

ADDENDUM #1

Project: E.E. Bass Cultural Arts Center
Phase II – Site and Building Improvements
Greenville, Mississippi

Professional: Beard + Riser Architects PLLC

Date Issued: March 8, 2016

Pages: 26 including this page



This addendum form is part of the Construction Documents, modifying and superseding where it is inconsistent with them. All other conditions of the Contract Documents remain unchanged. Acknowledge receipt of this addendum by inserting its number in the appropriate place on the bid proposal form:

1. **Item 1:** Prebid Conference Meeting Minutes
2. **Item 2:** Revised specification sections: Section 00 43 23 – Alternates Form, Section 01 23 00 – Alternates.
3. **Item 3:** Sheet C-2 Alternate No. Four: Indicates the East parking lot as a mix of heavy and light duty concrete pavement in lieu of asphalt paving.
4. **Clarification:** The corrugated metal roof system in Alternate #1 refers to fencing. Finish is "Galvalume."
5. **Item 4:** Provide new stall doors (5) and hardware as per detail 11/A1.0 in the existing women's restroom. Hardware is to be included as an Allowance. Revise Section 01 21 00 – Allowances – 3.3.A as follows:
 - A. *Allowance No. 1: Lump-Sum Allowance: Include the sum of \$600 per full door (qty. 6) and \$500 per toilet stall door (qty. 10).*
 - i. *This allowance includes material cost, receiving, handling, and installation, and Contractor overhead and profit.*
6. **Item 5:** Electrical/Mechanical Addendum Items Attachment. Lighting Control Relay Panel Schedule, Added Specification Section 23 74 33 Direct Gas-Fired Makeup Ventilation Air Unit and Section 23 81 26 Ductless Split Heat Pump Systems and additional item as listed in attachment.
7. **Question:** Does the exterior signage allowance cover all materials and labor for the steel tubing, concrete footings, brick columns and cast stone caps? **Clarification:** The allowance includes labor and material for steel, signs and concrete footings. It does not include brick or cast stone caps.
8. **Question:** Is the sculpture schedule Sheet L3.2 Detail 7 included in the signage allowance. **Clarification:** No.

9. **Question:** Sheet A2.0 Detail 2 states New Hollow Metal Doors to be 3'-0" x 8'-0". Are the doors 8'-0" in height. **Clarification:** Door #2 is 8'-0" high; Door #3 is 7'-0" high +- to match the existing opening.
10. **Clarification:** The existing flagpole is to be salvaged and delivered to the Owner for relocation.
11. **Question:** Note E4 for elevations 7&8 on sheet A2.0 states "new GWB wall, paint." Are we to apply GWB over Brick? **Answer:** The existing brick walls are to remain, tuckpoint where mortar is missing or deteriorated and paint.
12. **Clarification:** Insurance requirements are as follows:

General Contractor shall maintain reasonable insurance to include liability, accidents on premises, builder's risk and workman's compensation. At a minimum, General Contractor shall hold insurance in the following amounts:

- a. General Commercial.....\$1,000,000
- b. Owner's/Contractor's Protective Liability.....\$1,000,0000
- c. Automobile Liability.....\$500,000
- d. Workman's Compensation.....Statutory
- e. Builder's Risk.....Equal to Amount of Work

END OF ADDENDUM #1



Pre-Bid Conference Meeting Minutes

Project: Phase II- Site and Building Improvements
E.E. Bass Cultural Arts Center
Greenville, Mississippi
Date: March 2, 2016 – 10 a.m.
Attending: Refer to attached attendance sheet

Minutes Prepared by: John Beard, Beard + Riser Architects, PLLC

Introductions:

Tim Bixler – Bass Building Committee Chair
Damian Augsberger – Community Design Project
John Beard – Beard + Riser Architects, PLLC

1. Bidding:

- a. Bid date
 - i. Until 2:00 p.m. on Thursday, March 10, 2016.
 - ii. Bids will be received at E. E. Bass Administrative Office
 - iii. Drawings are available Jackson Blueprint online plan room www.jaxblue.com; printed cost \$125, digital cost \$25.
 - iv. Follow the "Instructions to Bidders" section in project manual.
 - v. Bid Bond is required (5% of the total amount of the base bid).
- b. 180 calendar days from Notice to Proceed.
- c. 5% Bid bond is required.
- d. 100% Performance and Payment Bonds are required.
- e. Addenda
 - i. Questions or clarifications will only be answered in writing via email or fax to the Professional.
 - ii. Last day to issue addenda is March 8 at 2:00 p.m. (48 business hours prior to bid).
 - iii. All questions to us at least 24 or more hours beforehand.
- f. Allowances:
 1. SCHEDULE OF ALLOWANCES
 - a. Allowance No. 1: Lump-Sum Allowance: Include the sum of \$600 per full door (qty. 6) and \$500 per toilet stall door (qty. 5).

- i. This allowance includes material cost, receiving, handling, and installation, and Contractor overhead and profit.
- b. Allowance No.2: Lump-Sum Allowance: Include the sum of \$95,000 for exterior signage.
 - i. This allowance includes material cost, receiving, handling, and installation, and Contractor overhead and profit.

g. Liquidated Damages: None

h. Alternates:

1. SCHEDULE OF ALTERNATES

- a. Alternate No.One: Deduct the cost of all work associated with the Carousel Courtyard as indicated in the construction documents.

Alternate No.Two: Deduct the cost of all work associated with the West Parking Lot adjacent to the main building as indicated in the construction documents.

Alternate No.Three: Deduct the cost of all work associated with the Catering Kitchen as indicated in the construction documents.

2. Examination of the site:

- a. GC's responsibility to become familiar with site prior to submitting bids.

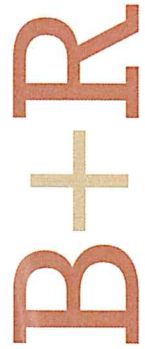
3. Review General Scope of Work:

- a. Refer to Documents
 - i. Building Improvements
 - ii. Site Improvements

4. Questions/Clarifications:

- a. Is concrete an option in lieu of asphalt for the east parking lot paving?
- b. Is the flagpole on the east lawn to be relocated?
- c. All signage must be approved by the city planning department.

END OF AGENDA



BEARD+RISER
ARCHITECTS PLLC

DATE: March 2, 2016 – 10 a.m.

MEETING: Pre-Bid Conference

PROJECT NAME: Phase II Improvements – Site and Building Improvements
E.E. Bass Cultural Arts Center
Greenville, Mississippi

NAME	COMPANY	CELL PHONE	EMAIL
John Beard	Beard + Riser Architects, PLLC	662.897-5678	jbeard@beardriser.com
Tim Bixler	Bassford.	662-820-5489	
Mike Henry	Henry Const	662 820.5925	
Hunter McVeer	Kenneth Thompson Builder	662-299-6671	
Kenneth Thompson	Kenneth Thompson Builder	662-299-2491	
William Scott	Scott Enterprise	378 3784	
John Chilson	1111	379-1539	
RAY KOSTER	KOSTER FILM		
RAY HENDERSON			
GARY VAUGHAN	GARY VAUGHAN CONST	662-378-3730	
Brian Ables	David Smith Const.	662-265-6060	

E. E. Bass Cultural Arts Center
Phase II – Site and Building Improvements
Greenville, MS

DOCUMENT 004323 - ALTERNATES FORM (Revised by Addendum #1)

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Prime Contract: _____.
- C. Project Name: E. E. Bass Cultural Arts Center, Phase II Site and Building Improvements
- D. Project Location: 323 South Main Street, Greenville, MS
- E. Owner: E. E. Bass Education and Development Foundation
- F. Architect: Beard + Riser Architects PLLC.

1.2 BID FORM SUPPLEMENT

- A. This form is required to be attached to the Bid Form.

1.3 DESCRIPTION

- A. The undersigned Bidder proposes the amount below be added to or deducted from the Base Bid if particular alternates are accepted by Owner. Amounts listed for each alternate include costs of related coordination, modification, or adjustment.
- B. If the alternate does not affect the Contract Sum, the Bidder shall indicate "NO CHANGE."
- C. If the alternate does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."
- D. The Bidder shall be responsible for determining from the Contract Documents the effects of each alternate on the Contract Time and the Contract Sum.
- E. Owner reserves the right to accept or reject any alternate, in any order, and to award or amend the Contract accordingly within 60 days of the Notice of Award unless otherwise indicated in the Contract Documents.
- F. Acceptance or non-acceptance of any alternates by the Owner shall have no effect on the Contract Time unless the "Schedule of Alternates" Article below provides a formatted space for the adjustment of the Contract Time.

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1.4 SCHEDULE OF ALTERNATES

- A. Alternate No. One: Omit all work associated with the Carousel Courtyard as indicated in the construction documents.

ADD ___ DEDUCT ___ NO CHANGE ___ NOT APPLICABLE _____.
_____ Dollars (\$_____).

ADD ___ DEDUCT ___ calendar days to adjust the Contract Time for this alternate.

- B. Alternate No. Two: Omit all work associated with the West Parking Lot adjacent to the main building as indicated in the construction documents.

ADD ___ DEDUCT ___ NO CHANGE ___ NOT APPLICABLE _____.
_____ Dollars (\$_____).

ADD ___ DEDUCT ___ calendar days to adjust the Contract Time for this alternate.

- C. Alternate No. Three: Omit all work associated with the Catering Kitchen as indicated in the construction documents.

ADD ___ DEDUCT ___ NO CHANGE ___ NOT APPLICABLE _____.
_____ Dollars (\$_____).

ADD ___ DEDUCT ___ calendar days to adjust the Contract Time for this alternate.

- D. Alternate No. Four: Omit asphalt paving at east parking lot and provide concrete as indicated on revised drawing C-2 attached.

ADD ___ DEDUCT ___ NO CHANGE ___ NOT APPLICABLE _____.
_____ Dollars (\$_____).

ADD ___ DEDUCT ___ calendar days to adjust the Contract Time for this alternate.

1.5 SUBMISSION OF BID SUPPLEMENT

- A. Respectfully submitted this ___ day of _____, 2015.

- B. Submitted By: _____ (Insert name of bidding firm or corporation).

- C. Authorized Signature: _____ (Handwritten signature).

- D. Signed By: _____ (Type or print name).

- E. Title: _____ (Owner/Partner/President/Vice President).

END OF DOCUMENT 004323

E. E. Bass Cultural Arts Center
Phase II – Site and Building Improvements
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SECTION 012300 – ALTERNATES (Revised by Addendum #1)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.

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- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

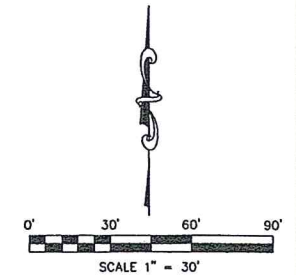
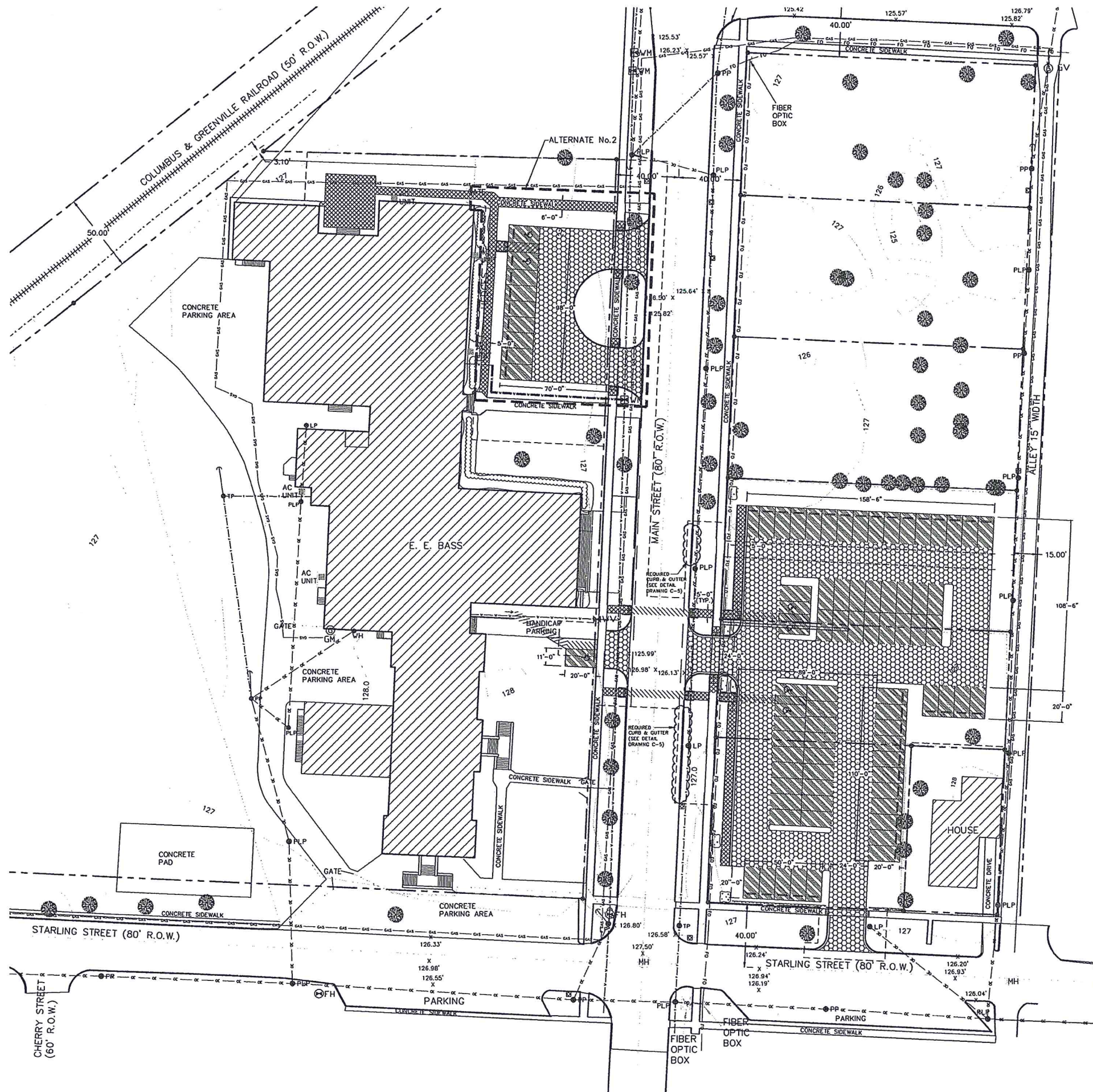
- A. Alternate No. One: Omit all work associated with the Carousel Courtyard as indicated in the construction documents.

Alternate No. Two: Omit all work associated with the West Parking Lot adjacent to the main building as indicated in the construction documents.

Alternate No. Three: Omit all work associated with the Catering Kitchen as indicated in the construction documents.

Alternate No. Four: Omit asphalt paving at East Parking Lot and provide concrete as indicated on revised drawing C-2 attached.

END OF SECTION 012300



LEGEND:

- EXISTING PROPERTY LINE
- CENTER LINE OF ROAD
- EXISTING PROJECT RIGHT-OF-WAY LINE
- +++++ EXISTING RAILROAD TRACKS
- EXISTING FENCE LINE
- EXISTING OVERHEAD POWER LINE
- EXISTING UNDERGROUND GAS LINE
- EXISTING UNDERGROUND FIBER OPTIC LINE
- EXISTING OVERHEAD TELEPHONE LINE
- 127 EXISTING CONTOUR LINE (FEET)
- EXISTING FLOW OF DITCH
- EXISTING WATER LINE
- REQUIRED 4 INCH WATER LINE (SEE DETAIL DRAWING C-8)
- PP EXISTING POWER POLE
- LP EXISTING LIGHT POLE
- PLP EXISTING POWER AND LIGHT POLE
- TP EXISTING TELEPHONE POLE
- V EXISTING SURVEY MONUMENT
- VH EXISTING WEATHER HEAD
- GM EXISTING GAS METER
- GV EXISTING GAS VALVE
- WV EXISTING WATER VALVE
- WM REQUIRED WATER METER TO BE PLACED BY CITY OF GREENVILLE
- FH EXISTING FIRE HYDRANT
- GUY EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING TREE
- M EXISTING SANITARY SEWER MANHOLE
- 127.82' EXISTING SPOT ELEVATION (FEET)
- REQUIRED HANDICAP STRIPPING (SEE DETAIL DRAWING C-8)
- REQUIRED PAVEMENT STRIPPING (SEE DETAIL DRAWING C-8)
- REQUIRED CONCRETE CURB AND GUTTER (SEE DETAIL DRAWING C-8)
- REQUIRED TRUNCATED DETECTABLE WARNING (SEE DETAIL DRAWING C-7)
- REQUIRED SOLDIER CURB (SEE DETAIL DRAWING C-7)
- REQUIRED ASPHALT PAVEMENT (SEE DETAIL DRAWING C-7)
- REQUIRED 4" CONCRETE PAVEMENT (SEE DETAIL DRAWING C-7)
- REQUIRED LIGHT DUTY REINFORCED CONCRETE PAVEMENT (SEE DETAIL DRAWING C-7)
- REQUIRED HEAVY DUTY REINFORCED CONCRETE PAVEMENT (SEE DETAIL DRAWING C-7)

NOTES:

1. EXISTING UNDERGROUND INSTALLATIONS AND PROFILE DATA IN THE VICINITY OF THE WORK AREA ARE INDICATED ON THE DRAWINGS ONLY TO THE EXTENT SUCH INFORMATION HAS BEEN MADE AVAILABLE TO OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THERE IS NO GUARANTEE AS TO THE ACCURACY OR COMPLETENESS THEREOF AND IS EXPRESSLY DISCLAIMED.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND INSTALLATIONS IN ADVANCE OF ANY EXCAVATING OR TRENCHING.
3. THIS IS NOT A BOUNDARY SURVEY, PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY.

**E.E. BASS CULTURAL ARTS CENTER
PHASE II - SITE & BUILDING IMPROVEMENTS**

323 SOUTH MAIN STREET
GREENVILLE, MISSISSIPPI

W.L. BURLE
ENGINEER, P.A.
111 South Main Street
Greenville, MS 38701
www.wlburle.com
PHONE: (662) 332-5619 FAX: (662) 332-5622

REVISIONS	
NO.	DESCRIPTION
1	DATE: 12-16-2015
2	REVISIONS: DA
3	DRAWN BY: DA
4	CHECKED BY:

201 MAIN STREET
GREENWOOD, MS 38930
PT 662.455.2581
www.beardriser.com

B+R
BEARD + RISER
ARCHITECTS PLLC

REQUIRED WORK

SHEET #:

C-2

ELECTRICAL / MECHANICAL ADDENDUM ITEMS:

LIGHTING CONTROL RELAY PANEL SCHEDULE (Specification Section 26 56 00, paragraph 2.4.4)

Leviton GreenMAX 16 Lighting Relay Control Panel

Quan.	ID Number	Description
1	R16TC-100	GreenMAX Relay Cabinet, 16-Relay Size, Surface Mount, Domestic, with Locking Door, Nema 1, Title 24 compliant, ASHRAE 90.1 compliant
1	RPM08-308	GreenMAX relay system Command Module complete with 70W power supply, Main Processor, LumaCAN 3, with 8 Low Voltage inputs. 100-277VAC 50/60Hz, Title 24 compliant, ASHRAE 90.1 compliant
1	R1600	GreenMAX 16-position Relay Insert Panel (fits 16, 32, 48-relay cabinets), without relays, Title 24 compliant, ASHRAE 90.1 compliant
1	RHDU1-300	LumaCAN 3 Handheld Display Unit for GreenMAX relay systems. Comes complete with rechargeable batteries, Title 24 compliant, ASHRAE 90.1 compliant
4	RELAYBFM	GreenMAX Relay, Blank Filler Module, Title 24 compliant, ASHRAE 90.1 compliant
12	RELAY-1TB	GreenMAX Relay, Latching, 1-pole, basic, 30A 24-277, 347VAC 50/60Hz, Title 24 compliant, ASHRAE 90.1 compliant
2	RDGSW- 4CT	GreenMAX Digital Switch, 4-Button, LumaCAN3 (includes single gang wallplate), LumaCAN3, Title 24 compliant, ASHRAE 90.1 compliant, Light Almond
1	PCOUT	Photocell -Outdoor 50-750 Foot Candles, Title 24 Compliant, ASHRAE 90.1 Compliant

ADDED SPECIFICATION SECTIONS (Attached to this Addendum):

SECTION 23 74 33	DIRECT GAS-FIRED MAKEUP VENTILATION AIR UNIT
SECTION 23 81 26	DUCTLESS SPLIT HEAT PUMP SYSTEMS

ADDITIONAL ITEM:

Panels L & S shall be equal to Square D Type QO Loadcenters, surface mount, 12-pole, 120/240V 1Ø 3W, with 12 ea. 20A 1P breakers in Panel L; and 8 ea. 20A 1P breakers and 2 ea. 30A 2P breakers in Panel S.

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SECTION 23 74 33 DIRECT GAS-FIRED MAKEUP VENTILATION AIR UNIT

PART 1 GENERAL

1.1 REFERENCES

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

AIR CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (ANSI)

AHRI 410 (2001) Forced-Circulation Air-Cooling and Air-Heating Coils

AIR MOVEMENT AND CONTROL ASSOCIATION (AMCA)

AMCA 210 (2007) Laboratory Methods for Testing Fans For Aerodynamic Properties

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z83.4 (2013) Non-Recirculating Direct Gas-Fired Industrial Air Heaters

ANSI Z83.18 (2007) Gas Food Service Equipment

ASTM INTERNATIONAL (ASTM)

ASTM C411-11 (2011) Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 90A (2015) Standard for the Installation of Air-Conditioning and Ventilating Systems

NFPA 90B (2015) Standard for the Installation of Warm Air Heating and Air-Conditioning Systems

UNDERWRITERS LABORATORIES (UL)

UL 1995 (2015) Heating and Cooling Equipment

1.2 RELATED REQUIREMENTS

Section 23 03 00, "Mechanical General Requirements," applies to this section with the additions and modifications specified herein.

1.3 SCOPE

This section includes units with integral Direct Gas-Fired heating for rooftop installation. Airflow arrangement shall be Outdoor Air only. Each unit shall be constructed in a

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horizontal configuration and shall incorporate additional product requirements as listed in Section 2 of this specification.

1.4 SUBMITTALS

Submit the following in accordance with Section 013300 SUBMITTALS.

1.4.1 Product Data

1. Complete fan performance curves for Supply Air, with system operating conditions indicated, as tested on an AMCA Certified Chamber.
2. Sound performance data for Supply Air, as tested on an AMCA Certified chamber.
3. Motor ratings, electrical characteristics and motor and fan accessories.
4. Drawings for each type of installation, showing isometric and plan views, to include location of attached ductwork and service clearance requirements.
5. Estimated gross weight of each installed unit.
6. Installation, Operating and Maintenance manual (IOM) for each model.
7. Remote Panel description to include all functions.

1.5 QUALITY ASSURANCE

1. Source Limitations: Obtain unit with Integral Heating with all appurtenant components or accessories from a single manufacturer.
2. Product Options: Drawings must indicate size, profiles and dimensional requirements of unit and are to be based on the specific system indicated. Refer Section 014000 QUALITY REQUIREMENTS.
3. Certifications: Entire unit shall be ETL Certified per ANSI Z83.4 or ANSI Z83.18 and bear an ETL mark. Coils shall be Recognized Components per UL 1995.

1.4 COORDINATION

Coordinate size and location of all building penetrations required for installation of MAU and associated ducting, plumbing and electrical systems. Coordinate sequencing of construction of associated plumbing, HVAC and electrical supply.

1.5 EXTRA MATERIALS

Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: Two (2) sets of 3 each 2" thick MERV 8 disposable pleated filters, to match the filters supplied with the unit.
2. Two (2) sets of fan belts.

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PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

Unit with Integral Heating shall be fully assembled at the factory and consist of an insulated metal cabinet, outdoor air intake weather hood with bird screen, motorized intake damper, sensors, curb assembly, service receptacle, filter assembly for intake air, supply air blower assembly and an electrical control center. All specified components and internal accessories factory installed and tested and prepared for single-point high voltage connection.

2.1.1 CABINET

2.1.1.1 Materials

Formed, single wall metal cabinet with fiberglass duct liner insulation from heat source on, fabricated to permit access to internal components for maintenance.

1. Outside casing: 18 gauge, galvanized (G90) steel meeting ASTM A653 for components that do not receive a painted finish. Pre-painted components as supplied by the factory shall have polyester urethane paint on 18 gauge G60 galvalume steel. Base rail is 12 gauge, galvanized (G90) steel. Components that receive a painted finish per A/E specification shall be painted with a polyester urethane powder coat.
2. Internal assemblies: 24 gauge, galvanized (G90) steel except for motor supports which shall be minimum 14 gauge galvanized (G90) steel.

2.1.1.2 Cabinet Insulation:

Comply with NFPA 90A and NFPA 90B and erosion requirements of UL 181.

1. Materials: Fiberglass insulation. If insulation other than fiberglass is used, it must also meet the Fire Hazard Classification shown below.
 - a. Thickness: 1 inch (25 mm)
 - b. Fire Hazard Classification: Maximum flame spread of 25 and smoke developed of 50, when tested in accordance with ASTM C 411.
 - c. Location and application: Floor of each unit shall be insulated with fiberglass insulation. Full interior coverage from "Heating on".
 - d. Access panels: Unit shall be equipped with insulated (downstream of heat source) hinged access panels to provide easy access to all major components. Access panels shall be fabricated of 18 gauge galvanized G90 steel, finish to match cabinet materials in paragraph 2.1.1.1 above.

2.1.2 SUPPLY AIR BLOWER

Forward curve blower: Blower assembly consists of an electric motor and a belt driven, double width, and double inlet forward curve blower. Assembly shall be mounted on heavy gauge galvanized rails and further mounted on minimum 1.125 inch thick neoprene vibration isolators.

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2.1.3 CONTROL CENTER

Control center / connections: unit shall have an electrical control center where all high and low voltage connections are made. Control center shall be constructed to permit single-point high voltage power supply connections.

2.1.4 DIRECT GAS-FIRED BURNER

Unit shall be factory assembled, piped and wired. Direct gas-fired system will be 92% efficient while supplying a burner that is capable of providing 25:1 turndown. Unit will utilize a draw through design and incorporate adjustable burner baffles plates for field adjustments. Unit will have a direct spark ignition system.

Burner construction shall consist of a cast aluminum burner manifold and 400 series stainless steel mixing plates. No air from the inside space shall be allowed to pass across the burner at any time. Flame sensing shall be provided by a flame rod. A flame safeguard display shall be included. Burner control shall have a digital coded fault indicator capable of storing the last five faults.

Burner shall be equipped for operation on natural gas with a maximum rated inlet gas pressure of 1/2 psi.

Burner control options to include the following: discharge air temperature.

Shall include the following safety controls:

1. Manual Reset, High Limit Switch:
2. Dual safety shutoff valves shall be that do not exceed 120 VAC control signals.
3. High and low Gas Pressure Switch(s):
4. Visual indication: Clear visual signal demonstrating the position of the main gas safety shutoff valves.

2.1.5 DAMPERS

2.1.5.1 Motorized Inlet Air Damper

Motorized Inlet Air Damper shall be low leakage type and shall be factory installed.

2.2 CURB ASSEMBLY

A curb assembly shall be made of galvanized steel provided by the factory for field assembly and installation as part of this division. The installing contractor shall be responsible for coordinating with roofing contractor to ensure curb unit is properly flashed to provide protection against weather/moisture penetration. Contractor shall provide and install appropriate insulation for the curb assembly.

2.3 SERVICE RECEPTACLE

A 120 VAC GFCI service outlet shall be factory-provided, and installed by the Contractor under Division 26 in a location designated by the Engineer.

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2.4 BLOWERS

2.4.1 Forward Curved (Standard)

1. Blower section construction, Supply Air: Belt drive motor and blower shall be assembled onto a minimum 14 gauge galvanized steel platform and must have neoprene vibration isolation devices, minimum of 1 – 1/8 inches thick.
2. Blower assemblies: Shall be statically and dynamically balanced and designed for continuous operation at maximum rated fan speed and horsepower.
3. Centrifugal blower housing: Formed and reinforced steel panels to make curved scroll housing with shaped cutoff.
4. Forward curved blower (fan) wheels: Galvanized or aluminum construction with inlet flange and shallow blades curved forward in direction of airflow. Mechanically attached to shaft with set screws.
5. Blower section motor source quality control: Blower performance shall be factory tested for flow rate, pressure, power, air density, rotation speed and efficiency. Ratings are to be established in accordance with AMCA 210, "Laboratory Methods of Testing Fans for Rating."

2.5 MOTORS AND DRIVES

2.5.1 General

Blower motors greater than ¾ horsepower shall be "NEMA Premium™" unless otherwise indicated. Compliance with EPA's minimum energy-efficiency standards for single speed ODP and TE enclosures is not acceptable. Motors shall be heavy-duty, permanently lubricated type to match the fan load and furnished at the specified voltage, phase and enclosure. Drives for Forward Curve blowers shall be sized for a minimum of 150% of driven horsepower and pulleys shall be fully machined cast-type, keyed and fully secured to the fan wheel and motor shafts. Electric motors of ten horsepower or less shall be supplied with an adjustable drive pulley.

2.5.2 Electrical Characteristics

Motors shall be 60 cycle, 1 phase 230 volts.

2.6 UNIT CONTROLS

The unit shall be constructed so that it can function as a stand-alone heating system controlled by factory-supplied remote panel, thermostats and sensors.

2.6.1 Sensors

Sensors are considered to be part of various optional operational modes or device controllers and shall be factory supplied and installed as specified by the A/E.

Sensors to be provided with the unit:

1. Heating Inlet Air Sensor
2. Dirty Filter Sensor
3. Fire Stat Type III

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4. 120V/24V Smoke Detector

2.7 FILTERS

Unit shall have 2" thick MERV 8 disposable pleated filters following the outdoor air intake in a V-bank arrangement and shall be accessible from the exterior of the unit.

3. EXECUTION

3.1 EXAMINATION

Prior to start of installation, examine area and conditions to verify correct location for compliance with installation tolerances and other conditions affecting unit performance. See unit IOM.

Examine roughing-in of plumbing, electrical and HVAC services to verify actual location and compliance with unit requirements. See unit Installation and Operations Manual (IOM).

3.2 INSTALLATION

Installation shall be accomplished in accordance with these written specifications, project drawings, manufacturer's installation instructions as documented in manufacturer's IOM, Best Practices and all applicable building codes.

3.3 CONNECTIONS

In all cases, industry Best Practices shall be incorporated. Connections are to be made subject to the installation requirements shown above.

1. Piping installation requirements are specified in Division 22 (Plumbing). Drawings indicate general arrangement of piping, fittings and specialties.
2. Duct installation and connection requirements are specified in Division 23 of this document.
3. Electrical installation requirements are specified in Division 26 of this document.

3.4 FIELD QUALITY CONTROL

Manufacturer's Field Service: Engage a factory authorized service representative to inspect field assembled components and equipment installation, to include electrical and piping connections. Report results to A/E in writing. Inspection must include a complete startup checklist to include (as a minimum) the following: Completed Start-Up Checklists as found in manufacturer's IOM.

3.5 START-UP SERVICE

Engage a factory authorized service representative to perform startup service. Clean entire unit, comb coil fins as necessary, and install clean filters. Verify water source for compliance with manufacturer's requirements for flow and temperature. Measure and record electrical values for voltage and amperage. Refer to Division 23 "Testing, Adjusting and Balancing" and comply with provisions therein.

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3.6 DEMONSTRATION AND TRAINING

Engage a factory authorized service representative to train owner's maintenance personnel to adjust, operate and maintain the entire unit. Refer to SECTION 017700 CLOSEOUT PROCEDURES.

-- End of Section 23 74 33 --

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SECTION 23 81 26 DUCTLESS SPLIT HEAT PUMP SYSTEMS

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

The system shall be a Mitsubishi Electric split system with Variable Speed Inverter Compressor technology. The system shall consist of a horizontal discharge, single phase outdoor unit, a matched capacity ceiling recessed cassette type indoor section that shall be equipped with a wired, wall mounted controller. Cooling and heating capacities shall be as scheduled on the drawings. Minimum SEER value shall be 13.5.

Quality Assurance

- a. The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL) and shall bear the ETL label.
- b. All wiring shall be in accordance with the National Electrical Code (N.E.C.) and local codes as required.
- c. The units shall be rated in accordance with Air-conditioning, Heating, and Refrigeration Institute's (AHRI) Standard 210 and bear the ARI Certification label.
- d. The units shall be manufactured in a facility registered to ISO 9001 and ISO 14001, which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
- e. A dry air holding charge shall be provided in the indoor section.
- f. The outdoor unit shall be pre-charged with R-410a refrigerant for 70 feet (20 meters) of refrigerant tubing.- PUY-42NHA4 for 100 feet (30 meters) of refrigerant tubing
- g. System efficiency shall meet or exceed SEER values below:

1.3 Delivery, Storage and Handling

- a. Unit shall be stored and handled according to the manufacturer's recommendations.
- b. The controller shall be shipped separately and shall be able to withstand 105°F storage temperatures and 95% relative humidity without adverse effect.

1.4 Warranty

The units shall have a manufacturer's parts and defects warranty for a period five (5) year from date of installation. The compressor shall have a warranty of seven (7) years from date of installation. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of the manufacturer. This warranty does not include labor.

PART 2 PRODUCTS

2.1 OUTDOOR UNIT:

- a. The outdoor unit shall be matched in capacity to the indoor unit.

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- b. The outdoor unit shall be equipped with an electronic control board that interfaces with the indoor unit to perform all necessary operation functions.
- c. The outdoor unit shall be capable of cooling operation down to 0°F ambient temperature without additional low ambient controls (optional wind baffle may be required).
- d. The outdoor unit shall be able to operate with a maximum height difference of 100 feet between indoor and outdoor units.
- e. System shall operate at up to a maximum refrigerant tubing length of 165 feet between indoor and outdoor units without the need for line size changes, traps or additional oil. Outdoor units shall be pre-charged for a maximum of 70 feet of refrigerant tubing.
- f. The outdoor unit shall be completely factory assembled, piped, and wired. Each unit must be test run at the factory.
- g. Outdoor unit sound level shall not exceed 48 dB(A).

2.1.1 Cabinet

- a. The casing shall be constructed from galvanized steel plate, finished with an electrostatically applied, thermally fused acrylic or polyester powder coating for corrosion protection and have a Munsell 3Y 7.8/1.1 finish.
- b. Mounting feet shall be provided and shall be welded to the base of the cabinet and be of sufficient size to afford reliable equipment mount and stability.
- c. Easy access shall be afforded to all serviceable parts by means of removable panel sections.
- d. The fan grill shall be of ABS plastic.
- e. Cabinet mounting and construction shall be sufficient to withstand 155 MPH wind speed conditions for use in Hurricane condition areas. Mounting, base support, and other installation to meet Hurricane Code Conditions shall be by others.

2.1.2 Fan

- a. Models PUY-A18/24/30/36NHA4 shall be furnished with a single DC fan motor. Model PUY-A42NHA4 shall have two (2) DC fan motors.
- b. The fan blade(s) shall be of aerodynamic design for quiet operation, and the fan motor bearings shall be permanently lubricated.
- c. The outdoor unit shall have horizontal discharge airflow. The fan shall be mounted in front of the coil, pulling air across it from the rear and dispelling it through the front. The fan shall be provided with a raised guard to prevent external contact with moving parts.

2.1.3 Coil

- a. The L shaped condenser coil shall be of copper tubing with flat aluminum fins to reduce debris build up and allow maximum airflow. The coil shall be protected with an integral metal guard.

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- b. Refrigerant flow from the condenser shall be controlled by means of an electronic linear expansion valve (LEV) metering device. The LEV shall be controlled by a microprocessor controlled step motor.
- c. All refrigerant lines between outdoor and indoor units shall be of annealed, refrigeration grade copper tubing, ARC Type, meeting ASTM B280 requirements, individually insulated in twin-tube, flexible, closed-cell, CFC-free (ozone depletion potential of zero), elastomeric material for the insulation of refrigerant pipes and tubes with thermal conductivity equal to or better than 0.27 BTU-inch/hour per Sq Ft / °F, a water vapor transmission equal to or better than 0.08 Perm-inch and superior fire ratings such that insulation will not contribute significantly to fire and up to 1" thick insulation shall have a - Flame-Spread Index of less than 25 and a Smoke-development Index of less than 50 as tested by ASTM E 84 and CAN / ULC S-102.

2.1.4 Compressor

- a. The compressor for models PUY-A12/18/24/30/36NHA4 shall be a DC twin-rotor rotary compressor with Variable Speed Inverter Drive Technology. The compressor for model PUY-A42NHA4 shall be a Frame Compliant Scroll compressor with Variable Speed Inverter Drive Technology.
- b. The compressor shall be driven by inverter circuit to control compressor speed. The compressor speed shall dynamically vary to match the room load for significantly increasing the efficiency of the system which shall result in significant energy savings.
- c. To prevent liquid from accumulating in the compressor during the off cycle, a minimal amount of current shall be automatically, intermittently applied to the compressor motor windings to maintain sufficient heat to vaporize any refrigerant. No crankcase heater is to be used.
- d. The outdoor unit shall have an accumulator and high pressure safety switch. The compressor shall be mounted to avoid the transmission of vibration.

2.1.5 Electrical

- a. The electrical power of the unit shall be 208volts or 230 volts, single phase, 60 hertz. The unit shall be capable of satisfactory operation within voltage limits of 187 volts to 253 volts.
- b. Power for the indoor unit shall be supplied from the outdoor unit via Mitsubishi Electric A-Control using three (3) fourteen (14) gauge AWG conductors plus ground wire connecting the units.
- c. The outdoor unit shall be controlled by the microprocessor located in the indoor unit.
- d. The control signal between the indoor unit and the outdoor unit shall be pulse signal 24 volts DC.
- e. The unit shall have Pulse Amplitude Modulation circuit to utilize 98% of input power supply.

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2.1.6 Operating Range:

Operating Range		Indoor Air Intake Temperature	Outdoor Air Intake Temperature
Cooling	Maximum	D.B. 95°F (35°C) W.B. 71°F (21.7°C)	D.B. 115°F (46°C)
	Minimum	D.B. 67°F (19.4°C) W.B. 57°F (13.9°C)	D.B. 0°F (-18°C)*

* Requires wind baffle – without wind baffle: D.B. 23°F (wind baffle is required).

2.2 INDOOR UNIT

The indoor unit shall be a space-saving ceiling-recessed cassette type, factory assembled, wired and tested. Contained within the unit shall be all factory wiring and internal piping, drain left mechanism, control circuit board, fan, and fan motor. The unit, in conjunction with the remote controller, shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, and a test run switch. Indoor unit and refrigerant pipes shall be purged with dry nitrogen before shipment from the factory.

2.2.1 Unit Cabinet: The cabinet shall be formed from galvanized sheet metal coated with high-density foam insulation. Cabinet shall be for recessed mounting and provided with four (4) corner mounting supports behind removable corner pockets in Grille assembly allowing adjustment of mounting height from front of unit.

- The cabinet panel shall have provisions for a field installed filtered outside air intake.
- There shall be a knock-out to provide a branch air duct for conditioning a secondary space.
- There shall be an optional multi-function casement which will mount between the unit cabinet and the Grille assembly to provide a second field installed filtered outside air intake and provide a mount for a high-efficiency filter element.
- A separate grill assembly shall be attached to the front of the cabinet to provide supply air vanes in four directions and a center mounted return air section. The four-way grill shall be fixed to bottom of cabinet allowing two, three or four-way blow. The grill vane angles shall be individually adjustable from the wired remote controller to customize the airflow pattern for the conditioned space. Grill assembly color shall be white, Munsell number 6.4Y 8.9/0.4.

2.2.2 Fan:

The indoor fan shall be an assembly with a turbo fan propeller, direct driven by a single motor and shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings. The indoor fan shall consist of four (4) speed settings, Low, Mid1, Mid2, High and Auto. The fan shall have a selectable Auto fan setting that will adjust the fan speed based on the difference between controller set-point and space temperature.

Indoor unit sound level shall not exceed the levels below:

Model Number	Low Speed	Mid Speed 1	Mid Speed 2	High Speed
PLA-A30BA4	28 dB(A)	30 dB(A)	32 dB(A)	34 dB(A)

2.2.3 Vane: The indoor unit shall have an adjustable air outlet system offering 4-way airflow, 3-way airflow, or 2-way airflow with switches that can be set to provide optimum airflow based on ceiling

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height and number of outlets used. The indoor unit vanes shall have 5 fixed positions and a swing feature that shall be capable of automatically swinging the vanes up and down for uniform air distribution. The vanes shall have an Auto-Wave selectable option in the heating mode that shall randomly cycle the vanes up and down to evenly heat the space. If specified, the grill shall have an optional i-see® sensor kit installed – sensor function described in System Control Section.

2.2.4 Filter

Return air shall be filtered by means of an easily removable, long life, washable filter.

2.2.5 Coil

- a. The indoor unit coil shall be of nonferrous construction with pre-coated aluminum strake fins on copper tubing. The tubing shall have inner grooves for high efficiency heat exchange.
- b. The heat exchanger shall have a modified fin shape that reduces air resistance for a smoother, quieter airflow. All tube joints shall be brazed with PhosCopper or silver alloy. The coils shall be pressure tested at the factory.
- c. A condensate pan with drain connections shall be provided under the coil. The unit shall also include a built-in, automatic condensate lift mechanism that will be able to raise drain water 33 inches (84 cm) above the condensate pan. The lift mechanism shall be equipped with a positive acting liquid level sensor to shut down the indoor unit if liquid level in the drain pan reached maximum level. An optional secondary drain pan level switch (DPLS1), designed to connect to the control board, shall also be provided if required, and installed on the condensate pan.
- d. Both refrigerant lines between the indoor unit and outdoor unit shall be fully insulated.

2.2.6 Electrical

- a. The electrical power of the unit shall be 208 / 230 volts, 1-phase, 60 hertz.
- b. The system shall be capable of satisfactory operation within voltage limits of 198 volts to 253 volts.
- c. The indoor unit shall be provided with A-Control – a system allowing the indoor unit to be powered and controlled directly from the outdoor unit using a fourteen (14) gauge (AWG) 3-wire connection plus ground wire providing both primary power and integrated, bi-directional, digital control signal without additional connections.
- d. The indoor units shall not have any supplemental or “back-up” electrical heating elements.

2.2.7 System Control:

- a. The control system shall consist of a minimum of two (2) microprocessors, one on each indoor and outdoor unit, interconnected by a single non-polar two-wire cable. The microprocessor located in the indoor unit shall have the capability of monitoring return air temperature and indoor coil temperature, receiving and processing commands from a wireless or wired controller, providing emergency operation and controlling the outdoor unit. The control signal between the indoor and outdoor unit shall be pulse signal 24 volts DC. Indoor units shall have the ability to control supplemental heat via connector CN24 and a 12 VDC output.

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- b. For A-Control, a three (3) conductor 14 gauge AWG wire with ground shall provide power feed and bi-directional control transmission between the outdoor and indoor units. . If code requires a disconnect mounted near the indoor unit, a TAZ-MS303 3-Pole Disconnect shall be used – all three conductors must be interrupted.
- c. The system shall be capable of automatic restart when power is restored after power interruption. The system shall have self-diagnostics ability, including total hours of compressor run time. Diagnostics codes for indoor and outdoor units shall be displayed on the wired controller panel.
- d. The indoor unit control board shall have auxiliary control contact connectors to provide:

Function / Model	PLA
CN-2L – Lossnay Control	X
CN-24(152) Back-up Heat	X
CN-32 – Remote Switch	X
CN-51 – Central Control	X
CN-105 – IP Terminal	X

X = Included

2.2.7.1 Wired Remote Controller

The Wired Remote Controller (PAR-21MAA) shall be approximately 5” x 5” in size and white in color with a light-green LCD display. The PAR-21MAA shall support a selection from multiple languages (Spanish, German, Japanese, Chinese, English, Russian, Italian, or French) for display information. There shall be a built-in weekly timer with up to 8 pattern settings per day. The controller shall consist of an On/Off button, Increase/Decrease Set Temperature buttons, a Cool/Auto/Fan/Dry mode selector, a Timer Menu button, a Timer On/Off button, Set Time buttons, a Fan Speed selector, a Ventilation button, a Test Run button, and a Check Mode button. The controller shall have a built-in temperature sensor. Temperature shall be displayed in either Fahrenheit (°F) or Celsius (°C), and Temperature changes shall be by increments of 1°F (0.5°C). The PAR-21MAA shall have the capability of controlling up to a maximum of 16 systems, as a group with the same mode and set-point for all, at a maximum developed control cable distance of 1,500 feet (500 meters). The control voltage from the wired controller to the indoor unit shall be 12/24 volts, DC. Field wiring shall run directly from the indoor unit to the wall mounted controller with no splices. Up to two wired controllers shall be able to be used to control one unit.

The basic functions are:

Wired Remote Controller (PAR-21MAA)	
Item	Description
Number of Units Controllable	16 units as 1 group
ON/OFF	Run and stop operation

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Wired Remote Controller (PAR-21MAA)	
Item	Description
Operation Mode	Switches between Cool/Dry/Auto/Fan/Heat.
Temperature Setting (Range and modes depend on connected unit model)	Sets the setpoint temperature in the following range Cool/Dry: 67°F-87°F Heat: 63°F-83°F Auto: 67°F-83°F
Fan Speed Setting (Range and modes depend on connected unit model)	Hi/Mid-2/Mid-1/Low/Auto
Air Flow Direction Setting (Air flow direction settings depend on the unit model)	Air flow direction angles 100%-80%-60%-40%, Swing.
Weekly Scheduler	ON/OFF/Temperature setting can be done up to 8 times one day in the week. The time can be set by the 1-minute interval.
Operating Conditions Display	Setpoint and room temperature. Sensing can be done at the remote controller or the indoor unit depending on the indoor unit dipswitch setting Liquid, discharge, indoor and outdoor pipe temperatures LEV opening pulses, sub cooling and discharge super heat Compressor Operating Conditions: Running current, frequency, input voltage, On/Off status and operating time
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed
Ventilation Equipment	Up to 16 indoor units can be connected to an interlocked system that has one LOSSNAY unit. LOSSNAY items that can be set are “Hi”, “Low”, and “Stop”. Ventilation mode switching is not available.
Auto Lock Out Function	Setting/releasing of simplified locking for remote control buttons can be performed. • Locking of all buttons • Locking of all buttons except ON/OFF button

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2.2.7.2 The microprocessor located in the indoor unit shall have the capability of sensing return air temperature and indoor coil temperature, receiving and processing commands from the wireless or a wireless or wired controller, providing emergency operation and controlling the outdoor unit.

PART 3 EXECUTION

2.1 INSTALLATION

The system shall be installed as indicated on the drawings, and in accordance with the manufacturer's printed installation instructions, and as directed by the Engineer.

-- End of Section --