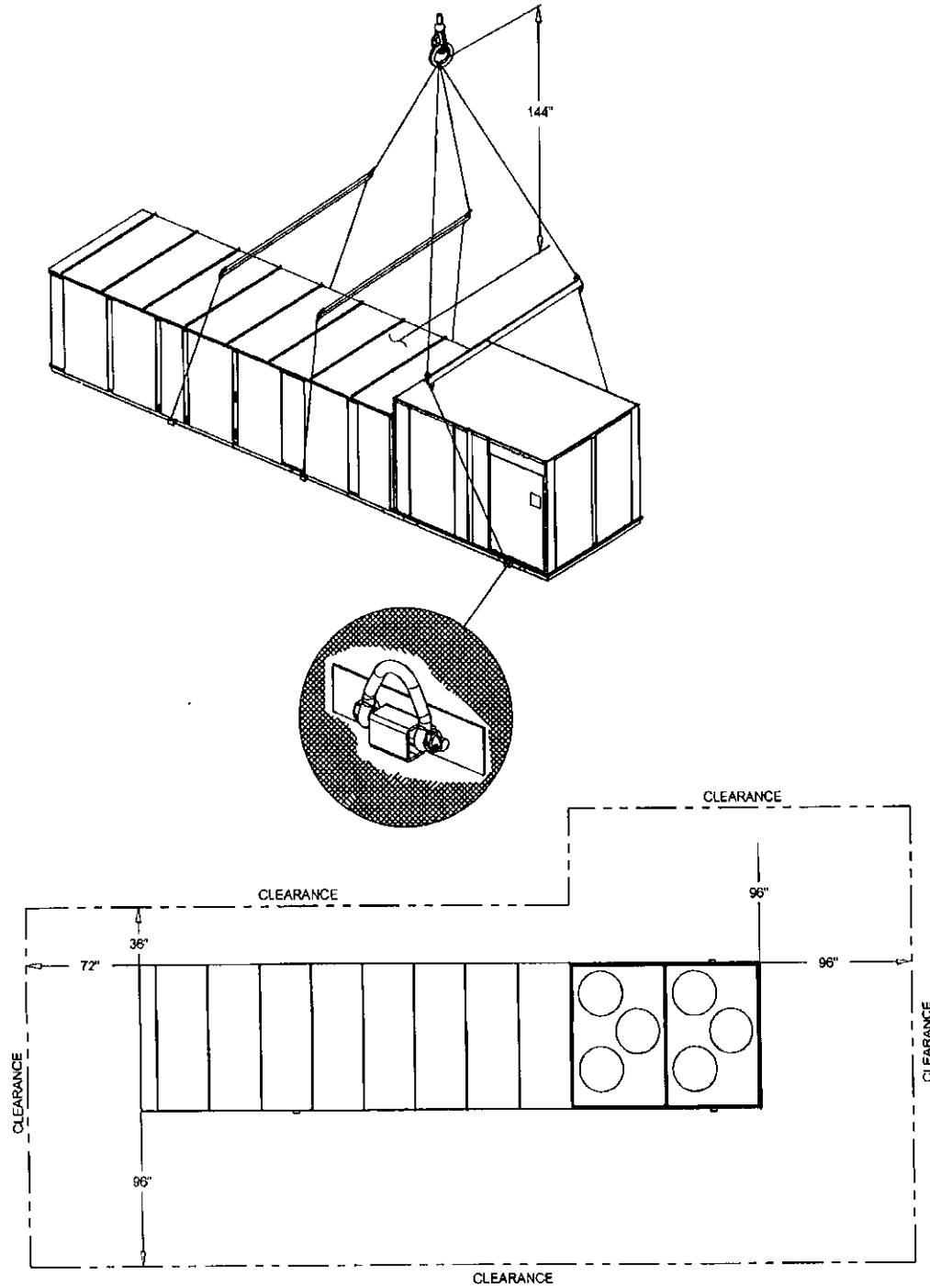
Item: A2 Qty: 1 Tag(s): 75 Ton

S04



Weight, Clearance & Rigging Diagram - Commercial Rooftop Air Conditioning Units (Midrange)

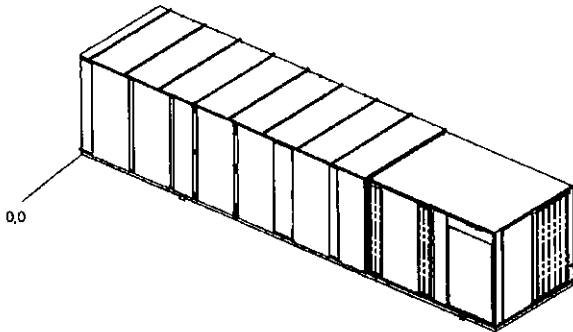
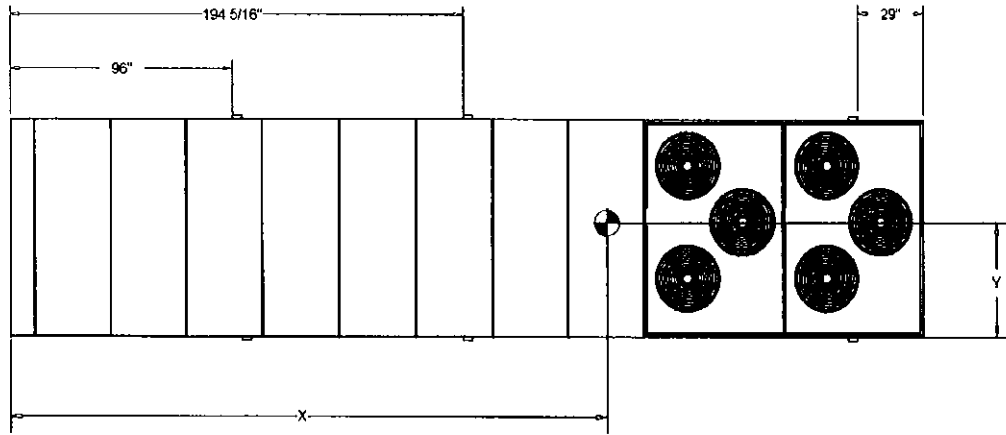
Item: A1 Qty: 1 Tag(s): 50 Ton



RIGGING AND CLEARANCE
AIR COOLED DRAWING

Weight, Clearance & Rigging Diagram - Commercial Rooftop Air Conditioning Units (Midrange)

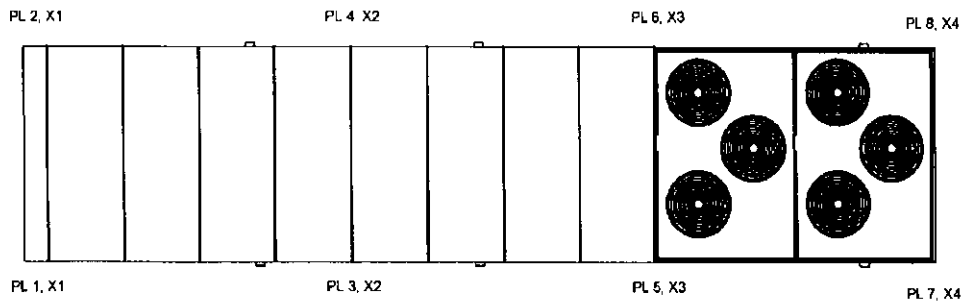
Item: A1 Qty: 1 Tag(s): 60 Ton



Center of Gravity X:	15.72 ft	Point load X location 1:	4.000 in
Center of Gravity Y:	3.92 ft	Point load X location 2:	120.000 in
Point Load 1:	785.0 lb	Point load X location 3:	238.000 in
Point Load 2:	857.6 lb	Point load X location 4:	332.000 in
Point Load 3:	903.4 lb	Point load X location 5:	N/A
Point Load 4:	978.0 lb	Point load X location 6:	N/A
Point Load 5:	1021.8 lb	Point load X location 7:	N/A
Point Load 6:	1064.4 lb	Point load X location 8:	N/A
Point Load 7:	1119.8 lb	Point load Y location 1:	4.000 in
Point Load 8:	1192.3 lb	Point load Y location 2:	87.000 in

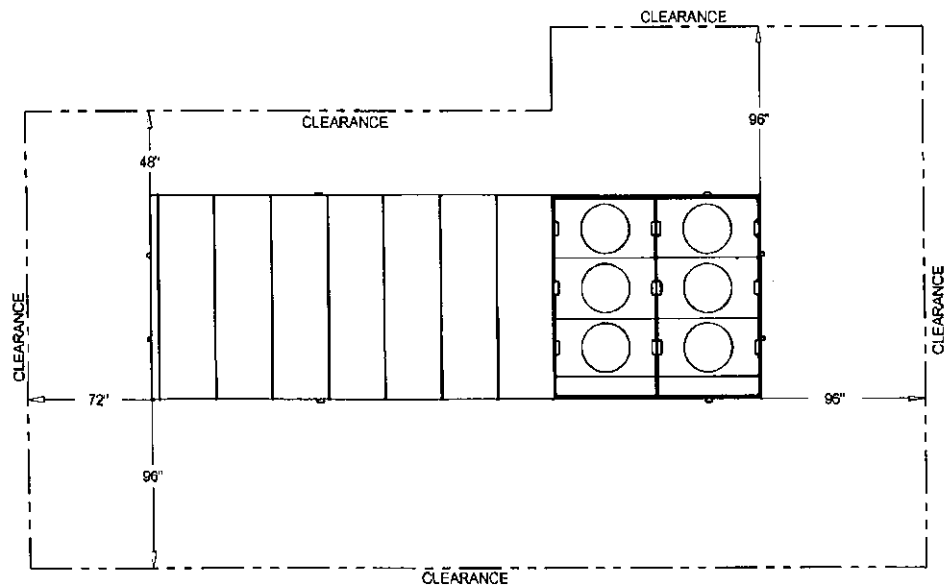
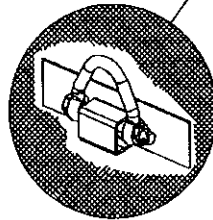
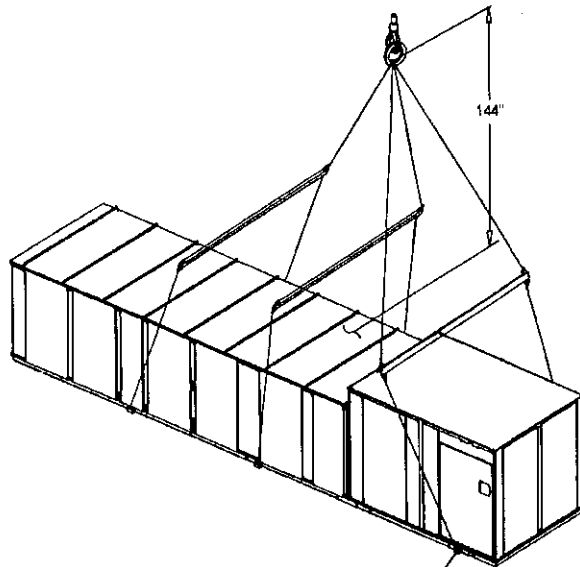
Total Weight: 7950.4 lb
 Added Weight ⁽³⁾
 1. Double wall: N/A

- Notes:
1. The actual weight is stamped on the unit nameplate.
 2. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight.
 3. Add weight to the total unit weight.
 4. Most Design Special weights are not displayed.



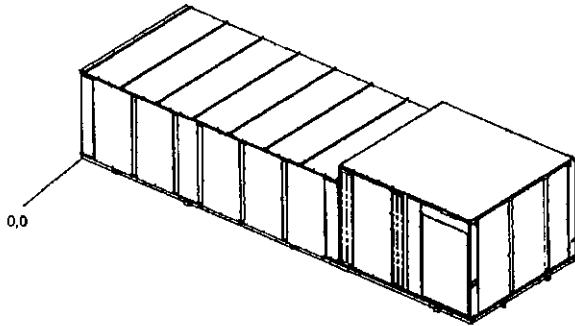
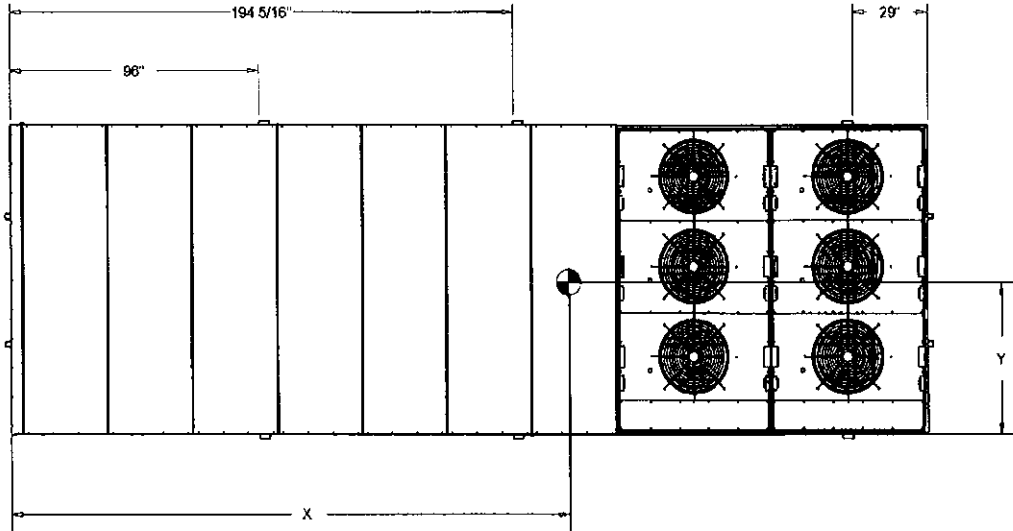
CENTER OF GRAVITY AND INSTALL WEIGHT X-Y POINTS
 AIR COOLED DRAWING

Weight, Clearance & Rigging Diagram - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A2 Qty: 1 Tag(s): 75 Ton



RIGGING AND CLEARANCE
AIR COOLED DRAWING

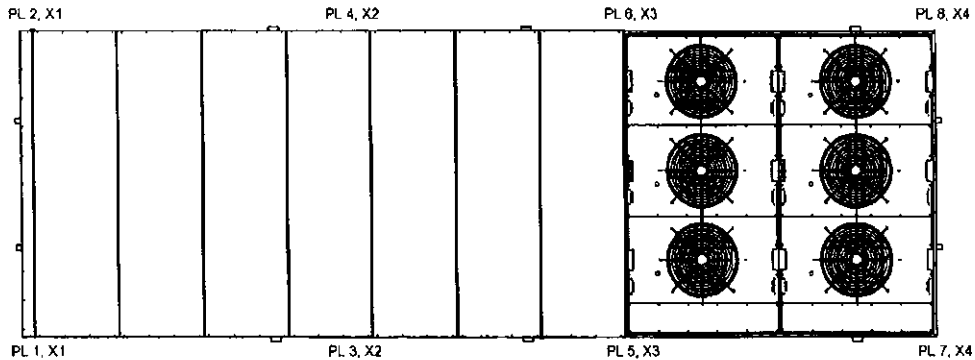
Weight, Clearance & Rigging Diagram - Commercial Rooftop Air Conditioning Units (Midrange)
 Item: A2 Qty: 1 Tag(s): 75 Ton



Center of Gravity X:	16.13 ft	Point load X location 1:	4.000 in
Center of Gravity Y:	4.73 ft	Point load X location 2:	120.000 in
Point Load 1:	1022.6 lb	Point load X location 3:	236.000 in
Point Load 2:	864.5 lb	Point load X location 4:	332.000 in
Point Load 3:	1226.3 lb	Point load X location 5:	N/A
Point Load 4:	1166.1 lb	Point load X location 6:	N/A
Point Load 5:	1430.0 lb	Point load X location 7:	N/A
Point Load 6:	1371.6 lb	Point load X location 8:	N/A
Point Load 7:	1598.5 lb	Point load Y location 1:	4.000 in
Point Load 8:	1540.4 lb	Point load Y location 2:	112.000 in

Total Weight: 10322.2 lb
 Added Weight ⁽²⁾
 1. Double wall : N/A

- Notes:
 1. The actual weight is stamped on the unit nameplate.
 2. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight.
 3. Most Design Special weights are not displayed



CENTER OF GRAVITY AND INSTALL WEIGHT X-Y POINTS
 AIR COOLED DRAWING

Accessory - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

<p>⚠ WARNING HAZARDOUS VOLTAGE!</p> <p>DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE.</p> <p>FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.</p>	<p>⚠ AVERTISSEMENT TENSION DANGEREUSE!</p> <p>COUPER TOUTES LES TENSIONS ET OUVRIR LES SECTIONNEURS A DISTANCE, PUIS SUIVRE LES PROCEDURES DE VERROUILLAGE ET DES ETIQUETTES AVANT TOUTE INTERVENTION. VERIFIER QUE TOUTS LES CONDENSATEURS DES MOTEURS SONT DECHARGES. DANS LE CAS D'UNITES COMPORTANT DES ENTRAINEMENTS A VITESSE VARIABLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAINEMENT POUR DECHARGER LES CONDENSATEURS</p> <p>NE PAS RESPECTER CES MESURES DE PRECAUTION PEUT ENTRAINER DES BLESSURES GRAVES POUVANT ETRE MORTELLES.</p>	<p>⚠ ADVERTENCIA VOLTAJE PELIGROSO!</p> <p>DESCONECTE TODA LA ENERGIA ELECTRICA, INCLUSO LAS DESCONEXIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CERRER Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGURESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCION DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR.</p> <p>EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRIA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.</p>
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CAUTION
 USE COPPER CONDUCTORS ONLY!
 UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.

FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

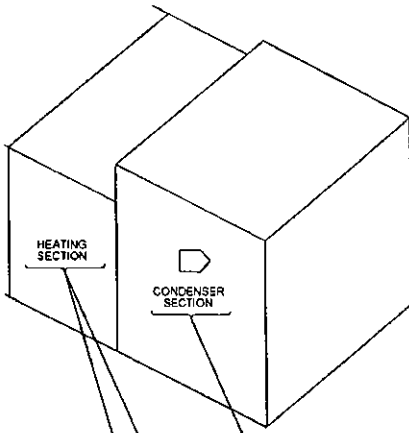
ATTENTION
 N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!
 LES BORNES DE L'UNITE NE SONT PAS CONCUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.

L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT ENDOMMAGER L'EQUIPEMENT.

PRECAUCION
 UTILICE UNICAMENTE CONDUCTORES DE COBRE!
 LAS TERMINALES DE LA UNIDAD NO ESTAN DISENADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.

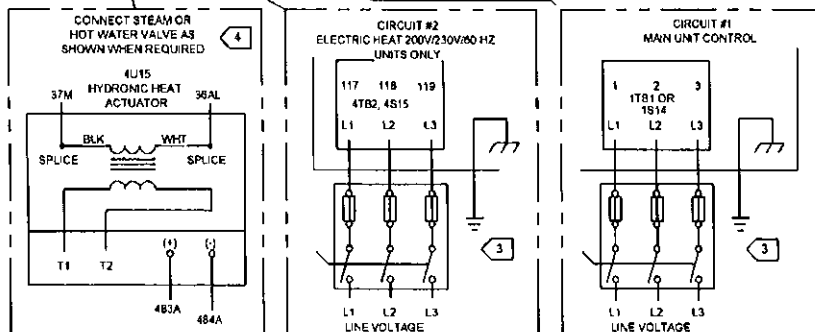
SI NO LO HACE, PUEDE OCASIONAR DANO AL EQUIPO.

IMPORTANT!
 DO NOT ENERGIZE UNIT UNTIL CHECK-OUT AND START-UP PROCEDURE HAS BEEN COMPLETED



DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE

Note:
 All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes



Accessory - Commercial Rooftop Air Conditioning Units (Midrange)

Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

NOTES:

- 1 ALL WIRING AND COMPONENTS SHOWN DASHED TO BE SUPPLIED AND INSTALLED BY THE CUSTOMER IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.
- 2 CUSTOMER CONNECTIONS - MAIN UNIT CONTROL (CIRCUIT #1) - ARE LOCATED IN THE CONDENSER SECTION FOR 20 THRU 75 TON UNITS.
- 3 SEE CUSTOMER CONNECTION WIRE RANGE TABLE FOR ACCEPTABLE WIRE SIZES FOR CONNECTION TO MAIN UNIT TERMINAL BLOCK (1TB1/4TB2) OR DISCONNECT SWITCH (1S14/4S15).
- 4 WIRES TO THE OPTIONAL STEAM AND/OR HOT WATER HEAT VALVE ARE SUPPLIED WITH THE UNIT. WIRE CONNECTIONS TO THE VALVE TO BE MADE BY THE CUSTOMER.
- 6 OPTIONAL 5U57 REMOTE ZONE TEMP SENSOR IS USED FOR UNOCCUPIED HEAT/COOL TEMP CONTROL SENSING.
- 7 WHEN 5U69 REMOTE ZONE TEMP SENSOR IS USED, REMOVE 5U58 INTEGRAL ZONE TEMP SENSOR ATTACHED TO TERMINALS S1 AND S2.
- 8 WIRES USE SHIELDED TWISTED PAIR WIRE
- 9 USE SHIELDED TWISTED PAIR WIRE. WRAP SHIELDS WITH TAPE TO PREVENT CONTACT WITH GROUND.
- 10 REMOVE JUMPER (1TB4-15 & 1TB4-16) AND INSTALL HIGH DJCT TEMP T-STAT /OR FIELD SUPPLIED DEVICE.
- 11 REMOVE JUMPER (1TB4-17 & 1TB4-18) WHEN FIELD SUPPLIED EXTERNAL AUTO/STOP SWITCH (5S67) IS INSTALLED.
- 12 CHANGEOVER (5K87) AVAILABLE ONLY ON HYDRONIC HEAT UNITS OR MODULATING GAS HEAT UNITS.
- 13 ALARM OUTPUT SWITCHES ON ANY MANUAL RESET DIAGNOSTIC.
- 14 OPTIONAL HEAT MODULE AUX. TEMP (5RT16) IS USED FOR MORNING WARM-UP CONTROL ON UNITS WITH HEATING OPTION.
- 15 TERMINAL BLOCK 1TB17 AND ASSOCIATED WIRING REQUIRED WITH GBAS (1U51) OPTION. DEMAND LIMIT RELAY (5K89) TO BE PROVIDED BY CUSTOMER.
- 16 VENTILATION OVERRIDE MODE CONTACTS RATED 12MA @ 24VDC MINIMUM (5K90 - 5K91 - 5K92 - 5K93 - 5K94) TO BE PROVIDED BY CUSTOMER.
- 17 WIRE NODES 533 & 534 REQUIRED WITH BAS/NETWORK COMM MODULE (1U54) OPTION. USE SHIELDED TWISTED PAIR WIRE.
- 18 FIELD CONNECTIONS TO DRIVE VAV BOXES FULL OPEN DURING NIGHT SETBACK MODE
- 19 15A FUSE REPLACEMENT IS REQUIRED FOR 50 THRU 60 TON - 0.50 KVA TRANSFORMER WITH 200V - 230V - 460V OR 575V UNIT VOLTAGE
20A FUSE REPLACEMENT IS REQUIRED FOR 50 THRU 60 TON - 0.50 KVA TRANSFORMER WITH 380V OR 415V UNIT VOLTAGE.
- 21 CONTACTS RATED 12 MA @ 24VDC MINIMLM.
- 22 CONNECT TO 24VAC CLASS 2 CIRCUITS ONLY.
- 23 REMOVE JUMPER WHEN OPTIONAL FIELD SUPPLIED OUTSIDE AIR SENSOR (3RT3) IS INSTALLED AND THE UNIT DOES NOT HAVE ECONOMIZER.
- 24 FIELD SUPPLIED AND INSTALLED OCCUPIED/UNOCCUPIED CONTACTS (5K88) FOR USE ON UNITS WITHOUT REMOTE PANEL WITH NIGHT SETBACK (5U58).
- 25 GBAS 0-5V OPTION CONNECTIONS.
- 26 GBAS 0-10V OPTION CONNECTIONS.
- 27 FOR GBAS INPUTS A11-A14, "GBAS 0-5V" REQUIRES 0-5V VDC AND "GBAS 0-10V" REQUIRES 0-10VDC
- 28 "ACTIVE DIAGNOSTICS (B05)" APPEARS WITH BOTH "GBAS 0-5V" AND "GBAS 0-10V".
- 29 SEE FUSE REPLACEMENT TABLE ON VFD PANEL FOR VFD POWER FUSES (F40, F41, F42).
- 30 SWITCH A53, LOCATED ON THE VFD, MUST BE SET TO "U" (OFF).

Accessory - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

FUSE REPLACEMENT TABLE												
CONDENSER FAN FUSE 1F1 THRU 1F6 CLASS RK5	UNIT VOLTAGE	200	230	380	415	460	575					
	TIME DELAY	25A	25A	15A	15A	15A	15A					
CONTROL POWER FUSE												
CONTROL (1T1) TRANSFORMER RATING		0.25 KVA	0.30 KVA	0.50 KVA	0.75 KVA	1.00 KVA	1.50 KVA					
1F7 CLASS CC - TYPE FNQ-R	20-30 TON	6.25A	6.25A	--	10A	--	--					
	40 TON	15A	20A	--	20A	--	--					
	50-60 TON	--	--	15A	--	20A	--					
	70-75 TON	--	--	--	--	15A	20A					
ELECTRIC HEAT FUSE	4F19 THRU 4F36, 4F46, 47, 48			CLASS K5		60A						
COMPRESSOR PROTECTION FUSE	1F44 & 1F45			TYPE MTH		6A						
TRANSFORMER CIRCUIT FUSE	1F72 THRU 1F74			TYPE FNQ-R		15A						
VFD PROTECTION FUSES (CLASS "T" FUSES) OPTIONAL SUPPLY VFD 1F57 - 1F62, OPTIONAL EXHAUST / RETURN VFD 1F63-1F65												
BELT DRIVE MOTOR 20-130 UNITS	UNIT VOLTAGE	FUSE RATING	3 HP	5 HP	7.5 HP	10 HP	15 HP	20 HP	25 HP	30 HP	40 HP	50 HP
	200V/60/3	600V	40A	60A	80A	100A	150A	200A	225A	300A	350A	N/A
	230V/60/3	600V	30A	45A	70A	90A	125A	175A	200A	250A	300A	N/A
	380V/50/3	600V	15A	30A	45A	50A	90A	100A	125A	150A	200A	N/A
	415V/50/3	600V	15A	30A	45A	50A	90A	100A	125A	150A	200A	N/A
	460V/60/3	600V	15A	25A	35A	45A	60A	90A	100A	125A	150A	200A
575V/60/3	600V	15A	15A	25A	35A	50A	70A	60A	100A	125A	175A	
OPTIONAL DIRECT DRIVE MOTOR 20-59 UNITS	UNIT VOLTAGE	FUSE RATING	3 HP	5 HP	7.5 HP	10 HP	15 HP 1K-1.6K RPM	15 HP 1.7K-2.4K RPM	20 HP	25 HP	30 HP	
	200V/60/3	600V	40A	60A	80A	100A	150A	150A	200A	225A	300A	
	230V/60/3	600V	25A	45A	70A	90A	125A	125A	175A	200A	260A	
	460V/60/3	600V	15A	25A	35A	45A	70A	60A	90A	100A	125A	
	575V/60/3	600V	15A	15A	25A	35A	50A	50A	70A	80A	100A	
OPTIONAL DIRECT DRIVE MOTOR 60-89 TON	UNIT VOLTAGE	FUSE RATING	10HP	15 HP 1K-1.6K RPM	15 HP 1.7K-2.4K RPM	20HP	30 HP 1K-1.6K RPM	30 HP 1.7-2.4K RPM	40HP	50HP		
	200V/60/3	600V	125A	175A	160A	200A	300A	150A	350A	N/A		
	230V/60/3	600V	95A	150A	125A	175A	250A	250A	300A	N/A		
	460V/60/3	600V	45A	70A	60A	90A	125A	125A	150A	200A		
	575V/60/3	600V	40A	90A	50A	70A	125A	100A	125A	175A		
CUSTOMER CONNECTION WIRE RANGE												
NOTES: A. BLOCK SIZE & DISCONNECT SIZE ARE CALCULATED BY SELECTING THE SIZE GREATER THAN OR EQUAL TO 1.15 X (SUM OF UNIT LOADS). SEE UNIT LITERATURE FOR UNIT LOAD VALUES.	UNITS WITH MAIN POWER TERMINAL BLOCK (ALL VOLTAGES)						UNITS WITH MAIN POWER DISCONNECT SWITCH (ALL VOLTAGES)					
	BLOCK SIZE	WIRE QTY	CONNECTOR WIRE RANGE				DISCONNECT SIZE	WIRE QTY	CONNECTOR WIRE RANGE			
	335 AMP	(1)	#6 - 350 MCM				100 AMP	(1)	#14 - 1/0			
	760 AMP	(2)	#4 - 500 MCM				250 AMP	(1)	#4 - 350 kcmil			
	840 AMP	(2)	#2 - 600 MCM				400 AMP	(1) OR	#1 - 800 kcmil OR			
							(2)		#1 - 250 kcmil			
							600 AMP	(2)	250 - 500 MCM			
						1000 AMP	(3)	3/0 - 500 kcmil				
OPTIONAL CONVENIENCE OUTLET FUSE		200V/60/3	230V/60/3	380V/50/3	415V/50/3	460V/60/3	575V/60/3					
1F55 AND 1F56 (TIME DELAY TYPE FNQ-R FUSE)		12A	10A	N/A	N/A	5A	4A					

Accessory - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

<p>⚠ WARNING HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE. FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.</p>	<p>⚠ AVERTISSEMENT TENSION DANGEREUSE! COUPER TOUTES LES TENSIONS ET OUVRIR LES SECTIONNEURS A DISTANCE, PUIS SUIVRE LES PROCEDURES DE VERROUILLAGE ET DES ETIQUETTES AVANT TOUTE INTERVENTION. VERIFIER QUE TOUS LES CONDENSATEURS DES MOTEURS SONT DECHARGES. DANS LE CAS D'UNITES COMPORTANT DES ENTRAINEMENTS A VITESSE VARIABLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAINEMENT POUR DECHARGER LES CONDENSATEURS. NE PAS RESPECTER CES MESURES DE PRECAUTION PEUT ENTRAINER DES BLESSURES GRAVES POUVANT ETRE MORTELLES.</p>	<p>⚠ ADVERTENCIA ¡VOLTAJE PELIGROSO! DESCONECTE TODA LA ENERGIA ELECTRICA, INCLUSO LAS DESCONEXIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGURESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO PARA LAS UNIDADES CON EJE DE DIRECCION DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR. EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRIA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.</p>
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CAUTION
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 FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT

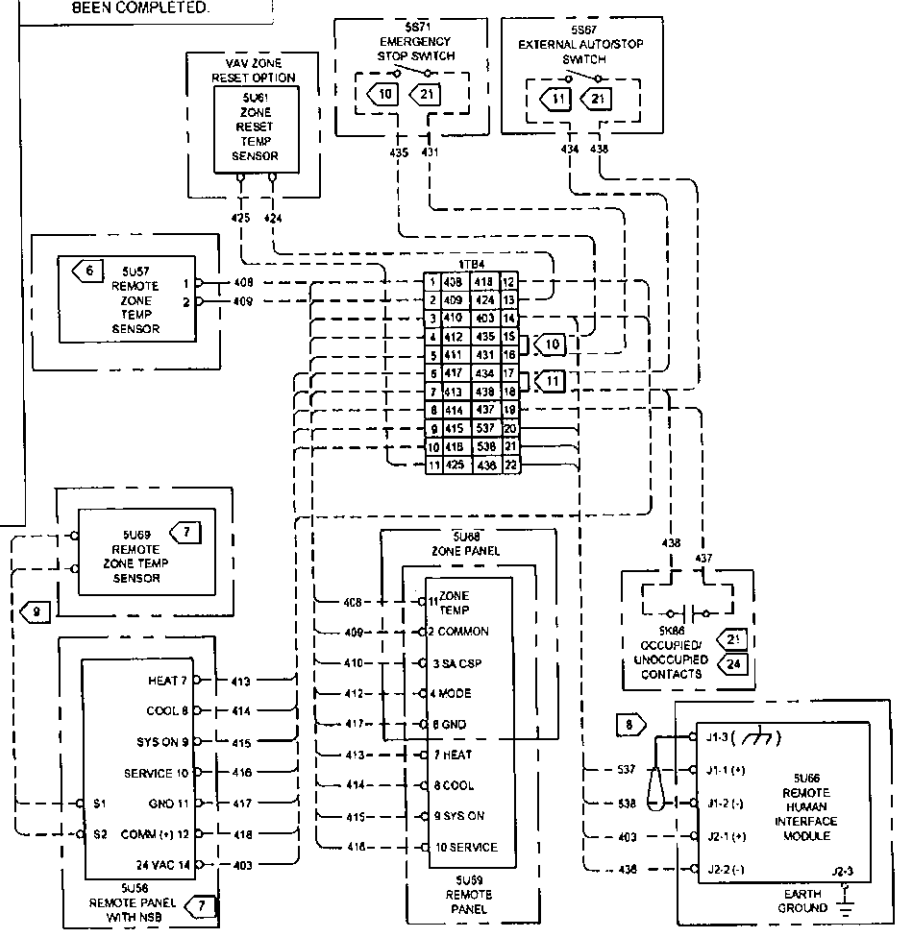
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PRECAUCION
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IMPORTANT!
 DO NOT ENERGIZE UNIT UNTIL CHECK-OUT AND START-UP PROCEDURE HAS BEEN COMPLETED.

DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE

Note:
 All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes.



Accessory - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

<p>⚠ WARNING HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE. FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.</p>	<p>⚠ AVERTISSEMENT TENSION DANGEREUSE! COUPER TOUTES LES TENSIONS ET OUVRIER LES SECTIONNEURS A DISTANCE, PUIS SUIVRE LES PROCEDURES DE VERROUILLAGE ET DES ETIQUETTES AVANT TOUTE INTERVENTION. VERIFIER QUE TOUS LES CONDENSATEURS DES MOTEURS SONT DECHARGES. DANS LE CAS D'UNITES COMPORTANT DES ENTRAINEMENTS A VITESSE VARIABLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAINEMENT POUR DECHARGER LES CONDENSATEURS. NE PAS RESPECTER CES MESURES DE PRECAUTION PEUT ENTRAINER DES BLESSURES GRAVES POUVANT ETRE MORTELLES.</p>	<p>⚠ ADVERTENCIA VOLTAJE PELIGROSO! DESCONECTE TODA LA ENERGIA ELECTRICA, INCLUSO LAS DESCONEXIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGURESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCION DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR. EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRIA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.</p>
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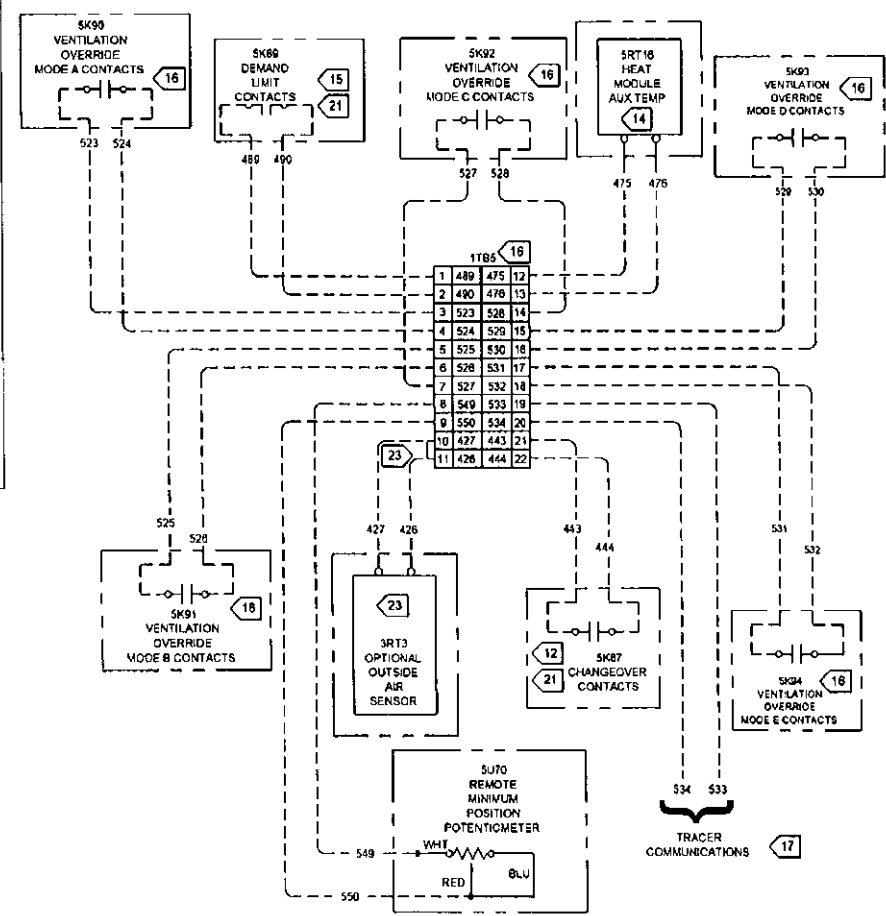
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AREA	LOCATION
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Note:
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Accessory - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

<p>⚠ WARNING HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.</p>	<p>⚠ AVERTISSEMENT TENSION DANGEREUSE! COUPER TOUTES LES TENSIONS ET OUVRIR LES SECTIONNEURS A DISTANCE, PUIS SUIVRE LES PROCEDURES DE VERROUILLAGE ET DES ETIQUETTES AVANT TOUTE INTERVENTION. VERIFIER QUE TOUTS LES CONDENSATEURS DES MOTEURS SONT DECHARGES. DANS LE CAS D'UNITES COMPORTANT DES ENTRAINEMENTS A VITESSE VARIABLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAINEMENT POUR DECHARGER LES CONDENSATEURS. NE PAS RESPECTER CES MESURES DE PRECAUTION PEUT ENTRAÎNER DES BLESSURES GRAVES POUVANT ETRE MORTELLES.</p>	<p>⚠ ADVERTENCIA VOLTAJE PELIGROSO! DESCONECTE TODA LA ENERGIA ELECTRICA, INCLUSO LAS DESCONEXIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGURESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCION DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR. EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRIA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.</p>
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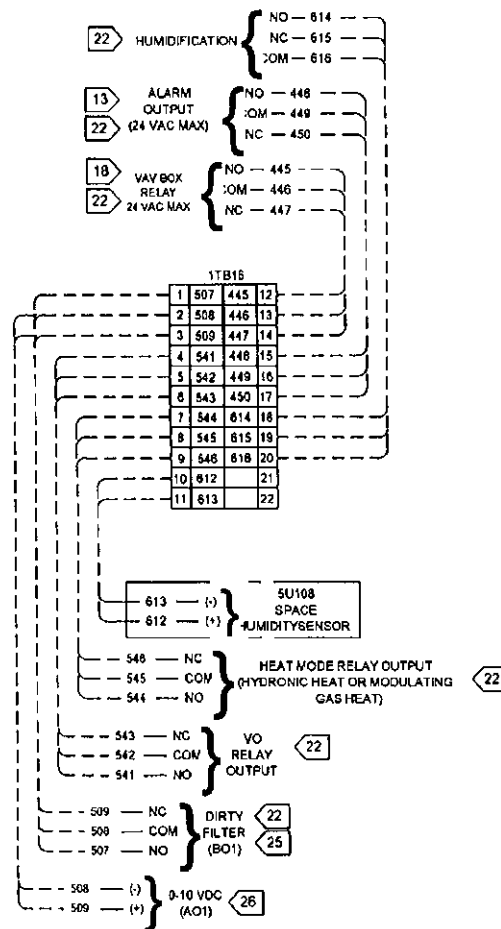
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AREA	LOCATION
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Note:
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Accessory - Commercial Rooftop Air Conditioning Units (Midrange)
Item: A1, A2 Qty: 2 Tag(s): 50 Ton, 75 Ton

DANFOSS VARIABLE FREQUENCY DRIVE PROGRAMMING PARAMETERS			
MENU	PARAMETER	DESCRIPTION	SETTING
LOAD/MOTOR	1-21	MOTOR POWER	SET ONLY FOR APPLICATIONS USING 3-P HIGH EFFICIENCY MOTORS
	1-22	MOTOR VOLTAGE	SET ONLY FOR 200/230V 60HZ 380/415V 50HZ APPLICATIONS
	1-24	MOTOR CURRENT	SET BASED ON MOTOR NAMEPLATE
	1-25	MOTOR NOMINAL SPEED	1800 RPM
	1-73	FLYING START	ENABLED
BRAKES	2-01	DC BRAKE CURRENT	0%
REFERENCE/ RAMPS	3-15	REFERENCE 1 SOURCE	ANALOG INPUT 53 <input type="text" value="30"/>
	3-41	RAMP 1 RAMP UP TIME	30 SECONDS
	3-42	RAMP 1 RAMP DOWN TIME	30 SECONDS
LIMITS/ WARNNGS	4-12	MOTOR SPEED LOW LIMIT	22HZ
	4-18	CURRENT LIMIT	100% RATED CURRENT
DIGITAL IN/OUT	5-40[0]	FUNCTION RELAY 1	NO ALARM
	5-40[1]	FUNCTION RELAY 2	RUNNING
SPECIAL FUNCTIONS	14-01	SWITCHING FREQUENCY	4.5KHZ
	14-12	FUNCTION AT MAINS IMBALANCE	DERATE
	14-20	RESET MODE	AUTOMATIC RESET X 3
	14-60	FUNCTION AT OVER TEMPERATURE	DERATE

Field Installed Options - Part/Order Number Summary

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

Product Family - Commercial Rooftop Air Conditioning Units (Midrange)

Item	Tag(s)	Qty	Description	Model Number
A1	50 Ton	1	50 Ton	SAHLF504

Field Installed Option Description	Part/Ordering Number
Remote human interface	

EXHIBIT "C"

**City of Greenville/Greenville Utilities Commission
Minority and Women Business Enterprise (MWBE) Program**

**City of Greenville
Construction Guidelines and Affidavits
\$100,000 and above**

These instructions shall be included with each bid solicitation.

City of Greenville/Greenville Utilities Commission Minority and Women Business Enterprise Program

\$100,000 and Construction Guidelines for MWBE Participants

Policy Statement

It is the policy of the City of Greenville and Greenville Utilities Commission to provide minorities and women equal opportunity for participating in all aspects of the City’s and Utilities’ contracting and procurement programs, including but not limited to, construction projects, supplies and materials purchases, and professional and personal service contracts.

Goals and Good Faith Efforts

Bidders responding to this solicitation shall comply with the MWBE program by making Good Faith Efforts to achieve the following aspiration goals for participation.

	CITY	
	MBE	WBE
Construction This goal includes Construction Manager at Risk.	10%	6%

Bidders shall submit MWBE information with their bids on the forms provided. This information will be subject to verification by the City prior to contract award. **As of July 1, 2009, contractors, subcontractors, suppliers, service providers, or MWBE members of joint ventures intended to satisfy City MWBE goals shall be certified by the NC Office of Historically Underutilized Businesses (NC HUB) only.** Firms qualifying as “WBE” for City’s goals must be designated as a “women-owned business” by the HUB Office. Firms qualifying as “MBE” for the City’s goals must be certified in one of the other categories (i.e.: Black, Hispanic, Asian American, American Indian, Disabled, or Socially and Economically Disadvantaged). Those firms who are certified as both a “WBE” and “MBE” may only satisfy the “MBE” requirement. **Each goal must be met separately. Exceeding one goal does not satisfy requirements for the other.** A complete database of NC HUB certified firms may be found at <http://www.doa.nc.gov/hub/>. An internal database of firms who have expressed interest to do business with the City and GUC is available at www.greenvillenc.gov. However, the HUB status of these firms must be verified by the HUB database. The City shall accept NCDOT certified firms on federally funded projects only. **Please note: A contractor may utilize any firm desired. However, for participation purposes, all MWBE vendors who wish to do business as a minority or female must be certified by NC HUB.**

The Bidder shall make good faith efforts to encourage participation of MWBEs prior to submission of bids in order to be considered as a responsive bidder. Bidders are cautioned that even though their submittal indicates they will meet the MWBE goal, they should document their good faith efforts and be prepared to submit this information, if requested.

The MWBE’s listed by the Contractor on the **Identification of Minority/Women Business Participation** which are determined by the City to be certified shall perform the work and supply the materials for which they are listed unless the Contractors receive prior authorization from the City to perform the work with other forces or to obtain materials from other sources. If a contractor is proposing to perform all elements of the work with his own forces, he must be prepared to document evidence satisfactory to the owner of similar government contracts where he has self-performed.

Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid
The Contractor shall enter into and supply copies of fully executed subcontracts with each MWBE or supply signed Letter(s) of Intent to the Project Manager after award of contract and prior to Notice to Proceed. Any amendments to subcontracts shall be submitted to the Project Manager prior to execution.

Instructions

The Bidder shall provide with the bid the following documentation:

Identification of Minority/Women Business Participation
(if participation is zero, please mark zero—Blank forms will be considered nonresponsive)

Affidavit A (if subcontracting)

OR

Identification of Minority/Women Business Participation
(if participation is zero, please mark zero—Blank forms will be considered nonresponsive)

Affidavit B (if self-performing; must attest that bidder does not customarily subcontract work on this type of project—includes supplies and materials)

Within 72 hours or 3 business days after notification of being the apparent low bidder who is subcontracting anything must provide the following information:

Affidavit C (if aspirational goals are met or are exceeded)

OR

Affidavit D (if aspirational goals are not met)

After award of contract and prior to issuance of notice to proceed:

Letter(s) of Intent or Executed Contracts

****With each pay request, the prime contractors will submit the Proof of Payment Certification, listing payments made to MWBE subcontractors.**

*****If a change is needed in MWBE Participation, submit a Request to Change MWBE Participation Form. Good Faith Efforts to substitute with another MWBE contractor must be demonstrated.**

Minimum Compliance Requirements:

All written statements, affidavits, or intentions made by the Bidder shall become a part of the agreement between the Contractor and the City for performance of contracts. Failure to comply with any of these statements, affidavits or intentions or with the minority business guidelines shall constitute a breach of the contract. A finding by the City that any information submitted (either prior to award of the contract or during the performance of the contract) is inaccurate, false, or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the City whether to terminate the contract for breach or not. In determining whether a contractor has made Good Faith Efforts, the CITY will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts.

MBForms 2002-
Revised July 2010
Updated 2015

City of Greenville AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- 1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- 2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- 3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- 4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- 5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- 6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- 7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- 8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- 9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- 10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

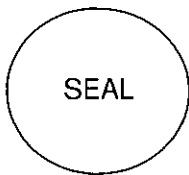
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority/Women Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority/women business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

**City of Greenville --AFFIDAVIT B-- Intent to Perform
Contract with Own Workforce.**

County of _____

Affidavit of _____

(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____
_____ contract.

(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

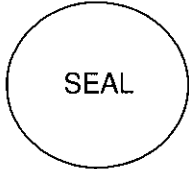
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20__

Notary Public _____

My commission expires _____

City of Greenville - **AFFIDAVIT C** - Portion of the Work to be Performed by MWBE Firms

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by MWBE businesses as defined in GS143-128.2(g) and the COG/CITY MWBE Plan sec. III is equal to or greater than 16% of the bidders total contract price, then the bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises and a minimum of _____% of the total dollar amount of the contract with women business enterprises. Minority/women businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*MWBE Category	Work description	Dollar Value

*Minority categories: Black, African American (B), Hispanic or Latino (L), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (S) Disabled (D)

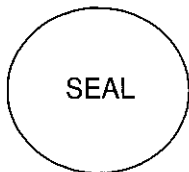
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with MWBE Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

City of Greenville **AFFIDAVIT D – Good Faith Efforts**

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 16% participation by minority/women business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify
that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) _____
Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises and a minimum of _____% of the total dollar amount of the contract with women business enterprises. Minority/women businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*MWBE Category	Work description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic or Latino (**L**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**S**) Disabled (**D**)

Examples of documentation required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster.
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the

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next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with MWBE Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

LETTER OF INTENT MWBE Subcontractor Performance

Please submit this form or executed subcontracts with MWBE firms after award of contract and prior to issuance of notice to proceed.

PROJECT: _____
(Project Name)

TO: _____
(Name of Prime Bidder/Architect)

The undersigned intends to perform work in connection with the above project as a:

___ Minority Business Enterprise ___ Women Business Enterprise

The MWBE status of the undersigned is certified the NC Office of Historically Underutilized Businesses (required). ___ Yes ___ No

The undersigned is prepared to perform the following described work or provide materials or services in connection with the above project at the following dollar amount:

Work/Materials/Service Provided	Dollar Amount of Contract	Projected Start Date	Projected End Date

(Date)

(Address)

(Name & Phone No. of MWBE Firm)

(Name & Title of Authorized Representative of MWBE)

(Signature of Authorized Representative of MWBE)

REQUEST TO CHANGE MWBE PARTICIPATION

(Submit changes only if notified as apparent lowest bidder, continuing through project completion)

Project: _____

Bidder or Prime Contractor: _____

Name & Title of Authorized Representative: _____

Address: _____ **Phone #:** _____

_____ **Email Address:** _____

Total Contract Amount (including approved change orders or amendments): \$ _____

Name of subcontractor: _____

Good or service provided: _____

Proposed Action:

Replace subcontractor

Perform work with own forces

For the above actions, you must provide one of the following reasons (Please check applicable reason):

The listed MBE/WBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract.

The listed MBE/WBE is bankrupt or insolvent.

The listed MBE/WBE fails or refuses to perform his/her subcontract or furnish the listed materials.

The work performed by the listed subcontractor is unsatisfactory according to industry standards and is not in accordance with the plans and specifications; or the subcontractor is substantially delaying or disrupting the progress of the work.

If replacing subcontractor:

Name of replacement subcontractor: _____

The MWBE status of the contractor is certified by the NC Office of Historically Underutilized Businesses (required). Yes No

Dollar amount of original contract \$ _____

Dollar amount of amended contract \$ _____

Other Proposed Action:

Increase total dollar amount of work

Add additional subcontractor

Decrease total dollar amount of work

Other

Please describe reason for requested action: _____

If adding additional subcontractor:*

The MWBE status of the contractor is certified by the NC Office of Historically Underutilized Businesses (required). Yes No

**Please attach Letter of Intent or executed contract document*

Dollar amount of original contract \$ _____

Dollar amount of amended contract \$ _____

Interoffice Use Only:

Approval Y N

Date _____

Signature _____

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Pay Application No. _____
Purchase Order No. _____

Proof of Payment Certification

MWBE Contractors, Suppliers, Service Providers

Project Name: _____

Prime Contractor: _____

Current Contract Amount (including change orders): \$ _____

Requested Payment Amount for this Period: \$ _____

Is this the final payment? ___ Yes ___ No

Firm Name	MWBE Category*	Total Amount Paid from this Pay Request	Total Contract Amount (including changes)	Total Amount Remaining

*Minority categories: Black, African American (B), Hispanic or Latino (L), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (S) Disabled (D)

Date: _____

Certified By: _____

Name

Title

Signature