

**CITY OF GREENVILLE
RECREATION AND PARKS
H. BOYD LEE PARK HVAC MODIFICATIONS**

ADDENDUM NO. 1

The following corrections, clarifications, or supplemental information is to be incorporated into the Contractor's Bid to perform the Work.

SPECIFICATIONS

TABLE OF CONTENTS: Section is *re-issued*.

SECTION 00400: Section is *re-issued*.

SECTION 01230: Section is *issued*.

SECTION 15815: Section is *re-issued*.

CLARIFICATIONS

The vendor for the fire alarm system is as follows:
Telecommunications, Inc.
Jack Morrow
(252) 758-4544

END OF ADDENDUM NO. 1

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BID FORM

TO: **City of Greenville, Recreation and Parks**
herein called "OWNER"

1. Pursuant to and in compliance with the invitation to bid and the proposed Contract Documents relating to construction of:

**City of Greenville
Recreation and Parks
H. Boyd Lee Park HVAC Modifications
Greenville, North Carolina**

the undersigned, having become thoroughly familiar with the terms and conditions of the proposed Contract Documents and with local conditions affecting the performance and costs of the Work at the place where the Work is to be completed, and having fully inspected the site in all particulars, hereby proposes and agrees to fully perform the Work within the time allowed and in strict accordance with proposed Contract Documents, including furnishing any and all labor and materials, and to do all of the work required to construct and complete said Work in accordance with the Contract Documents, for the following sum of money:

Single Prime Bid:

BIDDER'S COMPANY NAME: _____

BASE BID _____ (\$ _____)

Base bid shall include externally-insulated single-wall ductwork.

ALTERNATE NO. 1

Provide double-wall round ductwork in lieu of externally-insulated single-wall ductwork.
Provide internally-lined rectangular ductwork in lieu of externally-insulated single-wall ductwork. Increase sheet metal sizes of internally-lined ductwork to account for liner.
Clean, prep and paint indoor ductwork red to match existing.

(\$ _____)

LIST OF SUBCONTRACTORS			
	NAME OF COMPANY/ADDRESS		BID
ELECTRICAL			

ATTACH CHECK, CASH OR BID BOND TO THIS PROPOSAL.

2. I understand that the Owner reserves the right to reject this bid, but that this bid shall remain open and not be withdrawn for a period of 60 days from the date prescribed for its opening.

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3. If written notice of the acceptance of this bid is mailed or delivered to the undersigned within 45 days after the date set for the opening of this bid, or at any other time thereafter before it is withdrawn, the undersigned will execute and deliver the Contract Documents to Owner in accordance with this bid accepted, and will also furnish and deliver proof of insurance coverage, all within ten days after deposit in the mails of the notification of acceptance of this bid.
4. Notice of acceptance, or request for additional information, may be addressed to the undersigned at the address set forth below.
5. The bidder acknowledges receipt of the following Addenda and has incorporated bid revisions in this bid proposal.

Addendum No.	Dated	Received	Addendum No.	Dated	Received
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

6. Construction Time: The undersigned agrees if he is the successful bidder to commence work under this contract on March 1, 2017 and to fully complete all work on the Project within the following period set forth below.

60 Consecutive Calendar Days (completion by April 30, 2017)

7. The bidder further agrees that the Owner has the right to withhold from compensation otherwise to be paid the amount of three hundred dollars (**\$300.00**) per day that the work is not completed after the completion date defined above as liquidated damages reasonably determined to be incurred by the Owner as a result of such delay.
8. The names of all persons interested in the foregoing bid as principals are:

IMPORTANT NOTICE: If bidder or other interested persons is a corporation, give legal name of corporation, state in where incorporated, and names of president and secretary; if a partnership, give names of firm and names of all individual co-partners composing the firm; if bidder or other interested person is an individual, give first and last names in full.)

Licensed in accordance with an act for the registration of contractors, and with N.C. license number _____.

Sales and use tax registration number _____.

SIGN HERE:

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Signature of Bidder

NOTE: If bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If bidder is a partnership, set forth the name of the firm together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

Business address: _____

(Corporate Seal)

Telephone number: _____ Date of proposal: _____

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SECTION 01230 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

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

1.2 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. 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.

1.3 PROCEDURES

- A. Coordination: Modify 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 modifications to alternates.

- C. Execute accepted alternates under the same conditions as other work of the Contract.

- 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 - EXECUTION

2.1 SCHEDULE OF ALTERNATES

Alternate No. 1: Provide double-wall round ductwork in lieu of externally-insulated single-wall ductwork. Provide internally-lined rectangular ductwork in lieu of externally-insulated single-wall ductwork. Increase sheet metal sizes of internally-lined ductwork to account for liner. Clean, prep and paint indoor ductwork red to match existing.

END OF SECTION 01230

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SECTION 15815 - METAL DUCTWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Single-wall rectangular ducts and fittings.
 - 2. Single-wall round ducts and fittings.
 - 3. Double-wall round ducts and fittings.
 - 4. Sheet metal materials.
 - 5. Duct liner.
 - 6. Sealants and gaskets.
 - 7. Hangers and supports.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of the following products:
 - 1. Liners and adhesives.
 - 2. Sealants and gaskets.

1.4 QUALITY ASSURANCE

- A. ASHRAE Compliance: Comply with ASHRAE 62.1, Section 5 "Systems and Equipment" and Section 7 "Construction and System Start-up." Comply with ASHRAE 90.1, Section 6.4.4 "HVAC System Construction and Insulation."
- B. SMACNA Compliance: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations and other imperfections.
- C. Surface Burning Characteristics: Tested and labeled in accordance with ASTM E84 "Standard Test Method for Surface Burning Characteristics of Building Materials."
 - 1. Duct Liner: Flame spread index of 25 or less, and smoke developed index of 50 or less.

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PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static pressure class unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SINGLE-WALL ROUND DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static pressure class unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."
- D. Tees and Laterals: Select types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."

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2.3 DOUBLE-WALL ROUND DUCTS AND FITTINGS

- A. Outer Duct: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static pressure class unless otherwise indicated.
 - 1. Transverse Joints: Select joint types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."
 - 2. Longitudinal Seams: Select seam types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."
 - 3. Tees and Laterals: Select types and fabricate according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static pressure class, applicable sealing requirements, materials involved, duct support intervals, and other provisions in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."
- B. Inner Duct: Minimum 0.028 inch solid galvanized sheet steel.
- C. Interstitial Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C1071, Type I or Type II with moisture-repellant and erosion-resistant coating.
 - 1. Insulation Characteristics: 1-1/2 inches thick, 3 lb/cu. ft. nominal density, 5.0 minimum installed R-value.
 - 2. Spacers: Install spacers that position the inner duct at uniform distance from outer duct without compressing insulation.

2.4 SHEET METAL MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A653.
 - 1. Galvanized Coating Designation: G60.
 - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- B. Reinforcement Shapes and Plates: ASTM A36, steel plates, shapes, and bars; galvanized.
- C. Tie Rods: Galvanized steel, 1/4 inch minimum diameter for lengths 36 inches or less; 3/8 inch minimum diameter for lengths longer than 36 inches.

2.5 DUCT LINER

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Certainteed.

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2. Johns Manville.
 3. Knauf Insulation.
 4. Owens Corning Insulating Systems, LLC.
- B. Glass Fiber Board and Roll Duct Liner: Glass fibers bonded with a thermosetting resin. Comply with ASTM C1071, Type I or Type II with moisture-repellant and erosion-resistant coating.
1. Basis of Design: Owens Corning QuietR Duct Liner.
 2. Liner Adhesive: Comply with ASTM C916 and MIL-A-3316C, Class 2, Grade A.
- C. Insulation Pins:
1. Metal, Adhesively-Attached, Perforated-Base Insulation Pins: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
 - a. Baseplate: Perforated, galvanized carbon steel sheet, 0.030 inch thick by 2 inches square.
 - b. Spindle: Zinc-coated, carbon steel, fully annealed, 0.106 inch diameter shank, length to suit depth of insulation indicated.
 - c. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.
 2. Insulation Pin Retaining Washers: Self-locking washers formed from 0.016 inch thick, galvanized steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

2.6 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface burning characteristics for sealants and gaskets shall be a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested according to UL 723; certified by an OSHA Nationally Recognized Testing Laboratory.
- B. Water-Based Joint and Seam Sealant:
1. Application Method: Brush on.
 2. Solids Content: Minimum 65 percent.
 3. Shore A Hardness: Minimum 20.
 4. Water resistant.
 5. Mold and mildew resistant.
 6. VOC: Maximum 75 g/L (less water).
 7. Maximum Static Pressure Class: 10 inches wg, positive and negative.
 8. Service: Indoor or outdoor.
 9. Substrate: Compatible with galvanized sheet steel, stainless steel, or aluminum sheets.
- C. Flanged Joint Sealant: Comply with ASTM C920.
1. General: Single-component, acid-curing, silicone, elastomeric.
 2. Type: S.
 3. Grade: NS.

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4. Class: 25.
 5. Use: O.
 6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

2.7 HANGERS AND SUPPORTS

- A. Hanger Rods: Zinc-plated steel rods and nuts.
- B. Strap and Rod Sizes: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- C. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- D. Trapeze and Riser Supports:
 1. Supports for Galvanized Steel Ducts: Galvanized steel shapes and plates.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct systems. Indicated locations and arrangements are used to size duct and calculate friction loss and other design considerations. Install duct systems as indicated unless deviations to layout are approved by Architect/Engineer.
- B. Install ducts according to SMACNA "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install round ducts in maximum practical lengths.
- D. Install ducts with fewest possible joints.
- E. Install factory or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- I. Route ducts to avoid passing through electrical equipment rooms.

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- J. Where ducts pass through non-fire-resistance-rated interior partitions, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- K. Do not install ducts directly above electrical equipment such as panelboards and transformers.

3.2 INSTALLATION OF EXPOSED DUCTWORK

- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
- B. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories and air outlets.
- C. Clean outside of ducts to remove dirt, dust and oil in preparation for painting.
- D. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 DUCT LINER INSTALLATION

- A. Shop Application of Duct Liner: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible" and NAIMA "Fibrous Glass Duct Liner Standard."
 - 1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
 - 2. Butt transverse joints without gaps, and coat joint with adhesive.
 - 3. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
 - 4. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.
 - 5. Apply adhesive coating on longitudinal seams.
 - 6. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely, at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.
 - 7. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall.

3.4 DUCT SEALING

- A. Seal ducts for duct static pressure, seal classes, and leakage classes specified in "Duct Schedule" Article in accordance with procedures in SMACNA "HVAC Duct Construction Standards - Metal and Flexible."

3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

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- B. Building Attachments: Structural steel fasteners appropriate for construction materials to which hangers are being attached.
- C. Hanger Spacing: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.
- D. Hangers Exposed to View: Threaded rod and angle or channel supports.
- E. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.6 DUCT SCHEDULE

- A. Supply Ducts:
 - 1. Pressure Class: Positive 4 inches wg.
 - 2. Seal Class: A.
- B. Return Ducts:
 - 1. Pressure Class: Negative 2 inches wg.
 - 2. Seal Class: A.
- C. Duct Liner:
 - 1. Indoor Rectangular Supply Ducts and Plenums: Glass fiber, 1-1/2 inches thick, 3 lb/cu. ft. nominal density, 5.0 minimum installed R-value.
 - 2. Indoor Rectangular Return Ducts and Plenums: Glass fiber, 1-1/2 inches thick, 3 lb/cu. ft. nominal density, 5.0 minimum installed R-value.
 - 3. Outdoor Rectangular Supply Ducts and Plenums: Glass fiber, 2 inches thick, 3 lb/cu. ft. nominal density, 8.0 minimum installed R-value.
 - 4. Outdoor Rectangular Return Ducts and Plenums: Glass fiber, 2 inches thick, 3 lb/cu. ft. nominal density, 8.0 minimum installed R-value.
- D. Elbow Configuration:
 - 1. Rectangular Supply and Return Duct: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-width ratio.
 - b. Mitered Type RE 2 with vanes complying with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
 - 2. Round Supply and Return Duct: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."
 - a. Adjustable with minimum radius-to-diameter ratio of 1.5.
- E. Branch Configuration:

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1. Rectangular Supply and Return Duct: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
 - a. 45 degree entry.

2. Round Supply and Return Duct: Comply with SMACNA "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
 - a. 45 degree entry.

END OF SECTION 15815

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