CITY OF WILMINGTON, NC

BID INVITATION

BIDS ARE DUE:	TUESDAY, SEPTEMBER 16, 2025 by 3:00 PM
MANDATORY PRE-BID CONFERENCE:	**MANDATORY PRE-BID MEETING WILL BE HELD ON AUGUST 25, 2025 10:00 AM LOCATION: 680 SHIPYARD BLVD, WILMINGTON, NC.**
PROJECT:	**REMOVAL AND REPLACEMENT OF HVAC SYSTEMS AT FIRE STATION # 5 - 680 SHIPYARD BLVD.**
CONTRACT NUMBER:	PB-IH-08250
SUBMIT BIDS TO:	SR. CONTRACT SPECIALIST P.O.BOX 1810 929 N. FRONT STREET, 10TH FLOOR WILMINGTON, NC, 28401-1810

COMPANY NAME: _____

ADDRESS: _____

_____

TELEPHONE: _____

EMAIL: _____

LICENSE NO. _____

ADVERTISEMENT FOR BIDS
CITY OF WILMINGTON, NC

REMOVAL AND REPLACEMENT OF HVAC SYSTEM - FIRE STATION #5
680 SHIPYARD BLVD, WILMINGTON, NC

CONTRACT: PB-IH-0825

Sealed bids addressed to Christine R. Karem, Sr. Contract Specialist, at the Purchasing Division P0 Box 1810, 929 N. Front Street, 10th Floor, Wilmington, NC 28401, and marked "REMOVAL AND REPLACEMENT OF HVAC SYSTEM - FIRE STATION #5 will be received until 3:00 pm on September 16, 2025, at the Purchasing Division, 929 N. Front Street, 10ᵘ Floor, Room 1069, Wilmington, NC.

PROJECT DESCRIPTION: Replacement of HVAC system to include roof top Heat Pump, Branch Controller Boxes and (21) Air Handler units.

MANDATORY PRE-BID MEETING WILL BE HELD
ON Monday, August 25, 2025 , AT 10:00 A.M.

LOCATION: 680 SHIPYARD BLVD. WILMINGTON, NC.

MBE/WBE/HUB/DBE OBLIGATION: The City and its contractor agree to ensure that MBE/ WBE/HUB/DBE's have the maximum opportunity to participate in the performance of contract and subcontracts financed in whole or in part with City of Wilmington funds provided under this agreement. ln this regard, bidders and contractors shall take all necessary and reasonable steps in accordance with N.C.G.S. § 143-128 to ensure that MBE/WBE/HUB/ DBE firms have the maximum opportunity to compete and perform under this bid, any change orders and any subsequent contract.

The City of Wilmington and its contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and/or performance of this contract. A complete copy of the City of Wilmington's MBE/DBE policy is available for inspection at the Purchasing Manager's Office.

The City of Wilmington does not discriminate of the basis of race, sex, color, age, national origin, religion or disability in its employment opportunities, programs, services, or activities. Bids for this project shall be guaranteed by all bidders for a period of 90 calendar days following the bid opening.

THE CITY OF WILMINGTON RESERVES THE RIGHT TO REJECT ANY AND ALL BlDS.

Christine R. Karem
Sr. Contract Specialist
August 19, 2025

GENERAL SPECIFICATIONS
&
INSTRUCTIONS TO BIDDERS

Scope

It is the intent of this invitation to obtain bids for the Replacement of HVAC system to include roof top Heat Pump, Branch Controller Boxes and (21) Air Handler units Fire Station #5, 680 Shipyard Blvd. Wilmington, NC as outlined in the scope of
work.

You are requested to submit your bid on the enclosed Bid Sheet and return the entire package to Christine R. Karem, Sr. Contract Specialist, City of Wilmington, Post Office Box 1810, 929 N. Front Street., Floor 10th, Wilmington, North Carolina 28401-1810. Bids must be received no later than Tuesday, September 16 2025 by 3:00 pm.

A Mandatory Pre-bid Conference will be held on Monday, August 25,2025 at 10:00 am at 680 Shipyard Blvd, Wilmington, NC

Marking of Envelopes/Email

Bids must be contained in a sealed envelope, plainly marked, showing the name, Invitation to Bid number, date, time (if time is specified) and the bidder's name. Emailed submissions must include the Project Name and Contract Number in the Subject Line.

Late Bids Will Not Be Considered

Bids received after the due date and time will not be considered.

Compliance with Specifications

Your bid must be in strict compliance with the specifications and offer the same services as requested in the Invitation to Bid.

Price Corrections

All prices and notations shall be written in ink or typed. Changes or corrections made on the bid form must be made by striking through instead of using a liquid cover product and initialed by the individual signing the bid page. No corrections will be permitted once bids have been opened.

Withdrawal of Bids

Bids may be withdrawn at any time prior to the due date and time specified upon written or personal request of the bidder. No bid may be withdrawn for a period of sixty (60) days after the scheduled opening time (if the time is specified) and date. Negligence on the part of the bidder shall not constitute a right to withdraw the bid after the bids have been opened.

Rejection of Bids : The City reserves the right to reject any and all bids.

Award

Award shall be made to the lowest responsible bidder taking into consideration quality, performance and time specified in the bid for the performance of the contract. Firms must be registered with the North Carolina Secretary of State or hold a Certificate of Authority to do business in the State of North Carolina.

If the business operates under an assumed name, what is the assumed name? Has a certificate of assumed name been filed in the New Hanover County Registry?
If so, please provide the recording information. Deed Book _____at Page _____.

The City of Wilmington shall not be responsible for any oral instructions made by its employees or officers of the City in regard to the bidding instructions, drawings, specifications or contract documents.

Responsibility of Compliance with Legal Requirements

The bidder's products, service and facilities shall be in full compliance with any and all applicable state, federal, local, environmental and safety laws, regulations, ordinances and standards or any standards adopted by nationally recognized testing facilities regardless of whether or not they are referred to in this invitation.

Taxes

The City of Wilmington is exempt from and will not pay federal taxes. An exemption certificate will be furnished upon request. North Carolina and local sales tax shall be shown as a separate item. Sales tax will not be a consideration in the award.

Terms and Conditions

Payment will be made by the City of Wilmington within 30 days after receipt of an approved invoice. **Terms and Conditions attached to the bid by the bidder may render the bid non-responsive and may be rejected by the City of Wilmington.**

Terms and Conditions included herein are an integral part of the contract document and shall prevail unless changes or attachments are agreed to in writing by the City of Wilmington prior to the due date and time of the opening of the Bids.

Validity of Bids

Bids shall remain open and valid for a period of ninety (90) days from the due date specified in the Invitation to Bid.

STATE OF NORTH CAROLINA

COUNTY OF NEW HANOVER

AFFIDAVIT AND CERTIFICATE OF
NON-COLLUSION, NON-SUSPENSION AND NON-CONVICTION

The undersigned, being first duly sworn, deposes and says:

1. I understand that for the purposes of this affidavit, the term "bidder" shall include the person(s), firm(s), or corporation(s) signing this affidavit, the undersigned's subcontractor(s), subsidiary(ies) and affiliate(s) and any officer, director, employee or agent of the bidder; and the term "conviction" shall include guilty pleas, pleadings of nolo contendere and similar pleas.

2. This Affidavit and Certificate is made in accordance with Article 3 of Chapter 133 of the North Carolina General Statutes; I certify that this proposal is made without prior understanding, agreement, or connection with any person(s), firm(s), or corporation(s) making bids or proposals; I further certify that the bidder has not entered into any agreement with any other bidder or prospective bidder or with any other person(s), firm(s) or corporation(s) relating to the price named in said proposal, nor any agreement or arrangement under which any person(s), firm(s) or corporation(s) is to refrain from bidding, nor any agreement or arrangement for any act or omission in restraint of free competition among bidders; I understand collusive bidding is a violation of state and federal law and can result in fines, prison sentences, and civil damage awards; and I further certify that the bidder will abide by all terms of this bid or proposal.

3. The bidder is not suspended or debarred from bidding by any federal or state governmental agency that is providing funds for this contract.

4. The bidder is not presently charged in an indictment or information with engaging in any conspiracy, combination, or other unlawful act in restraint of trade or any similar charges in any federal court or a court of this or any other state.

5. The bidder, within one year immediately preceding the date of this affidavit, has not been convicted of charges or engaging in any conspiracy, combination, or other unlawful act in restraint of trade or similar charges in any federal court or a court of this or any other state.

6. If, during the time of this proposal, from the date advertised to the date bids are opened, the bidder is indicted or convicted of bid-rigging, I understand this proposal shall be rejected and not considered for award.

7. I hereby affirm that all information contained in this affidavit is true, correct, accurate and complete, and any untrue, incorrect, inaccurate or incomplete statements will result in the disqualification and rejection of this proposal. I certify that I am authorized to sign this bid and to make the representations set forth herein on behalf of myself and the bidder.

This the _____day of _____ , 2025

COMPANY NAME _____

BY: _____

Owner, Partner, or Corporate President, Vice President or Assistant Vice President only)

ATTEST:

_____

(Secretary, Assistant Secretary, Cashier or Assistant Cashier only)

(CORPORATE SEAL)

(TO BE EXECUTED ON BEHALF OF THE CONTRACTOR)

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public, certify that
(Name)
_____ personally came
(Name of Secretary, Assist. Sec., Cashier, Assist. Cashier)

before me this day and acknowledged that he (she) is _____
(Secretary, Assist. Sec.,
_____ of _____, a
Cashier, Assist. Cashier) (Name of Corporation)

corporation, and that by authority duly given and as the act of the corporation, the foregoing Affidavit

was signed in its name by its _____,
(President, Vice President, Assist. Vice President)

sealed with its corporate seal, and attest by himself (or herself) as its

_____.
(Secretary, Assist. Sec., Cashier, Assist. Cashier)

WITNESS my hand and official seal, this the _____ day of _____, 2025.

_____
Notary Public

My Commission Expires: _____

(NOTARY SEAL)

Rev. 3/98 AFF-MBE.DOC

STATE OF NORTH CAROLINA

COUNTY OF NEW HANOVER

AFFIDAVIT of COMPLIANCE with N.C. E-VERIFY STATUTES

I, _____ (hereinafter the "Affiant"), duly authorized by and on behalf of _____ (hereinafter the "Employer") after being first duly sworn deposes and says as follows:

1. I am the _____ (President, Manager, CEO, etc.) of the Employer and possess the full authority to speak for and on behalf of the Employer identified above.

2. Employer understands that "E-Verify" means the federal E-Verify program operated by the United States Dept. of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law.

3. ____ Employer employs 25 or more employees in the State of North Carolina, and is in compliance with the provisions of N.C. Gen. Stat. §64-26. Employer has verified the work authorization of its employees through E-Verify and shall retain the records of verification for a period of at least one year.

____ Employer employs fewer than 25 Employees and is therefore not subject to the provisions of N.C. Gen. Stat. §64-26.

4. All subcontractors engaged by or to be engaged by Employer have or will have likewise complied with the provisions of N.C. Gen. Stat. §64-26.

5. Employer shall keep the City of Wilmington informed of any change in its status pursuant to Article 2 of Chapter 64 of the North Carolina General Statutes.

Further this affiant sayeth not.

This the _____ day of _____, 20____.

_____
Affiant

STATE OF NORTH CAROLINA
COUNTY OF _____

Sworn to and subscribed before me, this the _____ day of _____, 20____.

_____ [NOTARY SEAL]
Notary Public

My commission expires: _____

PROJECT DESCRIPTION:

Title: Removal and Replacement of HVAC System – Fire Station 5

Location of Work: 680 Shipyard Blvd.

INTRODUCTION:

The City of Wilmington is seeking proposals from qualified vendors for the replacement of HVAC system at the location shown above per the plans provided. The HVAC systems to be replaced consist of a Heat Pump on the roof feeding Branch Controller Boxes and (21) AHUs. The selected professional will be required to provide all documentation necessary for permitting, removing, and replacing portions of the HVAC systems. Documentation for eligible Duke Rebates shall also be included with the bids.

SCOPE OF WORK:

Work to be Completed:

BASE BID – Install New HVAC System (As Is).

- Removal of existing HVAC system.
- Removal of dorm room sheetrock ceilings.
    - Work to be coordinated with City staff to ensure continued operational use of the Station.
- Installation of Acoustical Ceiling in the Dorm Rooms
    - Installation of new ceiling grid (color to match existing in station)
    - Installation of new insulation above ceiling tiles.
        - thickness match existing in station
    - Installation of new ceiling tiles (style to match existing in building)
    - Location of existing ceiling items to remain in same general locations. (Lights, ceiling fans, AHUs, etc.)
- Installation of new HVAC System.
    - Install new Mitsubishi Equipment or approved equivalent.
    - Installation of equipment per designed plans provided.
- Reclaim refrigerant, disconnect and haul away existing units
    - Disposal of HVAC units per local regulations.
- Repair and replace any sheetrock due to demo and/or new equipment sizing differences.
    - All ceilings shall be repaired with sheetrock with no gaps around new equipment.
    - All sheetrock shall be mudded and sanded and “Ready for Paint”.
- Replacement of exist thermostats/wall controllers with new.
    - City to retain all old thermostats.
- Removal and Replacement of rectangle AHUs and replace with Square/4-way AHUs.
- Install inline primary drain line safety switch and secondary emergency shutoff switch in drain pan
- Install new insulation tubing
    - Insultube shall be, minimum - 1.5” thick – wall
    - Condenser – New insultube from condenser to the building.
        - **(Do not split insultube)**

        - **Insultube shall enter the PVC where line set enters building.**
        - **Reseal PVC at line set entry.**
        - **Seal/Cover new insultube to protect it from the elements.**
- **Remove and Re-Install existing I-Wave equipment.**
    - **Ensure I-Wave equipment is operational during system start up.**
- Perform Test Adjusting & Balance (TAB) and submit reports.
    - A copy of reports must be included with warranty information at end of project.
- Contractor to take over all temporary HVAC rental units, to include:
    - Rental cost
    - Maintenance cost
    - Delivery and removal cost
    - Any other operational cost as necessary.

ALTERNATE BID #1 – Install New HVAC System with Redundancy

- Removal of existing HVAC system.
- Installation of new HVAC Air Handlers and Condensing Units as **two separate systems.**
    - Install new Mitsubishi Equipment or approved equivalent.
    - Contractor to provide plans for system redundancy to be approved by the City prior to ordering equipment.
- Removal of dorm room sheetrock ceilings.
    - Work to be coordinated with City staff to ensure continued operational use of the Station.
- Installation of Acoustical Ceiling in the Dorm Rooms
    - Installation of new ceiling grid (color to match existing in station)
    - Installation of new insulation above ceiling tiles.
        - Thickness match existing in station
    - Installation of new ceiling tiles (style to match existing in building)
    - Location of existing ceiling items to remain in same general locations. (Lights, ceiling fans, AHUs, etc.)
- Installation of new HVAC System.
    - Install new Mitsubishi Equipment or approved equivalent.
- Installation of equipment per approved Contractor designed redundancy plans.
- Reclaim refrigerant, disconnect and haul away existing units
    - Disposal of HVAC units per local regulations.
- Repair and replace any sheetrock due to demo and/or new equipment sizing differences.
    - All ceilings shall be repaired with sheetrock with no gaps around new equipment.
    - All sheetrock shall be mudded and sanded and “Ready for Paint”.
- Replacement of exist thermostats / wall controllers with new.
    - City to retain all old thermostats.
- Removal and Replacement of rectangle AHUs and replace with Square / 4-way AHUs.
- Install inline primary drain line safety switch and secondary emergency shutoff switch in drain pan
- Install new insulation tubing
    - Insultube shall be, minimum - 1.5” thick – wall
    - Condenser – New insultube from condenser to the building.
        - **(Do not split insultube)**
        - **Insultube shall enter the PVC where line set enters building.**
        - **Reseal PVC at line set entry.**
        - **Seal/Cover new insultube to protect it from the elements.**

- **Remove and Re-Install existing I-Wave equipment.**
    - **Ensure I-Wave equipment is operational during system start up.**
- Perform Test Adjusting & Balance (TAB) and submit reports.
    - A copy of reports must be included with warranty information at end of project.

UNIT PRICING – Install Non-Proprietary Building Automated System – (BAS)

- Provide Building Automation System (BAS) HVAC Controls
    - Sequences of operation on all HVAC Equipment
    - Graphics and interface to web access
    - Interface to fire alarm system
    - Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation systems controllers and sensors including back-up/alternate sources and response to loss of control or power.
    - **Provide remote access to BAS Controls System**
- The controls contractor's submittals of control drawings shall include complete detailed sequences of operation for each piece of equipment, regardless of the completeness and clarity of the sequences in the specifications.

    They shall include:
    - An overview narrative of the system generally describing its purpose, components and function.
    - Detailed delineation of control between any packaged controls and the building automation system, listing what points the BAS monitors only and what BAS points are control points and are adjustable.
    - Written sequences of control for packaged controlled equipment. (Equipment manufacturers' stock sequences may be included, but will generally require additional narrative).
    - Start-up sequences.
    - Warm-up mode sequences.
    - Normal operating mode sequences.
    - Unoccupied mode sequences.
    - Shutdown sequences.
    - Capacity control sequences and equipment staging, as interfaced with the dedicated system.
    - Temperature and pressure control: setbacks, set-ups, resets, etc.
    - Detailed sequences for all control strategies, e.g., economizer control, optimum start/stop, staging, optimization, demand limiting, etc.
    - Effects of power or equipment failure with all stand-by component functions.
    - Sequences for all alarms and emergency shutdowns.
    - Seasonal operational differences and recommendations.
    - Initial and recommended values for all adjustable settings, set points and parameters that are typically set or adjusted by operating staff; and any other control settings or fixed values, delays, etc. that will be useful during testing and operating the equipment.
    - Schedules, if known.
    - To facilitate referencing in testing procedures, all sequences shall be written in small statements, each with a number for reference. For a given system, numbers will not repeat for different sequence sections, unless the sections are numbered.

- A key to all abbreviations used.
- Contain graphic schematic depictions of the systems and each component.
- The schematics will include the system and component layout of any equipment that the control system monitors, enables or controls, even if the equipment is primarily controlled by packaged or integral controls.
- Provide a full points list with at least the following included for each point:
    - 1)Controlled system
    - 2)Point abbreviation
    - 3)Point description (e.g., DB temp, airflow, relative humidity, static pressure, etc.)
    - 4)Display unit
    - 5)Control point or set point (Point that controls equipment and can have its set point changed, e.g., OAT, SAT, etc.) (Yes/No)
    - 6)Monitoring point (Point that does not control or contribute to the control of equipment, but is used for operation, maintenance or performance verification.) (Yes/No)
    - 7) Intermediate point (Point whose value is used to make a calculation which then controls equipment, e.g., space temperatures that are averaged to a virtual point to control reset.) (Yes/No)
    - 8) Calculated point ("Virtual" point generated from calculations of other point values.) (Yes/No)
    - 9) Control dead bands and any applicable times for feedback control loops

- An updated as-built version of the control drawings and sequences of operation shall be included in the final controls O&M manual submittal. A copy of the Controls O&M final submission, including as-built control drawings and sequences of operations will be provided to the Project Manager not less than 3 weeks prior to beginning Functional Performance Testing to allow for final development of Test procedures and forms.
- Assist and cooperate with the Project Manager in the following manner:
    - Using a skilled technician who is familiar with this building, execute the functional testing of the controls system as specified for the controls contractor. Assist in the functional testing of all equipment. Provide two-way radios / communication during the testing.
    - Execute all control system trend logs specified.
- The controls contractor shall prepare a written plan indicating in a step-by-step manner, the procedures that will be followed to test, checkout and adjust the control system prior to functional performance testing. At a minimum the plan shall include, for each type of equipment controlled by the automatic controls:
    - System name.
    - List of devices.
        - Step-by-step procedures for testing each controller after installation, including:
        - Process of verifying proper hardware and wiring installation.
        - Process of downloading programs to local controllers and verifying that they are addressed correctly.
        - Process of performing operational checks of each controlled component.
    - Plan and process for calibrating valve and damper actuators and all sensors.
        - Sensor and Actuator Calibration
            - All field-installed temperature and pressure sensors and gages, and all actuators (dampers and valves) on all equipment shall be calibrated. Verify that all locations are appropriate and away from

causes of erratic operation (i.e. unstable flow conditions, other heat sources, vibration, emf, and rf interference). Submit to the Project Manager through the owner the calibration methods and results. Sensors installed in a piece of equipment at the factory with a current calibration certificate provided need not be field calibrated. Provide bench testing as required at the direction of the Project Manager.

- All procedures used shall be fully documented on the pre-functional checklists or other suitable forms, clearly referencing the procedures followed and written documentation of initial, intermediate and final results.
- Sensor Calibration Methods
    - All Sensors: Verify that all sensor locations are appropriate and away from causes of erratic operation (i.e. unstable flow conditions, other heat sources, vibration, emf and rf interference). Verify that sensors with shielded cable are grounded only at one end (at ground shield buss or isolated ground). For sensor pairs that are used to determine a temperature or pressure difference, make sure they are reading within 0.2°F of each other for temperature and within a tolerance equal to 2% of the reading, of each other, for pressure.
    - Sensors without Transmitters: Standard Application. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or Building Automation System (BAS) is within the tolerances in the table below of the instrument-measured value over the full range of expected control. If not, install offset in the BAS, calibrate or replace sensor.
    - Sensors with Transmitters: Standard Application. Disconnect sensor. Connect a signal generator in place of sensor. Connect ammeter in series between transmitter and BAS control panel. Using manufacturer's resistance-temperature data, simulate minimum desired temperature. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the BAS. Record all values and recalibrate controller as necessary to conform with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction. Reconnect sensor. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or BAS is within the tolerances in the table below of the instrument-measured value. If not, replace sensor and repeat. For pressure sensors, perform a similar process with a suitable signal generator.
- A description of the expected field adjustments for transmitters, controllers and control actuators should control responses fall outside of expected values.
- A copy of the log and field checkout sheets that will document the process. This log must include a place for initial and final read values during field calibration of each point and clearly indicate when a sensor or controller has "passed" and is operating within the contract parameters.
- Description of the instrumentation required for testing.

- Upon completion of the checkout of each controlled device, equipment and system and prior to functional testing, provide a signed and dated certification to the Project Manager and GC that all system programming is complete.

- Beyond the control points necessary to execute all documented control sequences, provide monitoring, control and virtual points as specified in Section 230900.
- List and clearly identify on the as-built duct and piping drawings the locations of all pressures static and differential pressure sensors (air, water, and building pressure).

DETAILS:

- Contract duration shall be 90 days from Notice to Proceed. (NTP)
- Bid must reflect the estimated energy savings we should expect with the new units. Contractors should base this information on the rating of the old unit compared to the new unit and offer a specific percentage of savings.
- **Base Bid** to include cost to replace HAVC system as currently installed.
- **Alternate #1** to include installation cost for redundancy systems.
- **Unit Pricing Cost** to include installation cost for Building Automated System (BAS)
- Equipment must meet or exceed the minimum requirements to qualify for Duke Energy Smart $aver HVAC Rebates.
- Smart $aver rebate details available at www.duke-energy.com/savemoney
- Contractor is responsible for filling out and submitting all rebate paperwork.
- **Contractor shall provide product specification sheets with their bid proposals.**
- The bid must include all material, supplies, and equipment to complete the work required.
- **The bid will be awarded to the lowest responsive and responsible bidder.**
- Perform Test and Balance testing to ensure proper air flow of replacement equipment.
- Provide copies of Test and Balance Reports to owner.
- Restore any walls, floors, or roofs penetrated by the new systems.
- Provide 1-year labor and material guarantee for all material & equipment.
- Provide extended 4-year warranty on all compressors for a total of 5 years' coverage.
- Provide onsite owner training.
- Remove all jobsite related debris from site daily.
- The contractor is responsible for all permits and inspections.
- Inspection schedules to be communicated with owner prior to completing.
- Provide Liability and Worker's Compensation Insurance certificate with City of Wilmington as additional insured.
- All work must be performed in accordance with federal, state, and local codes including, but not limited to, IBC, IMC & NEC.
- Each party submitting a proposal shall possess all necessary local licenses as are required by law, at the time of installation.
- Contractor agrees to maintain cleanliness of OWNERS property and shall clean up, remove, and dispose of all debris associated with this work.
- Contractor agrees to restore any walls, floors, or property damaged during demo or installation of new equipment to previous condition.
- All work, including start-up of equipment, is to be performed during regular working hours (7am – 5pm). After hour work will be coordinated with and approved by the OWNER.
- Any vendor submitting a proposal must be a vendor on record with the City of Wilmington. Vendor applications can be found at:

http://www.wilmingtonnc.gov/departments/finance-department/doing-business-with-the-city

SPECIAL INSTRUCTIONS:

(1) Delivery will be a factor in the evaluation of this Request for Quotation.
(2) All prices quoted shall remain firm for a period of sixty (60) days after the due date of the quotation.
(3) All quotes should include any required NC Sales Tax.
(4) Provide unit documentation with quotes.

CITY OF WILMINGTON

NORTH CAROLINA

PROPOSAL FOR
REPLACEMENT OF HVAC SYSTEMS
AT FIRE STATION #5 -
680 SHIPYARD BLVD.
CONTRACT NO. PB-IH-0825

1. The undersigned, having carefully examined the site of the proposed work, the entire Bidding Document, including but not limited to the Advertisement, General Specifications, Project Description, Insurance Requirements, MBE/WBE/HUB/DBE requirements and Standard Details attached hereto, all of which are fully understood and hereby agreed to, proposes to furnish all materials, labor, equipment and plant necessary to complete in-place the specified improvements, in strict accordance with the above mentioned bidding documents.

2. Where an interpretation as to specifications is necessary, or as to the character of the work performed, or as to further instructions relating to the work, before or during construction, the undersigned bidder hereby agrees that (hereinafter called "PROJECT MANAGER") shall be the authority and his word shall be final.

3. The prices, as stated, are for the work completed and also to include all charges and expenses for furnishing all labor, materials, equipment and plant for completing the specified work in the manner specified in the specifications, and according to the instructions of the PROJECT MANAGER, unless otherwise shown in the Bid.

4. If awarded this contract, the undersigned agrees to begin construction on the date to be specified in the written order by the Purchasing Manager and to complete all work within 90 calendar days of the date of beginning.

5. The undersigned hereby certifies that this Bid is made without connection with any person or persons making bids or bids for the above work, and that the bid is in all respects fair and without collusion or fraud.

6. The undersigned understands and agrees that all extra work shall be done and paid for as provided under the applicable sections of the specifications. In the event that extra work is necessary, the percentage to be added to the actual payroll cost to cover Social Security, small hand tools, office overhead on labor management only, Workmen's Compensation Insurance and other insurance for labor costs shall be 5% percent.

All extra work shall be done using actual payroll and material costs, and a profit of ten percent (10%) of the total cost shall be added thereto. All items of materials shall be billed to the CITY on the extra work invoice, and a delivery slip from the vendor shall be submitted therewith to verify actual cost. No additional profit will be allowed on materials other than the normal overall ten percent (10%) above stated. Items not provided for above shall be agreed upon between the CONTRACTOR and the PROJECT MANAGER prior to invoicing.

7. The undersigned understands that, if awarded this contract, he must guarantee, for a period of one year after date of final payment, all work accomplished under this contract to the extent that he will repair any defects due to faulty workmanship, or materials which may appear in his work during this period.

8. The undersigned supplies the information recorded below for use in the preparation of the contract documents, in event of contract award:

8.1 Please indicate type of business organization:

(a) Proprietorship _____
(b) Partnership _____
(c) Corporation _____
(d) Limited Liability Co. _____

8.2 If business is a Corporation, please answer the following questions:

Name and title of officers, authorized by Corporate Resolution, who will execute the contract on behalf of corporation (generally President and Secretary).

_____

Firm is incorporated in what state?

_____

If firm is a foreign corporation, does firm have a certificate of authority from the North Carolina Secretary of State? _____

8.3 If business is a Partnership, please answer the following:

Name in full or all general partners and addresses:

_____ Is this a limited or general partnership? _____

If a limited partnership, what is state of registration? _____

If business is a foreign limited partnership, does business have a certificate of authority from the North Carolina Secretary of State? _____

8.4 If business is a Proprietorship, please answer the following:

Name of owner: _____

8.5 If business is a limited liability company, please answer the following:

List the names and title of managers or member-managers who will execute the contract on behalf of the company? _____

What is state of organization? _____

If business is a foreign limited liability company, does business have a certificate of authority from the North Carolina Secretary of State? _____

8.6 For all bidders:

If the business operates under an assumed name, what is the assumed name? _____

Has a certificate of assumed name been filed in the New Hanover County Registry? _____

If so, please provide the recording information. Deed Book _____ at Page _____.

9. Insurance Requirements

Before commencing any work, the CONTRACTOR shall procure insurance in the CONTRACTOR'S name and maintain all insurance policies for the duration of the contract of the types and in the amounts listed. The insurance shall provide coverage against claims for injuries to persons or damages to property which may arise from operations or in connection with the performance of the work hereunder by the CONTRACTOR, his agents, representatives, employees, or subcontractors, whether such operations by himself/herself or anyone directly or indirectly employed by him/her.

(a) COMMERCIAL GENERAL LIABLLITY

(1) CONTRACTOR shall maintain Commercial General Liability (CGL) and if necessary, Commercial Umbrella Liability insurance with a total limit of not less than $1,000,000.00 each occurrence for bodily injury and property damage. If such CGL insurance contains a general aggregate limit, it shall apply separately to this project/location or the general aggregate shall be twice the required limit.

(2) CGL insurance shall be written on Insurance Services Office ([SO) "occurrence" form CG 00 01 covering Commercial General Liability or its equivalent and shall cover the liability arising from premises, operations, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract).

(3) The City of Wilmington, its officers, officials, agents, and employees are to be covered as additional insureds during and until completion of the work, under the CGL by endorsement CG 20 IO or an endorsement providing equivalent coverage as respects to liability arising out of activities performed by or on behalf of the CONTRACTOR; premises owned, leased or used by the CONTRACTOR; and under the commercial umbrella, if any. The coverage shall contain no special limitations on the scope of protection afforded to the City of Wilmington, its officers, officials, agents, and employees. Additional insured status for both ongoing and completed operations, in favor of City of Wilmington, its officers, officials, agents and employees, will be carried by Subcontractor performing installation.

(4) There shall be no endorsement or modification of the CGL or Umbrella Liability limiting the scope of coverage for liability arising from explosion, collapse, underground property damage, or damage to the named insured's work, when those exposures exist.

(5) The CONTRACTOR'S Commercial General Liability insurance shall be primary as respects the City of Wilmington, its officers, officials, agents, and employees. Any other insurance or self-insurance maintained by the City of Wilmington, its officers, officials, and employees shall be excess of and not contribute with the CONTRACTOR'S insurance.

(6) The insurer shall agree to waive all rights of subrogation against the City of Wilmington, its officers, officials, agents and employees for losses arising from work performed by the CONTRACTOR for the City of Wilmington.

(b) WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY

(b) WORKERS' COMPENSATION AND EMPLOYERS LIABILITY

(I) CONTRACTOR shall maintain Workers' Compensation as required by the general statutes of the State of North Carolina and Employer's Liability Insurance.

(2) The Employer's Liability, and if necessary, Commercial Umbrella Liability insurance shall not be less than $500,000 each accident for bodily injury by accident, $500,000 each employee for bodily injury by disease, and $500,000 policy limit.

(3) The insurer shall agree to waive all rights of subrogation against the City of Wilmington, its officers, officials, and employees for losses arising from work performed by the CONTRACTOR for the City of Wilmington.

(c) BUSINESS AUTO UABILITY

(I) CONTRACTOR shall maintain Business Auto Liability and, if necessary,

Commercial Umbrella Liability insurance with a limit of not less than $1,000,000 each accident.

(2) Such insurance shall cover liability arising out of any auto, including owned, hired, and non-owned autos.

(3) Business Auto coverage shall be written on ISO form CA 00 0I, or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in ISO form CA 00 01.

(4) Pollution liability coverage equivalent to that provided under the ISO pollution liability-broadened coverage for covered autos endorsement (CA 99 48) shall be provided, and the Motor Carrier Act endorsement (MCS 90) shall be attached when those exposures exist.

(5) CONTRACTOR waives all rights against the City of Wilmington, its officers, officials, agents and employees for recovery of damages to the extent these damage are covered by the business auto liability or commercial umbrella liability insurance obtained by CONSULTANT pursuant to Section I1.C.1 of this agreement.

(6) The CONTRACTOR'S Business Auto Liability insurance shall be primary as respects the City of Wilmington, its officers, officials, agents, and employees. Any other insurance or self-insurance maintained by The City of Wilmington, its officers, officials, and employees shall be excess of and not contribute with the CONTRACTOR'S insurance.

(d) DEDUCTIBLES AND SELF-INSURED RETENTIONS.

The contractor shall be solely responsible for the payment of all deductibles to which such policies are subject, whether or not The City of Wilmington is an insured under the policy.

(e) MISCELLANEOUS INSURANCE PROVISIONS.

The policies are to contain, or be endorsed to contain, the following provisions:

(I) Each insurance policy required by this contract shall be endorsed to state that coverage shall not canceled by either party except after 30 days prior written notice has been given to The City of Wilmington, PO Box 1810, Wilmington, NC 28402-1810.

(2) If CONTRACTOR'S liability policies do not contain the standard ISO separation of insureds provision, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

(f) ACCEPTABILITY OF INSURERS.

Insurance is to be placed with insurers licensed to do business in the State of North Carolina with an A.M. Best's rating of no less than A Vll unless specific approval has been granted by The City of Wilmington.

(g) EVIDENCE OF INSURANCE

(I) The CONTRACTOR shall furnish The City of Wilmington with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements prior to commencing the work, and thereafter upon renewal or replacement of each certified coverage until all operations under this contract are deemed complete.

(2) Evidence of additional insured status shall be noted on the certificate of insurance.

(3) With respect to insurance maintained after final payment in compliance with requirements, an additional certificate(s) evidencing such coverage shall be provided to The City of Wilmington with final application for payment and thereafter upon renewal or replacement of such insurance until the expiration of the period for which such insurance must be maintained.

(h) SUBCONTRACTORS

CONTRACTOR shall include all subcontractors as insureds under its policies or shall furnish separate certificates for each subcontractor. All coverage for subcontractors shalI be subject to alI of the requirements stated herein. Commercial General Liability coverage shall include independent CONTRACTORS' coverage, and the CONTRACTOR shall be responsible for assuring that all subcontractors are properly insured. Additional insured status for both ongoing and completed operations, in favor of City of Wilmington, its officer, officials, agents and employees, wiII be carried by Subcontractor performing installation.

(i) CONDITIONS

(I) The insurance required for this contract must be on forms acceptable to The City of Wilmington.

(2) The CONTRACTOR shall provide that the insurance contributing to satisfaction of insurance requirements in shall not be canceled, terminated or modified by the CONTRACTOR without prior written approval of The City of Wilmington.

(3) The CONTRACTOR shall promptly notify the Safety & Risk Manager at (910) 341- 5864 of any accidents arising in the course of operations under the contract causing bodily injury or property damage.

(4) Failure of The City of Wilmington to demand a certificate of insurance or other evidence of full compliance with these insurance requirements or failure of The City of Wilmington to

identify a deficiency from evidence that is provided shall not be construed as a waiver of CONTRACTOR'S obligation to maintain such insurance.

(5) By requiring insurance herein, The City of Wilmington does not represent that coverage and limits will necessarily be adequate to protect the CONTRACTOR and such coverage and limits shall not be deemed as a limitation of CONTRACTOR'S liability under the indemnities granted to The City of Wilmington in this contract.

(6) The City of Wilmington shall have the right, but not the obligation of prohibiting CONTRACTOR or any subcontractor from entering the project site or withhold payment until such certificates or other evidence that insurance has been placed in complete compliance with these requirements is received and approved by The City of Wilmington.

BID SUBMITTAL (PAGE 1)

In accordance with the terms, conditions and specifications, I/we, as authorized signatory to commit the firm, do hereby accept in total all the terms and conditions stipulated and referenced in this ITB document and hereby submit the following prices:

BASE BID – New System as is with New Equipment						
	Item Description	**Units**	**Quantity**	**18 Seer**	**Duke Rebate**	**Total Cost**
1.	Demolition of existing HVAC Air Handlers and Condensing Unit	Lump Sum	1			$
2.	Installation of new HVAC Air Handlers and Condensing Unit	Lump Sum	1	N/A	$	$
3.	Sheet Rock Repair	Lump Sum	1			$
4.	Remove and Replace Dorm Ceilings	Lump Sum	1			$
5.	Test and Balance Report	Lump Sum	1			$
6.	Take over Temporary HVAC Rentals	Lump Sum	1			$
7.					Total Cost $	
8.	Duke Rebate YES____ or NO_____ (Place a check mark)			Total Duke Rebate $		
9.	TOTAL QUOTE PRICE Including Duke Rebates $					
10.	Total Cost in Words:					
Warranty Period:				Length of Project: 90 Days		
Brand of Equipment Quoted:						

ALTERNATE BID #1 – Install New System with Redundancy						
	Item Description	**Units**	**Quantity**	**18 Seer**	**Duke Rebate**	**Total Cost**
11.	Demolition of existing HVAC Air Handlers and Condensing Unit	Lump Sum	1			$
12.	Installation of new HVAC Air Handlers and Condensing Units as two separate systems	Lump Sum	1	N/A	$	$
13.	Sheet Rock Repair	Lump Sum	1			$
14.	Remove and Replace Dorm Ceilings	Lump Sum	1			$
15..	Test and Balance Report	Lump Sum	1			$
16.	Take over Temporary HVAC Rentals	Lump Sum	1			$
17.					Total Cost $	
18.	Duke Rebate YES___ or NO ____ (Place a check mark)			Total Duke Rebate $		
19.	Total Cost including Rebates for Redundancy System $					
20.	Total Cost for Redundancy System in Words:					
Warranty Period:				Length of Project: 90 Days		
Brand of Equipment Quoted:						
UNIT PRICING – Install NON-PROPRIATARY Building Automated System – (BAS)						
21.	Building Automated System (BAS) – Installed per Base Bid	Lump Sum	1			$

22.	**Total Cost of BAS per Base Bid $**				
23.	**Total Cost for BAS per Base Bid in Words:**				
24.	**Building Automated System (BAS) – Installed per Alternate #1 - Redundancy**	**Lump Sum**	**1**		**$**
25.	**Total Cost of BAS per Alternate #1 - Redundancy $**				
36.	**Total Cost for BAS per Alternate #1 - Redundancy in Words:**				

Warranty Period:	**Length of Project: 90 Days**
Brand of Equipment Quoted:	

BID SUBMITTAL SHEET (Page 2)

ACKNOWLEDGEMENT OF DOCUMENTS:

A. The undersigned Bidder acknowledges receipt of and use of the following Documents in the preparation of this Bid:

1. Affidavit of Non-Colluison (2 pages)
2. Affidavit of Compliance with N.C. E-Verify Statues (1 page)
3. Bid Submittal Forms (11 Pages)

The undersigned Bidder acknowledges that the following required documents are a part of this Bid Submission Sheet and are attached hereto:

1. Bid Submittal Forms (P-1- P-11)
2. Business Information including business name, tax ID #, vendor # (if applicable), contact information
3. Cut/Spec Sheets including warranty information
4. Three references of similar size and scope
5. Proposed time frame for the work
6. City of Wilmington Vendor Application Packet (only if necessary)

Company Name: _____

Company Address: _____

City/State/Zip: _____

Telephone Number: _____ Fax Number: _____

E-mail: _____

License Number: _____

Signature: _____ Date: _____

Name (Print): _____ Title: _____

Expected Date to Begin Work: _____ Length of Project: _____

REPLACEMENT WARRANTY:_____

The undersigned acknowledges receipt of any issued Addendum(s) to this Project by recording the Addendum number and date acknowledged below:

Addendum #1:_____ Date: _____
Addendum #2:_____ Date:_____
Addendum #3:_____ Date:_____

DIFFUSERS, REGISTERS AND GRILLES SCHEDULE

DRAWING CODE	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	ALTERNATE APPROVED MANUFACTURERS	TYPE	SERVICE	NECK SIZE (IN.)	MODULE SIZE (IN.)	MATERIAL	FINISH	MOUNTING	NOTES	ACCESSORIES
S1	PRICE	ASPD	METALAIRE, TITUS	SQUARE FLANGE CEILING DIFFUSER	SUPPLY	6	24x24	ALUMINUM	WHITE	T-BAR	1,2	-
S2	PRICE	ASPD	METALAIRE, TITUS	SQUARE FLANGE CEILING DIFFUSER	SUPPLY	8	24x24	ALUMINUM	WHITE	T-BAR	1,2	-
S3	PRICE	ASPD	METALAIRE, TITUS	SQUARE FLANGE CEILING DIFFUSER	SUPPLY	10	24x24	ALUMINUM	WHITE	T-BAR	1,2	-
S4	PRICE	PCDN	METALAIRE, TITUS	PERFORATED DIFFUSER	SUPPLY	10	24x24	ALUMINUM	WHITE	T-BAR	1,2,3	-
E1	PRICE	630	METALAIRE, TITUS	FIXED FACE GRILLE	EXHAUST	12x12	12x12	ALUMINUM	WHITE	CEILING SURFACE	1	-
E2	PRICE	630	METALAIRE, TITUS	FIXED FACE GRILLE	EXHAUST	24x24	24x24	ALUMINUM	WHITE	T-BAR	1	-

NOTES:
1. REFER TO SPECIFICATION SECTION 233713 DIFFUSERS,REGISTERS AND GRILLES FOR FURTHER INFORMATION.
2. DUCT BRANCH CONNECTION SIZE TO BE EQUAL TO THE NECK SIZE OF DIFFUSER UNLESS NOTED OTHERWISE ON PLANS.
3. NO FACE DEFLECTOR.

ACCESSORIES: A. -

GAS-FIRED UNIT HEATER SCHEDULE

DRAWING CODE	DESIGN BASIS MFR	MODEL	ALTERNATE APPROVED MFRS	FUEL	TYPE			GAS			CONNECTIONS			MIN. AIRFLOW	MOTOR		VOLTAGE	FLA	MCA	MOCP	MAX. MTG.	WEIGHT	NOTES	ACCESSORIES
					FAN	COMBUSTION / CONTROL	VENTING	INPUT (BTUH)	OUTPUT (BTUH)	EFF.(%)	GAS (IN)	INTAKE (IN)	VENT (IN)	(CFM)	HP	RPM	(V/PH/HZ)	(AMPS)	(AMPS)	(AMPS)	HEIGHT (FT.)	(LBS)		
GUH01	MODINE	PTC85	MCQUAY, TRANE	NATURAL GAS	PROPELLER	ENCLOSED / SINGLE STAGE	POWERED	85,000	79,050	93	1/2	3	3	1,850	1/8	1550	120/1/60	2.2	4.35	15	13.0	125	1,2	A,B
GUH02	MODINE	PTC85	MCQUAY, TRANE	NATURAL GAS	PROPELLER	ENCLOSED / SINGLE STAGE	POWERED	85,000	79,050	93	1/2	3	3	1,850	1/8	1550	120/1/60	2.2	4.35	15	13.0	125	1,2	A,B

NOTES:
1. REFER TO SPECIFICATION SECTION 235533.16 - GAS FIRED UNIT HEATERS FOR FURTHER INFORMATION.
2. VENT IN ACCORDANCE WITH BUILDING CODE AND MANUFACTURER'S INSTRUCTIONS.

ACCESSORIES:
A. WALL MOUNT SINGLE STAGE THERMOSTAT.
B. AGA APPROVED REGULATOR, 2PSI TO 12".

POWER VENTILATOR SCHEDULE

DRAWING CODE	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	ALTERNATE APPROVED MFRS	FAN TYPE	SERVICE	CAPACITIES				ELECTRICAL					SONES	WEIGHT (LBS.)	NOTES	ACCESSORIES
						AIRFLOW (CFM)	ESP (IN. WG.)	DRIVE ARRANGEMENT	FAN RPM	MOTOR TYPE	MOTOR SIZE (HP)(W-WATTS)	V/PH/HZ	FLA	MOCP				
PV01	GREENHECK	RDU-24-630-A30	TWIN CITY, PENNBARRY	UPBLAST PROPELLER ROOF EXHAUST FAN	EXHAUST	8,800	0.50	DIRECT	1725	PSC	3-HP	208/3/60	10.6	15	53	205	1	A,B,C,D,E
PV02	GREENHECK	SQ-95-D	TWIN CITY, PENNBARRY	IN-LINE CENTRIFUGAL FANS	SUPPLY	600	0.38	DIRECT	1546	ECM	0.125-HP	115/1/60	3.4	15	8.1	65	1, 2	B,F
PV03	FANTECH	FG 6M EC	TWIN CITY, PENNBARRY	IN-LINE CENTRIFUGAL FANS	SUPPLY	35	0.38	DIRECT	1266	-	75-W	115/1/60	0.625	15	-	15	1	B,F,G

NOTES:
1. REFER TO SPECIFICATION SECTION 233423 - HVAC FANS FOR FURTHER INFORMATION.
2. INTERLOCK WITH KITCHEN HOOD FAN SWITCH.

ACCESSORIES:
A. BIRDSCREEN.
B. BACKDRAFT DAMPER
C. INTERLOCK FAN OPERATION WITH SAFEAIR CONTROL PANEL AT DIRECTION OF SAFEAIR CORPORATION MANUFACTURER'S REPRESENITIVE.
D. CORROSION RESISTANCE COATING, COLOR SELECTED BY ARCHITECT.
E. MATCHING ROOF CURB.
F. FAN MOUNTED SPEED CONTROL.
G. SWITCH FOR FAN OPERATION, PROVIDED AND WIRED BY E.C., M.C. TO PROVIDE SWITCH LABEL "VENTILATION".

ELECTRIC UNIT HEATER SCHEDULE

DRAWING CODE	DESIGN BASIS MANUFACTURER	MODEL	ALTERNATE APPROVED MANUFACTURERS	TYPE		ELECTRIC COIL		SUPPLY AIR	FAN MOTOR		ELECTRICAL				WEIGHT (LBS)	MOUNTING HEIGHT (FT)	NOTES	ACCESSORIES
				FAN	DISCHARGE	CAPACITY (KW)	STEPS	AIRFLOW (CFM)	SPEED (RPM)	MOTOR (HP)	POWER (V/PH/HZ)	FLA	MCA	MOCP				
EUH01	QMARK	E3323TD-RP	INDEECO, MARKEL	PROPELLER	HORIZONTAL	1.5	1	175.0	600.0	-	120/1/60	12.5	12.5	20	26	3.5	1	A,B

NOTES: 1. REFER TO SPECIFICATION SECTION 238300 - ELECTRIC HEATING APPLIANCES FOR FURTHER INFORMATION.

ACCESSORIES:
A. FACTORY INSTALLED THERMOSTAT.
B. WALL MOUNT BRACKET

VEHICLE EXHAUST REMOVAL SYSTEM SCHEDULE

DRAWING CODE	MANUFACTURER	MODEL	FAN							FILTRATION				WEIGHT	NOTES	ACCESSORIES
			TYPE	AIRFLOW (CFM)	DRIVE TYPE	TSP (IN H20)	MOTOR (HP)	VOLTAGE (V/PH/HZ)	FLA (AMP)	PRE FILTER PLEAT - MERV-8	MAIN FILTER HEPA - MERV-14	GAS FILTER CARBON - 28-LBS	AFTER FILTER PLEAT - MERV-8	OPERATING (LBS)		
ACD1	SAFEAIR CORPORATION	FHAC-3000	CENTRIFUGAL	3,000	DIRECT	1.6	1.0	208/1/60	6.00	24"x24"x4"	24"x24"x12"	24"x24"x12"	24"x24"x2"	300	1,2	A,B,C,D
ACD2	SAFEAIR CORPORATION	FHAC-3000	CENTRIFUGAL	3,000	DIRECT	1.6	1.0	208/1/60	6.00	24"x24"x4"	24"x24"x12"	24"x24"x12"	24"x24"x2"	300	1,2	A,B,C,D
ACD3	SAFEAIR CORPORATION	FHAC-3000	CENTRIFUGAL	3,000	DIRECT	1.6	1.0	208/1/60	6.00	24"x24"x4"	24"x24"x12"	24"x24"x12"	24"x24"x2"	300	1,2	A,B,C,D

NOTES:
1. EQUIPMENT FURNISHED BY OWNER. SCHEDULE FOR INFORMATION ONLY.
2. MECHANICAL CONTRACTOR SHALL PROVIDE CONTROL WIRING AT THE DIRECTION OF ACS AND SAFEAIR CORPORATION MANUFACTURER'S REPRESENTATIVE.

ACCESSORIES:
A. CONTROL PANEL.
B. AIR CLEANER DRIVE SWITCHES.
C. ACTIVATION DEVICES.
D. CO/NO2 DEVICES.

ROOF HOOD SCHEDULE

DRAWING CODE	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	APPROVED MANUFACTURERS	TYPE	CONSTRUCTION MATERIAL	ROOF CURB		SCREENING		FINISH	CAPACITIES AND CHARACTERISTICS								NOTES	ACCESSORIES
						CONFIGURATION	HEIGHT (IN.)	TYPE	MATERIAL		HEIGHT (IN.)	WIDTH (IN.)	DEPTH (IN.)	DIAMETER (IN.)	FREE AREA (SQ. FT.)	AIR VOLUME (CFM)	AIR VELOCITY (FPM)	PRESSURE DROP (IN. WG.)		
RV01	GREENHECK	GRSI-36	TWIN CITY, PENNBARRY	INTAKE VENTILATOR	ALUMINUM	FLAT	12	BIRD	GALVANIZED	POWDER COAT	23	56.75	56.75	-	7.29	8,800	1,207	0.363	1	A,B,C
RV02	GREENHECK	GRSI-15	TWIN CITY, PENNBARRY	INTAKE VENTILATOR	ALUMINUM	FLAT	12	BIRD	GALVANIZED	POWDER COAT	10	-	-	29	1.12	600	536	0.047	1	A,C,D
RV03	GREENHECK	GRSI-8	TWIN CITY, PENNBARRY	INTAKE VENTILATOR	ALUMINUM	FLAT	12	BIRD	GALVANIZED	POWDER COAT	8	-	-	20.5	0.37	35	95	0.002	1	A,B,C
RV04	GREENHECK	GRSI-12	TWIN CITY, PENNBARRY	EXHAUST VENTILATOR	ALUMINUM	FLAT	12	BIRD	GALVANIZED	POWDER COAT	10	-	-	29	0.57	600	1,053	0.008	1	A,C

NOTES: 1. REFER TO SPECIFICATION SECTION 233723 - GRAVITY HOODS AND LOUVERS FOR FURTHER INFORMATION.

ACCESSORIES:
A. ROOF CURB.
B. 24V DAMPER, INTERLOCK OPERATION WITH SAFEAIR VENTILATION CONTROL PANEL.
C. CORROSION RESISTANCE COATING, COLOR SELECTED BY ARCHITECT.
D. PROVIDE DAMPER AND 120V ACTUATOR. INTERLOCK WITH FAN PV02.

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

CLIMATE ZONE	3A
WINTER DRY BULB:	23°F
SUMMER DRY BULB	95°F
INTERIOR DESIGN CONDITIONS	
WINTER DRY BULB	70°F
SUMMER DRY BULB	75°F
RELATIVE HUMIDITY	50% RH*
	*DESIGN- NOT CONTROLLED
BUILDING HEATING LOAD:	145MBH
BUILDING COOLING LOAD:	171MBH
APPARATUS BAY HEATING LOAD:	78MBH
MECHANICAL SPACING CONDITIONING SYSTEM	SEE SCHEDULES
UNITARY	
DESCRIPTION OF UNIT:	SEE SCHEDULES
HEATING EFFICIENCY:	SEE SCHEDULES
COOLING EFFICIENCY:	SEE SCHEDULES
SIZE CATEGORY OF UNIT:	SEE SCHEDULES
BOILER	
SIZE CATEGORY, IF OVERSIZED STATE REASON:	N/A
CHILLER	
SIZE CATEGORY, IF OVERSIZED STATE REASON:	N/A
LIST EQUIPMENT EFFICIENCIES:	SEE SCHEDULES

ENERGY SUMMARY

ENERGY REQUIREMENTS:

THE FOLLOWING DATA SHALL BE CONSIDERED MINIMUM AND ANY SPECIAL ATTRIBUTE REQUIRED TO MEET THE ENERGY CODE SHALL ALSO BE PROVIDED. EACH DESIGNER SHALL FURNISH THE REQUIRED PORTIONS OF THE PROJECT INFORMATION FOR THE PLAN DATA SHEET. IF PERFORMANCE METHOD, STATE THE ANNUAL ENERGY COST FOR THE STANDARD REFERENCE DESIGN VS ANNUAL ENERGY COST FOR THE PROPOSED DESIGN.

CLIMATE ZONE: 3A

METHOD OF COMPLIANCE:

X PRESCRIPTIVE (ENERGY CODE)
PERFORMANCE (ENERGY CODE)
PRESCRIPTIVE (ASHRAE 90.1)
PERFORMANCE (ASHRAE 90.1)

THERMAL ENVELOPE

ROOF CEILING ASSEMBLY (EACH ASSEMBLY)

DESCRIPTION OF ASSEMBLY:	INSIDE SURFACE RESISTANCE, 1/2" GYPSUM BOARD, AIR SPACE, METAL DECKING, RIGID BOARD INSULATION, MEMBRANE ROOFING, OUTSIDE SURFACE RESISTANCE
U-VALUE OF TOTAL ASSEMBLY:	.024 BTU/HR/SF/F
R-VALUE OF INSULATION:	R-38 (HR-SF-F)/BTU
SKYLIGHTS IN EACH ASSEMBLY:	-
U-VALUE OF SKYLIGHT:	-
TOTAL SQ.FT OF SKYLIGHTS IN EA. ASSEMBLY:	-

EXTERIOR WALLS (EACH ASSEMBLY)

DESCRIPTION OF ASSEMBLY:	INSIDE SURFACE RESISTANCE, 5/8" GYPSUM BOARD, R-19 BATT INSULATION, 5/8" GYPSUM BOARD, RIGID BOARD INSULATION, AIR SPACE, 4 INCH FACE BRICK, OUTSIDE SURFACE RESISTANCE
U-VALUE OF TOTAL ASSEMBLY:	.048 BTU/HR/SF/F
R-VALUE OF INSULATION:	R-19+R-10 (HR-SF-F)/BTU
OPENINGS (WINDOWS OR DOORS WITH GLAZING)	
U-VALUE OF TOTAL ASSEMBLY	0.45 BTU/HR/SF/F
SHADING COEFFICIENT:	0.29
PROJECTION FACTOR:	<0.5
DOOR R-VALUES:	R-3 (HR-SF-F)/BTU

WALLS BELOW GRADE (EACH ASSEMBLY)

DESCRIPTION OF ASSEMBLY:	N/A
U-VALUE OF TOTAL ASSEMBLY:	N/A
R-VALUE OF INSULATION:	N/A

FLOORS OVER UNCONDITIONED SPACE (EACH ASSEMBLY)

DESCRIPTION OF ASSEMBLY:	INSIDE SURFACE RESISTANCE, 1/2"PLYWOOD SHEATHING, R-30 BATT INSULATION, 1/2" PLYWOOD SHEATHING, OUTSIDE SURFACE RESISTANCE
U-VALUE OF TOTAL ASSEMBLY:	0.040 BTU/HR/SF/F
R-VALUE OF INSULATION:	R-30 (HR-SF-F)/BTU

FLOORS SLAB ON GRADE

DESCRIPTION OF ASSEMBLY:	4" CONCRETE SLAB
U-VALUE OF TOTAL ASSEMBLY:	0.9 BTUH/HR/SF/F
R-VALUE OF INSULATION:	0 (HR-SF-F)BTU
HORIZONTAL/VERTICAL REQUIREMENT	N/A
SLAB HEATED:	NO

MECHANICAL LEGEND

ACD#	AIR CLEANING DEVICE UNIT NUMBER
AH#	AIR HANDLING UNIT NUMBER
AP	ACCESS PANEL
BC#	BRANCH CIRCUIT CONTROLLER NUMBER
BTUH	BRITISH THERMAL UNIT PER HOUR
CFM	CUBIC FEET PER MINUTE
COP	COEFFICIENT OF PERFORMANCE FACTOR
DEG. F	DEGREES FAHRENHEIT
DOAS#	DEDICATED OUTSIDE AIR SYSTEM NUMBER
EAT	ENTERING AIR TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
EUH#	ELECTRIC UNIT HEATER NUMBER
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
GUH#	GAS UNIT HEATER NUMBER
HP	HORSEPOWER
HP#	HEAT PUMP UNIT NUMBER
IN.	INCHES
KW	KILOWATT
L#	LOUVER NUMBER
LAT	LEAVING AIR TEMPERATURE
MBH	1000 BRITISH THERMAL UNIT
MCA	MINIMUM CIRCUIT AMPACITY
MOCP	MAXIMUM OVERCURRENT PROTECTION
PV#	POWER VENTILATOR NUMBER
R#	RETURN GRILLE NUMBER
RV#	ROOF VENTILATOR UNIT NUMBER
RPM	ROTATIONS PER MINUTE
S#	SUPPLY DIFFUSER NUMBER
SEER	SEASONAL ENERGY EFFICIENCY RATIO
WG	WATER GAUGE
(T)	THERMOSTAT

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NCB P-0506

NORTH CAROLINA PROFESSIONAL SEAL 10592 ENGINEER JAMES R. BENSON III
9/20/16

PROJECT TITLE

CITY OF WILMINGTON FIRE DEPARTMENT

FIRE STATION No. 5
680 SHIPYARD BLVD.
WILMINGTON, NC

SHEET TITLE

MECHANICAL SCHEDULES, MECHANICAL AND ENERGY SUMMARIES, LEGEND

ISSUE BLOCK

MARK	DATE	DESCRIPTION

PROJECT NO: 2015028.00
DATE: 8/01/2016
SCALE:
DRAWN BY: GRM | PROJ MGR: JRB

M001

SINGLE PACKAGE DEDICATED OUTDOOR AIR UNIT SCHEDULE

DRAWING CODE	DESIGN BASIS MFR	MODEL	ALTERNATE APPROVED MFR	SYSTEM TYPE	SA/OA FAN				RA/EA FAN				ERV HX SUMMER			DX COOLING			HG REHEAT		ERV HX WINTER			DX HEATING			ELECTRIC HEAT				ELECTRICAL				NOTES	ACCESSORIES
					SA (CFM)	OA (CFM)	ESP (IN H2O)	MOTOR (HP)	RA (CFM)	EA (CFM)	ESP (IN H2O)	MOTOR (HP)	SA EAT °F/°Fwb	RA EAT °F/°Fwb	SA LAT °F/°Fwb	SA LAT °F/°Fwb	TOT CAP (MBH)	EFFICIENCY	SA LAT °F	CAP (MBH)	SA EAT °F	RA EAT °F	SA LAT °F	SA LAT °F	TOT CAP (MBH)	EFFICIENCY	VOLTAGE (V/PH/HZ)	SA LAT °F	INPUT (KW)	MCA (AMPS)	MOCP (AMPS)	VOLTAGE (V/PH/HZ)	MCA (AMPS)	MOCP (AMPS)	WEIGHT (LBS)		
DOAS01	VALENT	VPRE-110-5J-10E-C-1DE	AAON, ADDISON	HEAT PUMP	1000	1000	0.50	1.00	700	700	0.75	0.50	95.0/80.0	75.0/62.5	83.1/70.5	50.2/49.8	64.3	EER 9.9	84.1	33.8	23.0/17.7	72.0/55.9	52.1/42.9	86.6	37.3	COP 2.2	208/3/60	83.5	10.0	34.7	35.0	208/3/60	37.6	50.0	2386	1,2	A,B,C,D,E,F,G,H,I,J

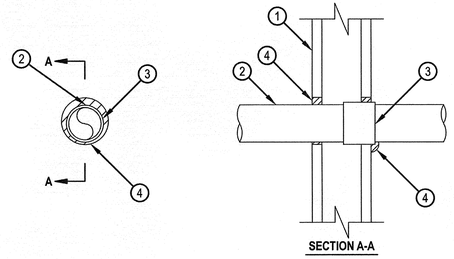
NOTES:
1. REFER TO SPECIFICATION SECTION 237433 DEDICATED OUTDOOR UNITS FOR FURTHER INFORMATION.
2. EFFICIENCY RATED IN ACCORDANCE WITH ANSI/AHRI STANDARD 340/360.

ACCESSORIES:
A. INSULATED FLOOR AND DRAIN PAN.
B. OA DAMPER WITH MODULATING ACTUATOR.
C. RA DAMPER WITH MODULATING ACTUATOR.
D. EA DAMPER - GRAVITY.
E. SEPARATE DISCONNECT FOR ELECTRIC HEAT.
F. FILTERS: HOOD-1" ALUMINUM, SUPPLY-4"MERV 14 WITH MERV 8, OUTDOOR-2" ALUMINUM, EXHAUST-2"MERV 8.
G. CORROSION RESISTANT COATING ON EVAPORATOR COIL, HOT GAS REHEAT COIL AND CONDENSER COIL.
H. MODULATING HOT GAS REHEAT.
I. SCR CONTROLLED ELECTRIC HEAT.
J. WEB BROWSER CONTROL INTERFACE.

CLASSIFIED
Classified by Underwriters Laboratories, Inc. to UL 1479

WL 2482

System No. W-L-2482
F Rating — 1 Hr
T Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating at 400 F — 4 CFM/Sq Ft



1. Wall Assembly — The 1 hour fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL fire Resistance Directory and shall include the construction features noted below:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Diam of opening shall be 1 in (25 mm) larger than nom pipe diameter.
2. Through Penetrants — One nonmetallic pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe and the periphery of the opening shall be min 0 in. (point contact) to a max 5/8 in. (16 mm). The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) cellular or solid core Schedule 40 (or heavier) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
3. Nonmetallic Pipe Coupling — (Optional) - Pipe coupling to be the same size and type of pipe and installed such that one end of coupling is flush with either side of wall assembly and extending outward. As an alternate, the coupling may be recessed into annular space within the opening on either side of the wall.
4. Fill, Void or Cavity Material* - Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At point contact location, a min 1/2 in. (13 mm) diam bead of fill material shall be applied to the wall/penetrant interface on both surfaces of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.
+ Bearing the UL Listing Mark

HILTI
Hilti Firestop Systems

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January 23, 2015

HEAT PUMP OUTDOOR UNIT SCHEDULE

DRAWING CODE	LOCATION	INDOOR UNIT(S)	DESIGN BASIS MFR	MODEL	ALTERNATE APPROVED MFRS	COOLING		HEATING		MIN EER	MIN COP	ELECTRICAL			REFRIGERANT			WEIGHT (LBS)	NOTES	ACCESSORIES
						TOTAL (MBH)	OAT (°F)	TOTAL (MBH)	OAT (°F)			VOLTAGE (V/PH/HZ)	MCA (AMPS)	MOCP (AMPS)	TYPE	CAPACITY - ODU (LBS)	CAPACITY - SYSTEM (EST) (LBS)			
HP01	SEE PLANS	AH1.1 THRU AH1.21	MITSUBISHI	PURY-P168TLMU-A-BS	DAIKIN, LG	168.0	95.0	188.0	23.0	11.2	3.49	208/3/60	68.0	110	R-410A	-	-	705	1,2,3,4	A,B

NOTES:
1. REFER TO SPECIFICATION SECTION 238126 - VARIABLE CAPACITY HEAT PUMP HEAT RECOVERY AIR CONDITIONING SYSTEM.
2. LISTED COOLING CAPACITIES ARE NOMINAL BASED ON INDOOR COIL EAT OF 80/67°F (DB), OUTDOOR OF 95°F (WB)
3. LISTED HEATING CAPACITIES ARE NOMINAL BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 23°F (WB)
4. REFER TO SCHEMATIC PIPING/CONTROL DIAGRAM ON DRAWING M-004 FOR INDICATION OF REQUIRED INDOOR UNIT REMOTE CONTROLLERS, SYSTEM CONTROLLERS, AND INTEGRATION DEVICES.

ACCESSORIES:
A. MANUFACTURER'S STANDARD SEACOAST PROTECTION.
B. ROOF MOUNTING RAILS AS SHOWN IN DETAILS.

HEAT PUMP INDOOR AIR HANDLER SCHEDULE

DRAWING CODE	BC CONTROLLER (MODEL #)	OUTDOOR UNIT	DESIGN BASIS	MODEL	ALTERNATE APPROVED MFGS	CONFIGURATION	NOMINAL COOLING CAPACITY (MBH)	NOMINAL HEATING CAPACITY (MBH)	SUPPLY AIRFLOW MIN-MAX (CFM)	VOLTAGE / PHASE	ELECTRICAL MCA/MOCP	WEIGHT (LBS)	NOTES	ACCESSORIES
AH1.1	BC01	HP01	MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.2			MITSUBISHI ELECTRIC	PMFY-P08NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	8.0	9.0	258-328	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.3			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.4			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.5			MITSUBISHI ELECTRIC	PLFY-P08NCMU-ER4	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - FOUR WAY SUPPLY	8.0	9.0	280-350	208/230V/1	0.29/15	45	1,2,3,4	B,C
AH1.6			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.7			MITSUBISHI ELECTRIC	PLFY-P12NCMU-ER4	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - FOUR WAY SUPPLY	12.0	13.5	320-390	208/230V/1	0.35/15	45	1,2,3,4	B,C
AH1.8			MITSUBISHI ELECTRIC	PLFY-P18NBMU-ER2	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - FOUR WAY SUPPLY	18.0	20.0	494-636	208/230V/1	0.64/15	65	1,2,3,4	B,C
AH1.9			MITSUBISHI ELECTRIC	PKFY-P15NHMU-E2	DAIKIN / LG ELECTRONICS	WALL MOUNTED	15.0	17.0	320-413	208/230V/1	0.38/15	30	1,2,3,4	A,C
AH1.10			MITSUBISHI ELECTRIC	PLFY-P12NCMU-ER4	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - FOUR WAY SUPPLY	12.0	13.5	320-390	208/230V/1	0.35/15	45	1,2,3,4	B,C
AH1.11			MITSUBISHI ELECTRIC	PLFY-P12NCMU-ER4	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - FOUR WAY SUPPLY	12.0	13.5	320-390	208/230V/1	0.35/15	45	1,2,3,4	B,C
AH1.12			MITSUBISHI ELECTRIC	PLFY-P08NCMU-ER4	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - FOUR WAY SUPPLY	8.0	9.0	280-350	208/230V/1	0.29/15	45	1,2,3,4	B,C
AH1.13			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.14			MITSUBISHI ELECTRIC	PKFY-P06NBMU-E2	DAIKIN / LG ELECTRONICS	WALL MOUNTED	6.0	6.7	170-210	208/230V/1	0.19/15	25	1,2,3,4	A,C
AH1.15	BC02		MITSUBISHI ELECTRIC	PLFY-P08NCMU-ER4	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - FOUR WAY SUPPLY	8.0	9.0	280-350	208/230V/1	0.29/15	45	1,2,3,4	B,C
AH1.16			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.17			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.18			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.19			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.20			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C
AH1.21			MITSUBISHI ELECTRIC	PMFY-P06NBMU-ER5	DAIKIN / LG ELECTRONICS	CEILING CASSETTE - ONE WAY SUPPLY	6.0	6.7	230-307	208/230V/1	0.25/15	40	1,2,3,4	B,C

NOTES:
1. REFER TO SPECIFICATION SECTION 238126 - VARIABLE CAPACITY HEAT PUMP HEAT RECOVERY AIR CONDITIONING SYSTEM.
2. LISTED COOLING CAPACITIES ARE NOMINAL BASED ON INDOOR COIL EAT OF 80/67°F (DB), OUTDOOR OF 95°F (WB)
3. LISTED HEATING CAPACITIES ARE NOMINAL BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 23°F (WB)
4. REFER TO SCHEMATIC PIPING/CONTROL DIAGRAM ON M005 FOR PIPE SIZES AND REQUIRED INDOOR UNIT REMOTE CONTROLLERS, SYSTEM CONTROLLERS, AND INTEGRATION DEVICES.

ACCESSORIES:
A. CONDENSATE PUMP (CONCEAL AS REQUIRED)
B. BUILT-IN CONDENSATE LIFT MECHANISM
C. PROVIDE WIRED LOCAL CONTROLLER PAR-U01MEDU-J

DUCTLESS SPLIT SYSTEM SCHEDULE

DRAWING CODE (INDOOR)	DRAWING CODE (OUTDOOR)	DESIGN BASIS MFR	MODEL INDOOR UNIT	MODEL OUTDOOR UNIT	ALTERNATE APPROVED MFRS	ARI COOLING 80/67/95		ARI HEATING 70/47	MIN SEER	MIN COP	INDOOR UNIT				OUTDOOR UNIT				NOTES	ACCESSORIES
											FAN	ELECTRICAL		WEIGHT	ELECTRICAL			WEIGHT		
						TOTAL (MBH)	SENS (MBH)	TOTAL (MBH)			SA MIN-MAX (CFM)	VOLTAGE (V/PH/HZ)	MCA (AMPS)	(LBS)	VOLTAGE (V/PH/HZ)	MCA (AMPS)	MOCP (AMPS)	(LBS)		
AH2.1	HP02	MITSUBISHI	MSZ-GE06NA	MXZ-3C24NA	DAIKIN, SANYO	6.0	-	7.2	16.8	3.8	145-399	208/1/60	1	25	208/1/60	15	20	130	1,2	A,B,C,D
AH2.2		MITSUBISHI	MSZ-GE06NA		DAIKIN, SANYO	6.0	-	7.2	16.8	3.8	145-399	208/1/60	1	25					1,2	A,B,C,D

NOTES:
1. REFER TO SPECIFICATION SECTION 238126 - VARIABLE CAPACITY HEAT PUMP HEAT RECOVERY AIR CONDITIONING SYSTEM.
2. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT AND CONDUCTOR FROM OUTDOOR UNIT TO INDOOR UNIT.

ACCESSORIES:
A. CONDENSATE PUMP.
B. SEACOAST COATING PROTECTION.
C. ROOF MOUNTING RAILS AS SHOWN IN DETAILS.
D. WIRED WALL-MOUNTED REMOTE CONTROLLER WITH VANDAL PROOF ENCLOSURE.

BRANCH CIRCUIT CONTROLLER SCHEDULE

DRAWING CODE	LOCATION	DESIGN BASIS MFR	MODEL	ALTERNATE APPROVED MFR	POWER INPUT (RATED) COOLING (kw)	POWER INPUT (RATED) HEATING (kw)	ELECTRICAL			WEIGHT (LBS)	NOTES	ACCESSORIES
							VOLTAGE (V/PH/HZ)	MCA (A)	MOCP (A)			
BC01	SEE PLANS	MITSUBISHI ELECTRIC	CMB-P1016NU-HA1	DAIKIN, LG ELECTRONICS	0.274	0.137	208/1/60	1.65	15	175	1,2	A
BC02	SEE PLANS	MITSUBISHI ELECTRIC	CMB-P108NU-GB1	DAIKIN, LG ELECTRONICS	0.106	0.053	208/1/60	0.64	15	85	1,2	A

NOTES:
1. REFER TO SPECIFICATION SECTION 238126 - VARIABLE CAPACITY HEAT PUMP HEAT RECOVERY AIR CONDITIONING SYSTEM.
2. PROVIDE GRAVITY DRAIN CONDENSATE PIPING AS INDICATED.

ACCESSORIES:
A. SUCTION AND LIQUID LINES SERVICE ISOLATION VALVES FOR ALL PORTS.

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NC# P-0606

NORTH CAROLINA PROFESSIONAL SEAL 10592 ENGINEER JAMES R. BENSON II
8/1/16

PROJECT TITLE
CITY OF WILMINGTON FIRE DEPARTMENT
FIRE STATION No. 5
680 SHIPYARD BLVD.
WILMINGTON, NC

SHEET TITLE
MECHANICAL SCHEDULES AND UL DETAIL

ISSUE BLOCK

MARK	DATE	DESCRIPTION

PROJECT NO: 2015028.00
DATE: 8/01/2016
SCALE:
DRAWN BY: GRM | PROJ MGR: JRB

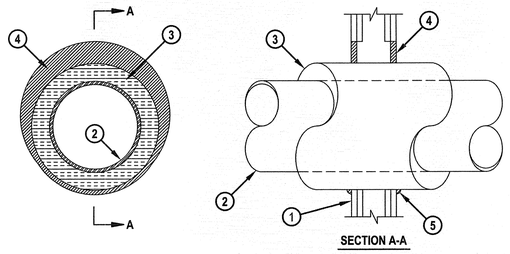
M002

System No. W-L-5029

WL 5029

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)	F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)
T Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)	FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft	FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
	L Rating At Ambient — 4 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Wall Assembly — The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide for 1 and 2 hr F and FH rating and 3-1/2 in. (89 mm) wide for 3 hr F and FH rating and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in. (473 mm).
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be installed within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper tube shall not exceed 4 in. (102 mm).
   D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper pipe shall not exceed 4 in. (102 mm).

Hilti Firestop Systems

System No. W-L-5029

WL 5029

3. Pipe Covering* — Nom 1, 1-1/2 or 2 in. (25, 38 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. For 1 and 2 hr F and FH Ratings, the annular space between insulated penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). For 3 hr F and FH Ratings, the annular space shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   The hourly T, FT, FTH Ratings of the firestop system are 1/2 hr for 1 hr rated walls and 1 hr for 2 hr rated walls. For 3 hr rated walls, the hourly T, FT and FTH Ratings when steel and iron pipes are used are 1 hr. For 3 hr rated walls, the hourly T, FT and FTH Ratings when copper penetrants are used are 1-1/4 hr for 2 in. (51 mm) thick pipe covering and 0 hr for pipe covering thickness less than 2 in. (51 mm).
3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. When the alternate pipe covering is used, the T and FT Rating shall be as specified in item 3 above.
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — For 1 and 2 hr F and FH Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 3 hr F and FH Rating, min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum board, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

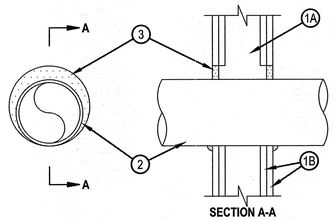
Hilti Firestop Systems

System No. W-L-1054

WL 1054

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating at Ambient — Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 1 CFM/sq ft L Rating at 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.

Hilti Firestop Systems

System No. W-L-1054

WL 1054

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

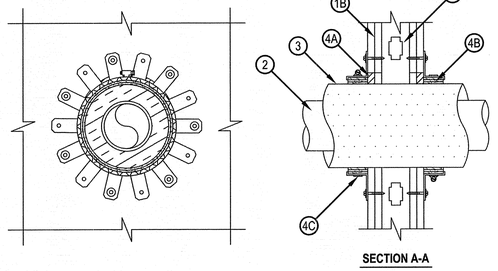
Hilti Firestop Systems

System No. W-L-5225

WL 5225

Classified by Underwriters Laboratories, Inc. to UL 1479

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 or 2 Hr (See Item 1)	F Rating — 1 or 2 Hr (See Item 1)
T Rating — 0, 1, 1-1/2 or 2 Hr (See Item 3)	FT Rating — 0, 1, 1-1/2 or 2 Hr (See Item 3)
	FH Rating — 1 or 2 Hr (See Item 1)
	FTH Rating — 0, 1, 1-1/2 or 2 Hr (See Item 3)



SECTION A-A

System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.
1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. OC (406 mm). Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Thickness, type and number of layers as specified in the individual Wall and Partition Design. Max diam of opening is 8-1/2 in. (178 mm).
   The hourly F, FH Ratings of the firestop system are equal to the hourly assembly rating of the wall assembly in which it is installed.
2. Through Penetrants — One nonmetallic pipe or conduit to be centered within the firestop system. Pipe to be rigidly supported on both sides of wall. The following types and sizes of pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

Hilti Firestop Systems

System No. W-L-5225

WL 5225

3. Pipe Covering* — Nom 1-1/2 in. (38 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. A nom annular space of min 0 in. (point contact) to max 1 in. (25 mm) is required within the firestop system.
   See Pipe and Equipment Covering - Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
3A. Tube Insulation — Plastics+ — (Optional for pipes with nom diam of 2 in. (51 mm) or less) Max 1 in.(25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The annular space shall be min 1/8 in. to max 1/4 in. (3 to 6 mm).
   See Plastics+ (QMFZZ)category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
   The hourly T, FT, FTH rating of the firestop system is equal to the hourly assembly rating of the wall assembly in which it is install unless Item 3 is used and nom pipe size is less than 4 in. (102 mm). For openings with item 3 glass fiber insulation and pipe sizes less than 4 in (102 mm), when hourly rating for of the wall assembly is 1 hr, the T, FT, FTH rating is 1 hr. and when the hourly rating is of the wall assembly is 2 hr, then the T, FT, FTH Rating is 1-1/2 hr. The T, FT, FTH Rating Is 0 hr if Item 3A is less than 1 in. (25 mm) thick.
4. Firestop System — The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material* - Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
   B. Fill, Void or Cavity Material* — Wrap Strip — Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Layers individually wrapped around the through-penetrant with the ends butted and held in place with tape. Butted ends in successive layers shall be offset. Each wrap strip layer is to be installed flush with both surfaces of wall. Wrap strips are installed on each surface of the wall.

Product Designation	Max Pipe Size, in. (mm)	Number of Layers
CP648-E W25/1-3/4*	2 (51)	1
CP648-E W25/1-3/4*	4 (102)	3

   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP-648E Wrap Strip
   C. Steel Collar — Steel collar fabricated from coils of precut min 0.016 in. (0.4 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be nom 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs on 1-3/4 in. (44 mm) centers for securement to both surfaces of wall. In addition, collars contain retainer tabs 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, located opposite the anchor tabs. Collar shall be tightly wrapped over the wrap strip, overlapping min 1 in. (25 mm) at seam and compressed with a min 0.028 in. (0.7 mm) thick stainless steel band at collar mid-height. The retainer tabs are folded 90 deg towards the pipe to maintain the annular space around the pipe and to retain the wrap strip. Each tab of collar secured to surface of wall by means of nom 1-1/4 in. (32 mm) long steel laminating drywall screws in conjunction with 1-1/4 in. (32 mm) diam steel fender washers.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

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NC# P-0506

NORTH CAROLINA PROFESSIONAL SEAL 10592 ENGINEER JAMES R. BENSON II 8/1/16

PROJECT TITLE

CITY OF WILMINGTON FIRE DEPARTMENT

FIRE STATION No. 5
680 SHIPYARD BLVD.
WILMINGTON, NC

SHEET TITLE

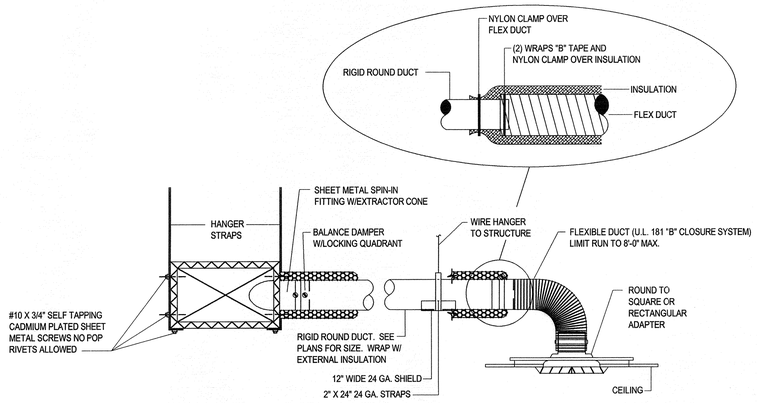
MECHANICAL UL DETAILS

ISSUE BLOCK

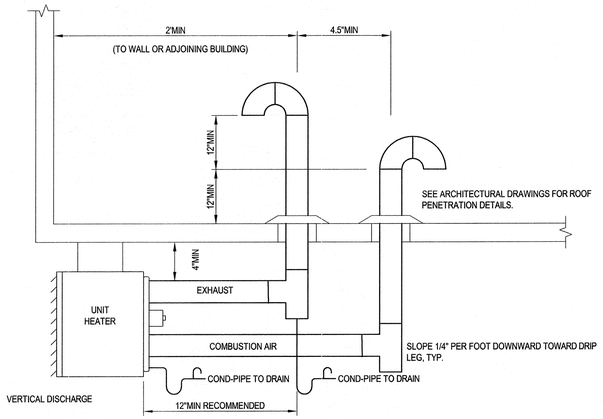
MARK	DATE	DESCRIPTION

PROJECT NO: 2015028.00
DATE: 8/01/2016
SCALE:
DRAWN BY: GRM | PROJ MGR: JRB

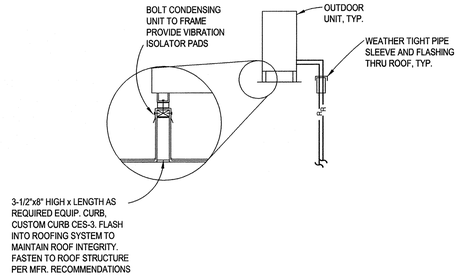
M003



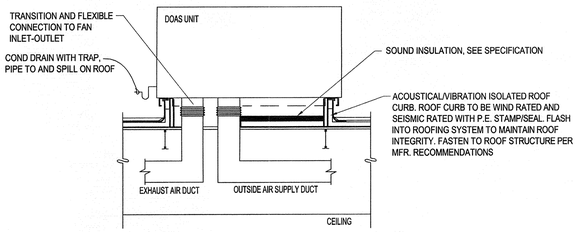
1 M004 TYPICAL DIFFUSER CONNECTION DETAIL
NO SCALE



2 M004 GAS FIRED UNIT HEATER VENT DETAIL
NO SCALE

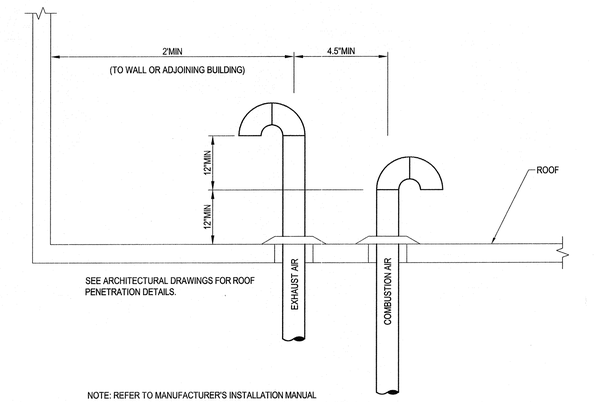


3 M004 HP OUTDOOR UNIT - ROOF MOUNTING DETAIL
NO SCALE



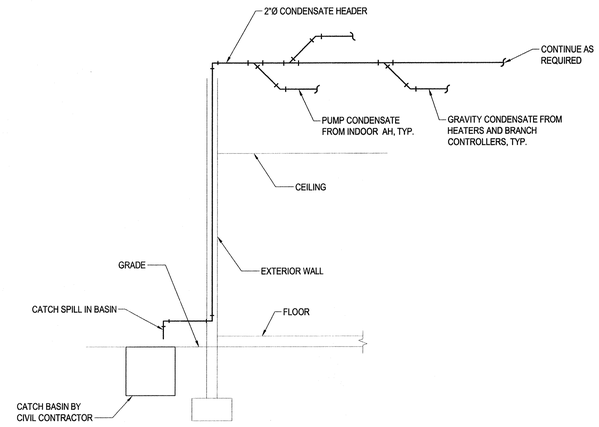
NOTES:
1. LEAVE ROOF DECKING INTACT INSIDE THE ROOF CURB. CUT HOLES 1"MAX. LARGER THAN REQUIRED FOR DUCTS AND INSULATION TO PASS THROUGH. FILL INSIDE OF CURBED AREA WITH SOUND ABSORBING INSULATION.
2. PROVIDE ACOUSTICAL DUCT LINER INSULATION IN SUPPLY AND RETURN DUCTS WITHIN 10 FEET OF UNIT MINIMUM OR AS SPECIFIED OTHERWISE.
3. COORDINATE EXACT UNIT PLACEMENT AND DUCT OPENINGS WITH ROOF STRUCTURE.

3 M004 TYPICAL PACKAGED ROOF TOP UNIT DETAIL
NO SCALE

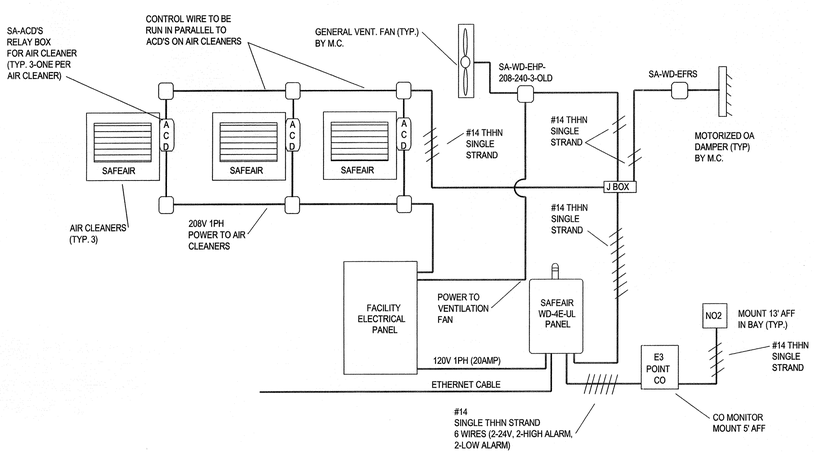


NOTE: REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL DETAILED INSTRUCTIONS.

5 M004 TYPICAL VERTICAL COMBUSTION AIR/EXHAUST DETAIL
NO SCALE



6 M004 TYPICAL CONDENSATE PIPING DETAIL
NO SCALE



NOTES:

EQUIPMENT PROVIDED BY OWNER:

(3) SAFEAIR 208V 1PH FHAC-3000 AIR CLEANERS
(1) WD-4E-UL SAFEAIR CONTROL PANEL 120V -1PH (20 AMP)
(1) SA-WD-EHP-208-240-3-OLD FOR VENTILATION FAN
(1) SA-WD-EFRS FOR LOUVER
(3) SA-ACD RELAYS FOR AIR CLEANERS
(1) E3 POINT TOXIC GAS MONITOR UNIT
(1) CO CARTRIDGE FOR E3 POINT MONITOR
(1) NO2 REMOTE SENSOR
ALL CONTROL WIRE FOR ACD, SA-WD-OLD,SA-WD-EFRS, E3 POINT GAS MONITOR, AND NO2 SENSOR

EQUIPMENT INSTALLED AND TERMINATED BY OWNER:

(3) SAFEAIR 208V 1PH FHAC-3000 AIR CLEANERS
(3) SA-ACD RELAYS FOR AIR CLEANERS
CONTROL WIRE (ONLY) TERMINATIONS FOR ACD'S, SAFEAIR PANEL, SA-WD-OLD, SA-WD-EFRS, AND FOR E3 POINT CO/NO2 SENSORS

EQUIPMENT INSTALLED AND PROVIDED BY ELECTRICAL CONTRACTOR:

MOUNTING OF THE FOLLOWING: SA-WD-OLD, SA-WD-EFRS, WD-4E-UL PANEL, E3 POINT MONITOR, AND NO2 SENSOR
ALL CONDUIT AND PULLING OF FURNISHED CONTROL WIRE FROM THE SAFEAIR PANEL TO THE FOLLOWING: TO ALL ACD'S, SA-WD-OLD, SA-WD-EFRS, E3 POINT MONITOR AND TO NO2 SENSOR
ALL 208V 1PH AND 120V, 1PH POWER; TO INCLUDE CONDUIT AND WIRE
ALL CAT-5 WIRE FROM NON VOIP ROUTER TO SAFEAIR PANEL WITH CONNECTORS

EQUIPMENT INSTALLED AND PROVIDED BY OTHERS:

ALL CAT-5 WIRE FROM NON VOIP ROUTER TO SAFEAIR PANEL WITH CONNECTORS

7 M004 SAFEAIR CONTROL ELECTRICAL FLOW DIAGRAM AND NOTES
SCALE: NONE

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NCB P-0506

NORTH CAROLINA PROFESSIONAL SEAL 10592 ENGINEER JAMES R. BENSON, III
9/20/16

PROJECT TITLE
CITY OF WILMINGTON FIRE DEPARTMENT
FIRE STATION No. 5
680 SHIPYARD BLVD.
WILMINGTON, NC

SHEET TITLE
MECHANICAL DETAILS

ISSUE BLOCK

MARK	DATE	DESCRIPTION

PROJECT NO: 2015028.00
DATE: 8/01/2016
SCALE:
DRAWN BY: GRM | PROJ MGR: JRB

M004

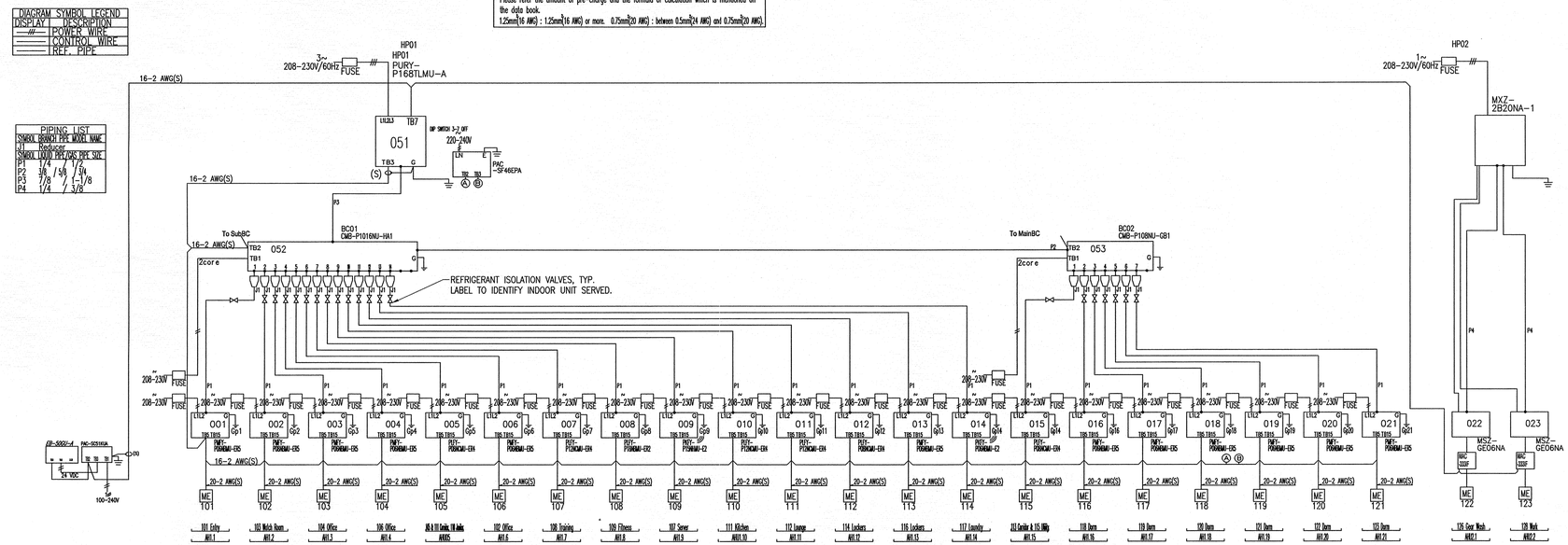
DIAGRAM SYMBOL LEGEND

DISPLAY	DESCRIPTION
///	POWER WIRE
———	CONTROL WIRE
———	REF. PIPE

PIPING LIST

SYMBOL	BRANCH PIPE	MODEL NAME
⟩⟨	Reducer	
SYMBOL	LIQUID PIPE	GAS PIPE SIZE
P1	1/4	1/2
P2	3/8	3/4
P3	7/8	1-1/8
P4	1/4	3/8

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).



1 M005 VRF SCHEMATIC - CENTRALIZED SYSTEM
NO SCALE

NOTE: SCHEMATIC BASED ON MITSUBISHI EQUIPMENT. ALTERNATE ARRANGEMENTS ARE ACCEPTABLE AS APPROPRIATE FOR OTHER MANUFACTURERS.

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NCB-P-0906

NORTH CAROLINA PROFESSIONAL SEAL 10592 ENGINEER JAMES R. BENSON
8/1/16

PROJECT TITLE
CITY OF WILMINGTON FIRE DEPARTMENT
FIRE STATION No. 5
680 SHIPYARD BLVD.
WILMINGTON, NC

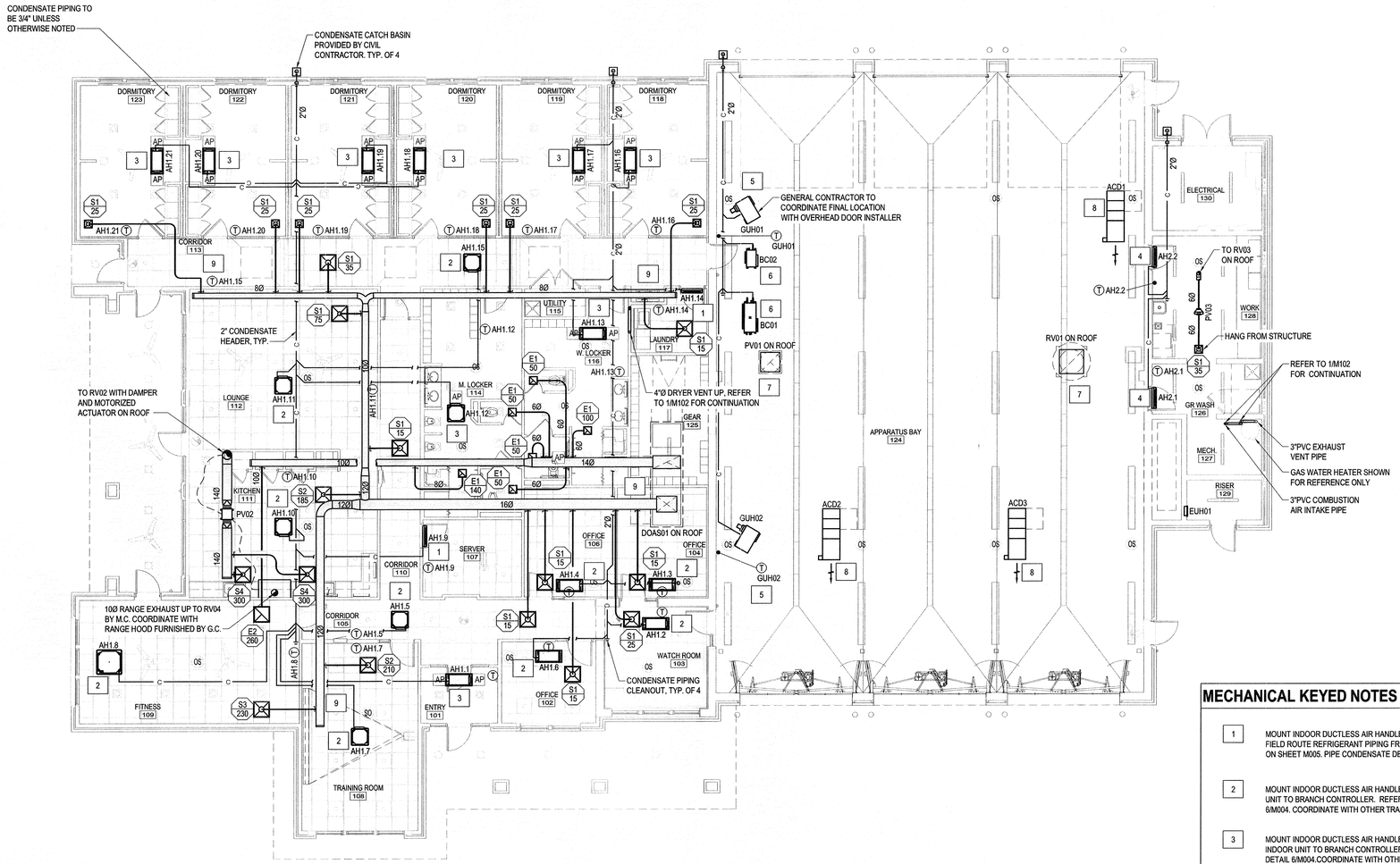
SHEET TITLE
MECHANICAL VRF SCHEMATIC - CENTRALIZED SYSTEM

ISSUE BLOCK

MARK	DATE	DESCRIPTION

PROJECT NO: 2015028.00
DATE: 8/01/2016
SCALE:
DRAWN BY: GRM | PROJ MGR: JRB

M005



1 MECHANICAL FLOOR PLAN
M101 1/8"=1'-0"

NORTH

MECHANICAL KEYED NOTES

1. MOUNT INDOOR DUCTLESS AIR HANDLER ON WALL AS CLOSE TO CEILING AS ALLOWED BY MANUFACTURER. FIELD ROUTE REFRIGERANT PIPING FROM INDOOR UNIT TO BRANCH CONTROLLER. REFER TO PIPING DIAGRAM ON SHEET M005. PIPE CONDENSATE DETAIL 6/M004. COORDINATE WITH OTHER TRADES.
2. MOUNT INDOOR DUCTLESS AIR HANDLER IN CEILING GRID. FIELD ROUTE REFRIGERANT PIPING FROM INDOOR UNIT TO BRANCH CONTROLLER. REFER TO PIPING DIAGRAM ON SHEET M005. PIPE CONDENSATE DETAIL 6/M004. COORDINATE WITH OTHER TRADES.
3. MOUNT INDOOR DUCTLESS AIR HANDLER IN CEILING SURFACE. FIELD ROUTE REFRIGERANT PIPING FROM INDOOR UNIT TO BRANCH CONTROLLER. REFER TO PIPING DIAGRAM ON SHEET M005. PIPE CONDENSATE DETAIL 6/M004.COORDINATE WITH OTHER TRADES. REFER TO ARCHITECTURAL DRAWINGS FOR ACCESS PANEL LOCATIONS.
4. MOUNT INDOOR DUCTLESS AIR HANDLER ON WALL AS CLOSE TO CEILING AS ALLOWED BY MANUFACTURER. FIELD ROUTE REFRIGERANT PIPING FROM INDOOR UNIT TO OUTDOOR UNIT ON ROOF. PIPE CONDENSATE DETAIL 6/M004. COORDINATE WITH OTHER TRADES.
5. INSTALL CEILING HUNG GAS FIRE UNIT HEATER. SEE DETAIL 2/M004 FOR TYPICAL VENTING. PIPE CONDENSATE DETAIL 6/M004. COORDINATE WITH OTHER TRADES.
6. SUSPEND BRANCH CONTROLLER FROM STRUCTURE ABOVE. FIELD ROUTE REFRIGERANT PIPING FROM INDOOR UNIT TO OUTDOOR UNIT OR OTHER BRANCH CONTROLLER. REFER TO PIPING DIAGRAM ON SHEET M005. PIPE CONDENSATE DETAIL 6/M004. COORDINATE WITH OTHER TRADES.
7. INSTALL ROOF FAN AND GRAVITY VENTILATOR ON ROOF CURB. FAN AND VENTILATOR DAMPER TO BE CONTROLLED BY SAFEAIR CONTROL PANEL.
8. REFER TO SAFEAIR REFERFERNCE DETAIL 7/M004.
9. CONSTRUCT ALL O/A DUCTWORK CONTINUOUS FROM DOAS01 TO OUTLETS USING 26 GA MINIMUM GALVANIZED STEEL IN ACCORDANCE WITH NCMC SECTION 607.5.2 TO ELIMINATE FIRE DAMPERS AT ONE-HOUR FIRE BARRIER PENETRATIONS. NO FLEX DUCT ALLOWED.

8' 6' 4' 2' 0 4' 8' 12' 16'
SCALE: 1/8" = 1'-0"

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NC# P-0506

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 10592 JAMES R. BENSON III
9/20/16

PROJECT TITLE
CITY OF WILMINGTON FIRE DEPARTMENT
FIRE STATION No. 5
680 SHIPYARD BLVD.
WILMINGTON, NC

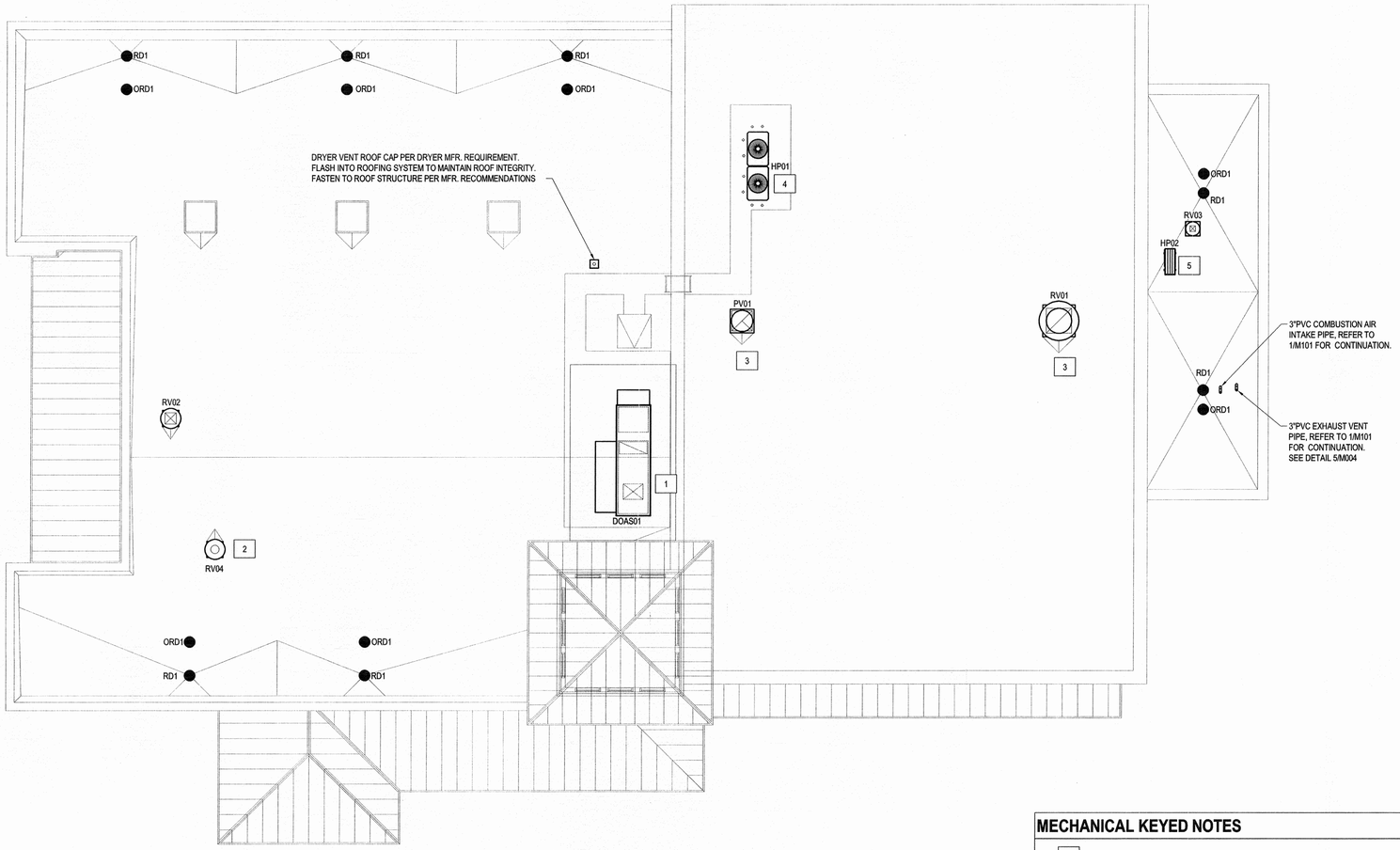
SHEET TITLE
MECHANICAL HVAC FLOOR PLAN

ISSUE BLOCK

MARK	DATE	DESCRIPTION

PROJECT NO: 2015028.00
DATE: 8/01/2016
SCALE:
DRAWN BY: GRM | PROJ MGR: JRB

M101



MECHANICAL KEYED NOTES

1	MOUNT DEDICATED OUTDOOR AIR UNIT ON ROOF CURB.
2	SERVES KITCHEN RANGE HOOD.
3	INSTALL ROOF FAN AND GRAVITY VENTILATOR ON ROOF CURB. FAN AND VENTILATOR DAMPER TO BE CONTROLLED BY SAFEAIR CONTROL PANEL.
4	INSTALL OUTDOOR HEAT PUMP ON ROOF RAILS. FIELD ROUTE REFRIGERANT PIPING TO BRANCH CONTROLLER INSIDE.
5	INSTALL OUTDOOR HEAT PUMP ON ROOF RAILS. FIELD ROUTE REFRIGERANT PIPING TO INDOOR AIR HANDLER.

NORTH

1 / M102 MECHANICAL ROOF PLAN
1/8"=1'-0"

8' 6' 4' 2' 0 4' 8' 12' 16'
SCALE: 1/8" = 1'-0"

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NC# P-0506

NORTH CAROLINA PROFESSIONAL SEAL 10592 ENGINEER JAMES R. BENSON, III
9/20/16

PROJECT TITLE
CITY OF WILMINGTON FIRE DEPARTMENT
FIRE STATION No. 5
680 SHIPYARD BLVD.
WILMINGTON, NC

SHEET TITLE
MECHANICAL HVAC ROOF PLAN

ISSUE BLOCK

MARK	DATE	DESCRIPTION

PROJECT NO: 2015028.00
DATE: 8/01/2016
SCALE:
DRAWN BY: GRM | PROJ MGR: JRB

M102