

# **INVITATION FOR BIDS**

**20190201**

## **HPHA Office HVAC**



**HOUSING AUTHORITY OF THE CITY OF HIGH POINT  
500 E. RUSSELL AVE.  
P.O. BOX 1779  
HIGH POINT, NC 27260/27261  
PHONE (336) 878-2326**

### **ENGINEER**

Facility Strategies Group, LLC  
1012 Market St. Suite 307  
Fort Mill, SC 29708

**April 2019**

**INVITATION FOR BIDS FOR  
HPHA Office HVAC  
20190201**

Sealed Bids will be received by the Housing Authority of the City of High Point (HPHA), 500 E. Russell Ave., High Point, NC for **HPHA Office HVAC** until 10:00 a.m. local time, May 3, 2019. Immediately following the deadline, the bids will be publicly opened at HPHA. Any bid received later than the specified time, whether delivered in person or mailed, will be disqualified. Emailed, faxed or other unsealed submissions will not be accepted.

The contractor will modernize the HVAC equipment at the HPHA office building. The contractor will replace three (3) rooftop units, replace malfunctioning controls equipment and ductwork, and add VVT controls in the North wing of the office building. The new controls system will utilize a JACE head-end with remote access. The contractor will perform the work in accordance with the Project Manual (Specifications) and Construction Documents (Drawings) for this project. The contractor will submit a construction staging schedule with his/her sealed bid.

A Pre-Bid Conference will be held on April 22, 2019 at 11:00 a.m. at 500 E. Russell Ave. in High Point, NC. All interested Contractors may obtain IFB documents through HPHA's website at [www.hpha.net](http://www.hpha.net), or by sending an email request to [tgann@hpha.net](mailto:tgann@hpha.net). All questions must be sent to HPHA by 6:00 p.m. on April 22, 2019. An addendum will be issued by 6:00 p.m. on April 24, 2019. It is important that the bids be submitted in a sealed envelope clearly marked in the lower left-hand corner with the name of the project: "**HPHA Office HVAC- 20190201**".

All bids must contain the following completed forms:

- |   |  |
|---|--|
| 1. Responder's Statement (Attachment A)   | 11. Change Order Acknowledgement form  |
| 2. Profile of Firm (Attachment B)   | 12. Environmental 24 CFR 58 Certification  |
| 3. Cost Proposal (Attachment C)   | 13. Estimated Project Work Force-Prime/Sub Contractor                                |
| 4. Construction Documents sign off  | 14. Compliance with Executive Order No. 11246  |
| 5. Financial Statement or Audit   | 15. Performance/Payment Bond Certification   |
| 6. Non-collusive Affidavit  | 16. References/Experience  |
| 7. Section 3 and MWBE Certifications  | 17. Bid Bond   |
| 8. E-Verify Affidavit   | 18. North Carolina Contractor's License for all Prime Contractors and Subcontractors |
| 9. Personnel Certification  | 19. Construction Staging Schedule  |
| 10. Representations, Certifications, and Other Statements of Bidders Public and Indian Housing Programs (form HUD-5369-A) |  |

Direct all inquiries and sealed bids to:

Tracy S. Gann, Chief Financial Officer  
Housing Authority of the City of High Point  
500 E. Russell Ave.  
High Point, NC 27260  
Phone: 336-878-2326  
Email: [tgann@hpha.net](mailto:tgann@hpha.net)

### **HPHA RESERVATION OF RIGHTS NOTICE**

- HPHA reserves the right to reject any or all bids, to waive informalities in the bidding process, and to terminate the bidding process at any time, if deemed to be in the best interest of the HPHA.
- HPHA reserves the right to terminate any contract awarded pursuant to this bid process, at any time for the convenience of the HPHA upon five (5) days written notice to the successful bidder/responder.
- HPHA reserves the right to determine the days, hours and locations that the successful bidder/responder will provide the services detailed by this bid process.
- HPHA reserves the right to hold all bids without award and not permit withdrawal of said bids for a period of sixty (60) days from the bid opening date. Bids may be released by the HPHA Procurement Officer upon written request by the bidder/responder.
- HPHA reserves the right to issue multiple contracts as a result of this offering.
- HPHA reserves the right to reject any bid that it deems to be non-responsive or the bid from any bidder/responder deemed to be non-responsive.
- HPHA will have no obligation to compensate any bidder/responder for any cost incurred in responding to this IFB document.

### **PROTEST PROCEDURES**

Any actual or prospective contractor may protest the solicitation or award of a contract for serious violations of the principles of HPHA's Procurement Policy. Any protest against a solicitation must be received in writing before the due date for receipt of bids or bids, and any protest against the award of a contract must be received in writing within ten (10) calendar days after contract award, or the protest will not be considered. All bid protests will be in writing and submitted to the Contracting Officer or designee, who will issue a written decision on the matter. The Contracting Officer may, at his or her discretion, suspend the procurement pending resolution of the protest, if warranted by the facts presented.

### **REQUIREMENTS FOR WRITTEN PROTEST**

Protests will be submitted in writing, clearly stating the basis for the protest. These protests will include, at a minimum:

- a. The name, address, and phone number(s) of the protestor;
- b. The solicitation number and project title;
- c. A detailed statement of the basis for the protest;
- d. Supporting evidence or documents to substantiate any arguments; and
- e. The form of relief requested.

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**SAMPLE CONTRACT AND SCOPE OF WORK FOR  
HPHA Office HVAC**

**HOUSING AUTHORITY OF THE CITY OF HIGH POINT**

**NORTH CAROLINA  
GUILFORD COUNTY**

**HPHA Contract Number 20190201**

This contract for **HPHA Office HVAC** is made effective this \_\_\_\_\_ day of May 2019 by and between the **Housing Authority of the City of High Point (HPHA)**, whose address is P.O. Box 1779, High Point, NC 27261 and \_\_\_\_\_ (**Contractor**), whose address is \_\_\_\_\_.

**Witness That:**

WHEREAS, HPHA is a public housing authority organized under Chapter 157 of the North Carolina General Statutes;

WHEREAS, HPHA desires to enter into this Contract for the provision of services by the Contractor to meet the goals and objectives of HPHA;

WHEREAS, HPHA has selected the Contractor consistent with HPHA's Procurement Policy, and all applicable federal, state and local procurement laws;

WHEREAS, the Contractor has the knowledge and experience required to fully perform the scope of work herein;

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and other good and valuable consideration hereby acknowledged, the parties hereto agree as follows:

**A. SCOPE OF WORK**

Facility Strategies Group, LLC will be the Contract Administrator for this project. The Contract Administrator has created a Project Manual (Specifications) and Construction Documents (Drawings) for this project that are part of the scope of work and this contract as referenced herein. The contractor will perform the work in accordance with the Project Manual (Specifications), Construction Documents (Drawings), and the staging requirements for this project.

The contractor will modernize the HVAC equipment at the HPHA office building. The contractor will replace three (3) rooftop units, replace malfunctioning controls equipment and ductwork, and add VVT controls in the North wing of the office building. The new controls system will utilize a JACE head-end with remote access. The contractor will submit the construction staging schedule for review and approval by the Contract Administrator and the HPHA before beginning any work.

**B. CONTRACTOR'S WORK PROCEDURES**

The Contractor will supply all materials, will work in a workmanlike manner, and will maintain a clean and safe working environment for the employees and residents of the HPHA. The Contractor will furnish all labor and equipment required to supply and deliver the required materials. The contractor will remove all rubbish, debris, and accumulated material after completion of the work.

**C. CONTRACTOR'S QUALIFICATIONS**

Contractor must possess a valid North Carolina Contractor's license for all Prime Contractors and Subcontractors, and will maintain good standing with all offices of the State of North Carolina during the term of this contract.

**D. CONTRACTOR'S RESPONSIBILITIES**

1. The Contractor must perform on the site and with his/her organization, work equivalent to at least 15% of the total amount of work to be performed under this contract. This percentage may be reduced by a supplemental agreement

to this order if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the HPHA.

2. The Contractor will be responsible for the employment, control and conduct of his/her employees and any approved subcontractors and for any damages resulting from any action or negligence of any employee or subcontractor. The Contractor and/or his/her employees must not bring, authorize, or allow any person or persons other than employees of the Contractor, employees of the approved subcontractors, staff of the HPHA or persons authorized by the HPHA to enter any property or premises where the Contractor is working or has been working. Any violation of this statement or participation in any illegal activity by the Contractor or his/her employees will result in the termination of this contract. The contractor will provide to HPHA a list of all employees and subcontractors (within 10 calendar days of the award) that will be at the project work site.
3. The Contractor will be solely responsible for the placement and removal of all cautionary signs, i.e. truck cones, while unloading all materials associated with this contract.
4. The Contractor will not have a conflict of interest with any present or former member or officer of the governing body of the HPHA or any member of the officer's immediate family for this or any other contract with the HPHA or any employee of the HPHA who formulates policy or who influences decisions with respect to the project(s), or any member of the employee's immediate family, or the employee's partner, any public official, member of the local governing body, or State or local legislator, or any member of such individuals' immediate family, who exercises functions or responsibilities with respect to the project(s) or the HPHA. If there are any conflicts of interest with any contracts, or bids, it is the responsibility of the Contractor to inform the HPHA. The HPHA will investigate all of the information and make a decision to determine the final ruling.
5. Service, Material, and Equipment Responsibilities: The Contractor is required to provide all permits; licensing; insurance; labor (all workers must be a minimum of 18 years of age); supervision; vehicles; equipment; machinery and tools; and materials needed to provide the required services within the designated time frame.
6. Any damage to HPHA or Client property and any other items inclusive or affected by the contractor during the work of this contract will be the contractor's exclusive responsibility. The repair or replacement to restore to the original condition must be paid in full by the contractor.
7. The contractor is responsible for all licenses, permits, and bonds required to complete this work. A copy of all inspections is required by HPHA. The Contract Administrator and HPHA will inspect all work; the Contractor must acknowledge any deficiencies and submit a plan for corrective actions within twenty-four (24) hours of notice and will complete said corrective actions within seven (7) days.

#### E. COMPENSATION AND DELIVERABLES

The Contract will be a contract with work ordered in the IFB 20190201 dated April 2019 for "HPHA Office HVAC" from the HPHA and the IFB response from the contractor dated \_\_\_\_\_. The Contractor will submit pay requests (form HUD-51001) monthly. The Contractor will include his/her Company name, address, and telephone number; a pay request referencing this Contract, 20190201; and the details of work being invoiced. Payment of approved pay requests will be issued **net 30 days** after receipt at HPHA. Pay requests will be all inclusive to include delivery, taxes, time/labor, travel and related expenses, which are included in the contract amount. No additional charges will be permitted over and above the contract amount. Pay requests will include all costs of the Contractor, including time/labor, travel and related expenses needed to perform the scope of work. The Contractor agrees to keep accurate records, including time sheets and vouchers, of all time and expenses allocated to the performance of the contract work. Such records will be kept in the offices of the Contractor and will be made available to the HPHA for inspection and copying upon request. Retention is required of all records for three (3) years after the final contract payment and all other pending contract matters are closed. Pay requests will be submitted to:

Housing Authority of the City of High Point  
 Attention: Accounts Payable  
 P.O. Box 1779  
 High Point, NC 27261  
 or email: [accountspayable@hpha.net](mailto:accountspayable@hpha.net)

The Contract amount from the sealed bid for IFB 20190201 "HPHA Office HVAC" as submitted by the Contractor is \_\_\_\_\_.

#### **F. CONTRACT TERM**

The work will be commenced at the time stipulated in a written **"Notice to Proceed"** to the Contractor. The performance period of this Contract will be 180 calendar days. Liquidated damages will be assessed at the rate of **One Hundred Dollars (\$100.00) per day** for each calendar day beyond the stated Contract Time.

#### **G. PERFORMANCE STANDARD**

If, during the contract period, the product does not perform to the manufacturer's specifications, and it cannot be repaired, the contractor must replace it with a comparable product. If during the first ninety (90) days after installation the replacement product does not perform as specified, HPHA will be entitled to a refund of payments made to the Contractor for the replacement product. In providing services under this agreement, the Contractor must endeavor to perform in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

#### **H. NOTICE TO STOP WORK ORDER**

HPHA has the right to issue a Notice to Stop Work Order at any time during the length of the contract period. Contractor will stop all work immediately upon receiving the Notice to Stop Work Order, pending a decision from HPHA or an agreement that might affect the Scope of Work or the project duration.

#### **I. CHANGES**

HPHA may, from time to time, request changes in the scope of work of the Contractor to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contractor's compensation, which are mutually agreed upon by and between the HPHA and the Contractor must be incorporated in written amendments and change orders to this Contract. Change orders will only be issued for unforeseen events.

#### **J. PERSONNEL**

1. The Contractor represents that he/she has, or will secure at his/her own expense, all personnel required in performing the services under this Contract. All services required hereunder will be performed by the Contractor or under his/her supervision and all personnel engaged in the work will be fully qualified and, if applicable, will be authorized or permitted under State and local law to perform such services. None of the work or services covered by this Contract will be subcontracted without the prior approval of HPHA. Any work or services subcontracted hereunder will be specified by written contract or agreement and will be subject to each provision of this Contract. All personnel will be properly dressed to provide a positive reflection upon the Contractor and the HPHA. The Contractor will perform a drug test, a criminal background check and will check the registered sex offenders list on each employee who works on this contract. Each employee will pass a drug test, a criminal background check and will not be on the list of sex offenders before working on this contract and for the duration of the contract. The Contractor will provide to the HPHA a list of all employees and subcontractors to work on this project and will update this list any time that a change in employees or subcontractors is made for any reason.
2. The contractor will ensure compliance with E-Verify for the contractor and any subcontractors when signing this contract and for the duration of this contract. The contractor will ensure compliance by any subcontractors subsequently hired by the contractor. A violation of this provision will provide grounds for a breach of contract claim by the local government should the contractor fail to ensure that his or her subcontractors have complied with the E-Verify requirement.

**K. REPORTS AND INFORMATION**

The Contractor, at such times and in such forms as the HPHA may require, must furnish the HPHA such periodic reports as it may request pertaining to the work or services undertaken pursuant to this Contract, the cost and obligations incurred or to be incurred in connection therein, and any other matters covered by this Contract.

**L. TERMINATION FOR CONVENIENCE**

The HPHA reserves the right to terminate this contract at any time upon **five (5) days** written notice to the Contractor; provided, however, that to the extent HPHA's obligation to pay any of the fees described hereinabove has already accrued and said fees have already been earned by the Contractor, HPHA's obligation to pay said fees will survive the termination of this Contract.

**M. TERMINATION FOR CAUSE**

If Contractor refuses or fails to prosecute the work as described in the Scope of Work, or any separable part thereof, with the diligence that will ensure its completion within the time specified in this Contract, or any extension thereof, or fails to complete said work within the time specified in this Contract, and such refusal or failure has not been substantially cured within ten (10) days of written notice to Contractor, HPHA may, by further written notice to Contractor, terminate the right to proceed with the Scope of Work (or separable part of the Scope of Work) that has been delayed. In this event, HPHA may take over the work and complete it by contract or otherwise, and may take possession of and use materials, equipment, and plant on the work site necessary for completing the work.

**N. INDEMNIFICATION**

Contractor agrees to protect, defend, indemnify, keep, save, and hold HPHA, its officers, officials, employees, and agents free and harmless from and against any and all liabilities, losses, penalties, damages, settlements, environmental liability, costs, charges, professional fees (including attorney's fees) or other expenses or liabilities of every kind, nature and character arising out of or relating to any and all claims, liens, demands, obligations, actions, suits, judgments or settlements, proceedings or causes of action of every kind, nature, and character (collectively, Claims) relating to Contractor's scope of work specified hereunder arising after the "Notice to Proceed" Effective Date of this Contract.

**O. INSURANCE REQUIREMENTS**

The Contractor must provide General Liability insurance in the amount of \$1,000,000 at a minimum for each occurrence and must provide Vehicle Liability insurance in the amount of \$500,000 for each occurrence. These policies must name HPHA as an additional insured. Additionally, the Contractor must maintain Worker's Compensation Insurance for the statutory limits.

**P. DELIVERY OF PRODUCTS**

Contractor agrees that all products produced under this Contract and paid for by HPHA must be delivered to HPHA as directed in the Scope of Work. In the event of Termination, whether for cause or convenience, Contractor agrees that those documents that HPHA has requested and paid for must be delivered to HPHA and HPHA will enjoy ownership of such documents.

**Q. GENERAL TERMS AND CONDITIONS****1. COMPLIANCE WITH HUD REGULATIONS**

To the extent applicable, Contractor and HPHA must comply with all the provisions of HUD Regulations, and all state and local laws, ordinances and executive orders including, but not limited to: 2 CFR 200; Section 504 of the Rehabilitation Act of 1973 relating to disabilities; Section 3 of the Housing and Urban Development Act of 1968; Executive Orders 11246, 11625, 12432 and 12138 regarding Minority Business Enterprise Policy and Women's



Business Enterprise Policy; 24 CFR part 86; the cost principles of the Office of Management and Budget Circular A-87; Title VI of the Civil Rights Act of 1967 (42 U.S.C. 2000d et seq.); Age Discrimination Act of 1975 (42 U.S.C. 6101-07 et seq.); Copeland Anti-Kickback Act (18 U.S.C. ' 874 and 40 U.S.C. ' 276); Byrd Anti-Lobbying Amendment (31 U.S.C. ' 1352); Debarment and Suspension (Executive Orders 12549 and 12689); and to the extent not included in the foregoing, all such laws, rules, regulations and Executive Orders, set forth in this Contract, and the General Conditions of the Contract Public and Indian Housing Programs are specifically incorporated hereto. Contractor is mandated to comply with all the regulations for from HUD-50071 and form SF-LLL.

## 2. COMPLIANCE WITH LAWS AND REGULATIONS

Contractor must at all times observe and comply with all applicable laws, ordinances, rules, regulations and executive orders of the federal, state and local government, now existing or hereinafter in effect, which may in any manner affect the performance of this Contract. Contractor must take such actions as may be necessary to comply promptly with any and all governmental orders imposed by any duly constituted government authority whether imposed by Federal, state, county or municipal authority. The Contractor must avoid any conflict of interest in the performance of this contract, should any conflict develop the HPHA may provide assistance in the resolution of any potential situation that might result in a conflict of interest.

## 3. FORCE MAJEURE

Contractor will not be in default because of any failure to perform this Contract under its terms if the failure results from causes beyond the control and without the fault or negligence of Contractor. Examples of these causes are (i) acts of God or the public enemy, (ii) acts of government in its sovereign capacity, (iii) fires, (iv) floods, (v) epidemics, (vi) quarantine restrictions, (vii) freight embargoes, (viii) strikes or (ix) unusually severe weather. In each instance, the failure to perform must be beyond the control and without the fault or negligence of Contractor.

## 4. ENTIRE CONTRACT

This Contract is comprised of this contract document, the Project Manual (specifications) and Construction Documents (Drawings), the Invitation for Bid 20190201 for "HPHA Office HVAC" dated April 2019, and the bid submitted by the Contractor dated \_\_\_\_\_, incorporated herein by reference; and the HUD form as follows: General Conditions for Construction Contracts – Public Housing Programs (form HUD-5370) referenced herein. These items will constitute the entire Contract between the parties and no other warranties, inducements, considerations, promises, or interpretations will be implied or impressed upon this Contract that are not expressly addressed herein and therein.

## 5. COUNTERPARTS

This Contract may be comprised of several identical counterparts, each to be fully executed by the parties and each to be deemed an original having identical legal effect.

## 6. AMENDMENTS

No changes, amendments, modifications, or discharge of this Contract, or any part thereof, will be valid unless in writing and signed by the authorized agent of Contractor and by the duly authorized representative of HPHA.

## 7. GOVERNING LAW

This Contract will be governed as to performance and interpretation in accordance with Federal laws and the laws of the State of North Carolina. In the event of any dispute between the parties, venue is properly laid in Guilford County for any state court action and in the Middle District of North Carolina for any federal court action.

## 8. SEVERABILITY

If any provisions of this Contract will be held or deemed to be or will in fact be inoperative or unenforceable as applied in any particular case in any jurisdiction or in all cases because it conflicts with any other provision or provisions hereof or of any constitution, state, ordinance, rule of law or public policy, or for any other reason, such

circumstances will not have the effect of rendering the provision in question inoperative or unenforceable in any other case or circumstances, or of rendering any other provision or provisions herein contained invalid, inoperative, or unenforceable to any extent whatever. The invalidity of any one or more phrases, sentences, clauses or sections contained in this Contract will not affect the remaining portions of this Contract or any part thereof.

9. ASSIGNS

All of the terms and conditions of this Contract will be binding upon and inure to the benefit of the parties hereto and their respective legal representatives, successors, transferees and assigns.

10. OVERHEAD AND PROFIT FOR CHANGE ORDERS

Delete paragraph 29(f) (3) from HUD form 5370 in its entirety and insert the following paragraph: Overhead and profit for additional work or change orders will be calculated as follows:

- Change Orders will **only** be issued for unforeseen events.
- For work performed by the Prime Contractor's own work force, the Prime Contractor may include 6% markup for overhead, plus 10% profit in the cost bid.
- For work performed by Sub-Contractors, the Prime Contractor may only include a 10% markup for overhead.
- Sub-Contractor may include a 6% markup for overhead plus 10% profit in the cost bid.

R. COMMUNICATION AND NOTICES

The parties agree to use their best efforts to communicate all information regarding the Scope of Work under this Contract to the other party completely and promptly. All notices, requests, claims and other communications described herein or required hereby, will be given or made by personal delivery, courier, facsimile, electronic mail, or certified mail to the parties at the following respective addresses:

**HPHA**

**Tracy Gann**  
**Chief Financial Officer**  
**P.O. Box 1779**  
**500 E. Russell Ave.**  
**High Point, NC 27261/27260**  
**Fax: (336) 887-0976**  
**tgann@hpha.net**

**Contractor**

**Name:** \_\_\_\_\_  
**Title:** \_\_\_\_\_  
**Fax:** \_\_\_\_\_  
**Address:** \_\_\_\_\_

**Contract Administrator**

**Matt Pesce**  
**Facility Strategies Group, LLC**  
**1012 Market St. Suite 307**  
**Fort Mill, SC 29708**  
**Telephone - (803) 616-7240**  
**mpesce@fstrategies.com**

**E-Mail:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

S. DRUG FREE WORKPLACE

The Contractor hereby certifies that he has a drug free work place policy in effect and will submit the same to HPHA upon request. The drug free work place policy must include, but is not limited to the following:

1. Each employee of the Contractor will sign a statement stating that he/she agrees that he/she has been notified by the contractor and is aware that the unlawful manufacture, distribution, dispensing, possession, or use of a control substance is prohibited while working under a contract by HPHA.

- 2. The Contractor hereby agrees that each employee has agreed to notify the contractor of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) calendar days after such occurrence.
- 3. The Contractor hereby agrees upon such request by HPHA, provided HPHA has reasonable suspicion of such request, to any reasonable test, which expense will be the responsibility of the Contractor and the Contractor will agree to such test.
- 4. The word employee as stated above will include all persons on the job, including the Principal (Contractor), whom is actually performing the skills of trade pertaining to the contract.

**T. HUD GENERAL CONTRACT CONDITIONS**

This Contract is subject to the terms of form HUD-5370. To the extent the terms of the Contract are in conflict with the terms of form HUD-5370, the terms of form HUD-5370 will control.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

**Contractor**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Fed ID #: \_\_\_\_\_

**Housing Authority of the City of High Point**

By: \_\_\_\_\_

Angela G. McGill, Chief Executive Officer

### INTRODUCTION TO SECTION 3

Section 3 of the Housing and Urban Development Act of 1968 is a tool that is used for economic uplift. The Act requires the Housing Authority as well as their contractors and subcontractors to make a good faith effort by taking concrete steps to provide opportunities for job training, employment on a permanent, temporary or seasonal basis, and contracting to low-income persons, particularly those who are recipients of Federal housing assistance.

Some of the following definitions may be helpful in understanding the program.

Section 3 Area: City of High Point or Guilford County.

Section 3 Resident: An individual who resides in the Section 3 area who is low-income or very low-income. Low-income are families (including single persons), whose income does not exceed 80% of the median area income. Very low-income (including single persons), whose income does not exceed 50% of the median area income.

Section 3 Business: (1) A business located within the Section 3 Area owned in substantial part, at least 51%, by Section 3 Resident; (2) whose permanent, full-time employees include persons, at least 30 % of whom are currently Section 3 Residents; (3) within three years of the date of first employment with the business concerned were Section 3 Residents; (4) provides evidence of a commitment to subcontract in excess of 25% of the dollar award of all subcontracts to be awarded to business concerns that meet the qualifications set forth in (1), (2), or (3).

Median Family Income (MFI): MFI is determined by the Federal government. For this Section 3 Area, MFI for a family of 4 is \$60,500. Low-income is 80% of AMI (\$48,400); Very low-income is 50% of AMI (\$30,250); and Extremely Low-income is \$25,100, which is the greater of 30/50ths (60 percent) of the Section 8 very low-income limit or the poverty guideline as established by the Department of Health and Human Services (HHS), provided that this amount is not greater than the Section 8 50% very low-income limit. Consequently, the extremely low income limits may equal the very low (50%) income limits.

As a Contractor, you are required by the Act to take affirmative steps to give preference to the greatest extent feasible to qualified Section 3 area residents and business to provide training, employment and contracting opportunities.

Read the attached Section 3 Specification Clause, complete all attached certifications and forms, returning these completed forms with your other bid documents.

**SECTION 3 SPECIFICATION CLAUSE**

*All Section 3 covered contracts will include the following clause (referred to as the Section 3 clause):*

- A. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, will to the greatest extent feasible, be directed to low-and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- B. The parties of this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.
- C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under Section 3 clause and will post copies of the notice in conspicuous places at the work sit where both employees and applicants for training and employment positions can see the notice. The notice will describe the Section 3 preference, will set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking application for each of the positions; and the anticipated date the work will begin.
- D. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.
- E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contractor is executed, and (2) with persons other than those to whom the regulations 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.
- F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.
- G. With respect to work performed in connection with Section 3 covered Indian housing assistance, Section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment will be given to Indians, and (ii) preference in the award of contracts and subcontracts will be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of Section 3 and Section 7 (b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with Section 7 (b).

**CERTIFICATE OF SECTION 3 COMPLIANCE**

I certify that I have reviewed and fully understand the attached Section 3 Specification Clause and program and will demonstrate compliance to the “greatest extent feasible”, to meet the numerical goal of 30% new hires. I further certify that I have and will make every reasonable effort to purchase from those small businesses located within the boundaries of the Section 3 covered project area and further, will take concrete steps to expand resident training and employment opportunities such as, asking if residents are aware of available training and employment positions, encouraging residents to participate in the job application process, and actually employing Section 3 area residents. Furthermore, I will contact the Housing Authority to obtain listings of available individuals to fill my labor needs, if any such needs arise, for the duration of this contract.

\_\_\_\_\_  
Principal Officer of Bidding Company

\_\_\_\_\_  
Date

**SECTION 3 STATEMENT**

Are you claiming a Section 3 business preference? Yes \_\_\_\_ No \_\_\_\_ . If “Yes”, pursuant to the Section 3 categories listed below, and pursuant to the documentation justifying such, which Category are you claiming? \_\_\_\_\_

- i. Category 1a Business  
Business concerns that are 51 percent or more owned by residents of the housing development or developments for which the Section 3-covered assistance is expended
- ii. Category 1b Business  
Business concerns whose workforce includes 30 percent of residents of the housing development for which the Section 3 covered assistance is expended, or within three (3) years of the date of first employment with the business concern, were residents of the Section 3-covered housing development
- iii. Category 2a Business  
Business concerns that are 51 percent or more owned by residents of any other housing development or developments
- iv. Category 2b Business  
Business concerns whose workforce includes 30 percent of residents of any other public housing development or developments, or within three (3) years of the date of first employment with the business concern, were “Section 3” residents of any other public housing development
- v. Category 3 Business  
Business concerns participating in HUD Youth-build programs being carried out in the metropolitan area in which the Section 3 covered assistance is expended
- vi. Category 4a Business  
Business concerns that are 51 percent or more owned by Section 3 residents in the metropolitan area, or whose permanent, full-time workforce includes no less than 30 percent of Section 3 residents in the metropolitan area, or within three (3) years of the date of employment with the business concern, were Section 3 residents in the metropolitan area
- vii. Category 4b Business  
Business concerns that subcontract in excess of 25 percent of the total amount of subcontracts to Section 3 business concerns

**HOUSING AUTHORITY OF THE CITY OF HIGH POINT MWBE REQUIREMENTS**

Contractor receiving award of competitively bid contracts in excess of \$25,000 will be required to take affirmative steps listed in Items 1 - 5 below and are encouraged to have a minimum of 15% minority-owned business sub-contract participation. A contractor who claims an inability to identify a qualified and responsible minority subcontractor will include a Certificate to that effect which will be included for consideration by the Housing Authority Board of Commissioners in their decision to award a contract.

1. Placing qualified small and minority business enterprises on solicitation lists;
2. Assuring that small minority business, and women's business enterprises are solicited whenever there are potential sources;
3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises;
5. Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce.

**MWBE PARTICIPATION CERTIFICATION**

I certify that I have reviewed and fully understand the attached Housing Authority of the City of High Point MWBE requirements and will take the five affirmative steps listed and make a GOOD FAITH EFFORT to achieve the MWBE participation goal.

\_\_\_\_\_  
Principal Officer of Bidding Company

\_\_\_\_\_  
Date



**E-Verify Affidavit**

Under existing North Carolina law, all state agencies, cities, counties, and local school boards must use E-Verify to check the work authorization of all new employees. (G.S. 126-7.1; G.S. 160A-169.1; and G.S. 153A-99.1). The requirement also applies to all private employers doing business in North Carolina who employ 25 or more employees in this state. G.S. 64-26(a) Private employers subject to the E-Verify requirement must maintain a record of verification of the employee's legal work status while the employee is employed and for one year thereafter.

E-Verify is a free, web-based system operated by the U.S. Department of Homeland Security in partnership with the Social Security Administration that allows participating employers to electronically verify the legal employment status of newly hired employees. Employers submit information taken from a new hire's Form 1-9 (Employment Eligibility Verification Form) through E-Verify to the Social Security Administration and U.S. Citizenship and Immigration Services (USCIS) to determine whether the information matches government records and whether the new hire is authorized to work in the United States. The employer receives an electronic verification of the new hire's legal employment status.

The Website address is: <http://www.uscis.gov/portal/site/uscis> then click on the E-Verify Home Page.

State of \_\_\_\_\_

County of \_\_\_\_\_

I \_\_\_\_\_ of \_\_\_\_\_ attest to:  
Bidder, Partner, Officer Company Name

1a. \_\_\_\_\_ compliance with E-Verify; or

1b. \_\_\_\_\_ the fact that my company employs less than 25 employees in this state.

If subcontractors are required for the proposed contract I also attest to:

2a. \_\_\_\_\_ my company's subcontractors' compliance with E-Verify; and/or

2b. \_\_\_\_\_ the fact that my company's subcontractors employ less than 25 employees in this state; or

2c. \_\_\_\_\_ No subcontractors for the proposed contract.

The party making the foregoing proposal or bid certifies that E-Verification is genuine; that said bidder has checked all personnel at the E-Verify website and that all statements in said proposal or bid are true. A violation of this provision would provide grounds for a breach of contract claim by the local government should the contractor fail to ensure that his or her subcontractors have complied with the E-Verify requirement.

Subscribed and sworn to before me  
this \_\_\_\_\_ day of \_\_\_\_\_ 2 \_\_\_\_\_

Signature of: \_\_\_\_\_  
Bidder, if the bidder is an individual

\_\_\_\_\_  
Partner, if the bidder is an individual

\_\_\_\_\_  
Official Signature of Notary

\_\_\_\_\_  
Officer, if the bidder is a corporation

\_\_\_\_\_, Notary Public  
Notary's Printed or Typed Name

My Commission expires: \_\_\_\_\_ 2 \_\_\_\_\_

**Personnel Certification**

Date \_\_\_\_\_

I \_\_\_\_\_ of \_\_\_\_\_ certify that:  
Bidder, Partner, Offeror Company Name

\_\_\_\_\_ all employees who will be doing work for this contract have passed a drug test; and

\_\_\_\_\_ all employees who will be doing work for this contract have had a criminal background check and have not had a drug related or other criminal charge for the last seven (7) year period beginning on the date of such conviction; and

\_\_\_\_\_ all employees who will be doing work for this contract have been checked against the Sex Offenders Registration and are not a registered Sex Offender. HPHA will prohibit any contractor or any worker who is subject to a lifetime sex offender registration requirement under a Sex Offender Registration program from doing work for this contract.

I certify that the results of the personnel certifications are genuine; that said bidder has checked all personnel in all three (3) areas listed above and that all statements in said proposal or bid are true.

Signature of: \_\_\_\_\_  
Bidder, if the bidder is an individual

\_\_\_\_\_  
Partner, if the bidder is an individual

\_\_\_\_\_  
Officer, if the bidder is a corporation

**Project Manual (Specifications) and Construction Documents (Drawings) sign off sheet**

I, \_\_\_\_\_ (contractor), hereby certify that my/our bid is based solely on the Project Manual (Specifications) and Construction Documents (Drawings), and any addenda that are issued for the IFB 20190201 for HPHA Office HVAC. I understand that any company that does not follow the drawings and specifications provided by the Architect/Engineer in the bid package will be considered non-responsive and non-responsible.

The index of drawings and specifications in the Project Manual in the IFB 20190201 for HPHA Office HVAC Construction Documents dated June 19, 2018 are as follows:

**INDEX OF CONSTRUCTION DOCUMENTS (Drawings)**

- C1.0 Cover Page
- M1.0 Mechanical Schedule
- M1.1 North Wing New Ductwork
- M1.2 North Wing Controls
- M1.3 North Wing Rooftop Equipment
- M1.4 South Wing New Controls
- M1.5 South Wing Rooftop Equipment
- M1.6 Controls Sequence of Operations
- M1.7 General Details

\_\_\_\_\_  
Name

\_\_\_\_\_  
Contracting Company Officer Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**Change Order Acknowledgment Form**

I, \_\_\_\_\_ (contractor), hereby acknowledge and understand that there will not be any change orders unless they are unforeseen. If my/our company knows of any changes that are needed, they need to be brought to the attention of HPHA before the final bid/proposal date for this package.

\_\_\_\_\_  
Project Number & Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Contracting Company Officer Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**ENVIRONMENTAL 24 CFR 58 CERTIFICATION**

If the contractor suspects there are any environmental issues or concerns on the property, either existing or caused during the construction of the project, they will have a certified environmental consultant survey, test, and remove any substance determined to be of concern as it relates to HUD 24 CFR 58 requirements. This can be done by an outside service or can be performed by an internal employee of the Contractor's company, as long as they have the proper certification. At all areas affected by the removal, the contractor will replace affected areas with new materials that meet the requirements of the project. The contractor will provide to HPHA a copy of all reports related to the removal and replacement.

I \_\_\_\_\_, have read the statement above and will comply with the rules and regulations related to environmental issues in compliance with HUD 24 CFR 58 requirements of any property(s) in connection with Contract # \_\_\_\_\_.

\_\_\_\_\_  
Contracting Company Officer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

**FORM OF NON-COLLUSIVE AFFIDAVIT**

(Prime Contractor)

State of ( \_\_\_\_\_ ).

County of ( \_\_\_\_\_ )

being first duly sworn deposes and says:

That he is \_\_\_\_\_  
(a partner or officer of the firm of, etc.)

that party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or of that of the Housing Authority of the City of High Point, North Carolina or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

Signature of:

\_\_\_\_\_  
Bidder, if the bidder is an individual

\_\_\_\_\_  
Partner, if the bidder is a partnership

\_\_\_\_\_  
Officer, if the bidder is a corporation

Subscribed and sworn to before me

this \_\_\_\_\_ day of \_\_\_\_\_ 2 \_\_\_\_\_

My Commission expires \_\_\_\_\_ 2 \_\_\_\_\_.

**Compliance with Executive Order No. 11246**  
(as amended September 21, 2014 by Executive Order 13672)

I \_\_\_\_\_, representing \_\_\_\_\_  
(Name) (Company Name)

hereby comply with Executive Order No. 11246 which states the following:

The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action will include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

**BIDDER'S EXPERIENCE**

Please provide the following information for projects you have done of similar size.  
Please include your most recent jobs and experience with Housing Authority Agencies.

Project Name and Location:	Project Date(s)
Project Description:	
Contract Amount	
Contact's Name	
Contact's Email	
Contact's Phone	

Project Name and Location:	Project Date(s)
Project Description:	
Contract Amount	
Contact's Name	
Contact's Email	
Contact's Phone	

Project Name and Location:	Project Date(s)
Project Description:	
Contract Amount	
Contact's Name	
Contact's Email	
Contact's Phone	

Project Name and Location:	Project Date(s)
Project Description:	
Contract Amount	
Contact's Name	
Contact's Email	
Contact's Phone	



**BID BOND**

KNOW ALL MEN BY THESE PRESENTS, that the undersigned,  
\_\_\_\_\_ as Principal, and  
\_\_\_\_\_ as Surety, are hereby held and firmly bound unto as Owner in  
the penal sum of \_\_\_\_\_ Dollars,(\_\_\_\_\_)  
for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs,  
executors, administrators, successors and assigns.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 2\_\_\_\_\_.

The condition of the above obligation is such that whereas the Principal has submitted to \_\_\_\_\_  
\_\_\_\_\_ a certain Bid, attached hereto and hereby made a part hereof to enter into a  
contract in writing, for the \_\_\_\_\_

NOW THEREFORE,

(a) If said Bid will be rejected, or in the alternate,

(b) If said Bid will be accepted and the Principal will execute and deliver a contract in the Form of Contract attached  
hereto (properly completed in accordance with the said Bid) and will furnish a bond for this faithful performance of  
said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and  
will in all other respects perform the agreement created by the acceptance of said Bid, then this obligation will be  
void, otherwise the same will remain in force and effect; it being expressly understood and agreed that the liability of  
the Surety for any and all claims hereunder will, in no event, exceed the penal amount of this obligation herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of the Surety and its bond will be in  
no way impaired or affected by an extension of the time within which the Owner may accept such Bid; and said  
Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as  
are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper  
officers, the day and year first set forth above.

\_\_\_\_\_  
Principal

Seal:

\_\_\_\_\_  
Surety

\_\_\_\_\_  
By

**PERFORMANCE & PAYMENT BOND CERTIFICATION**

If \_\_\_\_\_ (company name) is the successful bidder, my company will furnish an **Assurance of Completion** to HPHA as stated in the Instructions to Bidders for Contracts Public and Indian Housing Programs (form HUD-5369), page 3 of 4, Section 10. I understand that my company will have 30 calendar days from the Notice of Award to furnish such assurance of completion. I hereby certify that my company will furnish such assurance of completion in the form of either:

- (1) a performance and payment bond in a penal sum of 100 percent of the contract price; or,
- (2) separate performance and payment bonds, each for 50 percent or more of the contract price;

Bonds must be obtained from guarantee or surety companies acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. U.S. Treasury Circular Number 570 lists companies approved to act as sureties on bonds securing Government contracts, and the States in which the company is licensed to do business. The circular may be downloaded at <http://www.fms.treas.gov/c570/index.html>.

I \_\_\_\_\_, have read the statement above and will comply with the rules and regulations on the subject of Performance & Payment Bond in connection with Contract # \_\_\_\_\_.

\_\_\_\_\_  
Contracting Company Officer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

**ESTIMATED PROJECT WORK FORCE PRIME CONTRACTOR**

Job Category	Total Estimated Positions Needed for Project	Number of Positions Occupied by Permanent Employees	Number of Positions Not Occupied	Number of Positions to be Filled with Section 3 Residents/Pay Rate

**EMPLOYMENT CERTIFICATION (make additional copies as necessary)**

The Company hereby certifies that the above table represents the appropriate number of employee positions required for the execution of this Project. Also, this table represents the number of Section 3 service area residents that the company proposes to employ. Also, the Company will provide to the Housing Authority of the City of High Point the name(s), address, and last years income of any new hires for qualified Section 3 residents. A Section 3 Resident is an individual who is a resident of the City of High Point area or the Guilford County areas whose by income is considered Low-income, less that 80% of area median income or Very Low-income, less than 50% of area median income. (Contact the Housing Authority for these income levels)

Project No.: \_\_\_\_\_ By: \_\_\_\_\_ :  
 (Company Name)  
 Signature/Title: \_\_\_\_\_ Date: \_\_\_\_\_ :  
 (Company Representative)

**ESTIMATED PROJECT WORK FORCE SUBCONTRACTOR**

Job Category	Total Estimated Positions Needed for Project	Number of Positions Occupied by Permanent Employees	Number of Positions Not Occupied	Number of Positions to be Filled with Section 3 Residents/Pay Rate

**EMPLOYMENT CERTIFICATION** (make additional copies as necessary)

The Company hereby certifies that the above table represents the appropriate number of employee positions required for the execution of this Project. Also, this table represents the number of Section 3 service area residents that the company proposes to employ. Also, the Company will provide to the Housing Authority of the City of High Point the name(s), address, and last years income of any new hires for qualified Section 3 residents. A Section 3 Resident is an individual who is a resident of the City of High Point area or the Guilford County areas whose by income is considered Low-income, less that 80% of area median income or Very Low-income, less than 50% of area median income. (Contact the Housing Authority for these income levels)

Project No.: \_\_\_\_\_ By: \_\_\_\_\_ :  
 \_\_\_\_\_ (Company Name)  
 Signature/Title: \_\_\_\_\_ Date: \_\_\_\_\_ :  
 \_\_\_\_\_ (Company Representative)

**ATTACHMENT A**

**Responder's Statement**

The undersigned bidder/responder hereby states that by completing and submitting this form and all other documents within this submittal, he/she/they is/are verifying that all information provided herein is, to the best of his/her/their knowledge, true and accurate, and that if the HPHA discovers that any information entered herein is false, that will entitle the HPHA to not make award or to cancel any award with the undersigned party. Pursuant to all bid/ IFB documents, the Cost Proposal/ Form of Proposal, and all attachments pursuant to all completed Documents submitted, including these forms and all attachments, the undersigned proposes to supply the HPHA with the services described herein for the fees noted following and within Attachment C.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Company Name

**ATTACHMENT B**

**PROFILE OF FIRM and Financial Information**

- 1. Name of Firm: \_\_\_\_\_
- 2. Street Address: \_\_\_\_\_
- 3. Mailing Address: \_\_\_\_\_
- 4. City, State, Zip Code: \_\_\_\_\_
- 5. Email Address: \_\_\_\_\_
- 6. Phone Number: \_\_\_\_\_ fax: \_\_\_\_\_
- 7. Year Established: \_\_\_\_\_
- 8. Parent Company: \_\_\_\_\_ Date Acquired: \_\_\_\_\_
- 9. Identify Principals/Partners/sole Owner: attach brief resume for each  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- 10. Project Manager: \_\_\_\_\_
- 11. Federal Tax ID No.: \_\_\_\_\_
- 12. City of High Point/Guilford County Business License No.: \_\_\_\_\_
- 13. State Contractor License Type and No.: \_\_\_\_\_

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Print Name/Title

**PLEASE LIST ALL TYPE PROJECTS YOU ARE INTERESTED IN BELOW**  
Example: Concrete; Lawn Care; Janitorial; Light or Heavy Construction; etc.

**Please let HPHA know if you are one of the following type companies:**

- 1. **Women Owned**                    **Y or N**
- 2. **Minority Owned**                **Y or N**
- 3. **Section 3 Business**            **Y or N**

NOTE: Add financial information to submittal package.

**ATTACHMENT C**

**Cost Proposal: 20190201 Invitation for Bids for HPHA Office HVAC.** The undersigned, having carefully examined this Invitation for Bids entitled HPHA Office HVAC and the following addenda:

Addenda Number(s) and Date(s): \_\_\_\_\_  
 as well as the premises and conditions affecting the work, proposes to furnish all services, labor, materials, and equipment required to perform the work for the Lump sum of:

**A cost spreadsheet is required with your sealed bid, showing the cost breakdown of how you priced this project. Below is a sample spreadsheet.**

HPHA Office HVAC – South Wing	QUANTITY	UNIT	UNIT COST	TOTAL COST
Demolition/Disposal	1	Each		
South Wing HVAC Materials	1	Lump Sum		
South Wing Labor	1	Lump Sum		
Equipment Rental	1	Lump Sum		
Mobilization/Demobilization	1	Lump Sum		
Permits	1	Each		
<b>Sub Total</b>				
<b>Contingency</b>				
<b>Bonding</b>				
<b>TOTAL with Contingency</b>				

HPHA Office HVAC – North Wing	QUANTITY	UNIT	UNIT COST	TOTAL COST
Demolition/Disposal	1	Each		
North Wing HVAC Materials	1	Lump Sum		
North Wing Labor	1	Lump Sum		
Equipment Rental	1	Lump Sum		
Mobilization/Demobilization	1	Lump Sum		
Permits	1	Each		
<b>Sub Total</b>				
<b>Contingency</b>				
<b>Bonding</b>				
<b>TOTAL with Contingency</b>				

Respectfully submitted:

Firm's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

Printed Name of Authorized Signature: \_\_\_\_\_

**Construction Staging Requirements and Schedule**

Requirements

1. Spaces must remain conditioned during occupied hours.
2. Contractor to place HEPA filters over return grilles during construction.
3. Contractor to place plastic over desks and office equipment when overhead work is performed. Contractor must clean up after work each day.
4. All overhead work must be performed above unoccupied spaces. Contractor is to coordinate work with HPHA to rearrange office equipment, as necessary.
5. Access and working hours to be coordinated with HPHA. All modifications to the schedule must be approved and coordinated with the HPHA.
6. Contractor to submit construction staging schedule with his/her bid.
  - Five (5) of Seven (7) Rooftop Units on the North wing must remain in operation during occupied hours.
  - Contractor to coordinate with HPHA so that spaces are unoccupied while being worked on above. Contractor to replace ductwork on one (1) rooftop unit at a time.
  - On-site storage not allowed unless coordinated with HPHA.

Ductwork – RTU1			
Ductwork – RTU2			
Ductwork – RTU3			
Ductwork – RTU4			
Ductwork – RTU5			
Ductwork – RTU6			
Ductwork – RTU7			
Controls			
Replace RTUs/Control Actuators			



General Decision Number: NC190003 01/04/2019 NC3

Superseded General Decision Number: NC20180003

State: North Carolina

Construction Type: Residential

Counties: Alamance, Caswell, Guilford, Randolph and Rockingham Counties in North Carolina. RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015.

If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Modification Number            Publication Date

0                                    01/04/2019

SUNC1983-005 09/01/1983

	Rates	Fringes
Air conditioning mechanic.....	\$ 7.25	
Bricklayer.....	\$ 7.77	
Carpenter.....	\$ 7.25	
Cement mason/concrete finisher..	\$ 7.25	
Electrician.....	\$ 7.25	
Glazier.....	\$ 7.25	
Insulator/asbestos worker.....	\$ 7.25	
Ironworker.....	\$ 7.25	
Laborer, general.....	\$ 7.25	
Painter.....	\$ 7.25	
Plumber/pipefitter		
.....	\$ 7.69	
Power equipment operators:		
_Backhoe.....	\$ 7.25	
_Bulldozer.....	\$ 7.25	
Loader.....	\$ 7.25	
_Motor Grader.....	\$ 7.30	
_Pan.....	\$ 7.25	
_Paver.....	\$ 7.25	
_Roller.....	\$ 7.25	
_Tractor.....	\$ 7.25	
Roofer.....	\$ 7.25	
Sheet metal worker.....	\$ 7.25	
Soft floor layer.....	\$ 7.25	
Tile setter.....	\$ 7.25	
Truck driver.....	\$ 7.25	
Drywall hanger.....	\$ 7.25	
Drywall Finisher/Taper.....	\$ 7.25	

-----  
WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the

Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts). Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

-----  
 The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier. Survey wage rates are not updated and remain in effect until a

new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier. A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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 WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
 Wage and Hour Division  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**U.S. Department of Housing and  
Urban Development**  
Office of Public and Indian Housing

**Instructions to Bidders for Contracts  
Public and Indian Housing Programs**

# Instructions to Bidders for Contracts

## Public and Indian Housing Programs

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### 1. Bid Preparation and Submission

(a) Bidders are expected to examine the specifications, drawings, all instructions, and, if applicable, the construction site (see also the contract clause entitled **Site Investigation and Conditions Affecting the Work** of the General Conditions of the Contract for Construction). Failure to do so will be at the bidders' risk.

(b) All bids must be submitted on the forms provided by the Public Housing Agency/Indian Housing Authority (PHA/IHA). Bidders shall furnish all the information required by the solicitation. Bids must be signed and the bidder's name typed or printed on the bid sheet and each continuation sheet which requires the entry of information by the bidder. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent shall be accompanied by evidence of that agent's authority. (Bidders should retain a copy of their bid for their records.)

(c) Bidders must submit as part of their bid a completed form HUD-5369-A, "Representations, Certifications, and Other Statements of Bidders."

(d) All bid documents shall be sealed in an envelope which shall be clearly marked with the words "Bid Documents," the Invitation for Bids (IFB) number, any project or other identifying number, the bidder's name, and the date and time for receipt of bids.

(e) If this solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "No Bid" in the space provided for any item on which no price is submitted.

(f) Unless expressly authorized elsewhere in this solicitation, alternate bids will not be considered.

(g) Unless expressly authorized elsewhere in this solicitation, bids submitted by telegraph or facsimile (fax) machines will not be considered.

(h) If the proposed contract is for a Mutual Help project (as described in 24 CFR Part 905, Subpart E) that involves Mutual Help contributions of work, material, or equipment, supplemental information regarding the bid advertisement is provided as an attachment to this solicitation.

### 2. Explanations and Interpretations to Prospective Bidders

(a) Any prospective bidder desiring an explanation or interpretation of the solicitation, specifications, drawings, etc., must request it at least 7 days before the scheduled time for bid opening. Requests may be oral or written. Oral requests must be confirmed in writing. The only oral clarifications that will be provided will be those clearly related to solicitation procedures, i.e., not substantive technical information. No other oral explanation or interpretation will be provided. Any information given a prospective bidder concerning this solicitation will be furnished promptly to all other prospective bidders as a written amendment to the solicitation, if that information is necessary in submitting bids, or if the lack of it would be prejudicial to other prospective bidders.

(b) Any information obtained by, or provided to, a bidder other than by formal amendment to the solicitation shall not constitute a change to the solicitation.

### 3. Amendments to Invitations for Bids

(a) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.

(b) Bidders shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date on the bid form, or (3) by letter, telegram, or facsimile, if those methods are authorized in the solicitation. The PHA/IHA must receive acknowledgement by the time and at the place specified for receipt of bids. Bids which fail to acknowledge the bidder's receipt of any amendment will result in the rejection of the bid if the amendment(s) contained information which substantively changed the PHA's/IHA's requirements.

(c) Amendments will be on file in the offices of the PHA/IHA and the Architect at least 7 days before bid opening.

### 4. Responsibility of Prospective Contractor

(a) The PHA/IHA will award contracts only to responsible prospective contractors who have the ability to perform successfully under the terms and conditions of the proposed contract. In determining the responsibility of a bidder, the PHA/IHA will consider such matters as the bidder's:

- (1) Integrity;
- (2) Compliance with public policy;
- (3) Record of past performance; and
- (4) Financial and technical resources (including construction and technical equipment).

(b) Before a bid is considered for award, the bidder may be requested by the PHA/IHA to submit a statement or other documentation regarding any of the items in paragraph (a) above. Failure by the bidder to provide such additional information shall render the bidder nonresponsible and ineligible for award.

## 5. Late Submissions, Modifications, and Withdrawal of Bids

(a) Any bid received at the place designated in the solicitation after the exact time specified for receipt will not be considered unless it is received before award is made and it:

(1) Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of offers (e.g., an offer submitted in response to a solicitation requiring receipt of offers by the 20th of the month must have been mailed by the 15th);

(2) Was sent by mail, or if authorized by the solicitation, was sent by telegram or via facsimile, and it is determined by the PHA/IHA that the late receipt was due solely to mishandling by the PHA/IHA after receipt at the PHA/IHA; or

(3) Was sent by U.S. Postal Service Express Mail Next Day Service - Post Office to Addressee, not later than 5:00 p.m. at the place of mailing two working days prior to the date specified for receipt of proposals. The term "working days" excludes weekends and observed holidays.

(b) Any modification or withdrawal of a bid is subject to the same conditions as in paragraph (a) of this provision.

(c) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent either by registered or certified mail is the U.S. or Canadian Postal Service postmark both on the envelope or wrapper and on the original receipt from the U.S. or Canadian Postal Service. Both postmarks must show a legible date or the bid, modification, or withdrawal shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U.S. or Canadian Postal Service on the date of mailing. Therefore, bidders should request the postal clerk to place a hand cancellation bull's-eye postmark on both the receipt and the envelope or wrapper.

(d) The only acceptable evidence to establish the time of receipt at the PHA/IHA is the time/date stamp of PHA/IHA on the proposal wrapper or other documentary evidence of receipt maintained by the PHA/IHA.

(e) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent by Express Mail Next Day Service-Post Office to Addressee is the date entered by the post office receiving clerk on the "Express Mail Next Day Service-Post Office to Addressee" label and the postmark on both the envelope or wrapper and on the original receipt from the U.S. Postal Service. "Postmark" has the same meaning as defined in paragraph (c) of this provision, excluding postmarks of the Canadian Postal Service. Therefore, bidders should request the postal clerk to place a legible hand cancellation bull's eye postmark on both the receipt and Failure by a bidder to acknowledge receipt of the envelope or wrapper.

(f) Notwithstanding paragraph (a) of this provision, a late modification of an otherwise successful bid that makes its terms more favorable to the PHA/IHA will be considered at any time it is received and may be accepted.

(g) Bids may be withdrawn by written notice, or if authorized by this solicitation, by telegram (including mailgram) or facsimile machine transmission received at any time before the exact time set for opening of bids; provided that written confirmation of telegraphic or facsimile withdrawals over the signature of the bidder is mailed and postmarked prior to the specified bid opening time. A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for opening of bids, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid.

## 6. Bid Opening

All bids received by the date and time of receipt specified in the solicitation will be publicly opened and read. The time and place of opening will be as specified in the solicitation. Bidders and other interested persons may be present.

## 7. Service of Protest

(a) Definitions. As used in this provision:

"Interested party" means an actual or prospective bidder whose direct economic interest would be affected by the award of the contract.

"Protest" means a written objection by an interested party to this solicitation or to a proposed or actual award of a contract pursuant to this solicitation.

(b) Protests shall be served on the Contracting Officer by obtaining written and dated acknowledgement from —

Housing Authority of the City of High Point

500 E. Russell Ave.

High Point, NC 27260

Attention: Contracting Officer

(c) All protests shall be resolved in accordance with the PHA's/IHA's protest policy and procedures, copies of which are maintained at the PHA/IHA.

## 8. Contract Award

(a) The PHA/IHA will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the PHA/IHA considering only price and any price-related factors specified in the solicitation.

(b) If the apparent low bid received in response to this solicitation exceeds the PHA's/IHA's available funding for the proposed contract work, the PHA/IHA may either accept separately priced items (see 8(e) below) or use the following procedure to determine contract award. The PHA/IHA shall apply in turn to each bid (proceeding in order from the apparent low bid to the high bid) each of the separately priced bid deductible items, if any, in their priority order set forth in this solicitation. If upon the application of the first deductible item to all initial bids, a new low bid is within the PHA's/IHA's available funding, then award shall be made to that bidder. If no bid is within the available funding amount, then the PHA/IHA shall apply the second deductible item. The PHA/IHA shall continue this process until an evaluated low bid, if any, is within the PHA's/IHA's available funding. If upon the application of all deductibles, no bid is within the PHA's/IHA's available funding, or if the solicitation does not request separately priced deductibles, the PHA/IHA shall follow its written policy and procedures in making any award under this solicitation.

(c) In the case of tie low bids, award shall be made in accordance with the PHA's/IHA's written policy and procedures.

(d) The PHA/IHA may reject any and all bids, except other than the lowest bid (e.g., the apparent low bid is unreasonably low), and waive informalities or minor irregularities in bids received, in accordance with the PHA's/IHA's written policy and procedures.

(e) Unless precluded elsewhere in the solicitation, the PHA/IHA may accept any item or combination of items bid.

(f) The PHA/IHA may reject any bid as nonresponsive if it is materially unbalanced as to the prices for the various items of work to be performed. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

(g) A written award shall be furnished to the successful bidder within the period for acceptance specified in the bid and shall result in a binding contract without further action by either party.

**9. Bid Guarantee** (applicable to construction and equipment contracts exceeding \$25,000)

All bids must be accompanied by a negotiable bid guarantee which shall not be less than five percent (5%) of the amount of the bid. The bid guarantee may be a certified check, bank draft, U.S. Government Bonds at par value, or a bid bond secured by a surety company acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. In the case where the work under the contract will be performed on an Indian reservation area, the bid guarantee may also be an irrevocable Letter of Credit (see provision 10, Assurance of Completion, below). Certified checks and bank drafts must be made payable to the order of the PHA/IHA. The bid guarantee shall insure the execution of the contract and the furnishing of a method of assurance of completion by the successful bidder as required by the solicitation. Failure to submit a bid guarantee with the bid shall result in the rejection of the bid. Bid guarantees submitted by unsuccessful bidders will be returned as soon as practicable after bid opening.

**10. Assurance of Completion**

(a) Unless otherwise provided in State law, the successful bidder shall furnish an assurance of completion prior to the execution of any contract under this solicitation. This assurance may be [Contracting Officer check applicable items] —

(1) a performance and payment bond in a penal sum of 100 percent of the contract price; or, as may be required or permitted by State law;

(2) separate performance and payment bonds, each for 50 percent or more of the contract price;

(3) a 20 percent cash escrow;

(4) a 25 percent irrevocable letter of credit; or,

(5) an irrevocable letter of credit for 10 percent of the total contract price with a monitoring and disbursements agreement with the IHA (applicable only to contracts awarded by an IHA under the Indian Housing Program).

(b) Bonds must be obtained from guarantee or surety companies acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. Individual sureties will not be considered. U.S. Treasury Circular Number 570, published annually in the Federal Register, lists companies approved to act as sureties on bonds securing Government contracts, the maximum underwriting limits on each contract bonded, and the States in which the company is licensed to do business. Use of companies listed in this circular is mandatory. Copies of the circular may be downloaded on the U.S. Department of Treasury website <http://www.fms.treas.gov/c570/index.html>, or ordered for a minimum fee by contacting the Government Printing Office at (202) 512-2168.

(c) Each bond shall clearly state the rate of premium and the total amount of premium charged. The current power of attorney for the person who signs for the surety company must be attached to the bond. The effective date of the power of attorney shall not precede the date of the bond. The effective date of the bond shall be on or after the execution date of the contract.

(d) Failure by the successful bidder to obtain the required assurance of completion within the time specified, or within such extended period as the PHA/IHA may grant based upon reasons determined adequate by the PHA/IHA, shall render the bidder ineligible for award. The PHA/IHA may then either award the contract to the next lowest responsible bidder or solicit new bids. The PHA/IHA may retain the ineligible bidder's bid guarantee.

**11. Preconstruction Conference** (applicable to construction contracts)

After award of a contract under this solicitation and prior to the start of work, the successful bidder will be required to attend a preconstruction conference with representatives of the PHA/IHA and its architect/engineer, and other interested parties convened by the PHA/IHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract (e.g., Equal Employment Opportunity, Labor Standards). The PHA/IHA will provide the successful bidder with the date, time, and place of the conference.

**12. Indian Preference Requirements** (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

(a) HUD has determined that the contract awarded under this solicitation is subject to the requirements of section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e(b)). Section 7(b) requires that any contract or subcontract entered into for the benefit of Indians shall require that, to the greatest extent feasible

(1) Preferences and opportunities for training and employment (other than core crew positions; see paragraph (h) below) in connection with the administration of such contracts or subcontracts be given to qualified "Indians." The Act defines "Indians" to mean persons who are members of an Indian tribe and defines "Indian tribe" to mean any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians; and,

(2) Preference in the award of contracts or subcontracts in connection with the administration of contracts be given to Indian organizations and to Indian-owned economic enterprises, as defined in section 3 of the Indian Financing Act of 1974 (25 U.S.C. 1452). That Act defines "economic enterprise" to mean any Indian-owned commercial, industrial, or business activity established or organized for the purpose of profit, except that the Indian ownership must constitute not less than 51 percent of the enterprise; "Indian organization" to mean the governing body of any Indian tribe or entity established or recognized by such governing body; "Indian" to mean any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act; and Indian "tribe" to mean any Indian tribe, band, group, pueblo, or community including Native villages and Native groups (including

corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

(b) (1) The successful Contractor under this solicitation shall comply with the requirements of this provision in awarding all subcontracts under the contract and in providing training and employment opportunities.

(2) A finding by the IHA that the contractor, either (i) awarded a subcontract without using the procedure required by the IHA, (ii) falsely represented that subcontracts would be awarded to Indian enterprises or organizations; or, (iii) failed to comply with the contractor's employment and training preference bid statement shall be grounds for termination of the contract or for the assessment of penalties or other remedies.

(c) If specified elsewhere in this solicitation, the IHA may restrict the solicitation to qualified Indian-owned enterprises and Indian organizations. If two or more (or a greater number as specified elsewhere in the solicitation) qualified Indian-owned enterprises or organizations submit responsive bids, award shall be made to the qualified enterprise or organization with the lowest responsive bid. If fewer than the minimum required number of qualified Indian-owned enterprises or organizations submit responsive bids, the IHA shall reject all bids and readvertise the solicitation in accordance with paragraph (d) below.

(d) If the IHA prefers not to restrict the solicitation as described in paragraph (c) above, or if after having restricted a solicitation an insufficient number of qualified Indian enterprises or organizations submit bids, the IHA may advertise for bids from non-Indian as well as Indian-owned enterprises and Indian organizations. Award shall be made to the qualified Indian enterprise or organization with the lowest responsive bid if that bid is -

(1) Within the maximum HUD-approved budget amount established for the specific project or activity for which bids are being solicited; and

(2) No more than the percentage specified in 24 CFR 905.175(c) higher than the total bid price of the lowest responsive bid from any qualified bidder. If no responsive bid by a qualified Indian-owned economic enterprise or organization is within the stated range of the total bid price of the lowest responsive bid from any qualified enterprise, award shall be made to the bidder with the lowest bid.

(e) Bidders seeking to qualify for preference in contracting or subcontracting shall submit proof of Indian ownership with their bids. Proof of Indian ownership shall include but not be limited to:

(1) Certification by a tribe or other evidence that the bidder is an Indian. The IHA shall accept the certification of a tribe that an individual is a member.

(2) Evidence such as stock ownership, structure, management, control, financing and salary or profit sharing arrangements of the enterprise.

(f) (1) All bidders must submit with their bids a statement describing how they will provide Indian preference in the award of subcontracts. The specific requirements of that statement and the factors to be used by the IHA in determining the statement's adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement shall be rejected as nonresponsive. The IHA may require that comparable statements be provided by subcontractors to the successful Contractor, and may require the Contractor to reject any bid or proposal by a subcontractor that fails to include the statement.

(2) Bidders and prospective subcontractors shall submit a certification (supported by credible evidence) to the IHA in any instance where the bidder or subcontractor believes it is infeasible to provide Indian preference in subcontracting. The acceptance or rejection by the IHA of the certification shall be final. Rejection shall disqualify the bid from further consideration.

(g) All bidders must submit with their bids a statement detailing their employment and training opportunities and their plans to provide preference to Indians in implementing the contract; and the number or percentage of Indians anticipated to be employed and trained. Comparable statements from all proposed subcontractors must be submitted. The criteria to be used by the IHA in determining the statement(s)'s adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement(s), or that includes a statement that does not meet minimum standards required by the IHA shall be rejected as nonresponsive.

(h) Core crew employees. A core crew employee is an individual who is a bona fide employee of the contractor at the time the bid is submitted; or an individual who was not employed by the bidder at the time the bid was submitted, but who is regularly employed by the bidder in a supervisory or other key skilled position when work is available. Bidders shall submit with their bids a list of all core crew employees.

(i) Preference in contracting, subcontracting, employment, and training shall apply not only on-site, on the reservation, or within the IHA's jurisdiction, but also to contracts with firms that operate outside these areas (e.g., employment in modular or manufactured housing construction facilities).

(j) Bidders should contact the IHA to determine if any additional local preference requirements are applicable to this solicitation.

(k) The IHA [ ] does [ ] does not [Contracting Officer check applicable box] maintain lists of Indian-owned economic enterprises and Indian organizations by specialty (e.g., plumbing, electrical, foundations), which are available to bidders to assist them in meeting their responsibility to provide preference in connection with the administration of contracts and subcontracts.



**U.S. Department of Housing  
and Urban Development**  
Office of Public and Indian Housing

**Representations, Certifications,  
and Other Statements of Bidders**  
**Public and Indian Housing Programs**

# Representations, Certifications, and Other Statements of Bidders

## Public and Indian Housing Programs

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### 1. Certificate of Independent Price Determination

#### (a) The bidder certifies that--

(1) The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to (i) those prices, (ii) the intention to submit a bid, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a competitive proposal solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit a bid for the purpose of restricting competition.

(b) Each signature on the bid is considered to be a certification by the signatory that the signatory--

(1) Is the person in the bidder's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

\_\_\_\_\_ [insert full name of person(s) in the bidder's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the bidder's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the bidder deletes or modifies subparagraph (a)2 above, the bidder must furnish with its bid a signed statement setting forth in detail the circumstances of the disclosure.

[ ] [Contracting Officer check if following paragraph is applicable]

(d) Non-collusive affidavit. (applicable to contracts for construction and equipment exceeding \$50,000)

(1) Each bidder shall execute, in the form provided by the PHA/IHA, an affidavit to the effect that he/she has not colluded with any other person, firm or corporation in regard to any bid submitted in response to this solicitation. If the successful bidder did not submit the affidavit with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the affidavit by that date may render the bid nonresponsive. No contract award will be made without a properly executed affidavit.

(2) A fully executed "Non-collusive Affidavit" [ ] is, [ ] is not included with the bid.

### 2. Contingent Fee Representation and Agreement

(a) Definitions. As used in this provision:

"Bona fide employee" means a person, employed by a bidder and subject to the bidder's supervision and control as to time, place, and manner of performance, who neither exerts, nor proposes to exert improper influence to solicit or obtain contracts nor holds out as being able to obtain any contract(s) through improper influence.

"Improper influence" means any influence that induces or tends to induce a PHA/IHA employee or officer to give consideration or to act regarding a PHA/IHA contract on any basis other than the merits of the matter.

(b) The bidder represents and certifies as part of its bid that, except for full-time bona fide employees working solely for the bidder, the bidder:

(1) [ ] has, [ ] has not employed or retained any person or company to solicit or obtain this contract; and

(2) [ ] has, [ ] has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(c) If the answer to either (a)(1) or (a)(2) above is affirmative, the bidder shall make an immediate and full written disclosure to the PHA/IHA Contracting Officer.

(d) Any misrepresentation by the bidder shall give the PHA/IHA the right to (1) terminate the contract; (2) at its discretion, deduct from contract payments the amount of any commission, percentage, brokerage, or other contingent fee; or (3) take other remedy pursuant to the contract.

### 3. Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (applicable to contracts exceeding \$100,000)

(a) The definitions and prohibitions contained in Section 1352 of title 31, United States Code, are hereby incorporated by reference in paragraph (b) of this certification.

(b) The bidder, by signing its bid, hereby certifies to the best of his or her knowledge and belief as of December 23, 1989 that:

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of a contract resulting from this solicitation;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the bidder shall complete and submit, with its bid, OMB standard form LLL, "Disclosure of Lobbying Activities;" and

(3) He or she will include the language of this certification in all subcontracts at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

(d) Indian tribes (except those chartered by States) and Indian organizations as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) are exempt from the requirements of this provision.

#### 4. Organizational Conflicts of Interest Certification

The bidder certifies that to the best of its knowledge and belief and except as otherwise disclosed, he or she does not have any organizational conflict of interest which is defined as a situation in which the nature of work to be performed under this proposed contract and the bidder's organizational, financial, contractual, or other interests may, without some restriction on future activities:

- (a) Result in an unfair competitive advantage to the bidder; or,
- (b) Impair the bidder's objectivity in performing the contract work.

In the absence of any actual or apparent conflict, I hereby certify that to the best of my knowledge and belief, no actual or apparent conflict of interest exists with regard to my possible performance of this procurement.

#### 5. Bidder's Certification of Eligibility

(a) By the submission of this bid, the bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the bidder's firm, nor any of the bidder's subcontractors, is ineligible to:

(1) Be awarded contracts by any agency of the United States Government, HUD, or the State in which this contract is to be performed; or,

(2) Participate in HUD programs pursuant to 24 CFR Part 24.

(b) The certification in paragraph (a) above is a material representation of fact upon which reliance was placed when making award. If it is later determined that the bidder knowingly rendered an erroneous certification, the contract may be terminated for default, and the bidder may be debarred or suspended from participation in HUD programs and other Federal contract programs.

#### 6. Minimum Bid Acceptance Period

(a) "Acceptance period," as used in this provision, means the number of calendar days available to the PHA/IHA for awarding a contract from the date specified in this solicitation for receipt of bids.

(b) This provision supersedes any language pertaining to the acceptance period that may appear elsewhere in this solicitation.

(c) The PHA/IHA requires a minimum acceptance period of [Contracting Officer insert time period] calendar days.

(d) In the space provided immediately below, bidders may specify a longer acceptance period than the PHA's/IHA's minimum requirement. The bidder allows the following acceptance period: calendar days.

(e) A bid allowing less than the PHA's/IHA's minimum acceptance period will be rejected.

(f) The bidder agrees to execute all that it has undertaken to do, in compliance with its bid, if that bid is accepted in writing within (1) the acceptance period stated in paragraph (c) above or (2) any longer acceptance period stated in paragraph (d) above.

#### 7. Small, Minority, Women-Owned Business Concern Representation

The bidder represents and certifies as part of its bid/ offer that it --

(a)  is,  is not a small business concern. "Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR 121.

(b)  is,  is not a women-owned business enterprise. "Women-owned business enterprise," as used in this provision, means a business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

(c)  is,  is not a minority business enterprise. "Minority business enterprise," as used in this provision, means a business which is at least 51 percent owned or controlled by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of its voting stock is owned by one or more minority group members, and whose management and daily operations are controlled by one or more such individuals. For the purpose of this definition, minority group members are:

(Check the block applicable to you)

- |   |   |
|---|---|
| <input type="checkbox"/> Black Americans    | <input type="checkbox"/> Asian Pacific Americans  |
| <input type="checkbox"/> Hispanic Americans | <input type="checkbox"/> Asian Indian Americans   |
| <input type="checkbox"/> Native Americans   | <input type="checkbox"/> Hasidic Jewish Americans |

#### 8. Indian-Owned Economic Enterprise and Indian Organization Representation (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

The bidder represents and certifies that it:

(a)  is,  is not an Indian-owned economic enterprise. "Economic enterprise," as used in this provision, means any commercial, industrial, or business activity established or organized for the purpose of profit, which is at least 51 percent Indian owned. "Indian," as used in this provision, means any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act.

(b)  is,  is not an Indian organization. "Indian organization," as used in this provision, means the governing body of any Indian tribe or entity established or recognized by such governing body. Indian "tribe" means any Indian tribe, band, group, pueblo, or

community including Native villages and Native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

**9. Certification of Eligibility Under the Davis-Bacon Act** (applicable to construction contracts exceeding \$2,000)

(a) By the submission of this bid, the bidder certifies that neither it nor any person or firm who has an interest in the bidder's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(b) No part of the contract resulting from this solicitation shall be subcontracted to any person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(c) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

**10. Certification of Nonsegregated Facilities** (applicable to contracts exceeding \$10,000)

(a) The bidder's attention is called to the clause entitled **Equal Employment Opportunity** of the General Conditions of the Contract for Construction.

(b) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(c) By the submission of this bid, the bidder certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in the contract.

(d) The bidder further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) prior to entering into subcontracts which exceed \$10,000 and are not exempt from the requirements of the Equal Employment Opportunity clause, it will:

(1) Obtain identical certifications from the proposed subcontractors;

(2) Retain the certifications in its files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

**Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities**

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause of the prime contract. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

**Note:** The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

**11. Clean Air and Water Certification** (applicable to contracts exceeding \$100,000)

The bidder certifies that:

(a) Any facility to be used in the performance of this contract [ ] is, [ ] is not listed on the Environmental Protection Agency List of Violating Facilities:

(b) The bidder will immediately notify the PHA/IHA Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the bidder proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and,

(c) The bidder will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

**12. Previous Participation Certificate** (applicable to construction and equipment contracts exceeding \$50,000)

(a) The bidder shall complete and submit with his/her bid the Form HUD-2530, "Previous Participation Certificate." If the successful bidder does not submit the certificate with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the certificate by that date may render the bid nonresponsive. No contract award will be made without a properly executed certificate.

(b) A fully executed "Previous Participation Certificate"

[ ] is, [ ] is not included with the bid.

**13. Bidder's Signature**

The bidder hereby certifies that the information contained in these certifications and representations is accurate, complete, and current.

\_\_\_\_\_  
(Signature and Date)

\_\_\_\_\_  
(Typed or Printed Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Company Name)

\_\_\_\_\_  
(Company Address)

# General Conditions for Construction Contracts - Public Housing Programs

U.S. Department of Housing and Urban Development  
Office of Public and Indian Housing  
OMB Approval No. 2577-0157 (exp. 3/31/2020)

**Applicability. This form is applicable to any construction/development contract greater than \$150,000.**

This form includes those clauses required by OMB's common rule on grantee procurement, implemented at HUD in 2 CFR 200, and those requirements set forth in Section 3 of the Housing and Urban Development Act of 1968 and its amendment by the Housing and Community Development Act of 1992, implemented by HUD at 24 CFR Part 135. The form is required for construction contracts awarded by Public Housing Agencies (PHAs).

The form is used by Housing Authorities in solicitations to provide necessary contract clauses. If the form were not used, HAs would be unable to enforce their contracts.

Public reporting burden for this collection of information is estimated to average 1.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Responses to the collection of information are required to obtain a benefit or to retain a benefit.

The information requested does not lend itself to confidentiality.

HUD may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB number.

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## 1. Definitions

- (a) "Architect" means the person or other entity engaged by the PHA to perform architectural, engineering, design, and other services related to the work as provided for in the contract. When a PHA uses an engineer to act in this capacity, the terms "architect" and "engineer" shall be synonymous. The Architect shall serve as a technical representative of the Contracting Officer. The Architect's authority is as set forth elsewhere in this contract.
- (b) "Contract" means the contract entered into between the PHA and the Contractor. It includes the forms of Bid, the Bid Bond, the Performance and Payment Bond or Bonds or other assurance of completion, the Certifications, Representations, and Other Statements of Bidders (form HUD-5370), these General Conditions of the Contract for Construction (form HUD-5370), the applicable wage rate determinations from the U.S. Department of Labor, any special conditions included elsewhere in the contract, the specifications, and drawings. It includes all formal changes to any of those documents by addendum, change order, or other modification.
- (c) "Contracting Officer" means the person delegated the authority by the PHA to enter into, administer, and/or terminate this contract and designated as such in writing to the Contractor. The term includes any successor Contracting Officer and any duly authorized representative of the Contracting Officer also designated in writing. The Contracting Officer shall be deemed the authorized agent of the PHA in all dealings with the Contractor.
- (d) "Contractor" means the person or other entity entering into the contract with the PHA to perform all of the work required under the contract.
- (e) "Drawings" means the drawings enumerated in the schedule of drawings contained in the Specifications and as described in the contract clause entitled Specifications and Drawings for Construction herein.
- (f) "HUD" means the United States of America acting through the Department of Housing and Urban Development including the Secretary, or any other person designated to act on its behalf. HUD has agreed, subject to the provisions of an Annual Contributions Contract (ACC), to provide financial assistance to the PHA, which includes assistance in financing the work to be performed under this contract. As defined elsewhere in these General Conditions or the contract documents, the determination of HUD may be required to authorize changes in the work or for release of funds to the PHA for payment to the Contractor. Notwithstanding HUD's role, nothing in this contract shall be construed to create any contractual relationship between the Contractor and HUD.
- (g) "Project" means the entire project, whether construction or rehabilitation, the work for which is provided for in whole or in part under this contract.
- (h) "PHA" means the Public Housing Agency organized under applicable state laws which is a party to this contract.
- (i) "Specifications" means the written description of the technical requirements for construction and includes the criteria and tests for determining whether the requirements are met.
- (l) "Work" means materials, workmanship, and manufacture and fabrication of components.

## 2. Contractor's Responsibility for Work

- (a) The Contractor shall furnish all necessary labor, materials, tools, equipment, and transportation necessary for performance of the work. The Contractor shall also furnish all necessary water, heat, light, and power not made available to the Contractor by the PHA pursuant to the clause entitled Availability and Use of Utility Services herein.
- (b) The Contractor shall perform on the site, and with its own organization, work equivalent to at least [ ] (12 percent unless otherwise indicated) of the total amount of work to be performed under the order. This percentage may be reduced by a supplemental agreement to this order if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the PHA.
- (c) At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the work site a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.
- (d) The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall hold and save the PHA, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.
- (e) The Contractor shall lay out the work from base lines and bench marks indicated on the drawings and be responsible for all lines, levels, and measurements of all work executed under the contract. The Contractor shall verify the figures before laying out the work and will be held responsible for any error resulting from its failure to do so.
- (f) The Contractor shall confine all operations (including storage of materials) on PHA premises to areas authorized or approved by the Contracting Officer.
- (g) The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. After completing the work and before final inspection, the Contractor shall (1) remove from the premises all scaffolding, equipment, tools, and materials (including rejected materials) that are not the property of the PHA and all rubbish caused by its work; (2) leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer; (3) perform all specified tests; and, (4) deliver the installation in complete and operating condition.
- (h) The Contractor's responsibility will terminate when all work has been completed, the final inspection made, and the work accepted by the Contracting Officer. The Contractor will then be released from further obligation except as required by the warranties specified elsewhere in the contract.

## 3. Architect's Duties, Responsibilities, and Authority

- (a) The Architect for this contract, and any successor, shall be designated in writing by the Contracting Officer.

- (b) The Architect shall serve as the Contracting Officer's technical representative with respect to architectural, engineering, and design matters related to the work performed under the contract. The Architect may provide direction on contract performance. Such direction shall be within the scope of the contract and may not be of a nature which: (1) institutes additional work outside the scope of the contract; (2) constitutes a change as defined in the Changes clause herein; (3) causes an increase or decrease in the cost of the contract; (4) alters the Construction Progress Schedule; or (5) changes any of the other express terms or conditions of the contract.
- (c) The Architect's duties and responsibilities may include but shall not be limited to:
- (1) Making periodic visits to the work site, and on the basis of his/her on-site inspections, issuing written reports to the PHA which shall include all observed deficiencies. The Architect shall file a copy of the report with the Contractor's designated representative at the site;
  - (2) Making modifications in drawings and technical specifications and assisting the Contracting Officer in the preparation of change orders and other contract modifications for issuance by the Contracting Officer;
  - (3) Reviewing and making recommendations with respect to - (i) the Contractor's construction progress schedules; (ii) the Contractor's shop and detailed drawings; (iii) the machinery, mechanical and other equipment and materials or other articles proposed for use by the Contractor; and, (iv) the Contractor's price breakdown and progress payment estimates; and,
  - (4) Assisting in inspections, signing Certificates of Completion, and making recommendations with respect to acceptance of work completed under the contract.

#### 4. Other Contracts

The PHA may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with PHA employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by PHA employees

#### 5. Pre-construction Conference and Notice to Proceed

- (a) Within ten calendar days of contract execution, and prior to the commencement of work, the Contractor shall attend a preconstruction conference with representatives of the PHA, its Architect, and other interested parties convened by the PHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract. The PHA will provide the Contractor with the date, time, and place of the conference.
- (b) The contractor shall begin work upon receipt of a written Notice to Proceed from the Contracting Officer or designee. The Contractor shall not begin work prior to receiving such notice.

#### 6. Construction Progress Schedule

- (a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring labor, materials, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments or take other remedies under the contract until the Contractor submits the required schedule.
- (b) The Contractor shall enter the actual progress on the chart as required by the Contracting Officer, and immediately deliver three copies of the annotated schedule to the Contracting Officer. If the Contracting Officer determines, upon the basis of inspection conducted pursuant to the clause entitled Inspection and Acceptance of Construction, herein that the Contractor is not meeting the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the PHA. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.
- (c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the Contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the Default clause of this contract.

#### 7. Site Investigation and Conditions Affecting the Work

- (a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to, (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is

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reasonably ascertainable from an inspection of the site, including all exploratory work done by the PHA, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the PHA.

- (b) The PHA assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the PHA. Nor does the PHA assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

### 8. Differing Site Conditions

- (a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.
- (b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, the Contractor shall file a claim in writing to the PHA within ten days after receipt of such instructions and, in any event, before proceeding with the work. An equitable adjustment in the contract price, the delivery schedule, or both shall be made under this clause and the contract modified in writing accordingly.
- (c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.
- (d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

### 9. Specifications and Drawings for Construction

- (a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be

promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

- (b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.
- (c) Where "as shown" "as indicated", "as detailed", or of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place" that is "furnished and installed".
- (d) "Shop drawings" means drawings, submitted to the PHA by the Contractor, subcontractor, or any lower tier subcontractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials of equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. The PHA may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.
- (e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the PHA's reasons therefore. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.
- (f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Architect approves any such variation and the Contracting Officer concurs, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.
- (g) It shall be the responsibility of the Contractor to make timely requests of the PHA for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which shall be



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required in the planning and production of the work. Such requests may be submitted as the need arises, but each such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

- (h) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the PHA and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this contract, shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.
- (i) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by subcontractors are submitted to the Contracting Officer.

#### 10. As-Built Drawings

- (a) "As-built drawings," as used in this clause, means drawings submitted by the Contractor or subcontractor at any tier to show the construction of a particular structure or work as actually completed under the contract. "As-built drawings" shall be synonymous with "Record drawings."
- (b) As required by the Contracting Officer, the Contractor shall provide the Contracting Officer accurate information to be used in the preparation of permanent as-built drawings. For this purpose, the Contractor shall record on one set of contract drawings all changes from the installations originally indicated, and record final locations of underground lines by depth from finish grade and by accurate horizontal offset distances to permanent surface improvements such as buildings, curbs, or edges of walks.
- (c) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all as-built drawings prepared by subcontractors are submitted to the Contracting Officer.

#### 11. Material and Workmanship

- (a) All equipment, material, and articles furnished under this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the contract to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of, and as approved by the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.
- (b) Approval of equipment and materials.
  - (1) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the

machinery and mechanical and other equipment. When required by this contract or by the Contracting Officer, the Contractor shall also obtain the Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the Contractor shall provide full information concerning the material or articles. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

- (2) When required by the specifications or the Contracting Officer, the Contractor shall submit appropriately marked samples (and certificates related to them) for approval at the Contractor's expense, with all shipping charges prepaid. The Contractor shall label, or otherwise properly mark on the container, the material or product represented, its place of origin, the name of the producer, the Contractor's name, and the identification of the construction project for which the material or product is intended to be used.
- (3) Certificates shall be submitted in triplicate, describing each sample submitted for approval and certifying that the material, equipment or accessory complies with contract requirements. The certificates shall include the name and brand of the product, name of manufacturer, and the location where produced.
- (4) Approval of a sample shall not constitute a waiver of the PHA right to demand full compliance with contract requirements. Materials, equipment and accessories may be rejected for cause even though samples have been approved.
- (5) Wherever materials are required to comply with recognized standards or specifications, such specifications shall be accepted as establishing the technical qualities and testing methods, but shall not govern the number of tests required to be made nor modify other contract requirements. The Contracting Officer may require laboratory test reports on items submitted for approval or may approve materials on the basis of data submitted in certificates with samples. Check tests will be made on materials delivered for use only as frequently as the Contracting Officer determines necessary to insure compliance of materials with the specifications. The Contractor will assume all costs of retesting materials which fail to meet contract requirements and/or testing materials offered in substitution for those found deficient.
- (6) After approval, samples will be kept in the Project office until completion of work. They may be built into the work after a substantial quantity of the materials they represent has been built in and accepted.
- (c) Requirements concerning lead-based paint. The Contractor shall comply with the requirements concerning lead-based paint contained in the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846) as implemented by 24 CFR Part 35.

#### 12. Permits and Codes

- (a) The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. Notwithstanding the requirement of the Contractor to comply with the drawings and specifications in the contract, all work installed shall comply with all applicable codes and regulations as amended by any

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waivers. Before installing the work, the Contractor shall examine the drawings and the specifications for compliance with applicable codes and regulations bearing on the work and shall immediately report any discrepancy it may discover to the Contracting Officer. Where the requirements of the drawings and specifications fail to comply with the applicable code or regulation, the Contracting Officer shall modify the contract by change order pursuant to the clause entitled Changes herein to conform to the code or regulation.

- (b) The Contractor shall secure and pay for all permits, fees, and licenses necessary for the proper execution and completion of the work. Where the PHA can arrange for the issuance of all or part of these permits, fees and licenses, without cost to the Contractor, the contract amount shall be reduced accordingly.

### 13. Health, Safety, and Accident Prevention

- (a) In performing this contract, the Contractor shall:
- (1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;
  - (2) Protect the lives, health, and safety of other persons;
  - (3) Prevent damage to property, materials, supplies, and equipment; and,
  - (4) Avoid work interruptions.
- (b) For these purposes, the Contractor shall:
- (1) Comply with regulations and standards issued by the Secretary of Labor at 29 CFR Part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96), 40 U.S.C. 3701 et seq.; and
  - (2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.
- (c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 CFR Part 1904.
- (d) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.
- (e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as the PHA, the Secretary of Housing and Urban Development, or the Secretary of Labor shall direct as a means of enforcing such provisions.

### 14. Temporary Heating

The Contractor shall provide and pay for temporary heating, covering, and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work, and to facilitate the completion of the work. Any permanent heating equipment used shall be turned over to the PHA in the condition and at the time required by the specifications.

### 15. Availability and Use of Utility Services

- (a) The PHA shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the PHA or, where the utility is produced by the PHA, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.
- (b) The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the PHA, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

### 16. Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements

- (a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract, and which do not unreasonably interfere with the work required under this contract.
- (b) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this contract, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- (c) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.
- (d) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.
- (e) Any equipment temporarily removed as a result of work under this contract shall be protected, cleaned, and replaced in the same condition as at the time of award of this contract.

- (f) New work which connects to existing work shall correspond in all respects with that to which it connects and/or be similar to existing work unless otherwise required by the specifications.
- (g) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the plans or specifications.
- (h) If the removal of the existing work exposes discolored or unfinished surfaces, or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels when brought together by the removal of intervening work, unless such refinishing or reconstruction is specified in the plans or specifications.
- (i) The Contractor shall give all required notices to any adjoining or adjacent property owner or other party before the commencement of any work.
- (j) The Contractor shall indemnify and save harmless the PHA from any damages on account of settlement or the loss of lateral support of adjoining property, any damages from changes in topography affecting drainage, and from all loss or expense and all damages for which the PHA may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.
- (k) The Contractor shall repair any damage to vegetation, structures, equipment, utilities, or improvements, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

#### 17. Temporary Buildings and Transportation of Materials

- (a) Temporary buildings (e.g., storage sheds, shops, offices, sanitary facilities) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the PHA. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- (b) The Contractor shall, as directed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

#### 18. Clean Air and Water

The contractor shall comply with the Clean Air Act, as amended, 42 USC 7401 et seq., the Federal Water Pollution Control Water Act, as amended, 33 U.S.C. 1251 et seq., and standards issued pursuant thereto in the facilities in which this contract is to be performed.

#### 19. Energy Efficiency

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163) for the State in which the work under the contract is performed.

#### 20. Inspection and Acceptance of Construction

- (a) Definitions. As used in this clause -
  - (1) "Acceptance" means the act of an authorized representative of the PHA by which the PHA approves and assumes ownership of the work performed under this contract. Acceptance may be partial or complete.
  - (2) "Inspection" means examining and testing the work performed under the contract (including, when appropriate, raw materials, equipment, components, and intermediate assemblies) to determine whether it conforms to contract requirements.
  - (3) "Testing" means that element of inspection that determines the properties or elements, including functional operation of materials, equipment, or their components, by the application of established scientific principles and procedures.
- (b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. All work is subject to PHA inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.
- (c) PHA inspections and tests are for the sole benefit of the PHA and do not: (1) relieve the Contractor of responsibility for providing adequate quality control measures; (2) relieve the Contractor of responsibility for loss or damage of the material before acceptance; (3) constitute or imply acceptance; or, (4) affect the continuing rights of the PHA after acceptance of the completed work under paragraph (j) below.
- (d) The presence or absence of the PHA inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specifications without the Contracting Officer's written authorization. All instructions and approvals with respect to the work shall be given to the Contractor by the Contracting Officer.
- (e) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The PHA may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The PHA shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

- (f) The PHA may conduct routine inspections of the construction site on a daily basis.
- (g) The Contractor shall, without charge, replace or correct work found by the PHA not to conform to contract requirements, unless the PHA decides that it is in its interest to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.
- (h) If the Contractor does not promptly replace or correct rejected work, the PHA may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor, or (2) terminate for default the Contractor's right to proceed.
- (i) If any work requiring inspection is covered up without approval of the PHA, it must, if requested by the Contracting Officer, be uncovered at the expense of the Contractor. If at any time before final acceptance of the entire work, the PHA considers it necessary or advisable, to examine work already completed by removing or tearing it out, the Contractor, shall on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray all the expenses of the examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the Contracting Officer shall make an equitable adjustment to cover the cost of the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.
- (j) The Contractor shall notify the Contracting Officer, in writing, as to the date when in its opinion all or a designated portion of the work will be substantially completed and ready for inspection. If the Architect determines that the state of preparedness is as represented, the PHA will promptly arrange for the inspection. Unless otherwise specified in the contract, the PHA shall accept, as soon as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines and designates can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the PHA's right under any warranty or guarantee.

## 21. Use and Possession Prior to Completion

- (a) The PHA shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the PHA intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The PHA's possession or use shall not be deemed an acceptance of any work under the contract.
- (b) While the PHA has such possession or use, the Contractor shall be relieved of the responsibility for (1) the loss of or damage to the work resulting from the PHA's possession or use, notwithstanding the terms of the clause entitled Permits and Codes herein; (2) all maintenance costs on the areas occupied; and, (3) furnishing heat, light, power, and water used in the areas

occupied without proper remuneration therefore. If prior possession or use by the PHA delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

## 22. Warranty of Title

The Contractor warrants good title to all materials, supplies, and equipment incorporated in the work and agrees to deliver the premises together with all improvements thereon free from any claims, liens or charges, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien upon the premises or anything appurtenant thereto.

## 23. Warranty of Construction

- (a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (j) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of \_\_\_\_\_ (one year unless otherwise indicated) from the date of final acceptance of the work. If the PHA takes possession of any part of the work before final acceptance, this warranty shall continue for a period of (one year unless otherwise indicated) from the date that the PHA takes possession.
- (b) The Contractor shall remedy, at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to PHA-owned or controlled real or personal property when the damage is the result of—
  - (1) The Contractor's failure to conform to contract requirements; or
  - (2) Any defects of equipment, material, workmanship or design furnished by the Contractor.
- (c) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for (one year unless otherwise indicated) from the date of repair or replacement.
- (d) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect or damage.
- (e) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the PHA shall have the right to replace, repair or otherwise remedy the failure, defect, or damage at the Contractor's expense.
- (f) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:
  - (1) Obtain all warranties that would be given in normal commercial practice;
  - (2) Require all warranties to be executed in writing, for the benefit of the PHA; and,
  - (3) Enforce all warranties for the benefit of the PHA.
- (g) In the event the Contractor's warranty under paragraph (a) of this clause has expired, the PHA may bring suit at its own expense to enforce a subcontractor's, manufacturer's or supplier's warranty.

- (h) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defect of material or design furnished by the PHA nor for the repair of any damage that results from any defect in PHA furnished material or design.
- (i) Notwithstanding any provisions herein to the contrary, the establishment of the time periods in paragraphs (a) and (c) above relate only to the specific obligation of the Contractor to correct the work, and have no relationship to the time within which its obligation to comply with the contract may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to its obligation other than specifically to correct the work.
- (j) This warranty shall not limit the PHA's rights under the Inspection and Acceptance of Construction clause of this contract with respect to latent defects, gross mistakes or fraud.

24. Prohibition Against Liens

The Contractor is prohibited from placing a lien on the PHA's property. This prohibition shall apply to all subcontractors at any tier and all materials suppliers.

25. Contract Period

this contract within \_\_\_\_\_ calendar days of the effective date of the contract, or within the time schedule established in the notice to proceed issued by the Contracting Officer.

26. Order of Provisions

In the event of a conflict between these General Conditions and the Specifications, the General Conditions shall prevail. In the event of a conflict between the contract and any applicable state or local law or regulation, the state or local law or regulation shall prevail; provided that such state or local law or regulation does not conflict with, or is less restrictive than applicable federal law, regulation, or Executive Order. In the event of such a conflict, applicable federal law, regulation, and Executive Order shall prevail.

27. Payments

- (a) The PHA shall pay the Contractor the price as provided in this contract.
- (b) The PHA shall make progress payments approximately every 30 days as the work proceeds, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer. The PHA may, subject to written determination and approval of the Contracting Officer, make more frequent payments to contractors which are qualified small businesses.
- (c) Before the first progress payment under this contract, the Contractor shall furnish, in such detail as requested by the Contracting Officer, a breakdown of the total contract price showing the amount included therein for each principal category of the work, which shall substantiate the payment amount requested in order to provide a

basis for determining progress payments. The breakdown shall be approved by the Contracting Officer and must be acceptable to HUD. If the contract covers more than one project, the Contractor shall furnish a separate breakdown for each. The values and quantities employed in making up this breakdown are for determining the amount of progress payments and shall not be construed as a basis for additions to or deductions from the contract price. The Contractor shall prorate its overhead and profit over the construction period of the contract.

- (d) The Contractor shall submit, on forms provided by the PHA, periodic estimates showing the value of the work performed during each period based upon the approved

submitted not later than 30 days in advance of the date set for payment and are subject to correction and revision as required. The estimates must be approved by the Contracting Officer with the concurrence of the Architect prior to payment. If the contract covers more than one project, the Contractor shall furnish a separate progress payment estimate for each.

- (e) Along with each request for progress payments and the required estimates, the Contractor shall furnish the following certification, or payment shall not be made: I hereby certify, to the best of my knowledge and belief, that

- (1) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;
- (2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements; and,
- (3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.

\_\_\_\_\_  
Name:

\_\_\_\_\_  
Title:

\_\_\_\_\_  
Date:

- (f) Except as otherwise provided in State law, the PHA shall retain ten (10) percent of the amount of progress payments until completion and acceptance of all work under the contract; except, that if upon completion of 50 percent of the work, the Contracting Officer, after consulting with the Architect, determines that the Contractor's performance and progress are satisfactory, the PHA may make the remaining payments in full for the work subsequently completed. If the Contracting Officer subsequently determines that the Contractor's performance and progress are unsatisfactory, the PHA shall reinstate the ten (10) percent (or other percentage as provided in State law) retainage until such time as the Contracting Officer determines that performance and progress are satisfactory.
- (g) The Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration when computing progress payments.

Material delivered to the Contractor at locations other than the site may also be taken into consideration if the Contractor furnishes satisfactory evidence that (1) it has acquired title to such material; (2) the material is properly stored in a bonded warehouse, storage yard, or similar suitable place as may be approved by the Contracting Officer; (3) the material is insured to cover its full value; and (4) the material will be used to perform this contract. Before any progress payment which includes delivered material is made, the Contractor shall furnish such documentation as the Contracting Officer may require to assure the protection of the PHA's interest in such materials. The Contractor shall remain responsible for such stored material notwithstanding the transfer of title to the PHA.

- (h) All material and work covered by progress payments made shall, at the time of payment become the sole property of the PHA, but this shall not be construed as (1) relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or, (2) waiving the right of the PHA to require the fulfillment of all of the terms of the contract. In the event the work of the Contractor has been damaged by other contractors or persons other than employees of the PHA in the course of their employment, the Contractor shall restore such damaged work without cost to the PHA and to seek redress for its damage only from those who directly caused it.
- (i) The PHA shall make the final payment due the Contractor under this contract after (1) completion and final acceptance of all work; and (2) presentation of release of all claims against the PHA arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. Each such exception shall embrace no more than one claim, the basis and scope of which shall be clearly defined. The amounts for such excepted claims shall not be included in the request for final payment. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned.
- (j) Prior to making any payment, the Contracting Officer may require the Contractor to furnish receipts or other evidence of payment from all persons performing work and supplying material to the Contractor, if the Contracting Officer determines such evidence is necessary to substantiate claimed costs.
- (k) The PHA shall not; (1) determine or adjust any claims for payment or disputes arising there under between the Contractor and its subcontractors or material suppliers; or, (2) withhold any moneys for the protection of the subcontractors or material suppliers. The failure or refusal of the PHA to withhold moneys from the Contractor shall in no wise impair the obligations of any surety or sureties under any bonds furnished under this contract.

## 28. Contract Modifications

- (a) Only the Contracting Officer has authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.
- (b) The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative matters which do not change the rights or

responsibilities of the parties (e.g., change in the PHA address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.

- (c) When a proposed modification requires the approval of HUD prior to its issuance (e.g., a change order that exceeds the PHA's approved threshold), such modification shall not be effective until the required approval is received by the PHA.

## 29. Changes

- (a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:
  - (1) In the specifications (including drawings and designs);
  - (2) In the method or manner of performance of the work;
  - (3) PHA-furnished facilities, equipment, materials, services, or site; or,
  - (4) Directing the acceleration in the performance of the work.
- (b) Any other written order or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances and source of the order and (2) that the Contractor regards the order as a change order.
- (c) Except as provided in this clause, no order, statement or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.
- (d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for an adjustment based on defective specifications, no proposal for any change under paragraph (b) above shall be allowed for any costs incurred more than 20 days (5 days for oral orders) before the Contractor gives written notice as required. In the case of defective specifications for which the PHA is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.
- (e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause, or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting a written statement describing the general nature and the amount of the proposal. If the facts justify it, the Contracting Officer may extend the period for submission. The proposal may be included in the notice required under paragraph (b) above. No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.
- (f) The Contractor's written proposal for equitable adjustment shall be submitted in the form of a lump sum proposal supported with an itemized breakdown of all increases and decreases in the contract in at least the following details:

- (1) Direct Costs. Materials (list individual items, the quantity and unit cost of each, and the aggregate cost); Transportation and delivery costs associated with materials; Labor breakdowns by hours or unit costs (identified with specific work to be performed); Construction equipment exclusively necessary for the change; Costs of preparation and/ or revision to shop drawings resulting from the change; Worker's Compensation and Public Liability Insurance; Employment taxes under FICA and FUTA; and, Bond Costs when size of change warrants revision.
- (2) Indirect Costs. Indirect costs may include overhead, general and administrative expenses, and fringe benefits not normally treated as direct costs.
- (3) Profit. The amount of profit shall be negotiated and may vary according to the nature, extent, and complexity of the work required by the change. The allowability of the direct and indirect costs shall be determined in accordance with the Contract Cost Principles and Procedures for Commercial Firms in Part 31 of the Federal Acquisition Regulation (48 CFR 1-31), as implemented by HUD Handbook 2210.18, in effect on the date of this contract. The Contractor shall not be allowed a profit on the profit received by any subcontractor. Equitable adjustments for deleted work shall include a credit for profit and may include a credit for indirect costs. On proposals covering both increases and decreases in the amount of the contract, the application of indirect costs and profit shall be on the net-change in direct costs for the Contractor or subcontractor performing the work.
- (g) The Contractor shall include in the proposal its request for time extension (if any), and shall include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the contract in its entirety.
- (h) The Contracting Officer shall act on proposals within 30 days after their receipt, or notify the Contractor of the date when such action will be taken.
- (i) Failure to reach an agreement on any proposal shall be a dispute under the clause entitled Disputes herein. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.
- (j) Except in an emergency endangering life or property, no change shall be made by the Contractor without a prior order from the Contracting Officer.

### 30. Suspension of Work

- (a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the PHA.
- (b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified (or within a reasonable time if not specified) in this contract an adjustment shall be made for any increase in the cost of performance of the contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have

been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor or for which any equitable adjustment is provided for or excluded under any other provision of this contract.

- (c) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and, (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the contract.

### 31. Disputes

- (a) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the contract, unlike a claim relating to the contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.
- (b) Except for disputes arising under the clauses entitled Labor Standards - Davis Bacon and Related Acts, herein, all disputes arising under or relating to this contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this clause.
- (c) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. A claim by the PHA against the Contractor shall be subject to a written decision by the Contracting Officer.
- (d) The Contracting Officer shall, within 60 (unless otherwise indicated) days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.
- (e) The Contracting Officer's decision shall be final unless the Contractor (1) appeals in writing to a higher level in the PHA in accordance with the PHA's policy and procedures, (2) refers the appeal to an independent mediator or arbitrator, or (3) files suit in a court of competent jurisdiction. Such appeal must be made within (30 unless otherwise indicated) days after receipt of the Contracting Officer's decision.
- (f) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

### 32. Default

- (a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with the diligence that will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within this time, the Contracting Officer may, by written notice to the Contractor, terminate the right to

proceed with the work (or separable part of the work) that has been delayed. In this event, the PHA may take over the work and complete it, by contract or otherwise, and may take possession of and use any materials, equipment, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the PHA resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the PHA in completing the work.

- (b) The Contractor's right to proceed shall not be terminated or the Contractor charged with damages under this clause if—
- (1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (i) acts of God, or of the public enemy, (ii) acts of the PHA or other governmental entity in either its sovereign or contractual capacity, (iii) acts of another contractor in the performance of a contract with the PHA, (iv) fires, (v) floods, (vi) epidemics, (vii) quarantine restrictions, (viii) strikes, (ix) freight embargoes, (x) unusually severe weather, or (xi) delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and
  - (2) The Contractor, within days (10 days unless otherwise indicated) from the beginning of such delay (unless extended by the Contracting Officer) notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, time for completing the work shall be extended by written modification to the contract. The findings of the Contracting Officer shall be reduced to a written decision which shall be subject to the provisions of the Disputes clause of this contract.
- (c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been for convenience of the PHA.

### 33. Liquidated Damages

- (a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, as specified in the clause entitled Default of this contract, the Contractor shall pay to the PHA as liquidated damages, the sum of \$ 100.00 [Contracting Officer insert amount] for each day of delay. If different completion dates are specified in the contract for separate parts or stages of the work, the amount of liquidated damages shall be assessed on those parts or stages which are delayed. To the extent that the Contractor's delay or nonperformance is excused under another clause in this contract, liquidated damages shall not be due the PHA. The Contractor remains liable for damages caused other than by delay.
- (b) If the PHA terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final

completion of the work together with any increased costs occasioned the PHA in completing the work.

- (c) If the PHA does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

### 34. Termination for Convenience

- (a) The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of the PHA. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective.
- (b) If the performance of the work is terminated, either in whole or in part, the PHA shall be liable to the Contractor for reasonable and proper costs resulting from such termination upon the receipt by the PHA of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor; (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by the PHA to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and protecting the work already performed until the PHA or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of legal and accounting services reasonably necessary to prepare and present the termination claim to the PHA; and (5) an amount constituting a reasonable profit on the value of the work performed by the Contractor.
- (c) The Contracting Officer will act on the Contractor's claim within days (60 days unless otherwise indicated) of receipt of the Contractor's claim.
- (d) Any disputes with regard to this clause are expressly made subject to the provisions of the Disputes clause of this contract.

### 35. Assignment of Contract

The Contractor shall not assign or transfer any interest in this contract; except that claims for monies due or to become due from the PHA under the contract may be assigned to a bank, trust company, or other financial institution. Such assignments of claims shall only be made with the written concurrence of the Contracting Officer. If the Contractor is a partnership, this contract shall inure to the benefit of the surviving or remaining member(s) of such partnership as approved by the Contracting Officer.

### 36. Insurance

- (a) Before commencing work, the Contractor and each subcontractor shall furnish the PHA with certificates of insurance showing the following insurance is in force and will insure all operations under the Contract:
- (1) Workers' Compensation, in accordance with state or Territorial Workers' Compensation laws.
  - (2) Commercial General Liability with a combined single limit for bodily injury and property damage of not less than \$ 1,000,000 [Contracting Officer insert amount]



per occurrence to protect the Contractor and each subcontractor against claims for bodily injury or death and damage to the property of others. This shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under (3) below. If the Contractor has a "claims made" policy, then the following additional requirements apply: the policy must provide a "retroactive date" which must be on or before the execution date of the Contract; and the extended reporting period may not be less than five years following the completion date of the Contract.

- (3) Automobile Liability on owned and non-owned motor vehicles used on the site(s) or in connection therewith for a combined single limit for bodily injury and property damage of not less than \$ 500,000.00 [Contracting Officer insert amount] per occurrence.
- (b) Before commencing work, the Contractor shall furnish the PHA with a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) Insurance on all work in place and/or materials stored at the building site(s), including foundations and building equipment, is in force. The Builder's Risk Insurance shall be for the benefit of the Contractor and the PHA as their interests may appear and each shall be named in the policy or policies as an insured. The Contractor in installing equipment supplied by the PHA shall carry insurance on such equipment from the time the Contractor takes possession thereof until the Contract work is accepted by the PHA. The Builder's Risk Insurance need not be carried on excavations, piers, footings, or foundations until such time as work on the superstructure is started. It need not be carried on landscape work. Policies shall furnish coverage at all times for the full cash value of all completed construction, as well as materials in place and/or stored at the site(s), whether or not partial payment has been made by the PHA. The Contractor may terminate this insurance on buildings as of the date taken over for occupancy by the PHA. The Contractor is not required to carry Builder's Risk Insurance for modernization work which does not involve structural alterations or additions and where the PHA's existing fire and extended coverage policy can be endorsed to include such work.
- (c) All insurance shall be carried with companies which are financially responsible and admitted to do business in the State in which the project is located. If any such insurance is due to expire during the construction period, the Contractor (including subcontractors, as applicable) shall not permit the coverage to lapse and shall furnish evidence of coverage to the Contracting Officer. All certificates of insurance, as evidence of coverage, shall provide that no coverage may be canceled or non-renewed by the insurance company until at least 30 days prior written notice has been given to the Contracting Officer.

### 37. Subcontracts

- (a) Definitions. As used in this contract -
- (1) "Subcontract" means any contract, purchase order, or other purchase agreement, including modifications and change orders to the foregoing, entered into by a subcontractor to furnish supplies, materials, equipment, and services for the performance of the prime contract or a subcontract.

(2) "Subcontractor" means any supplier, vendor, or firm that furnishes supplies, materials, equipment, or services to or for the Contractor or another subcontractor.

- (b) The Contractor shall not enter into any subcontract with any subcontractor who has been temporarily denied participation in a HUD program or who has been suspended or debarred from participating in contracting programs by any agency of the United States Government or of the state in which the work under this contract is to be performed.
- (c) The Contractor shall be as fully responsible for the acts or omissions of its subcontractors, and of persons either directly or indirectly employed by them as for the acts or omissions of persons directly employed by the Contractor.
- (d) The Contractor shall insert appropriate clauses in all subcontracts to bind subcontractors to the terms and conditions of this contract insofar as they are applicable to the work of subcontractors.
- (e) Nothing contained in this contract shall create any contractual relationship between any subcontractor and the PHA or between the subcontractor and HUD.

### 38. Subcontracting with Small and Minority Firms, Women's Business Enterprise, and Labor Surplus Area Firms

The Contractor shall take the following steps to ensure that, whenever possible, subcontracts are awarded to small business firms, minority firms, women's business enterprises, and labor surplus area firms:

- (a) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- (b) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;
- (c) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;
- (d) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises; and
- (e) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies.

### 39. Equal Employment Opportunity

During the performance of this contract, the Contractor agrees as follows:

- (a) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or handicap.
- (b) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, or handicap. Such action shall include, but not be limited to, (1) employment, (2) upgrading, (3) demotion, (4) transfer, (5) recruitment or recruitment advertising, (6) layoff or termination, (7) rates of pay or other forms of compensation, and (8) selection for training, including apprenticeship.

- (c) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.
- (d) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or handicap.
- (e) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.
- (f) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.
- (g) The Contractor shall furnish all information and reports required by Executive Order 11246, as amended, Section 503 of the Rehabilitation Act of 1973, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto. The Contractor shall permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (h) In the event of a determination that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts, or Federally assisted construction contracts under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.
- (i) The Contractor shall include the terms and conditions of this clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as the Secretary of Housing and Urban Development or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.
- (j) Compliance with the requirements of this clause shall be to the maximum extent consistent with, but not in derogation of, compliance with section 7(b) of the Indian Self-Determination and Education Assistance Act and the Indian Preference clause of this contract.
- 40. Employment, Training, and Contracting Opportunities for Low-Income Persons, Section 3 of the Housing and Urban Development Act of 1968.**
- (a) The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- (b) The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the Part 135 regulations.
- (c) The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.
- (d) The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.
- (e) The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.
- (f) Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.
- (g) With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

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#### 41. Interest of Members of Congress

No member or delegate to the Congress of the United States of America shall be admitted to any share or part of this contract or to any benefit that may arise therefrom.

#### 42. Interest of Members, Officers, or Employees and Former Members, Officers, or Employees

No member, officer, or employee of the PHA, no member of the governing body of the locality in which the project is situated, no member of the governing body of the locality in which the PHA was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the project, shall, during his or her tenure, or for one year thereafter, have any interest, direct or indirect, in this contract or the proceeds thereof.

#### 43. Limitations on Payments made to Influence Certain Federal Financial Transactions

- (a) The Contractor agrees to comply with Section 1352 of Title 31, United States Code which prohibits the use of Federal appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.
- (b) The Contractor further agrees to comply with the requirement of the Act to furnish a disclosure (OMB Standard Form LLL, Disclosure of Lobbying Activities) if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

#### 44. Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringement of any patent rights and shall save the PHA harmless from loss on account thereof; except that the PHA shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified and the Contractor has no reason to believe that the specified design, process, or product is an infringement. If, however, the Contractor has reason to believe that any design, process or product specified is an infringement of a patent, the Contractor shall promptly notify the Contracting Officer. Failure to give such notice shall make the Contractor responsible for resultant loss.

#### 45. Examination and Retention of Contractor's Records

- (a) The PHA, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until 3 years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.
- (b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders not exceeding \$10,000.
- (c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the Disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the PHA, HUD, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

#### 46. Labor Standards - Davis-Bacon and Related Acts

If the total amount of this contract exceeds \$2,000, the Federal labor standards set forth in the clause below shall apply to the development or construction work to be performed under the contract.

- (a) Minimum Wages.
- (1) All laborers and mechanics employed under this contract in the development or construction of the project(s) involved will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the regular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall

be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- (2) (i) Any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when all the following criteria have been met: (A) The work to be performed by the classification requested is not performed by a classification in the wage determination; and (B) The classification is utilized in the area by the construction industry; and (C) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employee Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.
- (iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.
- (iv) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (a)(2)(ii) or (iii) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in classification.
- (3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the

amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

- (b) Withholding of funds. HUD or its designee shall, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working in the construction or development of the project, all or part of the wages required by the contract, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due.
- (c) Payrolls and basic records.
- (1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working in the construction or development of the project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- (2) (i) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under subparagraph (c)(1) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The Contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1214-0149.)
- (ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (A) That the payroll for the payroll period contains the information required to be maintained under paragraph (c) (1) of this clause and that such information is correct and complete;
- (B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3; and
- (C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirements for submission of the "Statement of Compliance" required by subparagraph (c)(2)(ii) of this clause.
- (iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.
- (3) The Contractor or subcontractor shall make the records required under subparagraph (c)(1) available for inspection, copying, or transcription by authorized representatives of HUD or its designee, the Contracting Officer, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to

- make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.
- (d) (1) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship and Training, Employer and Labor Services (OATELS), or with a State Apprenticeship Agency recognized by OATELS, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by OATELS or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event OATELS, or a State Apprenticeship Agency recognized by OATELS, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (2) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under

the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (3) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.
- (e) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract
- (f) Contract termination; debarment. A breach of this contract clause may be grounds for termination of the contract and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.
- (g) Compliance with Davis-Bacon and related Act requirements. All rulings and interpretations of the Davis-Bacon and related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract
- (h) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this clause shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the PHA, HUD, the U.S. Department of Labor, or the employees or their representatives.
- (i) Certification of eligibility.
  - (1) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

- (2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a United States Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
  - (3) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.
- (j) Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.
- (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics, including watchmen and guards, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.
  - (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in subparagraph (j)(1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic (including watchmen and guards) employed in violation of the provisions set forth in subparagraph (j)(1) of this clause, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in subparagraph (j)(1) of this clause.
  - (3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in subparagraph (j)(2) of this clause.
- (k) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts all the provisions contained in this clause, and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all these provisions.

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47. Non-Federal Prevailing Wage Rates

- (a) Any prevailing wage rate (including basic hourly rate and any fringe benefits), determined under State or tribal law to be prevailing, with respect to any employee in any trade or position employed under the contract, is inapplicable to the contract and shall not be enforced against the Contractor or any subcontractor, with respect to employees engaged under the contract whenever such non-Federal prevailing wage rate exceeds:
  - (1) The applicable wage rate determined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 U.S.C. 3141 et seq.) to be prevailing in the locality with respect to such trade;
- (b) An applicable apprentice wage rate based thereon specified in an apprenticeship program registered with the U.S. Department of Labor (DOL) or a DOL-recognized State Apprenticeship Agency; or
- (c) An applicable trainee wage rate based thereon specified in a DOL-certified trainee program.

48. Procurement of Recovered Materials.

- (a) In accordance with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, the Contractor shall procure items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition. The Contractor shall procure items designated in the EPA guidelines that contain the highest percentage of recovered materials practicable unless the Contractor determines that such items: (1) are not reasonably available in a reasonable period of time; (2) fail to meet reasonable performance standards, which shall be determined on the basis of the guidelines of the National Institute of Standards and Technology, if applicable to the item; or (3) are only available at an unreasonable price.
- (b) Paragraph (a) of this clause shall apply to items purchased under this contract where: (1) the Contractor purchases in excess of \$10,000 of the item under this contract; or (2) during the preceding Federal fiscal year, the Contractor: (i) purchased any amount of the items for use under a contract that was funded with Federal appropriations and was with a Federal agency or a State agency or agency of a political subdivision of a State; and (ii) purchased a total of in excess of \$10,000 of the item both under and outside that contract.

## SECTION 01 10 00 - SUMMARY

### PART 1 – GENERAL

#### 1.1 PROJECT DESCRIPTION

- A. High Point Housing Authority (Owner) is pursuing a project to modernize the HVAC equipment at its office building. The project includes replacing three rooftop units, replacing malfunctioning controls equipment and ductwork, and adding VVT controls in a wing of the office building. The new controls system shall utilize a JACE head-end with remote access.
- B. The successful bidder will provide a total base bid price for each of the items listed on the Bid Form. In addition, bidder shall provide add/deduct unit pricing and bid alternate pricing as indicated on the Bid Form

#### 1.2 GENERAL REQUIREMENTS

- A. All work shall be in accordance with all applicable Local and State Codes.
- B. If during the course of work, the Contractor discovers a problem that interferes with the installation relative to the plans and specifications, or codes, the contractor shall immediately bring the problem to the attention of Owner for resolution prior to the execution of the work.
- C. Contractor shall perform all necessary planning and permitting to ensure a seamless and code compliant integration of system components into the existing mechanical system.
- D. Contractor shall provide startup services (including factory authorized assistance).
- E. Provide all cutting and patching for installation of work and repair any damage done to Owner's property.
- F. All inspection certificates shall be issued by the local inspection authorities before work will be approved for final payment.
- G. Install all products and equipment in accordance with the manufacturers' written instructions and recommendations.



- H. Only licensed contractors & tradesmen shall offer, perform, and permit all work in accordance with applicable state and local requirements.
- I. Contractor shall notify Owner immediately if hazardous conditions are discovered during work.
- J. Do not close or obstruct building egress path. Do not disable or disrupt building fire or life safety systems.
- K. Tenant spaces will be occupied during construction phase. Do not use tenant restroom facilities. The Contractor shall provide their own restroom facilities. Location of any temporary/portable bathroom facilities must be approved by Owner.
- L. If Contractor finds something that needs to be repaired prior to the start of the Work, Contractor should immediately notify Owner. Contractors are responsible for providing hourly rates for different trades as part of bid along with material mark-up percentage. Contractor will provide change orders with the number of hours to fix the issue and materials required for approval by Owner prior to proceeding with the work. If contractor cannot complete repairs Owner will repair and notify Contractor when repairs are complete.

### 1.3 PROJECT SCHEDULE

- A. Contractor shall coordinate the project schedule with Owner.
- B. To the greatest extent possible, all work in each space shall be completed prior to contractor moving on to the next space.
- C. Onsite storage location of stored material must be approved by Owner. All materials shall be securely stored at the end of each work day.
- D. Any off-site stored material shall be stored in an insured and heated storage facility. Contractor shall provide pictures and proof of insurance to owner prior to payment.
- E. The owner shall not be responsible for any theft or damage of stored materials.
- F. Owner at no time will be responsible for any materials, tools or equipment that are left on job site.

#### 1.4 SUBMITTALS

- A. Project Strategy and Implementation Plan.
- B. Project Schedule with Work Days.
- C. Manufacturer cut sheets for all products and equipment to be installed
- D. Contractor shall submit permitting documentation to Owner for review prior to final permitting.
- E. The Installer must provide equipment installation and maintenance manuals; warranties; and where applicable, acceptance test reports with measured parameters.
- F. Any other submittals required by each individual specification in this package

#### 1.5 DELIVERABLES

- A. Equipment functional start-up and test reports.
- B. Contractor shall provide a system manual to the Owner. The system manual should include manufacturer's specifications, Operation and Maintenance Manual(s), serial numbers, warranty policies, etc. as well as information for who to call if a problem arises with the system.

#### 1.6 WASTE MANAGEMENT AND DISPOSAL

- A. Contractor shall follow waste disposal requirements for specific equipment and materials per individual specifications for all work performed.
- B. At the close of each workday and upon project completion, the contractor shall remove and properly dispose of all waste and debris from the installation site.
- C. Contractor will be responsible for providing a waste container for debris / trash removal. No use of Owner waste containers is permitted.

- D. All construction debris shall be recycled, to the extent feasible. At a minimum, all cardboard, plastics (#1-7), aluminum, glass, mixed paper products, ceiling tiles, lumber, gypsum, drywall, nonferrous metals, roof shingles, and wood.

#### 1.7 WARRANTY

- A. A minimum 1 year warranty on all work performed by contractor.
- B. All warranties on equipment and materials per specifications sections.
- C. Warranty shall include both parts and labor.

#### 1.8 DEMOLITION

- A. Demolition of existing equipment is the responsibility of contractor replacing the equipment. (Follow Selective Demolition Specification 02 41 19)

#### 1.9 CLEANING

- A. Remove dirt and debris tracked into the unit/building at the end of each day.
- B. All construction debris shall be removed and properly disposed of at the end of each day and recycled to the greatest extent possible.
  - 1. Any interior surfaces damaged during the installation shall be touch up painted, patched, and repaired as required. Paint shall be applied to match the existing surface color and texture.
  - 2. After each day, completion of the job, and before final acceptance, the contractor shall cleanup work areas to satisfactory conditions.
  - 3. All buildings will be occupied during working hours.

PART 2 – PRODUCTS – not used

PART 3 – EXECUTION

#### 3.1 GENERAL

- A. All equipment shall be installed in a manner consistent with industry standards, manufacturer's installation guidance, and best practices.

- B. All installed components must be UL listed and installed in a manner consistent with that listing.
- C. All components must be installed by a licensed installer.
- D. Scope of work shall include all HVAC, electrical, and communications wiring, equipment and accessories for a complete, functional installation.
- E. Any damage caused to Owner property as a result of contractor's actions shall be returned to existing condition or better.
- F. The Installer shall provide full documentation on all system components installed so that Owner representatives can commission the system to ensure proper operation. Documentation shall be presented in a binder containing the cut sheets, model and serial numbers, warranty information, and O & M Manuals for each type of product installed.
- G. Contractor shall maintain/update binder as project progresses. Locate at a central location accessible to Owner and Owner's commissioning agent during regular business hours.
- H. System start-up and basic training for Owner maintenance staff is to be provided by Factory Authorized personnel. Minimum 3 hours per equipment type.
- I. There is no on-site parking available. Contractor is responsible for securing parking for its employees and vendors.
- J. Working hours are limited to 8:00 a.m. to 6:00 p.m. Monday through Thursday and 8:00 a.m. to 12:00 p.m. on Friday without exception.
- K. Work shall not be performed on nights and weekends without prior permission granted from owner. Permission shall be requested no later than 12:00 p.m. on the Wednesday prior to Saturday request.
- L. No Construction Office or lay down area will be available on-site
- M. A site visit prior to bidding is highly recommended.

END OF SECTION

## SECTION 01 20 00 PROJECT MEETINGS

### PART 1 - GENERAL

#### 1.1 PRE-CONSTRUCTION CONFERENCE

- A. The Owner or Architect/Engineer will schedule conference at Project site prior to Contractor mobilization.
- B. Attendance: Architect/Engineer, Owner, Consultants, Contractor, and major subcontractors.
- C. The purpose of the conference is to establish the working relationships between the Owner, the Architect/Engineer and the Contractor during the construction of the project. Areas of responsibility, operational procedures, payment processing, and scheduling will be covered in detail.

#### 1.2 PROGRESS MEETINGS

- A. A&E firm shall conduct monthly OAC meetings and bi-monthly site visits and discuss work progress, problems or deficiencies noted during inspection visits, overdue reports, construction schedule, etc.
- B. Contractor shall make physical arrangements for meetings.
- C. Attendance: Job superintendent, Project Manager, major subcontractors and suppliers when specifically requested; Architect/Engineer and Owner as appropriate to agenda topics for each meeting.
- D. Suggested Agenda: Review of Work progress, payment requests, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of the Work.

END OF SECTION

SECTION 01 63 00 - SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.1 REQUIREMENTS

- A. Furnish and install products specified under options and conditions for substitutions stated in this section of Specifications.

1.2 SUBSTITUTIONS

- A. For products specified by naming one or more products or manufacturers and stating "or equal", or "or approved equal", or other such wording on Drawings or within Specifications Sections, submit a request for substitutions for any product or manufacturer which is not specifically named.
- B. Substitution requests must be received and approved prior to submitting bid. After bids are submitted, substitution requests will be considered only if specified product or system has gone out of production subsequent to bidding, or specified product or system has been deemed illegal or dangerous by governing agencies having jurisdiction over this project.
- C. It is the intent of the Owner and Owner's Representative to have this project constructed with materials, products and systems originally designed and specified into project. This opportunity to request substitutions is for the convenience of bidders or contractors to submit bids for materials, products and systems which may be more familiar to them, or having a lesser cost.
- D. Submit separate request for each substitution. Support each request with an explanation for the request. Provide information as follows:
  - 1. Fill out the Substitution Request Form and answer all questions.
  - 2. Provide complete data substantiating compliance of proposed substitutions with requirements stated in Contract Documents. Use additional sheets as required to provide all necessary information:
    - a. Product identification, including manufacturer's name and address.
    - b. Manufacturer's literature; identify:
      - 1) Product description.
      - 2) Exact model and option of substituted product.
      - 3) Reference standards.
      - 4) Performance and test data.
    - c. Samples, as applicable.
    - d. Name, address, and date of similar projects on which product has been used, and date of each installation, as well as servicing agency and installer.

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3. Itemized comparison of the proposed substitution with products specified, listing significant variations.
  4. Data relating to changes in the construction schedule.
  5. Any effect of substitution on separate contracts.
  6. Any effect of substitution on in-place construction, or other materials and systems to be installed.
  7. Accurate cost data comparing proposed substitution with product specified.
  8. Designation of availability of maintenance services and sources of replacement materials.
- E. Substitutions will not be considered for acceptance when:
1. Products sections expressly indicate that substitutions are not allowed.
  2. They are indicated or implied on shop drawings or product data submittals without formal request.
  3. Acceptance may require revision of Contract Documents.
- F. Substitute products shall not be ordered or installed without written acceptance and authorization of Owner and Owner's Representative.
- G. Only the Owner and his representatives will determine the acceptability of proposed substitutions.

### 1.3 REPRESENTATIONS

- A. In making a legitimate, authorized formal request for substitution, represent that:
1. A thorough investigation has transpired concerning the proposed product, and it has been determined that it is equal to or superior in all respects to that specified.
  2. The same warranties or bonds, and guarantees will be provided as for that specified.
  3. Installation of the accepted substitution will be coordinated into the work; and such changes to in-place work, ordered materials and products, or other work to be in progress prior to installation of the requested substitutions, will be performed without any additional cost to Owner.

### 1.4 DUTIES

- A. Requests for substitutions must be expeditiously forwarded for consideration prior to submitting bid. Substitution Requests must be received at least 1 week prior to bid submission deadline in order to be considered.

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- B. Notification of decisions concerning acceptance or rejection will be in writing, and are final without need for clarification.

END OF SECTION



**SUBSTITUTION REQUEST FORM**

Failure to complete this form with information required will nullify any request for substitution.

TO: \_\_\_\_\_

PROJECT: \_\_\_\_\_

We hereby submit for your consideration the following product instead of the specified item for the above project:

SECTION	PARAGRAPH	SPECIFIED ITEM
_____	_____	_____

Proposed Substitution:  
\_\_\_\_\_

Attach complete technical data, including laboratory test, if applicable.

Include complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

Fill in Blanks Below:

A. Does the substitution affect dimensions shown on Drawings?

Yes \_\_\_\_\_ No \_\_\_\_\_. If yes, clearly indicate changes.

\_\_\_\_\_  
\_\_\_\_\_

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

\_\_\_\_\_

C. What affect does substitution have on other trades?

\_\_\_\_\_  
\_\_\_\_\_

D. What affect does substitution have on applicable code requirements?

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E. What affect does substitution have on construction schedule?

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F. Differences between proposed substitution and specified item?

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G. Manufacturer's guarantees of the proposed and specified items are:

\_\_\_\_\_ Same \_\_\_\_\_ Different (explain on attachment)

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE

The undersigned states that the function, appearance and quality are equivalent or superior to the specified time.

Submitted By:

---

Signature \_\_\_\_\_ Title \_\_\_\_\_

\_\_\_\_\_ Date \_\_\_\_\_

Firm \_\_\_\_\_

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Address \_\_\_\_\_

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Telephone \_\_\_\_\_

Remarks:

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FOR USE BY DESIGN ENGINEER

\_\_\_\_\_ Accepted                      \_\_\_\_\_ Accepted as Noted

\_\_\_\_\_ Not Accepted                      \_\_\_\_\_ Received Too Late

\_\_\_\_\_ Approved as alternate - See Bid Form

(Design Engineer)

By                      (print) \_\_\_\_\_ (sign) \_\_\_\_\_

Date \_\_\_\_\_

Remarks \_\_\_\_\_

Signature must be by person having authority to legally bind his firm to the above terms. Failure to provide legally binding signature will result in retraction of approval.

SECTION 01 70 00 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 CLOSEOUT PROCEDURES

- A. When Contractor considers Work has reached final completion at each individual site, notify Owner and Architect/Engineer to perform inspections as required. Give notice at least seven (7) days in advance of the time final inspection is to be performed.
- B. The Architect/Engineer and Owner will be accompanied on inspections by the Contractor as necessary, as well as any subcontractors that the Architect/Engineer may request to be present.
- C. The Owner will accept the project and will file for the Notice of Completion provided the work has been completed in accordance with the Contract Documents and no further measures are required and upon receipt of Certificate of Occupancy if required.
- D. If the work has been substantially completed in accordance with the Contract Documents, and only minor corrective measures are required, the Architect/Engineer will prepare a punch list, supplemental to the punch list prepared by the Contractor, of work to be corrected and the Owner will conditionally accept the Project and will file for the Notice of Completion based upon the Contractor's assurance that the corrective measures will be completed within the shortest practicable time period.
- E. The Owner will not accept the Project or file for the Notice of Completion if the work has not been substantially completed in accordance with the Contract Documents, and several or many corrective measures are required. A punch list will be prepared, based on the information gathered from the final inspections, and the Contractor will be required to complete the work and then call for another final inspection.
- F. Contractor shall submit his request for the final and acceptance payment upon acceptance of the Project by the Owner. Payment will be made per Owners standard payment procedures.
- G. In addition to submittals required by the conditions of the Contract, provide submittals required by local or state jurisdictions as necessary.

1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements,

final certifications, and similar documents.

4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases as required.
  5. Prepare and submit operation and maintenance manuals and other project record documents as required.
  6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
  7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  8. Complete startup testing of systems, as required.
  9. Submit test/adjust/balance records, as required.
  10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  12. Complete final cleaning requirements, including touchup painting.
  13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion to Owner. On receipt of request, Owner and/or Owner's Representative and Construction Manager will either proceed with inspections or notify Contractor of unfulfilled requirements. Owner or Owner's Representative will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Owner's Representative that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for Final Completion.

### 1.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

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1. Submit a final Application for Payment
2. Submit certified copy of Owners and Architect/Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect/Engineer. The list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

### 1.4 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.

### 1.5 PROJECT RECORD DOCUMENTS

- A. Prepare project record documents as required.
- B. At Contract closeout, submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and a signature of Contractor.

### 1.6 OPERATION AND MAINTENANCE DATA

- A. Refer to individual sections for operation and maintenance manuals to be submitted.
- B. Submit two sets prior to time of final inspection specified in 1.5 of this section, bound in 8- 1/2 x 11 inch (216 x 279 mm) three-ring side binders with durable plastic covers.
- C. Provide a separate volume for each system, with a table of contents and index tabs for each volume.
  1. Part 1: Directory, listing names, addresses, and telephone numbers of: Architect/Engineer and Contractor.
  2. Part 2: Operation and maintenance instructions, arranged by Specification division or system. For each Specification division or system, give names, addresses, and telephone numbers of subcontractors and suppliers. List:
    - a. Appropriate design criteria.
    - b. List of equipment.
    - c. Parts list
    - d. Operating instructions.
    - e. Maintenance instructions, equipment.
    - f. Maintenance instructions, finishes.
    - g. Shop Drawings and Product Data.
    - h. Warranties.

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1.7 SYSTEMS DEMONSTRATION / TRAINING

- A. Prior to final inspection, demonstrate operation of each system to Architect/Engineer and Owner, as necessary.
- B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

1.8 WARRANTIES

- A. Provide submittals and assemble documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover. Provide all submittal documents in electronic .pdf form.
- B. Submit material prior to final application for payment. For equipment put into use with Owner's permission during construction, submit within 10 days after first operation. For items of Work delayed materially beyond Notice of Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

END OF SECTION

SECTION 01 73 10 Cutting and Patching

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.02 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

1. Divisions 2 through 26 Sections include specific requirements and limitations applicable to cutting and patching individual parts of the Work.
2. Requirements in this Section include mechanical and electrical installations. Refer to Divisions 20 through 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.03 DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.04 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.
4. Dates: Indicate when cutting and patching will be performed.



5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

6. Engineer's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

#### 1.05 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements, including vapor barriers, membranes, flashings, wiring, piping, or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1. If possible, retain original Installer or fabricator to cut and patch exposed Work.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

#### 1.06 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces.

## PART 3 – EXECUTION

### 3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

A.. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Existing Services: Where existing services are required to be removed, relocated, or abandoned; bypass such services before cutting to avoid interruption of services to occupied areas.

### 3.03 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
  - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition.

END OF SECTION

## SECTION 01 91 13 - COMMISSIONING REQUIREMENTS

### PART 1 – GENERAL

#### 1.1 SUMMARY

- A. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.
- B. Systems to be commissioned:
  - 1. All heating, ventilation, air conditioning and refrigeration (HVAC&R) systems and associated controls

#### 1.2 COMMISSIONING TEAM

- A. Members Appointed by Contractor: Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of the Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by Owner:
  - 1. Commissioning Agent (CxA): The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner will engage the CxA under a separate contract.
  - 2. Representatives of the facility user and operation and maintenance personnel.
  - 3. Architect and engineering design professionals.

#### 1.3 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
  - 1. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
  - 2. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
  - 3. Attend meetings as specified in 01 20 00 – Project Meetings.
  - 4. Submit copies of submittals for systems and equipment for review by the CxA, concurrent with submittal for review by the Designer.
  - 5. Integrate and coordinate commissioning process activities with construction schedule.
  - 6. Review and accept construction checklists provided by the CxA.
  - 7. Complete construction checklists as Work is completed and provide to the Commissioning Authority.

8. Review and accept commissioning process test procedures provided by the Commissioning Authority.
9. Complete commissioning process test procedures.
10. Perform commissioning tests at the direction of the CxA.
11. Attend construction phase controls coordination meeting.
12. Attend testing, adjusting, and balancing review and coordination meeting.
13. Participate in systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.
14. Provide information requested by the CxA for final commissioning documentation.
15. Provide measuring instruments and logging devices to record test data, and provide data

#### 1.4 COMMISSIONING DOCUMENTATION

- A. The Contractor shall provide the following information to the CxA for inclusion in the commissioning plan:
  1. Plan for delivery and review of submittals, systems manuals, and other documents and reports.
  2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
  3. Process and schedule for completing construction checklists and manufacturer's prestart and startup checklists for HVAC&R systems, assemblies, equipment, and components to be verified and tested.
  4. Certificate of readiness, signed by the Contractor, certifying that HVAC&R systems, assemblies, equipment, components, and associated controls are ready for testing.
  5. Certificate of completion certifying that installation, prestart checks, and startup procedures have been completed.
  6. Certificate of readiness certifying that systems, subsystems, equipment, and associated controls are ready for testing.
  7. Test and inspection reports and certificates.
  8. Corrective action documents.
  9. Verification of testing, adjusting, and balancing reports.

#### 1.5 SUBMITTALS

- A. Certificates of readiness.
- B. Certificates of completion of installation, prestart, and startup activities.
- C. Product data and shop drawings as required elsewhere in the specifications for systems and equipment listed above.
- D. Operation and Maintenance Manuals.
  1. Submit one copy to the CxA at least 20 days prior to start-up and initial checkout of systems and equipment.

E. Training plans and documentation

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 COMMISSIONING MEETINGS

- A. Within 60 days of Notice to Proceed, the Designer, Owner, CxA, and Contractor shall schedule a commissioning scoping meeting with the entire commissioning team in attendance.
  - 1. The purpose of this meeting will be to confirm and clarify responsibilities for commissioning activities, particularly the measurement and verification phase of commissioning.
  - 2. The CxA will conduct the meeting and distribute minutes.
- B. Other meetings will be planned and conducted by the CxA as construction progresses.

3.2 START-UP AND INITIAL CHECKOUT

- A. Start-up and initial checkout is the responsibility of the Contractor for all equipment and systems to be commissioned.
- B. Start-up and initial checkout shall be conducted in accordance with pre-functional checklists prepared by the CxA, manufacturer's standard written start-up procedures copied from the installation manuals, and technician start-up reports and checklists for equipment requiring start-up, checkout, and calibration by factory-trained technicians.
- C. The Contractor shall notify the CxA two weeks in advance of any equipment or systems start-up.
- D. Within seven days of the start-up and initial checkout, the Contractor shall submit the following documentation of start-up and initial checkout:
  - 1. The CxA's pre-functional checklists
  - 2. Manufacturer's standard written start-up procedures with contractor sign-off
  - 3. Factory-trained technician's start-up report (where required)
  - 4. List of deficiencies or non-conformances discovered during start-up and initial checkout.

3.3 MEASUREMENT AND VERIFICATION (FUNCTIONAL PERFORMANCE TESTING)

- A. The objective of the measurement and verification phase is to demonstrate that each system or equipment is operating according to the documented design and the Contract Documents. During the functional performance testing, areas of deficient performance are identified and corrected prior to Owner's occupancy.
- B. In general, each system shall be operated through all modes of operation to verify the sequences of operation for each individual component and the system.
  - 1. The CxA will provide functional performance testing procedures and checklists and will supervise all functional performance testing.

2. As the building remains under the control of the Contractor during this phase, the Contractor shall be responsible for actual operation of the equipment and systems.

- C. Start-up and initial checkout and testing, adjusting, and balancing (TAB) of HVAC systems shall be complete prior to the start of the measurement and verification phase of commissioning.
- D. The Contractor shall supply all personnel and equipment for measurement and verification, including, but not limited to, tools, instruments, ladders, lifts, computers, software, cables, etc. Personnel must be competent and knowledgeable of all project-specific systems and automation hardware and software, and shall be fully capable of operating systems and equipment per the functional performance testing procedures and checklists, including imposing artificial setpoints or conditions and manual operation

### 3.4 SCHEDULING AND COORDINATION

- A. The Contractor shall include sufficient time in the Construction Schedule for initial start-up and checkout, and measurement and verification phases of commissioning, and show these activities appropriately in the schedule.
- B. The CxA will provide to the Contractor pre-functional checklists and functional performance test procedures and checklists after approval of submittals for equipment and submittals, but at least one month prior to the anticipated start of initial start-up and verification.
- C. The Contractor shall provide sufficient notice to the CxA regarding the completion schedule for initial start-up and checkout of systems and equipment.

### 3.5 NON-CONFORMANCE

- A. The CxA will record the results of functional tests and TAB checkout on the test form. All deficiencies or non-conformance issues will be noted on the Issues Log.
- B. Correction of minor deficiencies identified during functional testing may be made during the test and will be documented on the test form.
- C. Each day the CxA will submit the updated Issues Log to the Contractor for correction and resolution. The Contractor shall notify the CxA when systems or equipment are ready for retest or inspection, as required.
- D. In case of a dispute over a deficiency:
  - 1. The Designer is the final authority with respect to determining compliance with the Contract Documents.
  - 2. The Contractor is the final authority with respect to determining which subcontractor is responsible for correcting the deficiency.

### 3.6 RETESTING

- A. The CxA will direct and supervise the retesting of any equipment or system once without charge to the Contractor.

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- B. The time and expenses for the CxA to direct, coordinate, or perform any retesting beyond the initial retesting will be chargeable to the Contractor under the following conditions:
  - 1. A specific pre-functional checklist, start-up test item, non-compliance, or repeated deficiency exists, and has been reported as complete or resolved via the issues log.
  - 2. A system has been determined not ready for testing at the time of the scheduled visit.
- C. The Contractor shall not consider any required retesting as a justification for a claim of delay or for a time extension to the Contract.



SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition of mechanical systems per Contract Documents.
2. Demolition and removal of selected portions of equipment or building as noted in specific Sections of the Contract Documents

1.2 QUALITY ASSURANCE

- A. Perform Work in accordance with the City of High Point, NC standards and all other state and local codes.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or remove and reinstalled.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulation before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

### PART 3 EXECUTION

#### 3.1 PREPARATION

- A. All materials used to complete the Work will be disposed of per the Construction Waste Management Plan
- B. Notify Owner and Engineer of discrepancies between existing conditions and Contract Documents prior to proceeding with selective demolition.
- C. Erect, and maintain temporary barriers and security devices, for protection of the public, Owner, tenants, and existing improvements indicated to remain as needed.
- D. Erect and maintain weatherproof closures for exterior openings.
- E. Prevent movement of structure; provide temporary bracing and shoring as necessary.
- F. Provide appropriate temporary signage including signage for exit or building egress.
- G. Lay down floor protection to prevent damage.

#### 3.2 DEMOLITION

- A. Conduct demolition to minimize interference with adjacent and occupied building areas. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Do not close or obstruct building egress path.
- C. Do not disable or disrupt building fire or life safety systems.
- D. Take care not to damage exterior or interior wall surfaces.
- E. Turn off gas and electric to demolition areas before beginning demolition work.
- F. Cap and identify abandoned utilities at termination points when utility is not completely removed.
- G. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- H. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- I. Remove temporary Work.

END OF SECTION

SECTION 20 00 10 General Mechanical Requirements

PART 1 – GENERAL

1.01 RELATED SECTIONS:

A. Drawings, general provisions of the Contract, including General and Supplementary Conditions, and Division-1 Specification Sections and Division 22, 23, and 26 Specification Sections, apply to work of this Section.

B. This section applies to Division 21, 22 and 23 Specification Sections.

1.02 DESCRIPTION OF WORK:

A. This Section includes general administrative and procedural requirements for mechanical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1 and form a part of and shall govern all work performed under these specifications

B. The Contract Documents depict the scheduled equipment and components as a basis of design. Should the Contractor submit and receive approval for equipment that is acceptable by specification, but differs from that of the basis of design, the Contractor shall be responsible for coordination of that equipment with all other trades. Costs incurred to provide increased service to or from said piece of equipment or system shall be borne by the Contractor supplying the equipment or system at no additional cost to the Owner.

C. Work includes the installation of all necessary equipment, piping and components for complete and operable systems.

D. This project includes the following systems:

1. HVAC Ductwork
2. Rooftop Unit Replacement
3. VVT Controls

1.03 DEFINITIONS AND TERMS:

A. The word "Owner" shall be defined as the party mentioned in the prime contract agreement, or any representative of his party authorized to act in his behalf in the execution of the work.

B. The word "Contractor" shall be defined as the person, firm or corporation entering into a contract with the owner to construct and complete the work as specified

herein.

C. The word “furnish” shall be defined as to furnish and deliver to project site, ready for unloading, unpacking, assembly, installation and similar subsequent requirements.

D. The word “install” shall be defined as operations at the project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar requirements.

E. The word “provide” shall be defined as to furnish and install complete, ready for intended use as defined above.

F. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

G. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

H. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

I. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings, in chases, in enclosures, in trenches or in crawl spaces.

J. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

#### 1.04 SUBMITTALS:

A. General: Each contractor shall submit shop drawings as stated in Division 1 Sections pertaining to submission of shop drawings, product data, samples, and as specified herein.

B. Approval of shop drawings does not relieve the contractor of the responsibility for ordering proper quantities and miscellaneous appurtenances required for operation and/or installation of the respective material or equipment nor from the responsibility of complying with all elements of the Contract Documents.

C. Provide specific information with each submittal as stated in the respective

specification sections.

D. The following General Information is required with each submittal as applicable.

1. Full manufacturer's model name and number of each item
2. Equipment performance, physical size by dimension, and construction data.
3. Finishes: Provide two (2) color samples for equipment requiring color/finish selection.
4. Location of connection points for external piping, ductwork, and electrical connections.
5. Rough-in/foundation and support point dimensions.
6. Complete wiring diagrams and connection identifications.
7. Contractor's stamp, signature and date shall be affixed to submittal drawing indicating his review and approval.

E. Corrections or comments made on the shop drawings during review do not relieve the Contractor from compliance with requirements of the drawings and specifications. Shop drawing checking by the Engineer is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor is responsible for:

1. Confirming and correlating all quantities and dimensions.
2. Selecting fabrication processes and techniques of construction.
3. Coordinating his work with that of all other trades.
4. Performing his work in a safe and satisfactory manner.

F. Shop drawings shall be processed electronically using PDF format with maximum 10MB file size. Transmit to [submittals@enverityeng.com](mailto:submittals@enverityeng.com) in accordance with Division 01 Section "Submittals." Each submission shall include a cover page identifying the BARTON TOWER CHILLER REPLACEMENT, contact information of contractor responsible and the associated specification number for the product submitted.

#### 1.05 SUBSTITUTIONS:

A. See Division 1, Substitutions.

B. Requests for substitutions after award of contract shall be considered only in case of product unavailability. Product unavailability shall be verified in writing by manufacturer.

C. Submit separate request for each substitution in the event of non-availability of item.

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D. Substantiate compliance of proposed substitution with requirements stated in Contract documents.

E. Indicate changes in construction schedule.

F. Indicate any effect of substitution on other Work in this and other Divisions, and any other related contracts, and changes required in other work or products.

G. Contractor shall be responsible for any extra cost for all changes resulting from proposed substitutions which affect work of other Sections or Divisions, or related contracts.

H. Substitutions will not be considered for acceptance when acceptance will require revision of Contract Documents, unless Contractor bears cost of redesign. Where any redesign of electrical, mechanical or other work is required due to substitution, arrangement or equipment layout other than herein specified or shown:

1. Arrange for required redesign by Engineer.
2. Pay all costs for such redesign.
3. Contractor shall perform such redesign.
4. Produce detailed plans at no extra cost to Owner.
5. All subject to Engineer's approval.

I. Engineer will have sole discretion to determine acceptability of proposed substitutions and reserves the right to reject any such substitution. Substitute products shall not be ordered or installed without prior written approval/acceptance by Engineer.

J. Approval of substitutions shall not relieve Contractor from full compliance with requirements of Contract documents.

1.06 PERMITS AND INSPECTIONS:

A. The Contractor shall obtain and furnish all necessary permits and inspection certificates for all material and labor furnished by him.

B. Permits and certificates shall be obtained from the proper inspection authorities. The cost of permits, certificates and all fees required in connection with the installation shall be borne by the Contractor, unless otherwise noted in the detailed contractual description preceding these Mechanical Specifications.

C. Where applications are required for the procuring of utility services to the building, this Contractor shall see that such application is properly filed with the utility and that all information required for such an application is presented to the extent and in the form required by the utility company.

D. Inspections:

1. Obtain inspections during the Work as required to allow timely progress of mechanical work and the work of other trades.
2. Obtain certificates of final inspection approval from authorities having jurisdiction, and submit to Engineer as a condition of acceptance of the Work.

1.07 DRAWINGS:

A. The drawings and the specifications are cooperative and supplementary. It is the intent of both said drawings and specifications to cover all mechanical requirements in their entirety as nearly as possible. The Contractor shall closely check the drawings and specifications for any obvious errors or omissions, and bring any such condition to the attention of the Engineer

B. The Contractor shall have a complete set of drawings on the site at all times. Prior to installing any of his work, he shall check the drawings for exact dimensions and see that his work does not interfere with clearance required for beams, foundations, finished columns, pilasters, partitions, piping, ductwork, etc., as shown on the drawings and details.

C. After work is installed and it develops that interferences occur which have not been called to the Engineer's attention before the installation, the Contractor shall, at his own expense, make such changes in his work as directed by the Engineer.

D. The contract drawings for mechanical work are in part diagrammatic, intended to convey the scope of work and indicate general arrangement of equipment, piping, ductwork, etc., and approximate sizes and locations of equipment and materials.

E. Where job conditions require reasonable changes in indicated locations and arrangement, the Contractor shall make such changes as directed by the Engineer, without additional cost to the Owner.

F. Because of the scale of the drawings, certain basic items may not be shown, but where such items are required by other Sections of these specifications or where they are required by the nature of the work, they shall be furnished and installed.

G. Rough-in dimensions and locations shall be verified with the supplier of all equipment furnished by other trades or by the Owner prior to the time of roughing-in.

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H. The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. Minor deviations from the contract drawings may be made to allow for better accessibility, but changes of magnitude, or which involve extra cost, shall not be made without approval.

I. Ample space shall be allowed for removal of all parts that may require replacement or service in the future.

### 1.08 RECORD DOCUMENTS:

A. Prepare record documents in accordance with the requirements in Division 1. In addition to the requirements specified in Division 1, indicate the following installed conditions:

1. Mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance.
2. Valve location diagrams, complete with valve tag chart. Indicate actual inverts and horizontal locations of underground piping.
3. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
4. Approved substitutions, Contract Modifications, and actual equipment and materials installed.
5. During construction, maintain a complete and legible set of drawings, showing changes and deviations between actual construction and Engineer's drawings.

### 1.09 OPERATING AND MAINTENANCE MANUALS:

A. Prepare bound sets of operating and maintenance manuals in accordance with Division 1 Section "PROJECT CLOSE-OUT." In addition to the requirements specified in Division 1, include the following information for equipment items:

1. Manufacturer's name, model number, service manual, spare-parts list, and descriptive literature for all components, cross referenced and numbered on Record Drawings as required.
2. Listing of possible breakdown and repairs.
3. Detailed and simplified one line, color coded flow and wiring diagram.
4. Field test report, including:



- a. Instrument set points.
- b. Normal operating valves.

5. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.

6. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.

7. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair and assembly; aligning and adjusting instructions.

8. Servicing instructions and lubrication charts and schedules.

9. Name, address and phone number of contractors equipment suppliers and service agencies.

10. Assemble manufacturer's equipment manuals in chronological order, following the specification alpha-numeric system, in heavy duty 3-ring binders clearly titled on the spine and front cover with appropriate index dividers.

#### 1.10 DELIVERY, STORAGE, AND HANDLING:

A. Deliver products to the project site properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

B. Check dimensions of access route through the site from delivery point to final location. Where necessary, ship in crated sections of size to permit passing through available space. Dismantle and/or reassemble, re-provision and retest equipment too large to pass through available access route to final location in one piece.

C. All construction related products and equipment received at project site shall be secured and stored neatly, in original packaging, and protected from the elements in an Owner designated, on-site storage area.

D. All construction related products and equipment shall be handled, moved, lifted and placed in accordance with all manufacturers' posted and written instructions. Equipment and/or product damage incurred due to improper handling shall be

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repaired to like new condition by the Contractor causing said damage. If the damaged item cannot be repaired to a like new condition then the item shall be replaced with new by the Contractor causing said damage at no additional cost increase in the contract amount.

### 1.11 CODES, FEES, AND MISCELLANEOUS COSTS:

A. All construction shall comply with all applicable specifications, federal, state, and local codes, local ordinances, industry standards, and utility company regulations.

B. In case of variations between specifications, codes, laws, applicable regulations, and the Contract Documents, the most stringent requirement shall govern the work done. The Contractor shall promptly notify the Engineer in writing of any such discrepancy.

C. Should the Contractor perform work that does not comply with the standards governing the construction of this project, he shall bear all costs incurred to correct work that does not comply with the set standards.

### 1.12 REFERENCE STANDARDS:

A. Published codes, specifications, standards, tests or recommended methods of trade, industry or governmental organizations apply to work in this Division where cited below:

1. ADA: Americans with Disabilities Act.
2. AABC: Associated Air Balance Council.
3. ADC: Air Diffuser Council.
4. AMCA: Air Moving and Conditioning Association.
5. ANSI: American National Standards Institute.
6. ARI: Air-Conditioning and Refrigeration Institute.
7. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers.
8. ASME: American Society of Mechanical Engineers.
9. ASSE: American Society of Sanitary Engineers.
10. ASTM: American Society for Testing and Materials.
11. AWS: American Welding Standards.
12. FM: Factory Mutual.
13. Local Utility Authorities.
14. National, State and Local Codes of all authorities having jurisdiction.
15. NEMA: National Electrical Manufacturer's Association.
16. NFPA: National Fire Protection Association.
17. OSHA: Occupational Safety and Health Act.
18. PDI: Plumbing and Drainage Institute.
19. State Energy Code having jurisdiction

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- 20. UL: Underwriters' Laboratories, Inc.
- 21. IBC: International Building Code.
- 22. IMC: International Mechanical Code.
- 23. IPC: International Plumbing Code.

B. In addition to complying with all other legal requirements, comply with current provisions of governing codes and regulations in effect during progress of the Work, and with the following:

- 1. Drawings and specification requirements shall govern where they exceed Code and Regulation requirements.
- 2. Where requirements between governing Codes and Regulations vary, the more restrictive provisions shall apply.
- 3. Nothing contained in Contract Documents shall be construed as authority or permission to disregard or violate legal requirements. The Contractor shall immediately draw the attention of the Engineer to any such conflicts noted in the Contract Documents.

1.13 REVIEW OF CONSTRUCTION:

- A. Work may be reviewed at any time by the Engineer.
- B. Advise Engineer in writing that work is ready for review at following times:
  - 1. When all requirements of Contract have been completed.

1.14 SEQUENCE AND SCHEDULING:

- A. Coordinate the shut-off and disconnection of utility services with the Owner.
- B. Notify the Engineer at least 5 days prior to commencing demolition operations.
- C. Perform demolition in phases as indicated.
- D. Arrange work to conform to schedule of construction established or required to comply with Contract Documents.
  - 1. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.
- E. Confirm in writing to Engineer, within 30 days of signing of contract, anticipated number of days required to perform test, balance, and acceptance testing of mechanical systems:

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1. This phase must occur after completion of mechanical systems, including all control calibration and adjustment, and requires substantial completion of the building, including closure, ceilings, lighting, partitioning, etc.
2. Submit for approval at this time, names and qualifications of test and balancing agencies to be used.

1.15 GUARANTEE:

- A. Guarantee all materials, equipment, apparatus and workmanship to be free of defective materials and faulty workmanship for period of one year from date of filing of Notice of Substantial Completion, unless extended guarantee periods are specified in individual sections.
- B. Furnish guarantee covering all work in accordance with general requirements of the Contract. This guarantee also applies to services such as Instructions, Adjusting, Testing, Noise, Balancing, etc.
- C. Provide new materials, equipment, apparatus and labor to replace that determined by Engineer to be defective or faulty.
- D. Equipment manufacturer's warranty shall be one year from date of initial operation or 18 months from the date of shipment, whichever comes first. Contractor shall purchase extended warranty to give full coverage during overall warranty period, unless longer period is specified.

PART 2 - PRODUCTS:

2.01 NOT APPLICABLE:

PART 3 - EXECUTION:

3.01 ROUGH-IN:

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment specification sections for rough-in requirements.

3.02 MECHANICAL INSTALLATIONS:

- A. Coordinate mechanical systems, equipment, and materials installation with other building components.
- B. Verify all dimensions by field measurements.

- C. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for mechanical installations.
- D. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
- E. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
- F. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
- G. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Engineer.
- H. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
- I. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
- J. The Engineer reserves the right to require minor adjustments in location of switches, blocking, ductwork, conduits, drains, piping, outlets, switches and/or equipment at no additional charge if so directed prior to their installation. Where the Drawings show equipment, casework, or the like, Contractors shall lay out the work to avoid conflicts. Where offsets in piping, additional fittings, necessary drains, minor valves, traps, devices, etc., are required to complete the installation, to clear obstructions or the work of other Contractors, or for the proper operation of the system, these shall be deemed to be included in the Contract and shall be furnished and installed complete by the Contractor at no additional charge.

### 3.03 CUTTING AND PATCHING:

- A. General: Perform cutting and patching in accordance with Division 1 Section "CUTTING AND PATCHING." In addition to the requirements specified in Division 1, the following requirements apply:

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1. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

B. Perform cutting, fitting, and patching of mechanical equipment and materials required to:

1. Remove and replace defective Work.
2. Remove and replace Work not conforming to requirements of the Contract Documents.
3. Install equipment and materials in existing structures.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

END OF SECTION

## SECTION 230713 -HVAC INSULATION

### 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.
- B. Latest versions of North Carolina Energy Conservation Code and Mechanical Code.

#### 1.2 SUMMARY

- A. Section includes insulating the following duct services: Indoor, concealed supply and outdoor air.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory-and field-applied if any).
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

#### 1.5 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
  - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

## 1.7 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

## 1.8 SCHEDULING

- A. Schedule insulation application after testing systems and, where required. Insulation application may begin on segments that have satisfactory test results.

## PART 2 -PRODUCTS

### 2.1 INSULATION MATERIALS

- A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- D. Flexible Elastomeric Insulation: Closed-cell, sponge-or expanded-rubber materials, tube form. Comply with ASTM C 534.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
    - a. Armaflex
    - b. Rubatex
    - c. IMACO

- A. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin.



Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
  - a. Certaineed
  - b. JM
  - c. Knauf
  - d. Owens Corning

## 2.2 DUCT LINER

- A. Fibrous-Glass Duct Liner: Comply with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."
  1. Maximum Thermal Conductivity:
    - a. Type I, Flexible: 0.27 Btu x in./h x sq. ft. x deg F (0.039 W/m x K) at 75 deg F (24 deg C) mean temperature.
    - b. Type II, Rigid: 0.23 Btu x in./h x sq. ft. x deg F (0.033 W/m x K) at 75 deg F (24 deg C) mean temperature.
  1. Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
  2. Water-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.
    - a. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
    - b. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Insulation Pins and Washers:
  1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper-or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch-(3.5-mm-) diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch (38-mm) galvanized carbon-steel washer.
  2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-(0.41-mm-) thick galvanized steel, aluminum or stainless steel; with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches (38 mm) in diameter.
- C. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 7-11, "Flexible Duct Liner Installation."

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. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
3. Butt transverse joints without gaps, and coat joint with adhesive.
4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
5. 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.
6. Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm (12.7 m/s).
7. Secure liner with mechanical fasteners 4 inches (100 mm) from corners and at intervals not exceeding 12 inches (300 mm) transversely; at 3 inches (75 mm) from transverse joints and at intervals not exceeding 18 inches (450 mm) longitudinally.
8. 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. Fabricate edge facings at the following locations:
  - a. Fan discharges.
  - b. Intervals of lined duct preceding unlined duct.
9. Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.

### 2.3 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Flexible Elastomeric Adhesive: Comply with MIL-A-24179A, Type II, Class I.
- C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

### 2.4 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1.FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

## 2.5 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. Metal Jacket:
  - 1. Aluminum Jacket: Comply with ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005, Temper H-14.
    - a. Sheet and roll stock ready for shop or field sizing.
    - b. Finish and thickness are indicated in field-applied jacket schedules.
    - c. Moisture Barrier for Outdoor Applications: 3-mil-(0.075-mm-) thick, heat-bonded polyethylene and kraft paper.

## 2.5 TAPES

- A. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
  - 1. Width: 3 inches (75 mm).
  - 2. Thickness: 6.5 mils (0.16 mm).
  - 3. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
  - 4. Elongation: 2 percent.
  - 5. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
  - 6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

## 2.6 SECUREMENTS

- A. Bands:
  - 1. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304 or Type 316; 0.015 inch (0.38 mm) thick, 1/2 inch (13 mm) wide with wing seal or closed seal.
  - 2. Aluminum: ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch (0.51 mm) thick, 1/2 inch (13 mm) wide with wing seal or closed seal.
- B. Insulation Pins and Hangers:
  - 1. Capacitor-Discharge-Weld Pins: Copper-or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch-(3.5-mm-) diameter shank, length to suit depth of insulation indicated.
  - 2. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper-or zinc-coated steel pin, fully

annealed for capacitor-discharge welding, 0.135-inch-(3.5-mm-) diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch (38-mm) galvanized carbon-steel washer.

3. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: 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 (0.76 mm) thick by 2 inches (50 mm) square.
- b. Spindle: Copper-or zinc-coated, low-carbon steel, Aluminum or Stainless steel, fully annealed, 0.106-inch-(2.6-mm-) 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.

4. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-(0.41-mm-) thick, galvanized-steel, aluminum or stainless-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches (38 mm) in diameter.

- a. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

C. Staples: Outward-clinching insulation staples, nominal 3/4-inch-(19-mm-) wide, stainless steel or Monel.

D. Wire: 0.080-inch (2.0-mm) nickel-copper alloy, 0.062-inch (1.6-mm) soft-annealed, stainless steel or 0.062-inch (1.6-mm) soft-annealed, galvanized steel.

## PART 3 -EXECUTION

### 3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

### 3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Keep insulation materials dry during application and finishing.
- F. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- G. Install insulation with least number of joints practical.
- H. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- I. Install insulation with factory-applied jackets as follows:
  - 1. Draw jacket tight and smooth.
  - 2. Cover circumferential joints with 3-inch-(75-mm-) wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches (100 mm) o.c.
  - 3. Overlap jacket longitudinal seams at least 1-1/2 inches (38 mm). Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches (100 mm) o.c.
  - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
- J. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- K. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

- L. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

### 3.4 PENETRATIONS

- A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- B. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches (50 mm).
  - 1. Comply with requirements in Section 078413 "Penetration Firestopping."
- C. Insulation Installation at Floor Penetrations:
  - Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches (50 mm).
  - Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

### 3.5 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

### 3.6 INSTALLATION OF MINERAL-FIBER INSULATION

- A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
  - 1. Apply adhesives according to manufacturer's recommended coverage rates per unit area.
  - 2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
  - 3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
    - a. On duct sides with dimensions 18 inches (450 mm) and smaller, place pins along longitudinal centerline of duct. Space 3 inches (75 mm) maximum from insulation end joints, and 16 inches (400 mm) o.c.
    - b. On duct sides with dimensions larger than 18 inches (450 mm), place pins 16 inches

(400 mm) o.c. each way, and 3 inches (75 mm) maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.

c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.

d. Do not overcompress insulation during installation.

e. Impale insulation over pins and attach speed washers.

f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.

5. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-(150-mm-) wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches (150 mm) o.c.

### 3.7 FIELD-APPLIED JACKET INSTALLATION

A. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.

2. Install lap or joint strips with same material as jacket.

3. Secure jacket to insulation with manufacturer's recommended adhesive.

4. Install jacket with 1-1/2-inch (38-mm) laps at longitudinal seams and 3-inch-(75-mm-) wide joint strips at end joints.

5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

B. Where metal jackets are indicated, install with 2-inch (50-mm) overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches (300 mm) o.c. and at end joints.

### 3.8 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:

1. Indoor, concealed supply and outdoor air.

B. Items Not Insulated:

1. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
2. Factory-insulated flexible ducts.
3. Factory-insulated plenums and casings.
4. Flexible connectors.
5. Vibration-control devices.
6. Factory-insulated access panels and doors.

### 3.9 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Concealed and exposed, round and rectangular, supply-, return-and outdoor-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: R-6

### 3.10 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over R-8 insulation material.

END OF SECTION



Part 1 - GENERAL

1.1 General System Architecture

- A. The BAS shall be comprised of a Niagara JACE head-end with graphical user interface and VVT zone controls featuring wireless temperature sensors. All expansion modules, wireless temperature sensors, and setpoint adjustable wireless temperature sensors shall be provided for a fully-functioning system.

1.2 DELIVERY AND INSTALLATION

A. QUALITY ASSURANCE

- 1. The BAS Contractor shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship provided under this Specification Section.
- 2. The BAS Contractor shall use technicians and application engineers certified by the manufacturer in the installation, configuration, programming and service of the BAS products.
- 3. Contractor shall verify signal strength of wireless temperature sensors with manufacturer's specifications. Contractor shall add gateways as necessary to accommodate temperature sensor layouts per mechanical drawings.

1.3 SUBMITTAL

- 1. One electronic copy shall be submitted as a single PDF. The original submittal should be updated to reflect any as-built changes.

Part 2 - PRODUCTS

1.4 JACE Supervisory Controller

A. A. The following Supervisory Controllers shall be allowed:

- 1. VYKON – JACE 8000
- 2. Distech – EC-BOS-8
- 3. Johnson Controls – FX80
- 4. Honeywell – WEB-8000
- 5. Siemens – TNM-8000
- 6. Other manufacturers as approved by engineer.

B. The controllers shall be fully programmable.

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### C. The SC shall provide the following hardware features as a minimum:

1. Two 10/100 Mbps Ethernet ports.
2. Two Isolated RS-485 ports with biasing switches.
3. 1 GB RAM
4. Minimum 4 GB Flash Total Storage / 2 GB User Storage
  - a. NAC must be able to store a minimum of 5 days of data for all points at 15-minute intervals.
5. Wi-Fi (Client or WAP)
6. USB Flash Drive
7. High Speed Field Bus Expansion
8. Integrated 24 VAC/DC Global Power Supply
9. MicroSD Memory Card Employing Encrypted Safe Boot Technology

### 1.5 JACE Expansion Modules

#### A. Accepted Equipment

1. Tridium Jace – IO-R-34
2. Other manufacturers as approved by engineer.

#### B. Documentation for each BACnet device shall be provided, with the following information at a minimum

1. BACnet Device; MAC address, name, type and instance number
2. BACnet Objects; name, type and instance number
3. A PICS document showing the installed systems compliance level to the ASHRAE Standard 135.

### 1.6 Other Control System Hardware

#### A. EnOcean Wireless Temperature Sensors

1. EnOcean Temperature sensors shall be located as shown in the mechanical drawings. All EnOcean products will meet the following requirements:
  - a. Operate wirelessly.

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b. Models allowed:

1. Magnum Mx-RTS1
  2. Magnum Mx-RTS1-SP
  3. Schneider Electric SED-T00-U-5045
  4. Distech PDITE-WSEN902X1
  5. Equivalent Zigbee model
  6. approved equivalent.
2. Contractor shall verify signal strength of wireless temperature sensors with manufacturer’s specifications. Contractor shall add gateways as necessary to accommodate temperature sensor layouts per mechanical drawings.

B. EnOcean Gateways and Repeaters

1. All EnOcean products shall meet the following requirements:
  - a. Must be BACnet Testing Laboratories (BTL) listed prior to the start of construction.
  - b. Gateways shall be accessibly located in the locations shown in the mechanical drawings.
  - c. The following gateways shall be allowed:
    1. Magnum Mx-EBOX
    2. Schneider Electric MPM-GW-E00-5045 Wireless Manager,
    3. Equivalent Zigbee hub and system components.
    4. approved equivalent

C. Network Switches

1. Network switches shall be unmanaged, gigabit capable.

1.7 Remote Access and Interface

1. The BAS shall be provided with a complete Web-enabled operator interface. The operator interface shall include graphics including a floor layout with corresponding office temperatures and setpoints from setpoint-adjustable thermostats.
2. The Web enabled operator interface shall allow scheduling are night, weekend, and vacation setbacks.

PART 1 EXECUTION

1.8 GENERAL

- A. All work described in this section shall be installed, wired, circuit tested and calibrated by factory certified technicians qualified for this work.

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- B. Install system and materials in accordance with manufacturer’s instructions.
- C. Drawings of Heating Control System are diagrammatic only and any apparatus not shown, such as relays, accessories, etc., but required to make the system operative to the complete satisfaction of the Owner shall be furnished and installed without additional cost.
- D. Implement all features of programs to specified requirements and as appropriate to sequence of operation.
- E. Verify location of thermostats, and other exposed control sensors with plans and room details before installation.
- F. Include any step-down transformers and other electrical components necessary for powering new system equipment.
- G. All wiring shall be in accordance with all local and national codes.
- H. The Owner shall be the named license holder of all software associated with any and all incremental work on the project(s).

1.9 WARRANTY

- A. The contractor shall warrant all materials and workmanship to be free from defect for a period of one (1) year from the date of overall substantial completion of the respective site.
- B. Within this period, upon notice by HHA, any defects in the work provided under this section due to faulty materials, methods of installation or workmanship shall be promptly (within 48 hours after receipt of notice) repaired or replaced.

1.10 ACCEPTANCE TESTING

- A. The contractor shall perform all necessary calibration, testing and de-bugging and perform all required operational checks to insure that the system is functioning in full accordance with these specifications and the correct sequences of operations.

1.11 OPERATION & MAINTENANCE MANUALS

- A. O&M manuals shall include the following elements, as a minimum:
  - 1. As-built control drawings for all equipment.
  - 2. General description and specifications for all components.
  - 3. Completed Performance Verification sheets.

END OF SECTION

SECTION 23 11 00 Natural Gas Piping Systems

PART 1 - GENERAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The following shall apply to this Section:

1. Drawings.
2. General Conditions.
3. Refer to Section 01 11 00 - General Information.

1.02 WORK INCLUDES

A. This Section includes piping, specialties, and accessories for gas systems within the building and outdoors.

1.03 RELATED WORK

A. Section 20 00 50 - "BASIC MECHANICAL MATERIALS AND METHODS"

1.04 SUBMITTALS

A. Product Data, including rated capacities of selected models, weights (shipping, installed, and operating), furnished specialties and accessories, and installation instructions for each specialty and special duty valve specified.

B. Maintenance Data for specialties and valves, for inclusion in operating and maintenance manual specified in Division 1.

C. Welders' certificates certifying that welders comply with the quality requirements specified in Quality Assurance below.

D. Certification of compliance with ASTM and ANSI manufacturing requirements for pipe, fittings, and specialties.

1.05 QUALITY ASSURANCE

A. Comply with NFPA 54 "National Fuel Gas Code" for gas piping materials and

components; installations; and inspection, testing, and purging.

B. Comply with the International Mechanical Code, latest edition, for all fuel gas piping installation.

C. Provide listing/approval stamp, label, or other marking on equipment made to specified standards.

D. Listing and Labeling: Provide equipment and accessories that are listed and labeled.

#### 1.06 DEFINITIONS

A. Low-Pressure Gas Piping System: Operating at pressure of 7" W.C. or 1/2 psi, or as indicated on drawings.

B. Medium-Pressure Gas Piping System: Operating at a pressure of above ½ psi to 10 psi.

C. Gas Service: Pipe from the street main or LP gas storage tank to point of delivery for the building being served. Piping includes gas service piping, gas valve, service pressure regulator.

D. Gas Piping System: Pipe within the building that conveys gas from point of delivery to points of usage. Piping includes dielectric fitting and gas valve immediately downstream from point of delivery.

#### PART 2 – PRODUCTS

##### A. Gas Pressure Regulators

1. American Meter Co.
2. Jordan Valve Div., Richards Industries, Inc.
3. Fisher Controls.
4. Lancaster by National Meter Parts, Inc.
5. Gas Energy, Inc., Subsid., Brooklyn Union Gas.
6. Maxitrol Co.

##### B. Low-Pressure Gas Stops

1. Hammond Valve Corp.
2. Lancaster by National Meter Parts, Inc.

3. Jomar International, Ltd.
4. Rockford-Eclipse Div., Eclipse, Inc.

C. Gas Valves, 2 Inches and Smaller

1. Homestead by Olson Technologies, Inc.
2. Mueller Co., A Grinnell Co.
3. Lancaster by National Meter Parts, Inc.
4. Mueller Steam Specialty Div., Core Industries, Inc.
5. Lunkenheimer Co.
6. Nordstrum Valves, Inc.
7. Milliken Valve Co., Inc.
8. Rockford-Eclipse Div., Eclipse, Inc.

D. CSST (Corrugated stainless steel tubing)

1. Titeflex.

2.02 PIPES AND TUBES

A. Refer to "Pipe Applications" Article in Part 3 for identification of systems where the following materials are used.

B. Steel Pipe: ASTM A 53, Type E, Electric-Resistance Welded or Type S, Seamless, Grade B, Schedule 40, black.

C. Plastic Pipe: ASTM D-2513, polyethylene pipe, SR-11, labeled for gas system use.

D. CSST: Corrugated stainless steel tubing with polyethylene jacketing; 304 stainless steel.

2.03 PIPE AND TUBE FITTINGS

A. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern, with threads conforming to ASME B1.20.1.

B. Unions: ASME B16.39, Class 150, black malleable iron; female pattern; brass-to-iron seat; ground joint.

C. Steel Fittings: ASME B16.9, wrought steel, butt-welding type; and ASME B16.11, forged

steel.

D. Transition Fittings: Type, material, and end connections to match piping being joined.

E. ESST Mechanical Fittings: Type, material, and end connections to match piping being joined.

#### 2.04 JOINING MATERIALS

A. Common Joining Materials: Refer to Section 20 00 50- "BASIC MECHANICAL MATERIALS AND METHODS" for joining materials not included in this Section.

#### 2.05 VALVES

A. Manual Valves: Conform to standards listed, or where appropriate, valves according to ANSI Z21.15 and ANSI Z21.15a.

B. Low-Pressure Gas Stops, 2 Inches and Smaller: AGA- certified design for 2 psig or less gas, with AGA stamp, plug or ball type, bronze body and bronze plug or chrome-plated brass ball. Include flat head, square head, or lever handle and threaded ends.

C. Gas Valves, 2-1/2 Inches and Larger: MSS SP-78, Class 125 or 175 WOG, lubricated plug type, semi steel body, wrench operated, with flanged ends.

#### 2.06 PIPING SPECIALTIES

A. Gas Pressure Regulators: comply with ANSI Z21.18. For appliance regulators or ANSI/U.L. 144 for second-stage regulators. (This applies only to regulators furnished and installed as part of the project, and not regulations furnished by others).

B. Flexible Connectors: ANSI Z21.24 or ANSI Z21.24a, copper alloy.

### PART 3 – PRODUCTS

#### 3.01 PREPARATION

A. Precautions: Close equipment shutoff valves before turning off gas to the premises or section of piping. Perform leakage test to determine that all equipment is turned off in the piping section to be affected.



B. Comply with NFPA 54 "Prevention of Accidental Ignition."

### 3.02 SERVICE ENTRANCE PIPING

A. Extend gas piping and connect to the gas service piping in location and size indicated for gas service entrance to building.

### 3.03 PIPE APPLICATIONS

A. Flanges, unions, transition and special fittings, and valves with pressure ratings same or higher than system pressure rating may be used in applications below, except where specified otherwise.

B. Low-Pressure Gas Systems, above Ground within or outside Building: Use the following:

1. 2 Inches and Smaller: Steel pipe, malleable-iron, threaded fittings, and threaded joints.
2. 2-1/2 Inches and Larger: Steel pipe, butt-welding fittings, and welded joints.

C. Low-pressure gas systems, below ground within the buildings: Use the following:

1. 1 inch and smaller: CSST tubing inside a schedule 40 PVC plastic sleeve.

D. Medium pressure (greater than ½ PSI up to 10 PSI) Gas Systems, Below Ground outside the buildings:

1. 1/2 " and larger: Polyethylene, ASTM D2513.

E. Medium pressure (greater than ½ PSI up to 10 PSI) gas systems above ground within the building and/or on the roof:

1. Steel pipe, butt-welding fittings, welded joints

### 3.04 VALVE APPLICATIONS

A. Use low-pressure gas stops, tapered plug or ball type, for shutoff to appliances with 2-inch or smaller low- pressure gas supply.

B. Use gas valves for shutoff to appliances. Where the appliance input exceeds one million BTUH, use a lubricated plug valve.

C. Use gas valves of sizes indicated for other gas shut-off applications where indicated.

### 3.05 JOINT CONSTRUCTION

A. For steel pipe, refer to Section 20 00 50- "BASIC MECHANICAL MATERIALS AND METHODS" for basic piping joint construction.

B. Use materials suitable for gas service.

C. Joints and connections in underground polyethylene gas piping shall be made by buttfused heat fusion methods, only by qualified personnel.

### 3.06 PIPING INSTALLATIONS

A. Refer to Section 20 00 50- "BASIC MECHANICAL MATERIALS AND METHODS" for basic piping installation requirements.

B. Above-Ceiling Locations: Gas piping may be installed in accessible above-ceiling spaces (subject to approval of the authority having jurisdiction), whether or not such spaces are used as a plenum. Do not locate valves or unions in such spaces.

1. Prohibited Locations: Do not install gas piping in or through circulating air ducts, chimneys or gas vents (flues), or ducts.

2. Concealed locations: Gas piping may be installed in concealed (inaccessible) locations as permitted by the International Mechanical Code only if all joints in the piping are welded.

C. Drips and Sediment Traps: Install drips at points where condensate may collect. Include outlets of gas meters. Locate where readily accessible to permit cleaning and emptying. Do not install where condensate would be subject to freezing.

1. Construct drips and sediment traps using tee fitting with bottom outlet plugged or capped. Use minimum-length nipple of 3 pipe diameters, but not less than 3 inches long, and same size as connected pipe. Install with space between bottom of drip and floor for removal of plug or cap.

D. Install gas piping at a uniform grade of 1/4 inch in 15 feet, upward toward risers. Install piping upward from the service point to equipment.

E. Connect branch piping from top or side (not bottom) of horizontal piping.

F. Install unions in pipes 2 inches and smaller, adjacent to each valve, at final connection to each piece of equipment, and elsewhere as indicated. Unions are not required on flanged devices.

G. Anchor piping to ensure proper direction of piping expansion and contraction. Install expansion joints, expansion loops, and pipe guides as indicated.

H. Install vent of gas pressure regulators pointing down, in accordance with manufacturer's instructions.

### 3.07 HANGER AND SUPPORT INSTALLATION

A. Refer to Section 20 00 50- "BASIC MECHANICAL MATERIALS AND METHODS" for hanger and support devices.

B. Install hangers for horizontal piping at 10' on centers or otherwise as called for on the drawings.

C. Do Not support gas piping by extending it to stand on the floor.

D. Install vent of gas pressure regulators pointing down, in accordance with manufacturer's instructions.

### 3.08 VALVE INSTALLATION

A. Install valves in accessible locations, protected from physical damage.

B. Install a gas valve upstream of each gas pressure regulator.

### 3.09 CONNECTIONS

A. Install gas piping near gas-utilizing equipment and appliances so as to allow servicing and maintenance.

B. Connect gas piping to gas-utilizing equipment and appliances with shutoff valves and unions. Make connections downstream of valves and unions, with flexible connectors where indicated.

### 3.10 TERMINAL EQUIPMENT CONNECTIONS

A. Install a gas valve upstream and within 6 feet of each gas-utilizing appliance. Install a union or flanged connection downstream from the valve to permit removal of controls.

B. Sediment Traps: Install as described above, as close as practical to gas appliance inlets, downstream of the shut-off valve for the appliance.

### 3.11 ELECTRICAL BONDING AND GROUNDING

A. Install above-ground portions of gas piping systems that are upstream from equipment shutoff valves, electrically continuous and bonded to a grounding electrode according to NFPA 70.

B. Do not use gas piping as a grounding electrode.

### 3.12 FIELD QUALITY CONTROL

A. Inspect, test, and purge gas systems according to NFPA 54, Part 4 "Gas Piping Inspection, Testing, and Purging" and local gas utility requirements as applicable.

B. Repair leaks and defects with new materials, and retest system until satisfactory results are obtained.

C. Verify capacities and pressure ratings of gas meters, regulators, valves, and specialties.

D. Verify correct pressure settings for pressure regulators.

E. Verify that specified piping tests are complete.

### 3.13 ADJUSTING

A. Adjust controls and safety devices. Replace damaged and malfunctioning controls and safety devices.

END OF SECTION

## SECTION 233113 -METAL DUCTS

### 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. Sheet metal materials.
4. Duct liner.
5. Sealant and gaskets.
6. Hangers and supports.
7. Seismic-restraint devices.

- B. Related Sections:

- 1 Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
- 2 Section 233300 "Air Duct Accessories" for dampers, duct-mounting access doors and panels, turning vanes, and flexible ducts.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

- B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards -Metal and Flexible" and ASCE/SEI 7. SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."

1. Seismic Hazard Level B: Seismic force to weight ratio, 0.30.

- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in

ASHRAE 62.1.

1.4 ACTION SUBMITTALS

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

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code -Steel," for hangers and supports.
  2. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 -"Systems and Equipment" and Section 7 -"Construction and System Start-up."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 "HVAC System Construction and Insulation."

PART 2 -PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "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's "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's "HVAC Duct Construction Standards -Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "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's "HVAC Duct Construction Standards Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "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's "HVAC Duct Construction Standards -Metal and Flexible."

## 2.2 SINGLE-WALL ROUND DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "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's "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's "HVAC Duct Construction Standards -Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "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's "HVAC Duct Construction Standards -Metal and Flexible."
- D. Tees and Laterals: Select types and fabricate according to SMACNA's "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's "HVAC Duct Construction Standards -Metal and Flexible."

## 2.3 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "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.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
  - 1. Galvanized Coating Designation: G90 (Z275).
  - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.
- D. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black-and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

## 2.5 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 NRTL.

B. Two-Part Tape Sealing System:

1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
2. Tape Width: 3 inches (76 mm).
3. Sealant: Modified styrene acrylic.
4. Water resistant.
5. Mold and mildew resistant.
6. Maximum Static-Pressure Class: 10-inch wg (2500 Pa), positive and negative.
7. Service: Indoor and outdoor.
8. Service Temperature: Minus 40 to plus 200 deg F (Minus 40 to plus 93 deg C).
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.
10. 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).
11. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. 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-inch wg (2500 Pa), positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.



3. Grade: NS.
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).
7. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

## 2.6 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.
- E. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- F. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- G. Trapeze and Riser Supports:
  1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

## 2.7 SEISMIC-RESTRAINT DEVICES

- A. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports by an evaluation service member of the ICC Evaluation Service.
  1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
- B. Channel Support System: Shop-or field-fabricated support assembly made of slotted steel channels rated in tension, compression, and torsion forces and with accessories for attachment to braced component at one end and to building structure at the other end. Include matching components and corrosion-resistant coating.

- C. Restraint Cables: ASTM A 603, galvanized or ASTM A 492, stainless-steel cables with end connections made of cadmium-plated steel assemblies with brackets, swivel, and bolts designed for restraining cable service; and with an automatic-locking and clamping device or double-cable clips.
- D. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections or Reinforcing steel angle clamped to hanger rod.
- E. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

### PART 3 -EXECUTION

#### 3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.
- B. Install ducts according to SMACNA's "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 (25 mm), plus allowance for insulation thickness.
- I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, 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 (38 mm).

- K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.
- L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

#### INSTALLATION OF EXPOSED DUCTWORK

- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
- B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.
- C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.
- D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
- E. Repair or replace damaged sections and finished work that does not comply with these requirements.

#### 3.3 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards -Metal and Flexible."

#### 3.4 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
  - 1. Where practical, install concrete inserts before placing concrete.
  - 2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
  - 3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches (100 mm) thick.
  - 4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches (100 mm) thick.
  - 5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Table 5-1 (Table 5-1M), "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 (610 mm) of each elbow and within 48 inches (1200 mm) of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet (5 m).

F. 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.

### 3.5 SEISMIC-RESTRAINT-DEVICE INSTALLATION

A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."

1 Space lateral supports a maximum of 40 feet (12 m) o.c., and longitudinal supports a maximum of 80 feet (24 m) o.c.

2 Brace a change of direction longer than 12 feet (3.7 m).

B. Select seismic-restraint devices with capacities adequate to carry present and future static and seismic loads.

C. Install cables so they do not bend across edges of adjacent equipment or building structure.

D. Install cable restraints on ducts that are suspended with vibration isolators.

E. Install seismic-restraint devices using methods approved by an evaluation service member of the ICC Evaluation Service.

F. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure, to flanges of beams, to upper truss chords of bar joists, or to concrete members.

G. Drilling for and Setting Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcement or embedded items during drilling. Notify the Architect if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.

2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full

design strength.

3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Set anchors to manufacturer's recommended torque, using a torque wrench.
5. Install zinc-coated steel anchors for interior applications and stainless-steel anchors for applications exposed to weather.

### 3.6 CONNECTIONS

- A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

### 3.7 PAINTING

- A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer.

### 3.8 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Duct System Cleanliness Tests:
  1. Visually inspect duct system to ensure that no visible contaminants are present.
- C. Duct system will be considered defective if it does not pass tests and inspections.
- D. Prepare inspection reports.

### 3.9 START UP

- A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

### 3.10 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel.
- B. Supply Ducts:
  1. Ducts Connected to all equipment:

- a. Pressure Class: Positive 2-inch wg (500 Pa).
- b. Minimum SMACNA Seal Class: A.
- c. SMACNA Leakage Class for Rectangular: 6.
- d. SMACNA Leakage Class for Round and Flat Oval: 6.

C. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel, Carbon steel coated with zinc-chromate primer or Galvanized steel or carbon steel coated with zinc-chromate primer.

D. Liner:

1. Supply, Return, and Transfer Air Ducts: Fibrous glass, Type I, R-5 minimum.

E. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Figure 4-2, "Rectangular Elbows."

- a. Velocity 1000 fpm (5 m/s) or Lower:

- 1) Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio. 2) Mitered Type RE 4 with vanes.

- b. Velocity 1000 to 1500 fpm (5 to 7.6 m/s):

- 1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio. 2) Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes. 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

- c. Velocity 1500 fpm (7.6 m/s) or Higher:

- 1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio. 2) Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes. 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Figure 4-2, "Rectangular Elbows."

- a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
- b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
- c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards -Metal

and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

3. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Figure 3-4, "Round Duct Elbows."

a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.

1) Velocity 1000 fpm (5 m/s) or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.

2) Velocity 1000 to 1500 fpm (5 to 7.6 m/s): 1.0 radius-to-diameter ratio and four segments for 90-degree elbow.

3) Velocity 1500 fpm (7.6 m/s) or Higher: 1.5 radius-to-diameter ratio and five segments for 90-degree elbow.

4) Radius-to Diameter Ratio: 1.5.

b. Round Elbows, 12 Inches (305 mm) and Smaller in Diameter: Stamped multi piece with all joints sealed.

c. Round Elbows, 14 Inches (356 mm) and Larger in Diameter: Standing seam.

i. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible," Figure 4-6, "Branch Connection."

a. Rectangular Main to Rectangular Branch: 45-degree entry.

b. Rectangular Main to Round Branch: Spin in with scoop and hand damper.

2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.

END OF SECTION

## SECTION 233300 -AIR DUCT ACCESSORIES

### 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. Flange connectors.
  - 2. Turning vanes.
  - 3. Remote damper operators.
  - 4. Duct-mounted access doors.
  - 5. Flexible connectors.
  - 6. Flexible ducts.
  - 7. Duct accessory hardware.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

#### 2.1 ASSEMBLY DESCRIPTION

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. Comply with SMACNA's "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.

#### 2.2 MATERIALS



- A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
  - 1. Galvanized Coating Designation: G90 (Z275).
  - 2. Exposed-Surface Finish: Mill phosphatized.
- B. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

#### 2.4 FLANGE CONNECTORS

- A. Description: Add-on, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.
- B. Material: Galvanized steel.
- C. Gage and Shape: Match connecting ductwork.

#### 2.5 TURNING VANES

- A. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- B. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards -Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."
- C. Vane Construction: Single wall.

#### 2.6 REMOTE DAMPER OPERATORS

- A. Description: Gear and shaft system designed for remote manual damper adjustment.
- B. Shaft: Steel
- C. Wall-Box Mounting: Recessed.
- D. Wall-Box Cover-Plate Material: Steel.

#### 2.8 FLEXIBLE CONNECTORS

- A. Materials: Flame-retardant or noncombustible fabrics.
- B. Coatings and Adhesives: Comply with UL 181, Class 1.

C. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches (89 mm) wide attached to two strips of 2-3/4-inch-(70-mm-) wide, 0.028-inch-(0.7-mm-) thick, galvanized sheet steel or 0.032-inch-(0.8-mm-) thick aluminum sheets. Provide metal compatible with connected ducts.

D. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.

1. Minimum Weight: 26 oz./sq. yd. (880 g/sq. m).
2. Tensile Strength: 480 lbf/inch (84 N/mm) in the warp and 360 lbf/inch (63 N/mm) in the filling.
3. Service Temperature: Minus 40 to plus 200 deg F (Minus 40 to plus 93 deg C).

## 2.9 FLEXIBLE DUCTS

A. Insulated, Flexible Duct: UL 181, Class 1, 2-ply vinyl film supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene or aluminized vapor-barrier film.

1. Pressure Rating: 6-inch wg positive and 1.0-inch wg (250 Pa) negative.
2. Maximum Air Velocity: 4000 fpm (20 m/s).
3. Temperature Range: Minus 10 to plus 160 deg F (Minus 23 to plus 71 deg C).
4. Insulation R-value: R-6 minimum. Comply with ASHRAE/IESNA 90.1.

C. Flexible Duct Connectors:

1. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action or Nylon strap in sizes 3 through 18 inches (75 through 460 mm), to suit duct size.
2. Non-Clamp Connectors: Adhesive or Adhesive plus sheet metal screws.

## 2.10 DUCT ACCESSORY HARDWARE

A. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

## PART 3 -EXECUTION

### 3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards -Metal and Flexible" for metal ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel ducts.
- C. Compliance with ASHRAE/IESNA 90.1-2004 includes Section 6.4.3.3.3 -"Shutoff Damper Controls," restricts the use of backdraft dampers, and requires control dampers for certain applications. Install backdraft dampers at inlet of exhaust fans or exhaust ducts as

close as possible to exhaust fan unless otherwise indicated.

D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.

1. Install steel volume dampers in steel ducts.

E. Set dampers to fully open position before testing, adjusting, and balancing.

J. Install flexible connectors to connect ducts to equipment.

K. Connect diffusers to ducts with maximum 60-inch (1500-mm) lengths of flexible duct clamped or strapped in place. No flex through fire rated walls.

L. Connect flexible ducts to metal ducts with draw bands or adhesive plus sheet metal screws.

### 3.2 FIELD QUALITY CONTROL

#### A. Tests and Inspections:

1. Operate dampers to verify full range of movement.
2. Inspect locations of access doors and verify that purpose of access door can be performed.
3. Inspect turning vanes for proper and secure installation.
4. Operate remote damper operators to verify full range of movement of operator and damper.

END OF SECTION 233300

## High Point Housing Authority – HVAC Upgrades

### 23 81 19 – Gas Pack Rooftop Units

#### 1.01 Accepted Manufacturers:

1. Carrier
2. Trane
3. York
4. Other manufacturers to be approved by engineer.
5. Equipment other than Carrier to include curb adapter, as necessary. Any equipment other than carrier must be approved by the engineer before the bid date.

#### 1.02 Small-Capacity Self-Contained Air Conditioners

##### A. General Requirements

##### 1. Gas-pack rooftop unit – electric cooling and gas heat.

- a) Unit shall use R-410a refrigerant.
- b) Unit shall be installed in accordance with the manufacturer's instructions.
- c) Unit must be selected and installed in compliance with local, state, and federal codes.

##### B. Quality Assurance

- a) Unit meets Department of Energy 2018 ASHRAE 90.1-2016 and IECC 2015 minimum efficiency requirements.
- b) Unit shall be rated in accordance with AHRI Standards 340/360.
- c) Unit shall be designed to conform to ASHRAE 15.
- d) Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.
- e) Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
- f) Roof curb shall be designed to conform to NRCA Standards.
- g) Unit shall be designed in accordance with UL Standard 1995, ETL listed including tested to withstand rain.

##### C. Delivery, storage, and handling

- a) Unit shall be stored and handled per manufacturer's recommendations.

##### D. Project conditions

- a) As specified in contract documents.
- b) Contractor to field verify site conditions before bidding.

##### F. Condensate pan and connections:

- a) Shall be a sloped condensate drain pan made of a non-corrosive material.

- b) Shall comply with ASHRAE Standard 62.
  - c) Connection shall be made per manufacturer's recommendations.
- F. Gas connections:
- a) All gas piping connecting to unit gas valve shall enter the unit cabinet at a single location on side of unit (horizontal plane).
- F. Electrical connections
- a) All unit power wiring shall enter unit cabinet at a single, factory-prepared, knockout location.
- F. Component access panels
- a) Cabinet panels shall be easily removable for servicing.
  - b) Handles shall be UV modified, composite.
- H. Gas heat
- a) Heat exchanger shall be an induced draft design. Positive pressure heat exchanger designs shall not be allowed.
  - b) Shall incorporate a direct-spark ignition system and redundant main gas valve.
  - c) Gas supply pressure at the inlet to the rooftop unit gas valve must match that required by the manufacturer.
  - d) The heat exchanger shall be controlled by an integrated gas controller (IGC) microprocessor.
  - e) Standard heat exchanger construction
- I. Coils
1. Standard aluminum fin/copper tube coils:
- a) Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
  - b) Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
  - c) Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
- I. Compressors
- a) Compressor motors shall be cooled by refrigerant gas passing through motor windings.
  - b) Compressors shall be internally protected from high discharge temperature conditions.
  - c) Compressors shall be protected from an over-temperature and over-ampereage conditions by an internal, motor overload device.
  - d) Compressor shall be factory-mounted on rubber grommets.
  - e) Compressor motors shall have internal line break thermal, current overload and high-pressure differential protection.

L. Evaporator fan and motor

- a) Shall have permanently lubricated bearings.
- b) Shall have inherent automatic-reset thermal overload protection or circuit breaker.
- c) Belt drive shall include an adjustable-pitch motor pulley.
- d) Shall use sealed, permanently lubricated ball-bearing type.
- e) Shall be constructed from steel with a finish that aids with corrosion resistance and that is dynamically balanced.

M. Condenser fan and motors

- a) Shall be a totally enclosed motor.
- b) Shall use permanently lubricated bearings.
- c) Shall have inherent thermal overload protection with an automatic reset feature.
- d) Shall be a direct-driven propeller type fan.
- e) Shall have corrosion-resistant properties and shall be dynamically balanced.

N. Special features options and accessories

1. Integrated Economizer:

- a) Integrated, gear driven modulating blade design. Damper blades shall be galvanized steel.
- b) Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
- c) Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
- d) Low leak rate models shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.
- e) Shall provide combined minimum and DCV maximum damper position potentiometers.
- f) Functions with solid state analog enthalpy or dry bulb changeover control sensing.
- g) Shall be capable of introducing up to 100% outdoor air.
- h) Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1-2016 and IECC-2015 requirements.
- i) Shall be designed to close damper(s) during loss-of-power situations.
- j) Dry bulb outdoor air temperature sensor shall be provided as standard.
- k) The economizer shall maintain minimum airflow into the building during occupied period.
- l) Dampers shall be completely closed when the unit is in the unoccupied mode.

2. Condenser coil hail guard assembly

- a) Shall protect against damage from hail.
- b) Shall be louvered style design.

End Of Section

# HIGHPOINT HOUSING AUTHORITY HVAC UPDATES

**NOTES:**

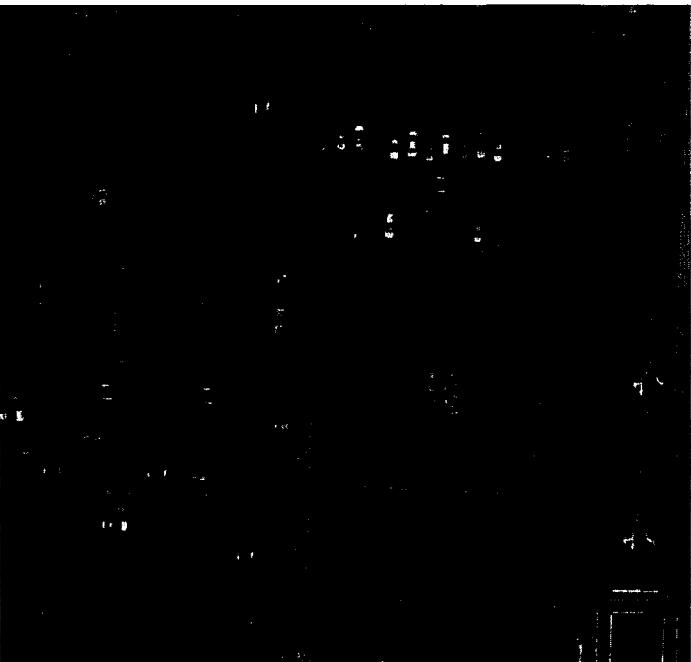
1. ALL WORK SHALL COMPLY WITH APPLICABLE STATE AND LOCAL CODES.
2. DRAWINGS ARE DIAGRAMATIC IN NATURE. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
3. COORDINATE WITH ALL TRADES PRIOR TO THE INSTALLATION OF ANY DUCTWORK OR PIPING.
4. INSTALL ALL DUCTWORK, PIPING, & EQUIPMENT TO CURRENT LOCAL MECHANICAL CODE REQUIREMENTS. SEAL ALL DUCTWORK JOINTS AND SEAMS. ALL MATERIALS REMOVED FROM THE SITE MUST FOLLOW RECYCLING AND WASTE DISPOSAL SPECIFICATIONS.
5. PROVIDE ALL MISC. MATERIALS REQUIRED FOR FULLY OPERABLE TURN-KEY SYSTEM.
6. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50. ALL EQUIPMENT LOCATED WITHIN THE PLENUM SHALL BE PLENUM-RATED.
7. SMOKE DETECTORS SHALL BE INSTALLED IN RETURN AIR DUCT OR PLENUM PER IMC. UNLESS DUCT SMOKE DETECTORS OR CONTROLS, FIRE PROTECTION SYSTEM IS ALREADY IN OPERATION.
8. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA + - 1 TWC OR HIGHER. NO SNAP-LOCK.
9. MAXIMUM DUCTWORK HANGER SPACING SHALL COMPLY WITH SMACNA REQUIREMENTS.
10. RECTANGULAR DUCT TAPS SHOULD BE MADE WITH 45 DEGREE FITTINGS. PROVIDE FLEXIBLE CONNECTIONS AT THE POINT OF CONNECTION TO EQUIPMENT IN ALL DUCTWORK SYSTEMS.
11. ALL 90-DEGREE SQUARE ELBOWS SHALL BE PROVIDED WITH DOUBLE RADIUS TURNING VANES.
12. PROVIDE ACCESS DOORS TO ALL FIRE DAMPERS, SMOKE DAMPERS, SMOKE COLLS, AND OTHER ITEMS LOCATED IN THE DUCTWORK REQUIRING ACCESS.
13. SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS PER SMACNA SEAL CLASS B.
14. FLEXIBLE DUCT SHALL BE USED AT A MAXIMUM LENGTH OF 5-FEET AND SHALL BE SUPPORTED TO MAXIMIZE AIRFLOW.
15. FLEXIBLE DUCT SHALL BE USED TO CONNECT ALL DRUP-IN DIFFUSERS TO ASSOCIATED BRANCH OR TRUNK LINES.
16. RETURN AIR SHALL NOT BE TAKEN FROM A CLOSET, BATHROOM, TOILET ROOM, OR UNCONDITIONED ATTIC.
17. DUCTWORK SHALL BE KEPT CLEAN OF DEBRIS DURING INSTALLATION. IMMEDIATELY REMOVE FILERS. SHALL BE USED ON RETURN GRILLES DURING CONSTRUCTION TO PREVENT THE INTRODUCTION OF DEBRIS INTO DUCTWORK. USE OF DISSIMILAR METALS SHALL BE AVOIDED. USE ONLY STEEL PIPE, FITTINGS, VALVES, FLANGES, AND OTHER DEVICES. WHERE DISSIMILAR METALS CANNOT BE AVOIDED, DIELECTRIC SEPARATION MUST BE USED.
18. PROVIDE EQUIPMENT SERVICE CLEARANCES PER MANUFACTURERS.
19. INSTALL ALL EQUIPMENT ACCORDING TO LOCAL ELECTRICAL AND SAFETY CODES USING APPROPRIATE WIRE SIZE AND SUITABLE OVERCURRENT PROTECTION.
20. CONTRACTOR IS TO VERIFY THAT ALL EQUIPMENT CLEARANCES ARE MET. ALL EXCEPTIONS ARE TO BE APPROVED BY THE MANUFACTURER.
21. CONTRACTOR IS RESPONSIBLE TO DISPOSE OF ALL WASTE MATERIALS PER WASTE MANAGEMENT SPEC.

**LEGEND**

	CONTROL WIRING
	OUTDOOR AIR TEMPERATURE
	DUCT TEMPERATURE SENSOR
	MANUAL BALANCE DAMPER
	OUTDOOR SWITCH
	BACKDRAFT DAMPER
	ZONE DAMPER/ACTUATOR
	SUPPLY DIFFUSER
	RETURN GRILLE
	TURNING VANES
	DUCT EXPANSION MODULE
	WELD THERMISTOR
	SUPERVISORY CONTROLLER GATEWAY
	FIELD CONTROLLER
	SUPPORT ADDRESSABLE W/S

**INDEX OF SHEETS**

NO.	COVER PAGE
M1.00	CODE COMPLIANCE
M1.01	MECHANICAL SCHEDULE
M1.1	NORTH WING NEW DUCTWORK
M1.2	NORTH WING NEW CONTROLS
M1.3	NORTH WING ROOFTOP EQUIPMENT
M1.4	SOUTH WING NEW CONTROLS
M1.5	SOUTH WING ROOFTOP EQUIPMENT
M1.6	CONTROLS SEQUENCE OF OPERATIONS
M1.7	CONTROLS POINTS LIST
M1.8	GENERAL DETAILS



**HIGHPOINT HOUSING AUTHORITY - HVAC UPGRADES**

500 E. RUSSELL AVE.  
HIGH POINT, NC 27260

FACILITY STRATEGIES GROUP, PLLC  
1012 MARKET ST. SUITE 307  
FORT MILL, SC 29708



COVER

DATE: 10/02/18

SCALE: NTS

**1.00**





NORTH WING - ZONE DAMPER SCHEDULE

MARK	MAX CFM	MIN CFM	SIZE (IN)
20-1-1	350	120	10"
20-1-2	750	250	12"
20-1-3	615	205	12"
20-1-4	295	95	10"
20-1-5	1350	450	16"
20-1-6	290	190	12"
20-1-7	850	290	14"
20-1-8	350	130	10"
20-1-9	330	150	10"
20-1-10	1720	400	16"
20-1-11	750	255	12"
20-1-12	850	285	14"
20-1-13	550	155	9"
20-1-14	125	45	8"
20-1-15	135	40	8"
20-1-16	490	120	12"
20-1-17	300	65	8"
20-1-18	300	200	14"
20-1-19	300	65	8"
20-1-20	750	255	12"
20-1-21	750	255	12"

1. ALL ZONE DAMPERS TO BE KEPT OPEN UNTIL AFTER 10:00 PM.  
2. ALL ZONE DAMPERS TO BE KEPT OPEN UNTIL 10:00 AM.

NORTH WING - NEW DAMPER SCHEDULE

MARK	CH BRANCH	NICK SIZE
01	50-120	6"X8"
02	150-200	8"X8"
03	200-300	10"X10"
04	200-250	12"X12"

1. VERIFY TO BE KEPT OPEN UNTIL 10:00 PM.  
2. VERIFY TO BE KEPT OPEN UNTIL 10:00 AM.  
3. VERIFY TO BE KEPT OPEN UNTIL 10:00 AM.

NORTH WING - NEW RETURN GRILLE SCHEDULE

MARK	CIV BRAND	NICK SIZE
01	41	24"X24"

1. CONFIRM TO BE KEPT OPEN UNTIL 10:00 PM.  
2. CONFIRM TO BE KEPT OPEN UNTIL 10:00 AM.  
3. CONFIRM TO BE KEPT OPEN UNTIL 10:00 AM.

NORTH WING - NEW BRANCH DAMPER SCHEDULE

MARK	MAX CFM	SIZE (IN)
01-1	200	12"
01-2	1000	14"
01-3	1100-1400	16"
01-4	1750	16"

1. VERIFY WITH REGISTER CONTRACTOR.  
2. VERIFY WITH REGISTER CONTRACTOR.

SOUTH WING - NEW REGISTER AND SCHEDULE

MARK	REGISTER AND SCHEDULE	REGISTER AND SCHEDULE	REGISTER AND SCHEDULE	REGISTER AND SCHEDULE	REGISTER AND SCHEDULE	REGISTER AND SCHEDULE
01	2400	375	0.5	125	206/1	652
02	2000	344	0.5	112	206/1	569
03	1600	143	0.5	115	206/1	537

1. VERIFY TO BE KEPT OPEN UNTIL 10:00 PM.  
2. VERIFY TO BE KEPT OPEN UNTIL 10:00 AM.  
3. VERIFY TO BE KEPT OPEN UNTIL 10:00 AM.

SOUTH WING - EXISTING ZONE DAMPER SCHEDULE


MARK	MAX CFM	MIN CFM	SIZE (IN)
20-1	12,314	550	24"
20-2	202,412,214	300	100"
20-3	202,123,412,4	300	100"
20-4	202,123,412,4	300	100"

1. VERIFY WITH REGISTER CONTRACTOR.  
2. VERIFY WITH REGISTER CONTRACTOR.

**HIGHPOINT HOUSING AUTHORITY - HVAC UPGRADES**

500 E. RUSSELL AVE.  
HIGH POINT, NC 27260

FACILITY STRATEGIES GROUP, PLLC  
1012 MARKET ST. SUITE 307  
FORT MILL, SC 29708



2/2/18

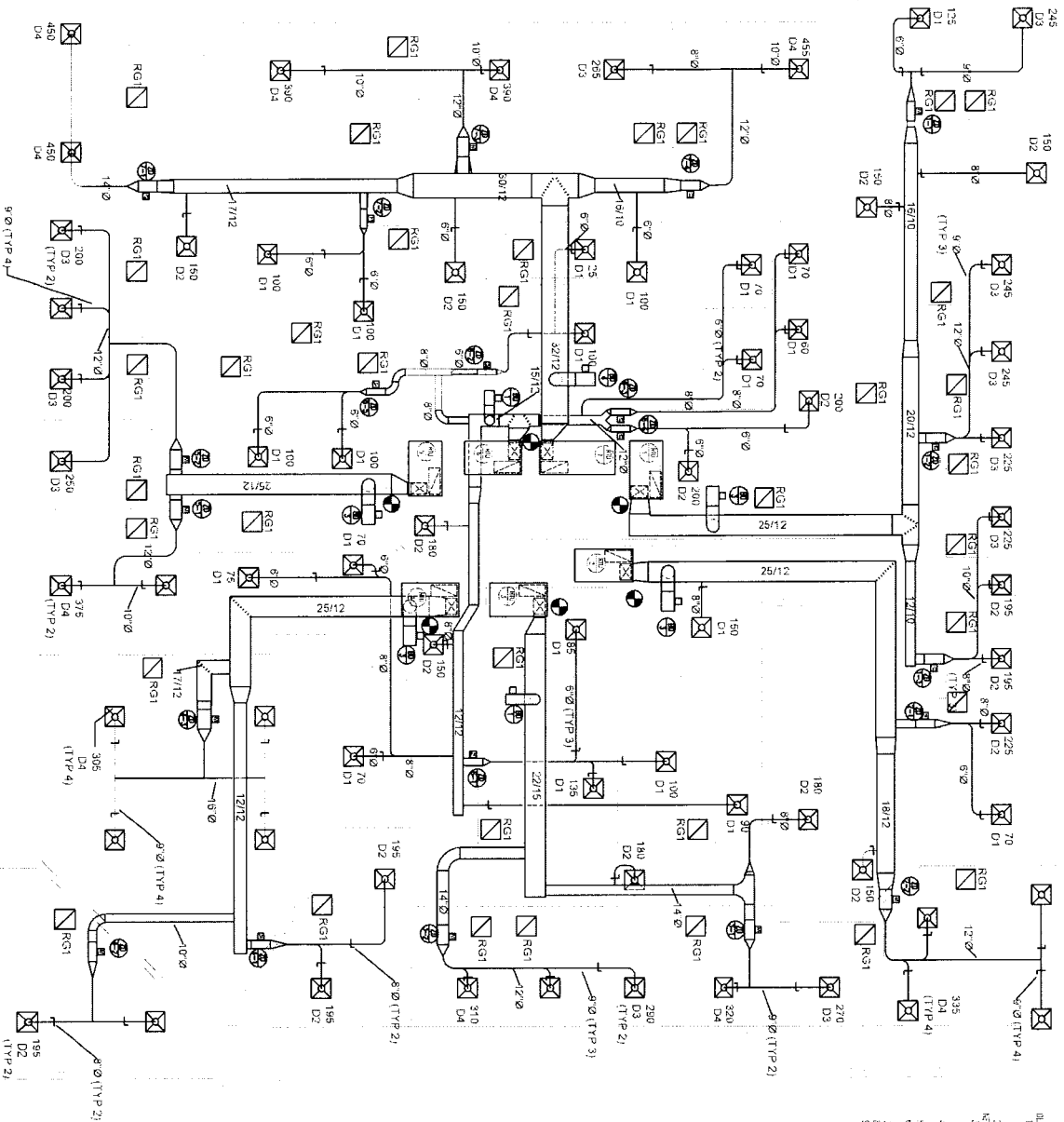
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SCHEDULE

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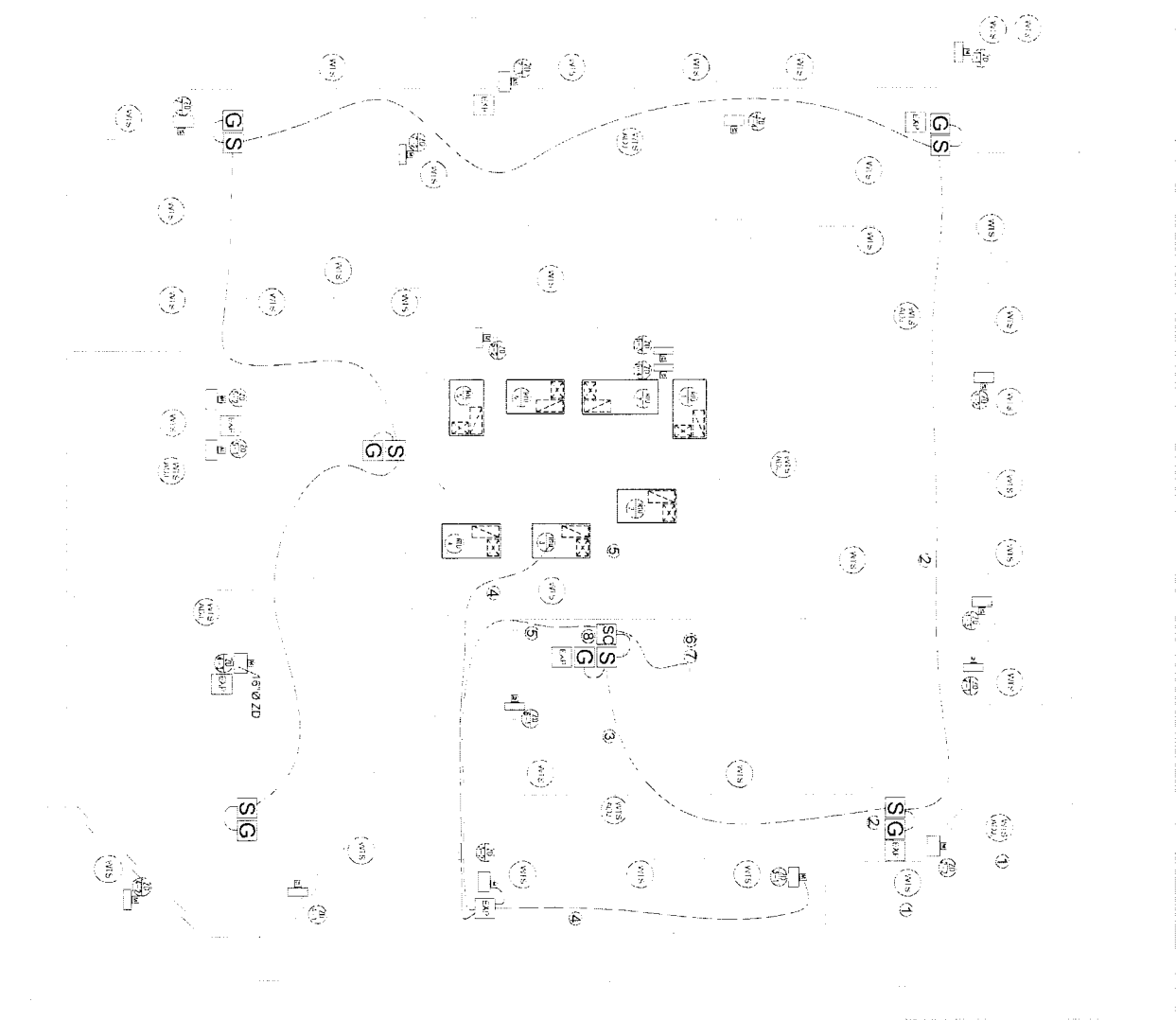
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- REVISIONS:
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NORTH BUILDING - FIRST FLOOR  
 NEW HVAC WORK  
 SCALE: ARCH TYPE D, 3/16" = 1'0"



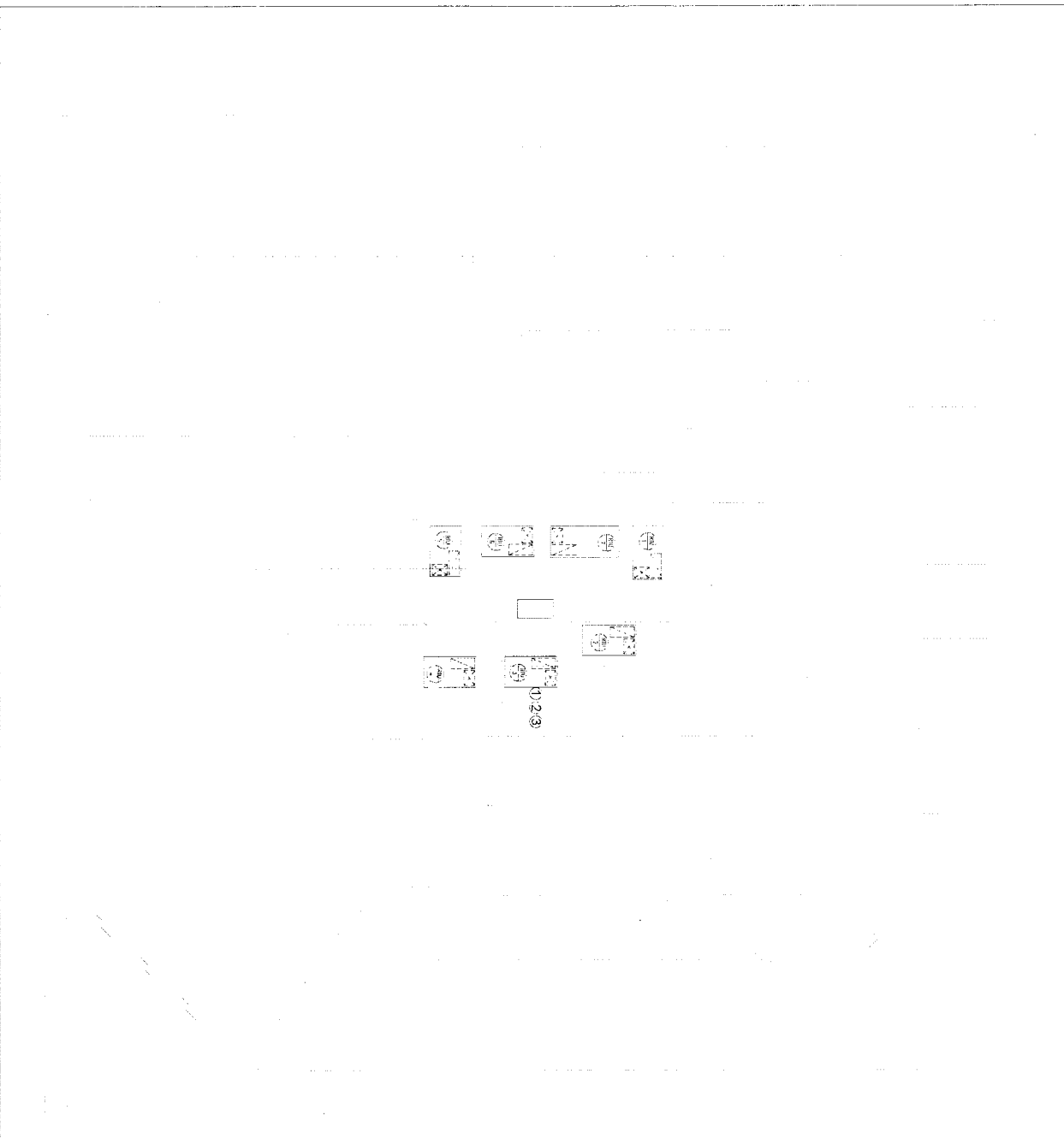


GENERAL NOTES:  
 1. REFER TO ALL DRAWINGS, SPECIFICATIONS AND SUPPLEMENTAL SHEETS FOR ALL NOTES AND SPECIFICATIONS FOR ALL EQUIPMENT MODELS.  
 2. REFER TO THE ARCHITECTURAL RECORDS FOR ALL NOTES AND SPECIFICATIONS FOR ALL EQUIPMENT MODELS.  
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 12. REFER TO THE ARCHITECTURAL RECORDS FOR ALL NOTES AND SPECIFICATIONS FOR ALL EQUIPMENT MODELS.

- NEW WORK NOTES:
1. INSTALL EXPANDED METAL LATHING STRIPS (TYPE ALL OTHER STRIPS) AND DECORATIVE JOINTS.
  2. PROVIDE EXPANDED METAL LATHING STRIPS (TYPE ALL OTHER STRIPS) AND DECORATIVE JOINTS.
  3. PROVIDE EXPANDED METAL LATHING STRIPS (TYPE ALL OTHER STRIPS) AND DECORATIVE JOINTS.
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  9. PROVIDE EXPANDED METAL LATHING STRIPS (TYPE ALL OTHER STRIPS) AND DECORATIVE JOINTS.
  10. PROVIDE EXPANDED METAL LATHING STRIPS (TYPE ALL OTHER STRIPS) AND DECORATIVE JOINTS.
  11. PROVIDE EXPANDED METAL LATHING STRIPS (TYPE ALL OTHER STRIPS) AND DECORATIVE JOINTS.
  12. PROVIDE EXPANDED METAL LATHING STRIPS (TYPE ALL OTHER STRIPS) AND DECORATIVE JOINTS.



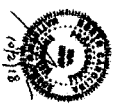
NORTH BUILDING  
 CONTROLS LAYOUT  
 SCALE: ARCH TYPE D, 3/16" = 1'0"



- NOTE: SEE SHEET 101 FOR THE LOCATION OF THE FOLLOWING ITEMS:
1. SHEET AND PANEL ELEVATIONS ARE SHOWN IN YELLOW IN THE DRAWING AND INDICATED WITH A YELLOW LINE.
  2. SHEET AND PANEL ELEVATIONS ARE SHOWN IN YELLOW IN THE DRAWING AND INDICATED WITH A YELLOW LINE.
  3. SHEET AND PANEL ELEVATIONS ARE SHOWN IN YELLOW IN THE DRAWING AND INDICATED WITH A YELLOW LINE.
  4. SHEET AND PANEL ELEVATIONS ARE SHOWN IN YELLOW IN THE DRAWING AND INDICATED WITH A YELLOW LINE.

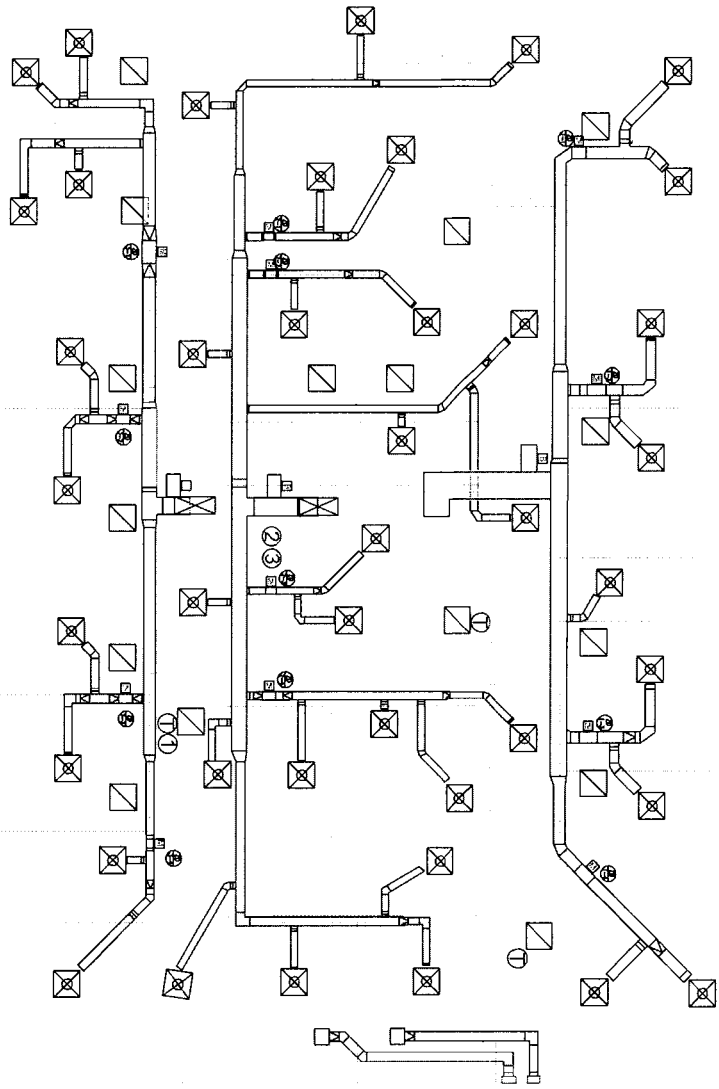


NORTH BUILDING -  
 ROOFTOP WORK/ EQUIPMENT LAYOUT  
 SCALE: ARCH TYPE D, 3/16" = 1'-0"

	<b>HIGHPOINT HOUSING AUTHORITY - HVAC UPGRADES</b>	
	500 E. RUSSELL AVE. HIGH POINT, NC 27260	FACILITY STRATEGIES GROUP, PLLC 1012 MARKET ST. SUITE 307 FORT MILL, SC 29708

M  
1.3

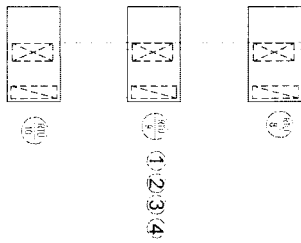
NORTH WING  
 ROOFTOP EQUIPMENT  
 DATE: 10/02/18  
 SCALE: 3/16"=1'



SOUTH WING - NEW CONTROLS  
 SCALE: ARCH TYPE D, 1/4" = 1'-0"

- NOTES:
1. INSTALL NEW WOOD HEAT/COOLING (FROM WALL THROU OR EQUIV. END) IN LOCATIONS SHOWN HERE TO ROOFTOP UNITS (174-31).
  2. INSTALL NEW ACTUATORS ON EXISTING ZONE DAMPERS (174-12), USE EXISTING WIRING.
  3. RE-BALANCE ZONE DAMPERS TO MIN/MAX POSITIONS SHOWN IN MECHANICAL SCHEDULE.
  4. NOTE: ALL DUCTWORK IS CASING AND IS TO REMAIN UNALTERED OTHER THAN AS SHOWN ABOVE.
- ADD ATTENDANT #1
1. PROVIDE JACKET EXPANSION MODULE IN SOUTH WING TO PICK UP SWEET POINTS FROM ROOFTOP UNITS. WIRE EXISTING CANS TO JACKET EXPANSION MODULE PER MANUFACTURER'S RECOMMENDATIONS.
  2. RAIL PLATFORM RATED CONTROL WIRING FROM JACKET EXPANSION MODULE TO JACKET IN NORTH WING.
  3. PROVIDE CABLETIES AND TERMINALS OF SWEET POINTS.

SOUTH BUILDING - ROOFTOP WORK/ EQUIPMENT LAYOUT  
 SCALE: ARCH. TYPE D, 1/4" = 1'-0"



- NOTES:
1. DISCONNECT GAS FROM EXISTING ROOFTOP EQUIPMENT. REMOVE EXISTING ROOFTOP EQUIPMENT AND DISPOSE (TYP. 3).
  2. RESPECT CURB FLASHING AND WEAP. IF NECESSARY (TYP. 3).
  3. INSTALL NEW ROOFTOP EQUIPMENT PER MECHANICAL. SCHEDULE 40MS MILD STEEL NEW RAIN VALVE. FLEX CONNECTION AND DIRT LEG PER MECHANICAL. DRILL 5/8" DIA. W/ 2" WIRE-BRUSH AND PAINT. EXISTING GAS LINE (2" COLL. 90) REMOVE. ROOF PENETRATION AND ISOLATION VALUE TO PROVIDE RISK (OVERSEEN) (TYP. 3).
  4. ROUTE NEW R/PV CONDENSATE DRAIN LINE TO ROOFTOP DRAIN (TYP. 3).
- ELECTRICAL NOTES:
1. DISCONNECT ELECTRIC FROM EXISTING ROOFTOP EQUIPMENT. RECONNECT NEW EQUIPMENT WHEN INSTALLED BY MECHANICAL CONTRACTOR (TYP. 3).

SOUTH WING ROOFTOP EQUIPMENT  
 DATE: 10/02/18  
 SCALE: 1/4"=1'  
**M**  
**1.5**

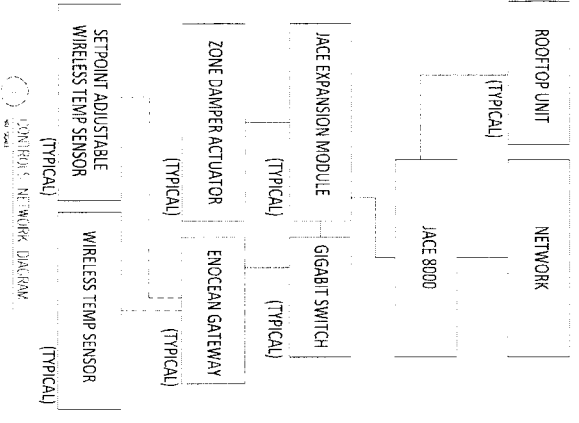
**HIGHPOINT HOUSING AUTHORITY - HVAC UPGRADES**  
 500 E. RUSSELL AVE.  
 HIGH POINT, NC 27260

FACILITY STRATEGIES GROUP, PLLC  
 1012 MARKET ST. SUITE 307  
 FORT MILL, SC 29708



**CONTROLS, ELECTRICAL NOTES**

1. INITIAL NEW BUILDING CONTROLLER, THERMOSTAT ROOM OR EQUIVALENT NEW BMS CONTROLLER SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR BMS.
2. INITIAL NEW BMS EXPANSION MODULES TO BE 34 OR EQUIVALENT CONTROLLER TO VERIFY THE NUMBER OF EXPANSION MODULES REQUIRED TO ACCOMMODATE ALL SYSTEMS/LOADS.
3. INITIAL NEW BMS WHILE AS EMPLOYING SENSORS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT.
4. INITIAL NEW BMS WIRELESS TEMPERATURE SENSORS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT.
5. INITIAL NEW BMS CONTROLLER ON EACH ROOFTOP UNIT MAJOR BMS RST OR EQUIVALENT.
6. INITIAL NEW BMS WIRELESS GATEWAYS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT. GATEWAYS ARE TO BE INSTALLED IN BMS UNIT. CONTROLLER IS RESPONSIBLE TO TEST SIGNAL STRENGTH AND PROVIDE AS MANY GATEWAYS AS NECESSARY TO ACCOMMODATE THE ENTIRE BUILDING AND WIRELESS THERMOSTATS AS SHOWN.
7. INITIAL NEW WIRELESS GATEWAY SENSORS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT. SENSORS SHALL BE INSTALLED IN EACH ROOM WITH SENSORS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT. ALL WIRELESS SENSORS SHALL BE TESTED AND OPERATIONAL BEFORE ALL CONTROLLER SENSORS ARE ONLINE.
8. INITIAL NEW BMS CONTROLLER SHALL BE INSTALLED WITH GATEWAY SENSORS AND GATEWAYS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT. CONTROLLER SHALL BE INSTALLED IN BMS UNIT. CONTROLLER IS RESPONSIBLE TO TEST SIGNAL STRENGTH AND PROVIDE AS MANY GATEWAYS AS NECESSARY TO ACCOMMODATE THE ENTIRE BUILDING AND WIRELESS THERMOSTATS AS SHOWN.
9. INITIAL NEW BMS CONTROLLER SHALL BE INSTALLED WITH GATEWAY SENSORS AND GATEWAYS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT. CONTROLLER SHALL BE INSTALLED IN BMS UNIT. CONTROLLER IS RESPONSIBLE TO TEST SIGNAL STRENGTH AND PROVIDE AS MANY GATEWAYS AS NECESSARY TO ACCOMMODATE THE ENTIRE BUILDING AND WIRELESS THERMOSTATS AS SHOWN.
10. CONTROLLER SHALL BE INSTALLED WITH GATEWAY SENSORS AND GATEWAYS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT. CONTROLLER SHALL BE INSTALLED IN BMS UNIT. CONTROLLER IS RESPONSIBLE TO TEST SIGNAL STRENGTH AND PROVIDE AS MANY GATEWAYS AS NECESSARY TO ACCOMMODATE THE ENTIRE BUILDING AND WIRELESS THERMOSTATS AS SHOWN.
11. CONTROLLER SHALL BE INSTALLED WITH GATEWAY SENSORS AND GATEWAYS AS SHOWN IN DWG M1.2. MAJOR BMS RST OR EQUIVALENT. CONTROLLER SHALL BE INSTALLED IN BMS UNIT. CONTROLLER IS RESPONSIBLE TO TEST SIGNAL STRENGTH AND PROVIDE AS MANY GATEWAYS AS NECESSARY TO ACCOMMODATE THE ENTIRE BUILDING AND WIRELESS THERMOSTATS AS SHOWN.



**SEQUENCE OF OPERATIONS**

1. SYSTEM CONTROL SEQUENCES SHALL BE PROVIDED BY THE BMS SUPERVISORY CONTROLLER. ALL THERMOSTAT SETPOINTS AND SPACE TEMPERATURE POINTS SHALL BE FILLED INTO THE JACE FOR BMS MONITORING. ALL POINTS FILLED INTO THE JACE SHALL BE ACCOMPANIED BY COMMENTS PER THE SPECIFICATIONS.
- ZONE DAMPERS**
1. ACTIVATE THERMATURES OF ZONES SERVED BY ZONE DAMPER SHALL BE USED TO MODULATE ZONE DAMPER ACTUATOR FROM MAXIMUM TO MINIMUM AIRFLOW PER MECHANICAL SCHEDULE. SETPOINT SHALL BE INITIATED BY SETPOINT ADJUSTABLE WIRELESS THERMOSTAT. CONTROLLER SHALL FOLLOW MANU ACTUATOR'S INSTALLATIONS TO CALIBRATE ZONE DAMPERS.
- COOLING MODE - OCCUPIED HOURS**
1. SETPOINT ADJUSTABLE THERMOSTAT SHALL CONTROL COOLING WHILE IN COOLING MODE.
  - IF SPACE TEMPERATURE > ZONE (OCCUPIED) UNIT SHALL ACTIVATE COOLING TO MAINTAIN DESIGN AIR TEMPERATURE OF 55F.
  - IF SPACE TEMPERATURE < ZONE (OCCUPIED) UNIT SHALL DEACTIVATE COOLING.
  - ALL ROOFTOP EQUIPMENT SHALL COMPLY WITH ECONOMIZER AND FAN REQUIREMENTS (SEE SECTIONS BELOW).
- HEATING MODE - OCCUPIED HOURS**
1. SETPOINT ADJUSTABLE THERMOSTAT SHALL CONTROL GAS HEATING WHILE IN HEATING MODE.
  - IF SPACE TEMPERATURE < ZONE (OCCUPIED) UNIT SHALL ACTIVATE HEATING.
  - IF SPACE TEMPERATURE > ZONE (OCCUPIED) UNIT SHALL DEACTIVATE HEATING.
  - ALL ROOFTOP EQUIPMENT SHALL COMPLY WITH ECONOMIZER AND FAN REQUIREMENTS (SEE SECTIONS BELOW).
- HEATING MODE - UNOCCUPIED HOURS**
1. SCHEDULE INDICATES UNOCCUPIED HOURS.
  2. TEMPERATURE SETPOINT SHALL BE SET TO LOWER TEMPERATURE (60F AND)
  3. BURN VALVE FOR HEATING SUPPLY FAN CIRCLES ON AND OUTSIDE AIR DAMPER REMAINS CLOSED.
- CONTROL MODE - UNOCCUPIED HOURS**
1. SCHEDULE INDICATES UNOCCUPIED HOURS.
  2. TEMPERATURE SETPOINT SHALL BE SET TO HIGHER TEMPERATURE (70F AND)
  3. BURN VALVE FOR COOLING SUPPLY FAN CIRCLES ON AND OUTSIDE AIR DAMPER REMAINS CLOSED.
- ROOFTOP UNIT FAN - OCCUPIED HOURS**
1. SCHEDULE (WITHIN JACE) INDICATES OCCUPIED HOURS.
  - ALL ROOFTOP UNIT FANS SHALL RUN CONTINUOUSLY.
- ROOFTOP UNIT FAN - UNOCCUPIED HOURS**
1. SCHEDULE (WITHIN JACE) INDICATES UNOCCUPIED HOURS.
  - REVERSE UNIT FANS SHALL TURN OFF UNLESS HEATING OR COOLING IS REQUIRED.
- ECONOMIZER**
- EXISTING ROOFTOP EQUIPMENT WITH MANUAL OUTSIDE AIR DAMPERS (PROPH WIND) SHALL BE SET TO MINIMUM ON DAMPER POSITION AND ECONOMIZER SCHEDULE. ALL NEW ROOFTOP EQUIPMENT (SOUTH WIND) SHALL FOLLOW THE FOLLOWING ECONOMIZER SEQUENCES OF OPERATION:
- COOLING MODE - ECONOMIZER - UNOCCUPIED HOURS**
1. SCHEDULE INDICATES UNOCCUPIED HOURS.
  2. OUTSIDE AIR DAMPER OPENS TO MINIMUM POSITION (20 PERCENT A.O.)
  - IF COOLING MODE - OUTSIDE AIR DAMPER HOLDS MIN POSITION.
  - IF COOLING MODE - OUTSIDE AIR DAMPER HOLDS MIN POSITION AND RETURN AIR DAMPERS MODULATE TO MAINTAIN DESIGNER AIR TEMPERATURE (55 F)
- HEATING MODE - ECONOMIZER - OCCUPIED HOURS**
1. SCHEDULE INDICATES OCCUPIED HOURS.
  2. OUTSIDE AIR DAMPER OPENS TO MINIMUM POSITION (20 PERCENT A.O.)
- COOLING MODE - ECONOMIZER - OCCUPIED HOURS**
1. SCHEDULE INDICATES OCCUPIED HOURS.
  2. OUTSIDE AIR DAMPER OPENS TO MINIMUM POSITION (20 PERCENT A.O.)
- HEATING MODE - ECONOMIZER - UNOCCUPIED HOURS**
1. SCHEDULE INDICATES UNOCCUPIED HOURS.
  2. OUTSIDE AIR DAMPER OPENS TO MINIMUM POSITION (20 PERCENT A.O.)
- SEQUENCE OF OPERATIONS**
1. WORK SCHEDULE SHALL BE PROGRAMMED REMOVED BY OWNER.
  - IF UNOCCUPIED VACATION DAY IS SCHEDULED, SYSTEM SETPOINTS SHALL SETBACK FOR UNOCCUPIED HOURS.

RTU/Controls Setpoints	
Cooling	72(F)
Heating	72(F)
OA Damper	Open
Period	7AM - 6PM (Adj) 6PM - 7AM (Adj)

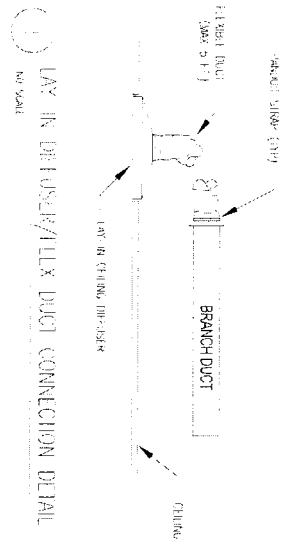


Ref. #	Point Name	JACE OUTPUTS				JACE INPUTS		Software
		Digital Control Relay	0-10V	Analog Heating	Analog Cooling	Analog Temperature	Application Programs	
1	ST1 Space Temperature 1..5In Space Temperature n							
2	SSI Space Setpoint 1..5Sn Space Setpoint n					40		
3	RTU 1 On/Off...RTU n On/Off	7				7		
4	RTU 1 Mode...RTU n Mode				7	7		
5	RTU Day/Night Setback							7
6	ZoneDampnPPosition 1..ZoneDampnPPosition n		21					

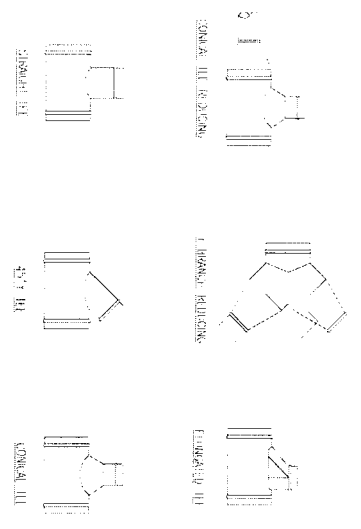
1. PROVIDE GRAPHICS SHOWING FLOOR LAYOUT WITH SPACE TEMPERATURE AND TEMPERATURE SETPOINTS. GRAPHICS TO BE APPROVED BY OWNER.
2. PROVIDE COLOR-CODED GRAPHICS FOR TEMPERATURE DEVIATION FROM SET POINT OF 5°FH OR GREATER.
3. PROVIDE TRENDDING FOR ALL POINTS AT 15 MINUTE INTERVALS.
4. SETBACK SCHEDULE TO BE ACCESSIBLE VIA REMOTE ACCESS.

Ref. #	Point Name	JACE INPUTS						Software
		Heating	Cooling	Analog Temperature	Position	Digital Alarm	Application Programs	
7	RTU8 OA Damper Position				1			
8	RTU8 Supply Temperature			1				
9	RTU8 Return Temperature			1				
10	RTU8 Fan Status					1		
11	RTU8 Alarm Status					1		
12	RTU8 Temperature Setpoint			1				
13	RTU8 Space Temperature			1				
14	RTU8 Mode	1						1
15	RTU8 Day/Night Setback							
16	RTU9 OA Damper Position				1			
17	RTU9 Supply Temperature			1				
18	RTU9 Return Temperature			1				
19	RTU9 Fan Status					1		
20	RTU9 Alarm Status					1		
21	RTU9 Temperature Setpoint			1				
22	RTU9 Space Temperature			1				
23	RTU9 Mode	1						1
24	RTU9 Day/Night Setback							
25	RTU10 OA Damper Position				1			
26	RTU10 Supply Temperature			1				
27	RTU10 Return Temperature			1				
28	RTU10 Fan Status					1		
29	RTU10 Alarm Status					1		
30	RTU10 Temperature Setpoint			1				
31	RTU10 Space Temperature			1				
32	RTU10 Mode	1						1
33	RTU10 Day/Night Setback							
34	Outside Temp					1		1

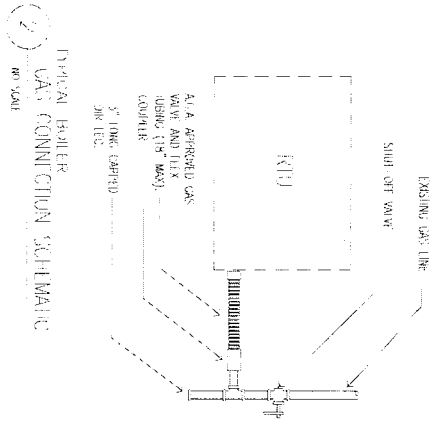
1. PROVIDE GRAPHICS SHOWING ROOFTOP UNITS AND POINTS ABOVE. GRAPHICS TO BE APPROVED BY OWNER.
2. PROVIDE TRENDDING FOR ALL POINTS ABOVE AT 15 MINUTE INTERVALS.
3. ALL OTHER AVAILABLE BACKNET POINTS TO BE PULLED INTO TABLE.



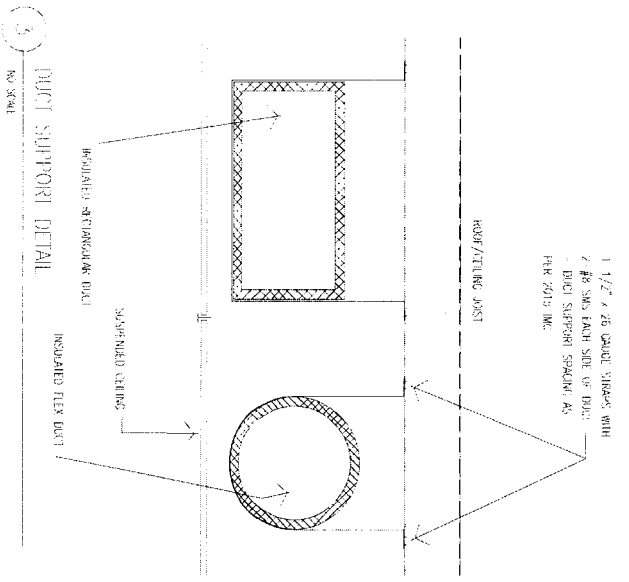
1) LAY IN BRIDGE/LLX DUCT CONNECTION DETAIL  
NO SCALE



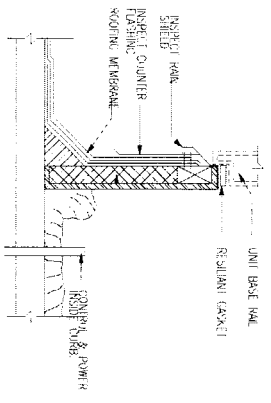
2) ROUND DUCT BRANCH TAKE-OUT DETAILS  
NO SCALE



3) TYPICAL BOILER GAS CONNECTION SCHEMATIC  
NO SCALE



3) DUCT SUPPORT DETAIL  
NO SCALE



5) ROOF CURB INSPECTION DETAIL  
NO SCALE