

CITY OF ANN ARBOR
INVITATION TO BID



City Hall Duct Cleaning Project

ITB No. 4671

Due Date: May 4, 2021 by 10:00 am (Local Time)

Fleet & Facilities Service Unit, City Administrator Area

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

TABLE OF CONTENTS

TABLE OF CONTENTS.....	TC-1
NOTICE OF PRE-BID CONFERENCE.....	NP-1
INSTRUCTIONS TO BIDDERS.....	IB-1 to 5
INVITATION TO BID.....	ITB-1 to 3
BID FORMS.....	BF-1 to 8
CONTRACT.....	C-1 to 3
BOND FORMS.....	B-1 to 2
GENERAL CONDITIONS.....	GC-1 to 16
STANDARD SPECIFICATIONS.....	SS-17
DETAILED SPECIFICATIONS.....	DS-1 to 6
NADCA STANDARD - ACR 2013	

ATTACHMENTS

City of Ann Arbor Prevailing Wage Declaration Form
City of Ann Arbor Living Wage Forms
City of Ann Arbor Vendor Conflict of Interest Disclosure Form
City of Ann Arbor Non-Discrimination Ordinance Notice and Declaration Form

NOTICE OF PRE-BID CONFERENCE

A **mandatory** pre-bid conference for this project will be held on **April 19, 2021** at **11:00 am** at the **Basement conference room, Larcom City Hall, 301 E. Huron Street, Ann Arbor, MI**. All attendees must wear masks and with be health screened upon entry to the building. Socially distant seating will be maintained.

Failure to attend the meeting and sign the ITB No. 4671 sign-in sheet at the pre-bid meeting will automatically disqualify a bidder from submitting a valid bid. Any bid submitted by a party not attending and signing the roster at the pre-bid meeting will not be opened or considered. Administrative and technical questions regarding this project will be answered at this time. The pre-bid meeting is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarifications / Designated City Contacts

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before **April 21, 2021 at 3:00 pm (local time)** and should be addressed as follows:

Specification/Scope of Work questions emailed to **mjkulhanek@a2gov.org**
Bid Process and Compliance questions emailed to **cspencer@a2gov.org**

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of **Colin Spencer, cspencer@a2gov.org** after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **May 4, 2021 at 10:00 am (local time)**. Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and **three (3)** Bid copies in a sealed envelope clearly marked: **ITB No. 4671 – City Hall Duct Cleaning Project**.

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48104

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

The following forms provided within this ITB Document should be included in submitted bids.

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

Bids that fail to provide these completed forms listed above upon bid opening may be rejected as non-responsive and may not be considered for award.

Hand delivered bids may be dropped off in the Purchasing drop box located in the Ann Street (north) vestibule of City Hall which is open to the public at all hours. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid

as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

Bid Security

Each bid must be accompanied by a certified check or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of sixty (60) days.

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements cannot be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-2 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a “living wage” to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: www.wdol.gov.

For the purposes of this ITB the Construction Type of Building will apply.

Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may be awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is attached.

Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over \$50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter’s bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the “Freedom of Information Act.” The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by any prospective bidder to initiate contact with anyone other than the Designated City Contacts provided herein that the bidder believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.

Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

Idlefree Ordinance

The City of Ann Arbor adopted an idling reduction Ordinance that goes into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: www.a2gov.org/idlefree.

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

- (a) For any period of time while the Commercial Vehicle is unoccupied; or
- (b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

(1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except when it is providing power or electrical energy to equipment or a tool that is actively in use.

Environmental Commitment

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 2021.

Bidder's Name

Authorized Signature of Bidder

Official Address

(Print Name of Signer Above)

Telephone Number

Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the State of _____, for whom _____, bearing the office title of _____, whose signature is affixed to this Bid, is authorized to execute contracts.

NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

* A partnership, organized under the laws of the state of _____ and filed in the county of _____, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

* An individual, whose signature with address, is affixed to this Bid: _____
(initial here)

Authorized Official

_____ **Date** _____, 2021

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone () _____ Fax () _____

Email _____

BID FORM

Section 1 – Schedule of Prices

Company: _____

Project: **ITB No. 4671 – City Hall Duct Cleaning Project**

Base Bid –

For the entire work outlined in these documents for the **City Hall Duct Cleaning Project**, complete as specified, using equipment and materials only of the type and manufacturers where specifically named. Please break down project total by floors.

Basement (including AHU) _____

1st Floor _____

2nd Floor _____

3rd Floor _____

4th Floor _____

5th Floor _____

6th Floor _____

Penthouse (including AHU) _____

City Hall Total: _____

(\$ _____)

BID FORM

Section 2 – Material, Equipment and Environmental Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

If an environmental alternative is bid the City strongly encourages bidders to provide recent examples of product testing and previous successful use for the City to properly evaluate the environmental alternative. Testing data from independent accredited organizations are strongly preferred.

<u>Item Number</u>	<u>Description</u>	<u>Add/Deduct Amount</u>
--------------------	--------------------	--------------------------

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

<u>Subcontractor (Name and Address)</u>	<u>Work</u>	<u>Amount</u>
---	-------------	---------------

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the Contract.

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 5 – References

Include a minimum of 4 references from similar projects completed within the past 5 years.

1) _____
Project Name Cost Date Worked

Contact Name Phone Number

2) _____
Project Name Cost Date Worked

Contact Name Phone Number

3) _____
Project Name Cost Date Worked

Contact Name Phone Number

4) _____
Project Name Cost Date Worked

Contact Name Phone Number

BID FORM

Section 6 – Contractor Information and Responsible Contractor Criteria

Backup documentation may be requested at the sole discretion of the City to validate all of the responses provided herein by bidders. False statements by bidders to any of the criteria provided herein will result in the bid being considered non-responsive and will not be considered for award.

Failure to provide responses to all questions may result in being deemed non-responsive.

Attach additional pages as needed if space below is insufficient.

Pursuant to Sec 1:312(20) of the City Code which sets forth requirements of a responsible bidder, Bidder is required to submit the following:

1. Organization Name: _____

Social Security or Federal Employer I.D. #: _____

Address: _____

City: _____ State: _____ Zip: _____

Type of Organization (circle one below):

Individual Partnership Corporation Joint Venture Other

If "Other" please provide details on the organization:

Year organization established: _____

2. Current owners/principals/members/managing members/partners of the organization:

3. Assumed Names, "doing business as" d/b/a, and/or former organization names(s), if applicable: _____

Explanation of any business name changes:

4. If applicable, please provide a list of all bidder's litigation and arbitrations currently pending and within the past five years, including an explanation of each (parties, court/forum, legal claims, damages sought, and resolution).

5. Qualifications of management and supervisory personnel to be assigned by the bidder:

6. List the state and local licenses and license numbers held by the bidder:

7. Will all subcontractors, employees and other individuals working on the construction project maintain current applicable licenses required by law for all licensed occupations and professions?

Yes

No

8. Will contractors, subcontractors, employees, and other individuals working on the construction project be misclassified by bidder as independent contractors in violation of state or federal law?

Yes

No

9. Submit a statement as to what percentage of your work force resides within the City of Ann Arbor, and what percentage resides in Washtenaw County, Michigan, and the same information for any major subcontractors.

10. Submit documentation as to bidder's employee pay rates (e.g., certified payroll without SSN or personal identifying information, or chart of job titles and pay rates, or other evidence).

11. State whether bidder provides health insurance, pension or other retirement benefits, paid leave (vacation, personal time, sick leave, etc.), or other benefits to its employees, and if so, state whether each benefit is provided directly to employees, by payments or contributions to a third-party administered plan, in cash (e.g., fringe benefit portion of prevailing wages), or other manner.

12. State whether bidder is an equal opportunity employer and does not discriminate in its hiring on the basis of race, sex, pregnancy, age, religion, national origin, marital status, sexual orientation or gender identity, height, weight, or disability.

Yes

No

13. State whether bidder has Equal Employment Opportunity Programs for minorities, women, veterans, returning citizens, and small businesses, and if so, submit supporting documentation or other evidence of such program(s).

14. Has bidder had any violations of state, federal, or local laws or regulations, including OSHA or MIOSHA violations, state or federal prevailing wage laws, wage and hour laws, worker's compensation or unemployment compensation laws, rules or regulations, issued to or against the bidder within the past five years?

Yes

No

If you answered "yes" to the question above, for each violation provide an explanation of the nature of the violation, the agency involved, a violation or reference number, any other individual(s) or party(ies) involved, and the status or outcome and resolution.

15. Does bidder have an existing Fitness for Duty Program (drugs and alcohol testing) of each employee working on the proposed jobsite?

Yes

No

If you answered "Yes", please submit documentation of the Fitness for Duty Program and what it entails.

16. Submit documents or evidence of any debarment by any federal, state or local governmental unit and/or findings of non-responsibility or non-compliance with respect to any public or private construction project performed by the bidder.

17. Proof of insurance, including certificates of insurance, confirming existence and amount of coverage for liability, property damage, workers compensation, and any other insurances required by the proposed contract documents.

SAMPLE STANDARD CONTRACT

If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:

CONTRACT

THIS AGREEMENT is made on the _____ day of _____, 2021, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ ("Contractor")

(An individual/partnership/corporation, include state of incorporation)

(Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled City Hall Duct Cleaning Project - ITB No. 4671 in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Non-discrimination and Living Wage
Declaration of Compliance Forms (if
applicable)
Vendor Conflict of Interest Form
Prevailing Wage Declaration of
Compliance Form (if applicable)
Bid Forms
Contract and Exhibits
Bonds

General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means the **City Administrator Area/Fleet & Facilities Service Unit.**

Project means **City Hall Duct Cleaning Project – ITB No. 4671**

ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.
- (B) The entire work for this Contract shall be completed within sixty (60) consecutive calendar days.
- (C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount

equal to \$300.00 for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

ARTICLE IV - The Contract Sum

- (A) The City shall pay to the Contractor for the performance of the Contract, the lump sum price as given in the Bid Form in the amount of:

_____ Dollars (\$_____)

- (B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted any portion of any right or obligation under this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this Contract shall be in writing and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney’s fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor’s behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City’s sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party’s invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party’s failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By _____

Its: _____

FOR THE CITY OF ANN ARBOR

By _____
Christopher Taylor, Mayor

By _____
Jacqueline Beaudry, City Clerk

Approved as to substance

By _____
Tom Crawford, City Administrator

Approved as to form and content

By _____
Stephen K. Postema, City Attorney

PERFORMANCE BOND

- (1) _____ of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for \$ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City dated _____, 2021, for: _____ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.
- (3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:
- (a) complete the Contract in accordance with its terms and conditions; or
 - (b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.
- (4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.
- (5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 2021.

(Name of Surety Company)
By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

(Name of Principal)
By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

LABOR AND MATERIAL BOND

- (1) _____
of _____(referred to
as "Principal"), and _____, a corporation
duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound
to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants
as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et
seq., in the amount of
\$ _____, for the payment of which Principal and Surety bind themselves, their
heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City, dated _____, 2021,
for _____
_____; and this bond is
given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as
amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably
required under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have
no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 2021

(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage Requirements

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen,

mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Agreement a "living wage," as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

- (1) When work under an extra work order is added to the work under this Contract;
- (2) When the work is suspended as provided in Section 20;
- (3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;
- (4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;
- (5) Delay due to an act of Government;
- (6) Delay by the Supervising Professional in the furnishing of plans and necessary information;
- (7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section 13. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

- (1) The consent of the surety to payment of the final estimate;
- (2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

- (1) unsettled liens;
- (2) faulty work appearing within 12 months after final payment;
- (3) hidden defects in meeting the requirements of the plans and specifications;
- (4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and the City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;
- (3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- (4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

- (1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. In the case of all contracts involving on-site work, the Contractor shall provide to the City, before the commencement of any work under this contract, certificates of insurance and other documentation satisfactory to the City demonstrating it has obtained the policies and endorsements required on behalf of itself, and when requested, any subcontractor(s). The certificates of insurance endorsements and/or copies of policy language shall document that the Contractor satisfies the following minimum requirements.

- (a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - \$500,000 each accident
Bodily Injury by Disease - \$500,000 each employee
Bodily Injury by Disease - \$500,000 each policy limit

- (b) Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

\$1,000,000	Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.
\$2,000,000	Per Job General Aggregate
\$1,000,000	Personal and Advertising Injury
\$2,000,000	Products and Completed Operations Aggregate

- (c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

- (d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.

- (2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.

- (3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at

least ten days prior to the expiration date.

- (4) Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.
- (5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.
- (6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

- (1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
- (2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20____, to _____, 20____, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

Standard Specifications are available online:

<http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx>

DETAILED SPECIFICATIONS

General Project Description - The City of Ann Arbor desires to have the HVAC system located in Larcom City Hall, 301 E. Huron Street, Ann Arbor, MI cleaned. This system includes supply air, ducted return air, two air handlers and multiple terminal units spread over seven floors and a mechanical penthouse.

The successful contractor will follow the International Standard developed by the National Air Duct Cleaners Association (NADCA), ACR 2013 ("Standard"), a copy which is attached under Technical Specifications. The successful contractor will also be appropriately licensed by the State of Michigan, Licensing and Regulatory Affairs, with a Category 3 Mechanical Contractors License.

Building History – Larcom City Hall was constructed in 1963 and consists of a basement, six floors of offices and a mechanical penthouse. Significant renovations were made in 2010 to the basement, floors 1, 6 and part of floor 2. The basement, floors 1 and 6 were gutted and new HVAC ducting was installed. Floor 2 was partially renovated and includes a mix of new and original ducts.

The basement HVAC system is stand alone and has a dedicated air handling unit that was also installed in 2010. The remaining floors are handled by an air handling unit located in the mechanical penthouse connected to three separate large vertical ducts dedicated to cooling, heating and return air. Heating is provided by three boilers in the penthouse and cooling is provided by two rooftop mounted 70 ton air cooled chillers.

A number of floors also include an original dual duct system integrated into the concrete floors of the building. This system is not part of this contract.

The building includes approximately 82,500 sf of conditioned space broken down as follows:

- Basement – 15,800 sf
- 1st Floor – 15,800 sf
- 2nd Floor – 9,900 sf
- 3rd Floor – 8,600 sf
- 4th Floor – 9,200 sf
- 5th Floor – 9,500 sf
- 6th Floor – 10,200 sf
- Penthouse – 3,500 sf.

Building Plans – The package of building plans available with this specification include a combination of 2010 as-built plans and original 1963 building plans (unsure if they are design or as-built plans). Supply air (yellow), ducted return air (pink) and terminal units (blue) have been highlighted on these plans. Plans are not available for the penthouse. The plan packet includes the following Mechanical Plans:

- Basement (east and west)
- 1st Floor (east and west)
- 2nd Floor (original and 2010 west modifications)
- 3rd & 4th Floors
- 5th Floor
- 6th Floor (east and west)

There are additional flexible ducts located on floors 2, 3, 4, and 5 that are not shown on the plans. These should be included in the project.

Building Restrictions/Work Hours – Contractors shall comply with the State of Michigan, Washtenaw County Health Department and City of Ann Arbor COVID guidelines in place at the time of on-site work. All City buildings are non-smoking facilities and the use of controlled substances is also prohibited.

The building shall be available for on-site work between the hours of 6:00 pm and 6:00 am Monday-Friday. Additional hours and weekends must be approved in advance by the Project Manager. The building work hours may be reduced by City Council, Commission and Committee meetings scheduled in the evening hours. These meeting impacts will be coordinated by the Project Manager.

Work Plan/Safety Plan – The successful contractor will provide a Work Plan/Safety Plan consistent with Section 2 – Work Plans of the NADCA Standard. The City's Safety Division may require additional Safety Plans from the successful contractor.

Other Items –

- 1) Exhaust air ducts are not included in the proposed work.
- 2) The building's original dual duct system, integrated into the concrete floors of the building, is not included in the proposed work.
- 3) The three large vertical ducts running between floors are not included in the proposed work.
- 4) Air Handling Unit intake air ducts, while not highlighted on plans, are included in the proposed work.
- 5) While plans of the Penthouse are unavailable, cleaning supply air ducts (both cold air and hot air) and return air ducts, from the air handling unit to/from the large vertical ducts, are included in the proposed work.
- 6) The Contractor will be responsible to shut down the air handling units at the start of each project workday, if needed, and return them to operation at the end of each project workday.

Deviations from the NADCA Standard –

- 1) Section 1 (Inspections) – This section is not applicable to the proposed project.
- 2) Section 2.5 (Project Schedule) – A project schedule *shall* be included with the Work Plan.
- 3) Section 4.2.8.3 (Service Panels) – Service Panels *shall* be sealed.
- 4) Section 4.7 (AHU Cleaning) – AHU components *shall* be wet cleaned.
- 5) Section 4.10 (Registers, Grilles, Diffusers) – All registers, grilles, diffusers, including those for the non-ducted return air plenum, *shall* be removed if possible, properly cleaned and restored to their previous position.
- 6) Section 5.6 (Post-Project Documentation) – Documentation showing compliance with the Standard *shall* be provided.
- 7) Section 5.6.3 – Photo images shall be provided as part of Post-Project Documentation. Photos from a minimum of five separate duct locations and two terminal unit locations per floor shall be provided. The photos should be labelled, and the corresponding locations should be identified on the plans. A minimum of two photos for each AHU shall also be provided.

TECHNICAL SPECIFICATIONS

SECTION 01 10 00

SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Phased construction.
 - 4. Work by Owner.
 - 5. Work under separate contracts.
 - 6. Future work.
 - 7. Purchase contracts.
 - 8. Owner-furnished products.
 - 9. Contractor-furnished, Owner-installed products.
 - 10. Access to site.
 - 11. Coordination with occupants.
 - 12. Work restrictions.
 - 13. Specification and drawing conventions.

1.3 PROJECT INFORMATION

- A. Project Identification: Larcom City Hall Duct Cleaning Project
 - 1. Project Location: 301 East Huron, Ann Arbor, Michigan, 48104.
- B. Owner: City of Ann Arbor.
 - 1. Owner's Representative: Matthew Kulhanek, 734.794.6312, email: mjkulhanek@a2gov.org
- C. Architect: n/a

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following:
 - 1. Professional cleaning of the HVAC system located in Larcom City Hall, 301 E. Huron Street, Ann Arbor, MI. This system includes supply air, ducted return air, two air handlers and multiple terminal units spread over seven floors and a mechanical penthouse.
 - 2. The successful contractor will follow the International Standard developed by the National Air Duct Cleaners Association (NADCA), ACR 2013 ("Standard"), a copy which is attached under Technical Specification. The successful contractor will also be appropriately licensed by the State of Michigan, Licensing and Regulatory Affairs, with a Category 3 Mechanical Contractors License.

- B. Type of Contract
 - 1. Project will be constructed under a single prime contract.
- C. Before commencing Work, submit an updated copy of the Contractor's construction schedule showing the sequence, commencement and completion dates for the Work.
- D. Permits: The Contractor shall be responsible for the procurement of all permits required in connection with the work, and to arrange for all necessary inspections and to pay for all fees in connection therewith.

1.5 PURCHASE CONTRACTS

- A. General: n/a

1.6 ACCESS TO SITE

- A. Parking: Limited parking will be available at the site after 6:00 PM weekdays. Additional parking is available at 721 N. Main Street, Ann Arbor with approval from the Representative of the City. The Contractor will be limited to truck access for loading and unloading materials prior 6:00 PM.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated by the Owner and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to the project site and other areas agreed to in advance by the owner.
 - 2. Driveways, Walkways and Entrances: Keep driveways, parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather-tight condition throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
 - 1. The Owner must approve work that will result in no cooling capacity for the building in advance. Efforts should be made to complete this work after hours, weekends or days in which no cooling demand is needed for the building.
 - 2. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 3. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of

the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to the hours between 6:00 PM to 6:00 AM, Monday through Friday, except as otherwise indicated.
 - 1. Weekend Hours: by approval of the Owner in advance.
 - 2. Evening City Meetings: work hours may be impacted by scheduled evening meetings for City Council, Commissions and other Committees.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Construction Manager and Owner not less than two days in advance of proposed utility interruptions.
 - 2. Obtain Construction Manager's and Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Construction Manager and Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Construction Manager's and Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on the Project site. Require personnel to utilize identification tags at all times.
- H. Employee Screening: Comply with Owner's requirements regarding background screening of Contractor personnel working on the Project site.
 - 1. Maintain list of approved screened personnel with Owner's Representative.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

- C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations are scheduled on the Drawings and defined in the corresponding specification sections.
 3. Keynoting: Materials and products are identified by reference keynotes and long-hand notes on the Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

ACR

THE NADCA STANDARD

For
Assessment • Cleaning • Restoration
of
HVAC Systems

2013



The International Standard for HVAC Cleaning Professionals

ACR

The NADCA Standard

for

Assessment, Cleaning, and Restoration of HVAC Systems

2013

*The International Standard Developed by the
National Air Duct Cleaners Association (NADCA)*

ACR-13 Committee Roster

Bill Lundquist, ASCS, CVC, Chairman. Monster VAC Inc . (Denver, CO)
Bill Benito, ASCS, CVI Connecticut Steam Cleaning Inc. (South Windsor, CT)
Brad Kuhlmann, ASCS Midwest Duct Cleaning Services (Merriam, KS)
Richard Lantz, ASCS, CVI Air Duct Cleaners of Virginia (Chesapeake, VA)
Greg Long, ASCS, CIEC IAQ Consulting Services, Inc . (Belton, TX)
Rick MacDonald, ASCS CVI Armstrong Heating & Power Vac (Manchester, NH)

Technical Consultants

Patrick O'Donnell, ASCS, CVC, CIEC Enviro Team North America (Ft . Lauderdale, FL)

Technical Editor

Jodi Araujo, CEM

Project Management

Association Headquarters, Mt. Laurel, NJ

Published by
National Air Duct Cleaners Association (NADCA)
15000 Commerce Parkway, Suite C
Mt. Laurel, NJ 08054
Toll Free: (855) GO-NADCA | P: (856) 380-6810 | F: (856) 439-0525

Copyright © 2013 by NADCA
All rights reserved.

No part of this publication may be reproduced in any form – mechanical, electronic or otherwise – without prior express written consent of the publisher.

Printed in the United States of America.

DISCLAIMER

The National Air Duct Cleaners Association (NADCA) has developed and published the Assessment, Cleaning, and Restoration of HVAC Systems (“ACR 2013” or the “Standard”). The Standard is intended to provide information for assessing new and existing HVAC systems, evaluating the cleanliness of HVAC system components, and guiding the cleaning and restoration of HVAC systems to a specific level of cleanliness. The Standard is also intended to assist individuals and entities establish and maintain their professional competence while working in the duct cleaning industry. All persons using the Standard must be, and remain, updated and informed about developments in the duct cleaning industry so that he/she may implement changes in technology and procedures as appropriate, as well as adhere to all applicable federal, state, provincial, and local laws and regulations. Since every cleaning and restoration job project is unique, in certain circumstances, common sense, experience, and professional judgment may justify a deviation from the information provided in the Standard. Furthermore, this Standard is not intended to be either exhaustive or inclusive of all pertinent requirements, methods, systems, or procedures that might be appropriate on a particular job. The information upon which this Standard is based is subject to change, which may modify, supplemental or invalidate any or all of the information contained herein.

ALL PERSONS USING THE STANDARD, AS A CONDITION OF USE, AGREES THAT NEITHER NADCA, NOR ANY ACR 2013 COMMITTEE MEMBER OR CONTRIBUTOR SHALL NOT BE LIABLE FOR ANY DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING WITHOUT LIMITATION, ANY AND ALL SPECIAL, INCIDENTAL, COMPENSATORY, CONSEQUENTIAL, PUNITIVE, OR OTHER DAMAGES (INCLUDING DAMAGES FOR PERSONAL INJURY OR BODILY INJURY, PROPERTY DAMAGE, LOSS OF BUSINESS, LOSS OF PROFITS, LITIGATION, OR THE LIKE), WHETHER BASED UPON BREACH OF CONTRACT, BREACH OF WARRANTY, TORT (INCLUDING NEGLIGENCE AND GROSS NEGLIGENCE), PRODUCT LIABILITY, OR OTHERWISE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER DIRECT OR INDIRECT, ARISING FROM OR RELATING TO THE PUBLICATION, USE OF, OR RELIANCE ON, THE INFORMATION CONTAINED IN THIS STANDARD . THE FOREGOING LIMITATION AND NEGATION OF DAMAGES IS A FUNDAMENTAL CONDITION OF THE USE OF THE INFORMATION CONTAINED IN THIS STANDARD AND THIS DOCUMENT WOULD NOT BE PUBLISHED WITHOUT SUCH LIMITATIONS.

While the information contained within this Standard is provided in good faith and is believed to be reliable, NADCA makes no representations, warranties, or guarantees as to the accuracy or completeness of any information contained in this Standard, or that following this Standard will result in compliance with any applicable laws, rules, or regulations; or will result in the safe, satisfactory, or complete performance of a duct cleaning project . NADCA does not warrant, assure, certify or guarantee that adherence to this Standard will or result in any energy savings or correct any indoor air quality related concerns. Any instruction or directive issued by a governmental or regulatory “Authorities Having Jurisdiction” with respect to the assessment and/or remediation of mold shall supersede any contradictory information included in the Standard.

ALL PERSONS USING THE STANDARD, AS A CONDITION OF USE, AGREES THAT ALL WARRANTIES, EXPRESS OR IMPLIED, ARE DISCLAIMED BY NADCA (and its committee members and contributors), INCLUDING WITHOUT LIMITATION, ANY AND ALL WARRANTIES CONCERNING THE ACCURACY OR COMPLETENESS OF THE INFORMATION, ITS FITNESS OR APPROPRIATENESS FOR A PARTICULAR PURPOSE OR USE, ITS MERCHANTABILITY, ITS NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS, OR ANY OTHER EXPRESS OR IMPLIED WARRANTY WHICH MAY EXIST OR APPLY .

In publishing this document, NADCA is not undertaking to render scientific, professional, medical, legal, or other advice or services for, or on behalf of, any person or entity, or to perform any duty owed by any person or entity to others. Any and all use of or reliance upon this Standard is at the user’s own discretion and risk. All persons using the Standard should understand the limitations of the information provided in the Standard, and should rely on his or her own independent judgment, or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given situation.

The NADCA Standard - Table of Contents

ACR Committee Roster -----	Page 1	3.12 Level 4 Containment -----	Page 13
Disclaimer -----	Page 2	3.13 Summary of Engineering Controls-----	Page 13
Foreword -----	Page 4		
Purpose -----	Page 5		
Scope -----	Page 5		
Application -----	Page 5		
Qualifications -----	Page 5		
Limitations -----	Page 5		
Determining the Need for HVAC Cleaning & Restoration -----	Page 6		
 Section 1 Inspections			
1 .0 Overview -----	Page 7		
1 .1 When to Perform an Inspection -----	Page 7		
1 .2 HVAC Inspector Qualification -----	Page 7		
1 .3 HVAC Pre-Inspection -----	Page 7		
1 .4 Appropriate Environmental Engineering Controls -----	Page 7		
1 .5 Routine HVAC Inspection -----	Page 7		
1 .6 HVAC System Inspection-Construction, Retrofit and Remodel -----	Page 7		
1 .7 Performing HVAC System Component Inspections -----	Page 7		
1 .8 Exposure to Hazardous Materials -----	Page 8		
1 .9 Inspecting for Mold Contamination -----	Page 8		
1 .10 System Assessment -----	Page 8		
 Section 2 Work Plans			
2 .0 Overview -----	Page 9		
2 .1 Purpose -----	Page 9		
2 .2 Scope of Work -----	Page 9		
2 .3 Means and Methods -----	Page 9		
2 .4 Other Trades and Their Tasks -----	Page 9		
2 .5 Project Schedule -----	Page 9		
2 .6 Work Site Communication Plan -----	Page 9		
2 .7 Product Submittals -----	Page 9		
2 .8 Safety Plan & Safety Concerns -----	Page 9		
2 .9 Disclaimers -----	Page 9		
 Section 3 Engineering Controls for HVAC Cleaning and Restoration Projects			
3 .0 Overview -----	Page 11		
3 .1 Equipment Maintenance -----	Page 11		
3 .2 Fuel-powered Equipment -----	Page 11		
3 .3 Vacuum Equipment Exhausting Indoors ---	Page 11		
3 .4 Negative Pressure Requirements -----	Page 11		
3 .5 Handling of Contaminated Materials -----	Page 11		
3 .6 Ambient Air Cleaning -----	Page 11		
3 .7 Control of Product Emissions -----	Page 11		
3 .8 Negative Pressure Failure -----	Page 11		
3 .9 Level 1 Containment -----	Page 12		
3.10 Level 2 Containment (Temporary Barriers)	Page 12		
3 .11 Level 3 Containment -----	Page 13		
		4 .0 Overview -----	Page 15
		4 .1 Negative Duct Pressurization -----	Page 15
		4 .2 Service Openings -----	Page 15
		4 .3 Cleaning and Restoration of HVAC Systems --	Page 16
		4 .4 Wet Cleaning, Power Washing, and Steam Cleaning -----	Page 16
		4 .5 Vacuum Collection Equipment -----	Page 16
		4 .6 Confined Space Cleaning -----	Page 16
		4 .7 Air-Handling Unit (AHU) Cleaning -----	Page 16
		4 .8 Air Duct Cleaning -----	Page 17
		4 .9 Dampers -----	Page 17
		4 .10 Registers, Grilles, Diffusers -----	Page 17
		4 .11 Smoke and/or Fire Detection Equipment ----	Page 17
		4 .12 Coil Surface Cleaning -----	Page 17
		4 .13 Control of Odors and Product Emissions ----	Page 18
		4 .14 Remediation of Mold Contamination -----	Page 18
		4 .15 Restoration and Repair of Mechanical Systems -----	Page 18
		4 .16 Surface Treatments -----	Page 18
		4 .17 Removal of Mold Contaminated Porous Materials -----	Page 18
		4 .18 Cleaning Fibrous Glass Duct System Components -----	Page 19
		4 .19 Resurfacing Fibrous Glass Surfaces -----	Page 19
		4 .20 Damaged Fibrous Glass Material -----	Page 19
		4 .21 Thermal-Acoustic HVAC Insulation Replacement -----	Page 19
		4 .22 Non-Porous Material Restoration -----	Page 19
		4 .23 Flooding/Water Damage -----	Page 19
		4 .24 Fire/Smoke Damage -----	Page 19
		4 .25 HVAC System Repair -----	Page 20
 Section 5 Cleanliness Verification and Documentation			
		5 .0 Overview -----	Page 21
		5 .1 When to Perform Cleanliness Verification ----	Page 21
		5 .2 Description of Method 1-Visual Inspection ---	Page 21
		5 .3 Description of Method 2 - Surface Comparison Testing -----	Page 21
		5 .4 Description of Method 3-NADCA Vacuum Test	Page 21
		5 .5 Passing Criteria for NADCA Vacuum Test ----	Page 23
		5 .6 Post-Project Documentation -----	Page 23
		Definitions -----	Page 25
		Reference Documents and Resources -----	Page 29
		Form to Request Formal Interpretations -----	Page 31

FOREWORD

Assessment, Cleaning, and Restoration of HVAC Systems (ACR The NADCA Standard) is unique in that it is a performance standard that also provides minimum procedural requirements. This Standard has evolved from procedural-based guidelines, standards of care, and research originating from the National Air Duct Cleaners Association (NADCA), along with associated organizations. It is based on reliable principles, review of applicable industry literature and information, and practical experience.

This Standard establishes minimum performance requirements for assessing new and existing HVAC systems, evaluating the cleanliness of HVAC system components, determining the need to clean and cleaning and restoring systems to a verifiable cleanliness level. The Standard also focuses on preventing job-related hazards, such as exposure to workers and occupants, and cross-contamination to the indoor environment.

This document is written for use by those involved in the HVAC cleaning and restoration industry including specifiers, consultants, contractors and end users. Users of this document should stay updated and informed about changes in the industry and implement changes in technology and procedures, as appropriate, while following applicable federal, state, provincial, and local laws and regulations.

All HVAC cleaning and restoration projects are unique and, in certain circumstances, common sense, experience, and professional judgment may justify deviation from this Standard. It is the responsibility of the contractor, or others relying on this Standard, to verify on a case-by-case basis, that application of this Standard is appropriate. When in doubt, use caution and seek additional professional guidance. Users of this document assume all risks and liabilities resulting from use of, and reliance upon, this Standard.

ACR is a living document that is subject to change as more information regarding the HVAC cleaning and restoration industry becomes available and advancements are made in technology and practice. ACR 2013 will be reviewed, evaluated, and validated through application in the field and thereafter revised and improved as deemed necessary.

GENERAL

PURPOSE

This Standard defines the minimum performance and procedural requirements for the assessment, cleaning and restoration of heating, ventilation and air conditioning (HVAC) systems. ACR 2013 supersedes all previous editions of the NADCA ACR Standard and is considered the standard of care for the HVAC cleaning and restoration industry.

SCOPE

This Standard applies to all HVAC assessment, cleaning and restoration services as defined herein. It does not include the cleaning of non-ducted ceiling plenums and items such as the mechanical repair of electrical or pneumatic components of any kind, repair of high pressure vessels, gas/oil controls or preventative maintenance tasks as prescribed by, or recommended by, the original equipment manufacturer (OEM).

APPLICATION

ACR 2013 provides minimum standards and guidance for industry professionals, HVAC assessment, cleaning and restoration service providers, building owners, and others who manage HVAC systems and projects.

QUALIFICATIONS

Those responsible for performing work to this Standard *shall* be properly trained and qualified and possess relevant knowledge and experience before performing work of any type on HVAC Systems. Industry certifications such as the Air Systems Cleaning Specialist (ASCS) or equivalent certification, *may* demonstrate minimum qualifications.

LIMITATIONS

This Standard does not specifically address any and all hazards or risks that could be encountered when performing work in accordance with this document. Instead, the user is directed to rely on the Authority Having Jurisdiction in such cases.

Determining the Need for HVAC Cleaning & Restoration

It is *recommended* that HVAC systems be cleaned when a proper HVAC cleanliness inspection or building history indicates one or more of the following conditions exist:

- The HVAC system is contaminated with an accumulation of particulate;
- The HVAC system performance is compromised due to contamination build-up;
- The HVAC system has been determined to be a source of unacceptable odors;
- The HVAC system is discharging visible dirt or debris into the conditioned space;
- The HVAC system has been contaminated as a result of fire, smoke, and/or water damage;
- The HVAC system has been infested with birds, rodents, insects, or their byproducts;
- The HVAC system has been determined to be at risk for fire hazard;
- The HVAC system has become contaminated with construction debris or dust;
- Mold contamination conditions have reached either Condition 2 or Condition 3;
- Deterioration of fiber glass duct liner, duct board, or other porous components;
- As part of an HVAC maintenance program as defined in ANSI/ASHRAE/ACCA Standard 180;
- As part of the HVAC equipment manufacturers *recommended* maintenance practices;
- As part of a proactive energy management program;
- As part of a proactive indoor air quality management program;
- As a component to achieve LEED Certification;
- When a newly installed component or duct has been contaminated with construction and/or other dust and debris.

NOTE: If there is any question on the need to clean, the **NADCA Surface Comparison Test** or **NADCA Vacuum Test** may be performed to assist in determining the need for cleaning. These tests are described in detail in Section 5 of this Standard.

Section 1 – Inspections

1.0 Overview: Inspections are an important component of any HVAC cleaning and restoration project. HVAC inspections *shall* be performed to determine the need for cleaning. HVAC inspections *shall* also be performed to determine the scope of work, engineering controls, safety measures and tools and equipment necessary to perform a cleaning and restoration project.

1.1 When to Perform an Inspection: Inspections *shall* be performed before and after HVAC cleaning and restoration projects. It is also *recommended* that routine inspections be performed as part of a proactive energy and indoor air quality management plan.

1.2 HVAC Inspector Qualification: It is *recommended* that a qualified HVAC inspector, such as an Air Systems Cleaning Specialist (ASCS), Certified Ventilation Inspector (CVI), or equivalent, be used to determine the preliminary state of HVAC system cleanliness. At minimum, such personnel *shall* have a verifiable working knowledge of basic HVAC system design, fundamental HVAC engineering practices, current industry HVAC cleaning and restoration techniques, and applicable industry standards. Individuals who are inspecting for microbial contamination *shall* be qualified (through training and experience) and licensed (where applicable by law) to determine Conditions 1, 2 and 3.

1.2.1 Risk Assessment: Prior to conducting an inspection of the HVAC system the inspector *shall* have a clear understanding what impact the inspection process *may* have on the building environment and its occupants.

1.3 HVAC Pre-Inspection: HVAC plans, building plans, and understanding the layout of the home or building will provide important information needed to establish the scope of work. Both building floor plans and mechanical plans, if available, *shall* be used during the inspection, cleaning and restoration work.

1.4 Appropriate Environmental Engineering Controls: HVAC inspection activities *may* adversely influence a building’s indoor environment. Of primary concern is the disturbance of settled particulate and the potential for disturbed particles to be released into occupied areas. During an inspection, appropriate engineering controls *shall* be used to manage the general workspace environment.

1.5 Routine HVAC Inspection: It is *recommended* that HVAC system inspections be part of a building’s overall energy and indoor air quality management plan, and that the inspections be addressed in accordance with

documents such as ANSI/ASHRAE/ACCA Standard 180 *Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems* and NFPA 90-A *Standard for the Installation of Air-Conditioning and Ventilating Systems Today*.

1.5.1 Inspection Schedule Table HVAC systems *shall* be routinely inspected for cleanliness by visual means. Table 1 provides a *recommended* inspection schedule for major HVAC components within different building use classifications. The inspection intervals specified in Table 1 are minimum recommendations

1.5.1.1 It is *recommended* that more frequent cleanliness inspections be performed when geographical, human or mechanical conditions make it necessary.

Table 1
HVAC Cleanliness Inspection
Schedule (Recommended Intervals)

Building Use Classification	Airhandling Unit	Return Supply Duct	Exhaust Duct / Duct
Residential	1 year	2 years	2 years
Commercial	1 year	1 year	1 year
Industrial	1 year	1 year	1 year
Healthcare	1 year	1 year	1 year
Marine	1 year	2 years	2 years

1.6 HVAC System Inspection – Construction, Retrofit and Remodel: HVAC system components often collect significant amounts of debris and particulate during construction activities within a building . It is *recommended* that new and existing HVAC systems that are part of a construction, retrofit or remodel project be inspected and verified as clean before the system is permitted to operate.

1.7 Performing HVAC System Component Inspections: The cleanliness inspection *shall* include, at minimum, 10% of the HVAC system components . If the inspection is being conducted as part of a mold remediation project in accordance with IICRC Standard S520, then all components of the HVAC system *shall* be inspected.

1.7.1 Air-Handling Unit Inspections: The air-handling unit (AHU) cleanliness inspection *shall* include components within the unit, including filters and air bypass, heating and cooling coils, condensate pans, condensate drain lines, humidification systems, acoustic insulation, fans and fan compartments, dampers, door gaskets and general unit integrity. This would also include components such as fan coil units, evaporative coolers, etc.

1.7.2 Supply Air Duct Inspections: The supply duct cleanliness inspection *shall* include supply components including, but not limited to, air ducts, controls, mixing/control boxes, reheat coils and other internal components.

1.7.3 Return Air Duct Inspections: The return air duct cleanliness inspection *shall* include return components including, but not limited to, return air ducts, dampers, return plenums and grilles.

1.7.4 Exhaust Air Duct Inspections: General exhaust, bathroom exhaust and heat recovery exhaust are considered part of the ventilation system and a part of the overall inspection.

1.7.5 Internal Components: Internal components that are in the HVAC system air stream such as coils, dampers, fans, etc., *shall* be inspected for cleanliness during the AHU or air duct inspection.

1.7.6 Damaged Components: Damaged components observed during the inspection *shall* be documented.

1.8 Exposure to Hazardous Materials: If the possibility exists that the inspector or others *may* be exposed to hazardous materials, consultation with a qualified indoor environmental professional (IEP) or other health and safety professional is recommended.

1.9 Inspecting for Mold Contamination: It is *recommended* that the HVAC system cleanliness inspection include a preliminary determination of the level of suspect mold contamination (Condition 1, 2 or 3) and other biological activity. In the event suspect mold growth or other biological activity is identified, it is *recommended* that the cause and extent be further assessed, if necessary, by an indoor environmental professional (IEP) or other appropriate professional, or as required by Authorities Having Jurisdiction (AHJ).

1.9.1 If the inspection of an HVAC unit's air-handling components reveals suspect mold contamination, then the supply and return ducts *shall* be inspected during that same inspection time rather than in accordance with the intervals specified in Table 1.

1.9.2 If water damage or suspect mold growth is observed on building products or furnishings, this condition is not within the scope of this document. Refer to IICRC S520 and/or Authorities Having Jurisdiction.

1.10 System Assessment: Information collected from the HVAC inspection *shall* be documented and evaluated to assess the condition of the HVAC system at the time of the inspection. The assessment *shall* include a *recommendation* on the need for cleaning, a clearly defined scope of work for the cleaning and restoration project, *recommended* cleaning techniques, a determination of the environmental engineering controls required for the workspace, and any unique requirements.

Section 2 – Work Plans

2.0 Overview: A written work plan is a document that communicates responsibilities and specific tasks associated with the cleaning and restoration project. The work plan is created using information gathered from the HVAC inspection and system assessment.

2.1 Purpose: The primary purpose for providing a written work plan is to allow the client, the cleaning contractor, field personnel and others involved in the project to have a clear understanding of what work tasks and procedures will be performed.

2.2 Scope of Work: A scope of work *shall* be included that clearly identifies which HVAC components are to be cleaned or restored, as well as those components **NOT** included in the process. The scope of work *shall* also include the environmental engineering controls required for the workspace, and any unique requirements.

2.3 Means and Methods: It is *recommended* that the written work plan identify the specific means and methods of cleaning and restoration that will be used for the particular project.

2.4 Other Trades and Their Tasks: When applicable, it is *recommended* that the work plan include the name of all firms, contractors and representatives involved in the project, along with contact information. It is *recommended* that the tasks others will perform be clearly identified.

2.5 Project Schedule: When appropriate, it is *recommended* that the work plan include the dates and times the work will take place and an overall timeframe for completion.

2.6 Work Site Communication Plan: When more than one company is associated with the project, it is *recommended* that the written work plan list the name, company name and contact information of pertinent individuals, along with their responsibilities to the project.

2.7 Product Submittals: All general use and/or specific “chemical type” products and coatings specific to the project *shall* be clearly listed on the work plan. Additionally, the manufacturer’s instructions for use and application *shall* be available at all times for workers and others.

2.7.1 Material Safety Data Sheets (Includes MSDS and SDS): The work plan *shall* include Material Safety Data Sheets for all chemical products to be used on the project. In addition, the MSDS *shall* be maintained on-site and available for review for the duration of the project. Documentation showing that the products have been submitted to the owner for review *can* also be included in the work plan.

2.7.2 Controlling Vapors and Odors: Where applicable, the plan *shall* include a description of Engineering Controls (see Section 3) to be employed to control occupant and worker exposure to chemical vapors and odors.

2.8 Safety Plan & Safety Concerns: When life safety detection equipment (e.g., air duct sensors and smoke detectors) needs to be off-line or disabled, the work plan *shall* address life safety concerns, which will likely require the input of others. It is recommended that the written work plan define the responsibilities of each organization’s designated representative involved with executing the plan for the duration of the HVAC system cleaning and restoration project.

2.9 Disclaimers: It is *recommended* that the work plan include disclaimers to clearly identify items that are not covered under any warranty or guarantee.

Section 3 - Engineering Controls for HVAC Cleaning and Restoration Projects

3.0 Overview: Engineering controls *shall* be used to ensure worker safety and health, and to prevent cross-contamination. Engineering controls *may* include, but are not limited to source control, isolation barriers, pressure differentials, dust suppression methods, HEPA vacuuming and filtration, detailed cleaning, temperature and humidity control, and a sanitary approach.

3.1 Equipment Maintenance: All contractor equipment *shall* be maintained in good working order, consistent with applicable jurisdictional requirements, including but not limited to vacuum collection equipment, power tools, pressurized air sources, electrical power cords and plugs, ground fault protection devices, vacuum collection hoses, fluid and pneumatic lines, manual and mechanical rotary brush systems, pneumatic cleaning systems, air duct zoning devices, ladders, staging equipment, and hand tools.

3.1.1 Equipment Maintenance Before Project: Before any equipment is brought onto the work site it *shall* be cleaned and inspected to ensure that it will not introduce contaminants into the indoor environment or HVAC system.

3.1.2 Equipment Maintenance During a Project: During a project all equipment *shall* be serviced as needed to limit possible cross-contamination from poor hygiene, and/ or unsafe operating conditions for service personnel and building occupants.

3.1.2.1 Collector Filter Maintenance During a Project: Any activity requiring the opening of contaminated vacuum collection equipment on-site, such as servicing or filter maintenance *shall* be performed in an appropriate containment area or outside of the building.

3.1.3 Transportation and Relocation of Equipment: All collection devices, vacuums and other tools and devices *shall* be cleaned or sealed before relocating to different areas of the building and before removing the equipment

from building.

3.1.4 On-Site Equipment Verification: It is *recommended* that an on-site maintenance verification be performed on vacuum collection equipment prior to commencement of work.

3.2 Fuel-powered Equipment: Generators, vacuum trucks, air compressors or other fuel-powered equipment *shall* be positioned in a location to prevent combustion emissions and air exhaust emissions from entering an occupied space.

3.2.1 Location *shall* be monitored and managed during a project to prevent the introduction of combustion emissions into the occupied space.

3.3 Vacuum Equipment Exhausting Indoors: When using vacuum collection equipment exhausting within the building envelope, it *shall* utilize HEPA filtration with 99.97% collection efficiency at 0.3 micron particle size. This requirement applies to all cleaning projects.

3.4 Negative Pressure Requirements: A continuous negative pressure *shall* be maintained in the portion of the HVAC system being cleaned in relation to the surrounding indoor spaces. The negative pressure *shall* be verified at representative locations during the cleaning process.

3.5 Handling of Contaminated Materials: To prevent cross-contamination, all contaminated materials removed from the HVAC system *shall* be properly contained prior to removal from the building.

3.5.1 Materials deemed to be hazardous by governmental agencies *shall* be handled in strict accordance with any applicable local, regional or national codes.

3.6 Ambient Air Cleaning: It is *recommended* that ambient air cleaning using HEPA-filtered air scrubbers be employed as a supplemental engineering control for particle reduction, during and immediately after HVAC cleaning and restoration work. It is *recommended* that ambient air cleaning provide a minimum of four (4) air changes per hour.

3.7 Control of Product Emissions: Any application of cleaning agents or other chemicals *shall* be used in strict accordance with manufacturer's recommended

procedures and product application instructions, including exhaust ventilation as required.

3.8 Negative Pressure Failure: To prevent negative pressure failure due to equipment malfunction or electrical power interruption, it is *recommended* that backup equipment be on-site with a dedicated power supply properly designed to carry the intended current draw being utilized.

3.9 Level 1 Containment: Level 1 is the minimum level of containment that *shall* be used on all HVAC system cleaning projects.

3.9.1 Negative Pressure: The HVAC system, or area being cleaned/restored, *shall* be placed under negative pressure during all cleaning activities. Negative pressure *shall* be sufficient to prevent migration of any particulate material out of the HVAC system.

3.9.2 Protective Coverings: Clean, protective coverings *shall* be used within the work area. Protective coverings *shall* extend beyond the work area to provide protection of flooring, equipment, and furniture whenever necessary.

3.9.3 Cleaning Equipment and Tools: All tools and equipment *shall* be maintained as described in Section 3.1.

3.9.4 Cross-Contamination Control: Engineering controls *shall* be in place to control contaminant discharge from the HVAC system and/or cross-contamination into occupied space during the cleaning process.

3.10 Level 2 Containment (Temporary Barriers):

3.10.1 Include Level 1 requirements: All level 1 containment requirements apply to Level 2 Containments.

3.10.2 Temporary Containment Barriers: Temporary barriers *shall* be constructed.

3.10.2.1 It is *recommended* that containment barriers be erected from floor to ceiling when applicable.

3.10.2.2 It is *recommended* that above-ceiling work areas are isolated from occupied spaces and/or non-work areas when applicable.

3.10.2.3 It is *recommended* that containment barriers are built utilizing 6-mil fire retardant polyethylene sheeting or equivalent.

3.10.2.4 These barriers are *recommended* to be sealed airtight where they meet the ceiling, floor, and walls or other areas.

3.10.3 Containment Area Floor: The containment *shall* have a two-layer floor utilizing 6-mil fire retardant polyethylene or equivalent. The floor material *shall* extend at least 6 inches (15.2 centimeters) up the containment side walls. The floor material *shall* be sealed to side walls in a manner that will remain secure and airtight during the depressurization.

3.10.4 Containment Area Access: A zipper-type access, with a single flap covering the zipper is the most common work practice.

3.10.4.1 In the event a zipper is not available or practical, then a vertical cut in the containment side wall *can* provide access into the containment area. The vertical cut *shall* be entirely covered by two flaps, one on each side of the polyethylene.

3.10.5 Negative Pressure: The containment area *shall* be kept under negative pressure at all times. The negative pressure *shall* be sufficient to prevent airborne migration of particulate material out of the containment area.

3.10.6 Validate Negative Pressurization: A manometer or airflow measuring/monitoring device *shall* be used to validate negative pressurization.

3.10.7 Ambient Air Cleaning Ambient air cleaning with HEPA-filtered air scrubbers *shall* be performed. Ambient air cleaning *shall* maintain, at minimum, four (4) air changes per hour.

3.10.8 Dismantling: Interior surfaces of the containment enclosure *shall* be wet-wiped and/or HEPA vacuumed before moving or dismantling the containment enclosure. In the healthcare environment, an appropriate post-remediation verification *shall* be performed prior to dismantling the containment.

3.11 Level 3 Containment: Level 3 is a containment with a single chamber decontamination unit.

3.11.1 Include Level 1 and Level 2 Requirements: All of the Level 1 and 2 Containment requirements apply to Level 3 Containments. In addition, the following protective actions *shall* be used under Level 3 Containment strategies.

3.11.2 Decontamination Facility: A single chamber decontamination facility *shall* be utilized in conjunction with the containment area. The decontamination chamber *shall* be attached and sealed directly to the containment area. The decontamination chamber *shall* be separated from the containment area by a zipper access with single flap or the use of two flaps as described in Level 2 Containment.

3.11.3 Monitoring Requirements: Level 3 Containment areas *shall* be monitored for negative pressure on a continuous basis by using an instrument sensitive enough to detect a loss of negative pressure. Background monitoring for total particulate *shall* be performed prior to set-up of containment to establish baseline airborne total particulate concentrations. It is *recommended* that monitoring also be conducted during set-up of containment. Real time monitoring for total particulate *shall* be conducted on a regular basis during the work to ensure that particulate is not escaping the containment. If airborne particulate levels exceed background levels, work *shall* cease until airborne particulate levels are reduced to background levels and the cause of the problem is found and corrected.

3.12 Level 4 Containment: A Level 4 Containment is a containment with a two chamber decontamination unit.

3.12.1 Include Level 1, Level 2 and Level 3 Requirements: All of the Level 1, Level 2, and Level 3 Containment requirements apply to Level 4 Containment areas. In addition, the following protective actions *shall* be used under Level 4 Containment strategies.

3.12.2 Decontamination Facility: A decontamination facility as described for a Level 3 Containment area *shall* be utilized, except that the decontamination facility *shall* consist of two chambers. Each chamber *shall* be constructed according to the requirements described for a Level 3 Containment area.

3.12.3 Monitoring Requirements: Monitoring requirements described for a Level 3 Containment area apply. In addition, the containment *shall* have a constant recording pressurization monitor with an appropriate alarm.

3.13 Summary of Engineering Controls: Appropriate engineering controls are mandatory on every HVAC cleaning and restoration project. Protecting workers and building occupants and preventing cross-contamination *shall* be considered a priority on every project. It is *recommended* that the above listed engineering controls are considered minimum requirements. When a contractor has any questions about project-specific engineering controls, it is *recommended* that an Indoor Environmental Professional (IEP) be consulted.

Section 4 - Cleaning and Restoration Procedures

4.0 Overview: All cleaning and restoration procedures *shall* achieve the minimum level of visibly clean or the specified level of cleanliness verification as defined in the contractual documents for components within the project scope of work.

4.1 Negative Duct Pressurization: Prior to and throughout the duration of the cleaning process, the HVAC system and associated air duct *shall* be kept at an appropriate negative pressure differential relative to the indoor non-work area. This negative pressure differential *shall* be maintained between the portion of the HVAC duct system being cleaned and surrounding indoor occupant spaces.

4.1.1 Verifying Negative Pressure Differential: Under all circumstances, you *shall* verify pressurization differential during the project.

4.1.2 Equipment Exhausting Indoors: When utilizing vacuum collection equipment exhausting indoors it shall be HEPA-filtered and be capable of retaining dislodged debris.

4.1.3 Equipment Exhausting Outdoors: All equipment used to create negative duct pressurization that does not have HEPA filtration *shall* be exhausted outdoors.

4.2 Service Openings: Service openings *may* be needed to perform assessment, cleaning and restoration (ACR) procedures. Below are the minimum requirements for service openings.

4.2.1 Service openings installed into the system *shall* not degrade the structural, thermal, or functional integrity of the system.

4.2.2 Service openings *shall* be created in a manner that allows for proper closure.

4.2.3 Service openings *shall* not hinder, restrict, or alter the airflow within the air duct.

4.2.4 Service opening construction materials and methods *shall* be in compliance with industry standards and local codes, using materials acceptable under those standards and codes.

4.2.5 Materials used in the fabrication of duct access doors and permanent panels *shall* be those classified for flammability and smoke spread if the material is exposed to the internal airstream. These materials are classified as having a flame-spread rating of not over 25 without evidence of continued progressive combustion and a smoke-developed rating of not over 50, as determined by UL 723.

4.2.6 All tapes used in the installation and closure of service openings *shall* meet the requirements of UL 181A.

4.2.7 All service openings *shall* comply with applicable UL, SMACNA and NFPA standards, as well as local, regional, and state codes.

4.2.8 Service Panels

4.2.8.1 Service panels used for closing service openings in the HVAC system *shall* be of an equivalent gauge or heavier so as to not compromise the structural integrity of the duct.

4.2.8.2 Service panels used for closing service openings *shall* be mechanically fastened (screwed or riveted) at minimum every 4" on center. The panel *shall* overlap the ductwork surfaces by a minimum of 1" on all sides.

4.2.8.3 It is *recommended* that service panels used for closing service openings be sealed with gaskets, duct sealants, mastic or tape.

4.2.9 Prefabricated Duct Access Doors: The gauge of the duct access door *shall* be based on the pressure class of the duct system and *shall* be installed according to manufacturer's specifications.

4.2.10 Fibrous Glass System Service Openings

4.2.10.1 Access and closure of service openings installed in fibrous glass *shall* be created and closed in such a manner that there are no exposed fibrous glass edges within the system common to the airstream.

4.2.10.2 Any fibrous glass removed during the installation of a service opening *shall* be repaired or replaced with like material of the same thickness so that there are no breaks or openings that would degrade the R value, service rating or vapor/air barrier characteristics.

4.2.11 Drilled 1” Service Openings: Drilled 1” service openings *shall* be closed with materials meeting UL 181 for smoke generation and flame spread.

4.2.12 Flexible Duct Systems: Service openings *shall* not be made in flexible ductwork.

4.3 Cleaning and Restoration of HVAC Systems: HVAC systems *shall* be cleaned by using a suitable agitation device to dislodge contaminants from the HVAC component surface and then capturing the contaminants with a vacuum collection device.

4.4 Wet Cleaning, Power Washing, and Steam Cleaning: Wet cleaning, power washing, steam cleaning and any other form of wet process cleaning of HVAC system components *shall* not damage or result in subsequent damage to the components. Cleaning agents or water *shall* never be applied to electrical, fibrous glass or other porous HVAC system components.

4.5 Vacuum Collection Equipment: Vacuum collection equipment *shall* be operated continuously during cleaning. The collection equipment *shall* be used in conjunction with agitation tools and other equipment to convey and collect debris and prevent cross-contamination of dislodged particulate during the mechanical cleaning process.

4.5.1 Capture Velocity: When the vacuum collection device is used to convey air with debris, it *shall* maintain a sufficient velocity and negative pressure differential in the portion of the mechanical system being cleaned. Table 2 defines *recommended* velocities for various types of contaminants.

Table 2
Table of Velocity Requirements for Contaminant Removal

Nature of Contaminant	Examples	Design Velocity in FPM
Very fine light dust	Cotton lint, wood flour, litho powder	2500-3000
Dry dusts & powders	Fine rubber dust, Bakelite molding powder dust, jute lint, cotton dust, shavings (light), soap dust, leather shavings	3000-4000
Average industrial dust	Grinding dust, buffing lint (dry), wool jute dust, shoe dust, granite dust, silica flour, general material handling, brick cutting, clay dust, foundry (general), limestone dust, packaging and weighing asbestos dust in textile industries	3500-4000
Heavy dusts	Sawdust (heavy & wet), metal turnings, foundry tumbling barrels and shake out, sand blast dust, wood blocks, hog waste, brass turnings, cast iron boring dust, lead dust	4000-4500

Reprinted from ACGIH Industrial Ventilation: A Manual of Recommended Practice

4.6 Confined Space Cleaning: When working inside a confined space, health and safety concerns *shall* be a priority. The duct support system, internal components, configuration and confined space concerns *shall* be evaluated for safety prior to entry. It is *recommended* that a Certified Safety Professional be consulted as needed.

4.7 Air-Handling Unit (AHU) Cleaning: It is *recommended* that air-handling coils, fans, condensate pans, drains and similar non-porous surfaces be wet cleaned in conjunction with mechanical methods.

4.7.1 Efforts to control water extraction *shall* be sufficient to collect debris and prevent water damage to the HVAC components and surrounding equipment and structure.

4.7.2 The capture, containment, testing and disposal of waste water generated while performing wet cleaning *shall* be in accordance with applicable local, regional, state and federal regulations.

4.8 Air Duct Cleaning: Air ducts *shall* be cleaned to remove all non-adhered substances and *shall* be capable of passing NADCA cleanliness verification tests.

4.8.1 Air ducts *shall* be accessed through service openings in the system that are large enough to accommodate mechanical cleaning procedures and allow for cleanliness verification.

4.8.2 Air ducts *shall* be cleaned using mechanical agitation methods to remove particulate, debris, and surface contamination.

4.8.3 Dislodged substances *shall* be captured with a vacuum collection device.

4.8.4 Cleaning activities *shall* not damage any HVAC components.

4.9 Dampers: Dampers and any air-directional mechanical devices *shall* have their position marked prior to cleaning and *shall* be restored to their marked position after cleaning.

4.10 Registers, Grilles, Diffusers: It is *recommended* that all registers, grilles, diffusers and other air distribution devices be removed if possible, properly cleaned, and *shall* be restored to their previous position.

4.11 Smoke and/or Fire Detection Equipment: Cleaning activities *shall* not impair, alter or damage any smoke and fire detection equipment located within the facility, or attached to and serving the HVAC system.

4.12 Coil Surface Cleaning: When coil cleaning is performed, both upstream and downstream sides of each coil section *shall* be accessed for cleaning. When both sides of a coil are not accessible for cleaning then removal and/or replacement *may* be required.

4.12.1 Preliminary Coil Inspection: A visual inspection of the coil and drain pan *shall* be conducted prior to cleaning a coil. The data gathered from the preliminary inspection will determine whether Type 1 or Type 2 cleaning is required.

4.12.1.1 If it is determined the coil cannot be properly cleaned through Type 1 methods, Type 2 methods *shall* be performed.

4.12.1.2 When the preliminary visual inspection reveals suspect microbial matter on any portion of the coil or drain pan, Type 2 cleaning methods *shall* be performed.

4.12.1.3 When the metal fins of the coil are damaged, deteriorating or showing signs of corrosion, replacement *may* be necessary. If cleaning will result in further damage to the coil, replacement is *recommended*.

4.12.2 Type 1 Coil Cleaning (Dry Cleaning): Type 1 methods of coil cleaning *shall* be used for removing loose dust, dirt or debris collected upon coil surfaces. Negative air machines *shall* be operated continuously during Type 1 coil cleaning process. The coil *shall* be isolated from the duct system during the cleaning process to ensure disrupted particulate does not migrate to, or redeposit on, unintended areas. Physical removal of debris *may* be accomplished through a variety of methods which *may* include:

- HEPA-filtered contact vacuuming
- Brushes for penetrating between coil fins
- Compressed air
- Fin straightening tools

4.12.3 Type 1 Post-Cleaning Inspection: This inspection *shall* be performed after Type 1 coil cleaning has been completed. If debris still remains on the coil or the coil is impacted, Type 2 cleaning *shall* be performed.

4.12.4 Type 2 Coil Cleaning (Wet Cleaning): Type 2 cleaning methods are appropriate for removing adhered debris on all coil, drain pan and drain line surfaces. Type 2 cleaning *shall* be performed after non-adhered substance has been removed using Type 1 methods. Type 2 cleaning *may* include the following methods:

- All methods under Type 1
- Application of coil cleaning products (which *shall* be used in accordance with the manufacturer's product labeling)
- Water washing at normal water line pressure
- Pressure washing equipment
- Hot water or steam cleaning equipment

4.12.4.1 The condensate drain pan and drain line *shall* be cleaned and flushed. The condensate drain pan *shall* be inspected to verify proper drainage operation before and after cleaning.

4.12.4.2 Cleaning methods and products *shall* not cause damage to, or erosion of, the coil surface or fins and *shall* conform to coil manufacturer recommendations when available. It is *recommended* that only coil cleaning solutions that are as close to pH neutral as possible are used.

4.12.5 Type 2 Post-Cleaning Inspection: Type 2 inspections *shall* be conducted after completion of Type 2 cleaning methods. If debris still remains on the coil after Type 2 cleaning, the process *shall* be repeated. When debris cannot be removed using Type 2 cleaning methods, replacement *may* be necessary.

4.12.6 Measuring the Effectiveness of Coil Cleaning: Visual observation of coil surfaces *can* be misleading, therefore it is *recommended* that a static pressure drop measurement be obtained before and after the cleaning process to demonstrate the effectiveness of such efforts.

4.12.7 Inline Coils: Wet cleaning processes using pressurized water and chemical agents are normally required for coil cleaning. Precautions *shall* be taken to capture rinse water when wet cleaning duct mounted coils without drain pans. Type 1 and/or Type 2 methods *shall* be used for cleaning inline coils.

4.12.8 Electric Resistance Coils: When cleaning electric resistance coils, the power source to the coils *shall* be de-energized and locked out/tagged out. When wet process cleaning is used, only non-corrosive detergents *shall* be used, and the coil *shall* be rinsed free of chemicals and thoroughly dried prior to being re-energized.

4.13 Control of Odors and Product Emissions: All products used *shall* comply with any local, regional, state and federal regulations and/or other laws regulating the use of such agents.

4.14 Remediation of Mold Contamination: Remediating mold *shall* be performed in accordance with the IICRC S520 *Standard for Professional Mold Remediation* and the cleaning/restoration of the HVAC system provisions as outlined within this Standard.

4.15 Restoration and Repair of Mechanical Systems: Restoration procedures *shall* only be performed after mechanical cleaning.

4.15.1 HVAC system components subjected to catastrophic events such as fire, smoke, flood, or water damage *shall* be subject to appropriate restoration procedures as described in Sections 4.23 and 4.24.

4.15.2 Components that are compromised *shall* be addressed as part of the restoration procedure to the extent possible.

4.15.3 It is recommended that HVAC components be replaced if cleanliness levels specified in this Standard cannot be achieved through mechanical cleaning and restoration methods.

4.16 Surface Treatments: Surface treatments *may* be used to restore the integrity of material surfaces as an alternative to replacement. Surface treatments *shall* only be applied after confirming the system has been cleaned and has passed the specified level of cleanliness verification.

4.17 Removal of Mold Contaminated Porous Materials: It is recommended that porous materials with mold growth (Condition 3) be properly removed and replaced. This task *shall* be followed by surface cleaning using mechanical cleaning methods.

4.18 Cleaning Fibrous Glass Duct System Components:

The cleaning of fibrous glass duct liner or duct board present in equipment or air ducts *shall* be performed in accordance with Section 4.8 of this Standard.

4.18.1 The mechanical cleaning methods selected for duct liner or fibrous glass duct board *shall* not create abrasions, breaks, or tears to fibrous glass liner or duct board surfaces.

4.19 Resurfacing Fibrous Glass Surfaces: Resurfacing may be considered when thermal acoustic fibrous glass components, including air duct liner or duct board in the HVAC system, are considered friable, or exhibit visual signs of abrasion, degradation, or other undesirable conditions. Resurfacing may also be considered when the project work plan requests smoothing fiber glass surfaces to reduce future particulate collections within the HVAC system.

4.19.1 If resurfacing is to be performed, an assessment *shall* be made to determine whether the surface of the component will provide a strong, bondable surface for the coating material after undergoing proper mechanical cleaning.

4.19.2 If fibrous glass materials are beyond restoration and deemed unsuitable to support the proper application of a surfacing product or unable to provide a long-term bondable surface, resurfacing shall not be performed.

4.20 Damaged Fibrous Glass Material: When there is evidence of damage, deterioration, delaminating, friable material, such that cleaning or resurfacing cannot restore fibrous glass materials, replacement is recommended.

4.21 Thermal-Acoustic HVAC Insulation Replacement:

All metal surfaces of the duct system that have undergone removal of degraded thermal-acoustic material *shall* have the base surface scraped clean and be free of loose, visible debris prior to installation of new insulation.

4.21.1 In the event the fiber glass removal was due to mold contamination, the base surface *shall* be cleaned to a Condition 1 status prior to reapplying any fiber glass insulating products.

4.21.2 All materials used for insulation replacement within the HVAC system *shall* meet or exceed the specifications of the original materials or current applicable codes. Installation of the replacement materials *shall* be in accordance with the manufacturer's written instructions.

4.21.3 Installation of thermal-acoustic HVAC insulation common to the air stream *shall* comply with current SMACNA, NAIMA and other applicable codes and standards.

4.21.4 Following completion of the installation of replacement materials, all new fiber glass surfaces *shall* be capable of meeting NADCA cleanliness verification requirements.

4.21.5 No cleaning process *shall* be performed that will damage a properly designed, installed, and structurally sound HVAC system and its components, or negatively affect the performance, operation, or normal life expectancy of the system.

4.22 Non-Porous Material Restoration: If the surface conditions of non-porous components, following cleaning, reveal a surface that will continue to contribute particulate, odors or adversely affect the quality of the air moving through the system, restoration is *recommended*.

4.23 Flooding/Water Damage: All HVAC system surfaces and components subjected to water damage due to flooding *shall* be evaluated and categorized according to industry recognized methods to determine the ability to salvage and restore, as defined in documents such as the current IICRC Standard S500, *Standard and Reference Guide for Professional Water Damage Restoration*. To a large extent, the category of water entering the HVAC system will dictate methods of cleaning and environmental engineering controls. Any system components and/or air ducts deemed worthy of salvage *shall* be thoroughly cleaned.

4.24 Fire/Smoke Damage: All HVAC system components subjected to heat and smoke *shall* be evaluated for restoration. Any components and/or surfaces unable to withstand proper mechanical cleaning and restoration *shall* be replaced.

4.24.1 All porous surfaces subjected to fire/smoke damage *shall* be evaluated following proper mechanical cleaning for friability and odor retention.

4.24.2 Any areas assessed as being friable and/or retaining odors *shall* be resurfaced or replaced.

4.24.3 Following cleaning, any component surface exhibiting damage due to heat exposure *shall* be restored to an acceptable condition or replaced.

4.24.4 If there is a question as to whether a system component is contaminated with soot or smoke from a fire, it is *recommended* that sampling be performed in accordance with documents such as IESO/RIA 6001-2011 *Evaluation of Heating, Ventilation and Air Conditioning HVAC Interior Surfaces to Determine the Presence of Fire-Related Particulate as a Result of a Fire in a Structure*.

4.25 HVAC System Repair: HVAC components found to have pre-existing damage during the cleaning process *shall* be documented and brought to the attention of the building owner or representative.

4.25.1 Repair or replacement of malfunctioning mechanical devices is not included in the scope of this Standard. Restoration does not include the sealing of air leaks within duct systems or HVAC equipment.

Section 5 - Cleanliness Verification and Documentation

5.0 Overview: Cleanliness verification *shall* be performed on all specified components to verify compliance with this Standard. All components within the project scope of work *shall* achieve, at minimum, the level of visibly clean or the specified method of cleanliness verification defined in the contractual documents.

5.1 When to Perform Cleanliness Verification: Cleanliness verification is done immediately after HVAC system component cleaning and prior to use in operation.

5.2 Description of Method 1 - Visual Inspection: A visual inspection of porous and non-porous HVAC system components *shall* be conducted to assess that the HVAC system is visibly clean. An interior surface is considered visibly clean when it is free from non-adhered substances and debris. If a component is visibly clean then no further cleanliness verification methods are necessary.

5.2.1 Method 1 Inconclusive: If Method 1 – Visual Inspection is inconclusive or disputed, then it is *recommended* that Method 2 - Surface Comparison Testing be used to verify cleanliness.

5.3 Description of Method 2 - Surface Comparison Testing: The Surface Comparison Test *may* be used to determine cleanliness of both non-porous and porous HVAC component surfaces. The component's surface conditions are evaluated by comparing visible characteristics of the test surface before and after implementing a specific procedure of contact vacuuming.

5.3.1 Test Method 2 Protocol: A vacuum brush *shall* be attached to a contact vacuum and the device *shall* be running. The brush *shall* be passed over the surface test area four (4) times, with the brush depressed against the surface being tested using light to moderate pressure (as used in routine cleaning). The testing contact vacuum *shall* be HEPA-filtered and capable of achieving a minimum of 80 inches of static lift (WC). The contact vacuum *shall* be fitted with a 2.5 inch round nylon brush attached to a 1.5 inch diameter vacuum hose.

5.3.2 Interpretation of Method 2 Results:

When the procedure described above has been completed, a comparison *shall* be made to determine if the visible characteristics of the surface have changed significantly. The HVAC component surface is considered to be clean when there is no significant visible difference in the surface characteristics.

5.3.3 Method 2 Inconclusive: If Method 2 – Surface Comparison Testing is inconclusive or disputed, then Method 3 – NADCA Vacuum Test *may* be used to make a final cleanliness determination. The NADCA Vacuum Test does not apply to porous system components.

5.4 Description of Method 3 – NADCA Vacuum Test: The NADCA Vacuum Test is used for scientifically evaluating particulate levels of non-porous HVAC component surfaces. Using this procedure, a NADCA Vacuum Test Template is applied to the component's airside surface. A vacuum cassette with filter media is attached to a calibrated air sampling pump and the open face of the filter cassette is passed over two 2 cm x 25 cm openings within the template.

At no time *can* any portion of the vacuum cassette directly contact the component surface being tested. The template is specifically designed to allow the cassette to ride above the surface being tested. Airflow is accelerated through a narrow opening between the template and the test surface of the component, allowing any latent remaining particulate from the component's surface to be dislodged through increased velocity and impinged onto the filter media within the vacuum cassette. After this procedure is complete, the cassette is prepared and weighed to determine the amount of total debris collected on the filter media.

5.4.1 Test Components: The following describes the materials and test components used to perform Method 3 verification:

- Air Sampling Pump: An air sampling pump capable of drawing 15 liters per minute through a cassette containing 37 mm matched weight filters (two 0.8 micrometer pore size mixed cellulose ester (MCE) filters in series) *shall* be used.
- Filter Media: Filter media within the vacuum cassette *shall* be 37 mm mixed cellulose ester (MCE) matched weight

filters (0.8 micrometer pore size pre-loaded in three-piece cassette).

- Calibration Device: The vacuum pump *shall* be calibrated using a calibration device that is accurate to $\pm 5\%$ at 15 liters per minute.
- NADCA Vacuum Test Template: The template *shall* be 15 mil thick (0.381 mm) and *shall* provide a 100 cm² sampling area consisting of two 2 cm x 25 cm slots at least 2.5 cm apart.

5.4.1.1 The standard size openings for the NADCA Vacuum Test Template are 2 centimeters in width by 25 centimeters in length. At times, templates with slots of this size *may* not fit in a space where testing is necessary or desired. Slots of other sizes *may* be utilized, subject to the specifications to follow:

5.4.1.2 The template opening size and shape *can* vary provided that (1) the total area to be sampled is equal to 100 square centimeters; (2) the maximum width of the opening does not exceed 3.7 centimeters, so that the sample cassette will not touch the surface being sampled; and (3) the minimum opening width is greater than or equal to 2.0 centimeters.

5.4.2 Sampling Protocol: Secure the template to the surface to be sampled so that it will not shift position during sample collection (i.e., taped at four corners).

- The template *shall* lay flat against the surface to be sampled. The surface to be sampled *shall* be dry. The air-handler *shall* not be running when the sampling is being conducted.
- Cassettes *shall* be sealed with shrink tape by the supplier. Remove protective plugs from the new cassette. Attach the outlet end of the cassette to the vacuum pump tubing.

- Adjust air flow using an appropriate calibration device to 15 liters per minute. Once the flow rate is calibrated, remove

the clear plastic inlet cover, making sure that the retainer ring (middle section) stays in place.

- Vacuum the open area of the template by sliding the cassette from one end of each template opening to the other. The cassette *shall* be moved at a rate not greater than 5 cm per second. The edges of the cassette *shall* always rest on the template. The cassette *shall* not touch the duct surface. Each template's opening shall be vacuumed twice (once in each direction).
- Throughout the vacuum process, hold the cassette so that it touches the template surface, with no downward pressure being applied.
- After the template's openings have been vacuumed twice, put the clear plastic cover back on the cassette. The vacuum pump may now be turned off. The replace the plugs.
- Label the cassette and record the area of the surface sampled. The cassette may now be prepared and weighed to determine the amount of debris collected on the filter media. Analysis based on the National Institute for Occupational Safety and Health (NIOSH) Method 0500 (total nuisance dust) *shall* be used.
- Scale sensitivity *shall* be equal to or greater than 0.7 milligram and shall be calibrated in accordance with the manufacturer's written recommendations. Results *shall* be reported in milligrams per 100 square centimeters (mg/100 cm²) of sampling area.

Generally, samples are sent to a laboratory for testing, however, sampling equipment is capable of being brought on to the work site. It is *recommended* that samples be procured by a qualified individual designated by the owner or owner's agent and analyzed by an accredited laboratory.

5.5 Passing Criteria for NADCA Vacuum Test: To be considered clean according to the NADCA Vacuum Test, the net weight of the debris collected on the filter media *shall* not exceed 0 .75 mg/100 cm².

5.6 Post-Project Documentation: It is *recommended* that documentation showing compliance with this Standard is provided for all work performed. Documentation *can* include organized and legible written and visual records.

5.6.1 If the NADCA Vacuum Test is used for cleanliness verification, a copy of the lab results *shall* be included with this documentation.

5.6.2 If any outside laboratories or testing agencies are used, chain of custody documentation *shall* be added.

5.6.3 It is *recommended* that photo images, HVAC plans and other supporting documents such as submittal forms for materials used and/or warranties or guarantees are included as part of Post Project Documentation.

Definitions

Abrasion: A surface loss of material due to friction.

Access: The ability to gain entry to the interior of the air duct or HVAC component.

Access Door: Fabricated metal barrier (hatch) by which a service opening is accessed or closed.

Adhered Substance: A material that is not removable by direct contact vacuuming.

Agitation: A process that involves using an agitation device to dislodge or move contaminants and debris within an HVAC system.

Agitation Device: A tool used to dislodge or move contaminants and debris within the HVAC system. Examples of agitation devices include, brushes, whips, compressed air and contact vacuum attachments.

Air Duct: A passageway for distribution and extraction of air, excluding plenums not installed in accordance with SMACNA Standards (See ASHRAE Terminology of Heating, Ventilation, Air Conditioning & Refrigeration).

Air Duct Covering: Materials such as insulation and banding used to cover the external surface of a duct.

Air Duct Liner: Generally refers to fiber glass or other matting affixed to the interior surfaces of the air ducts for thermal insulation and noise attenuation.

Air Filtration Device (AFD): A portable or transportable, self-contained blower assembly designed to move a defined volume of air equipped with one or more stages of particulate filtration. Depending on the mode of use, an AFD that filters (usually HEPA) and re-circulates air is referred to as an “air scrubber.” One that filters air and creates negative pressure is referred to as a “negative air machine.”

Air-Handling Unit (AHU): A packaged assembly, usually connected to ductwork, that moves air and may also clean and condition the air.

Central-Station Air-Handling Unit: Factory-made, encased assembly consisting of the fan or fans and other necessary equipment, that perform one or more of the functions of circulating, cleaning, heating, cooling, humidifying, dehumidifying, and mixing of air; does

not include a heating or cooling source.

Cooling-Heating Unit: Unit that includes means for cooling and heating, and which may also include means for other air-handling unit functions.

Cooling Unit: Unit that includes means for cooling and which may also include means for other air-handling unit functions.

Heating Unit: Unit that includes means for heating, and which may also include means for other air-handling unit functions.

Make-Up Air Unit: Factory-assembled fan-heater or cooling/dehumidifying unit that supplies tempered fresh air to replace air that is exhausted. Centrifugal or axial fans are used with direct gas-fired, electric, or water heater sections.

Ventilating Unit: Unit with means to provide ventilation, and which may also include means for other air-handling unit functions (See ASHRAE Terminology of Heating, Ventilating, Air Conditioning, and Refrigeration, 1991)

Air Scrubber: An air filtration device (AFD) using HEPA filtration configured to re-circulate air within a defined space.

Air Systems Cleaning Specialist (ASCS): The ASCS designation is awarded by NADCA to industry professionals who satisfactorily complete a written certification examination testing knowledge of HVAC systems, cleaning standards and best practices.

Ambient Air Cleaning: The process of removing particulate from indoor air outside of the HVAC system.

Antimicrobial: Describes an agent that kills or inactivates microorganisms or suppresses their growth.

Appropriate Negative Pressure: Implies enough negative pressure to satisfactorily prevent debris from entering the occupied space or leaving the contained area.

Assessment: A comprehensive review and evaluation of the HVAC system, or representative portions thereof, to make a preliminary determination of the need for cleaning, to write a scope of work for the cleaning and restoration project, recommend cleaning techniques, and to determine the

environmental engineering controls required for the workspace, and any unique requirements.

Authorities Having Jurisdiction (AHJ): An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

Bioaerosols: Airborne particles of biological origin.

CAN: When the term *CAN* is used in this document, it signifies an ability or possibility open to a user of the document, and it means that a referenced practice or procedure is possible or capable of application, but is not a requirement of the accepted “standard of care.”

Certified Safety Professional (CSP): CSP certification marks individuals who have met educational and experience standards and passed rigorous examinations validated against the practice of hundreds of safety professionals.

Chain of Custody Documentation: The chronological documentation or paper trail, showing the seizure, custody, control, transfer, analysis, and disposition of evidence, physical or electronic.

Cleaning: The removal of visible particulate and contaminants.

Closure: (1) An access door or panel installed on the air duct or air-handling unit to create a permanent seal; (2) Device or material used in closing a service opening.

Coatings: See “Surface Treatments.”

Coils: Devices inside an HVAC system that temper and/or dehumidify the air handled by the HVAC system. These include heat exchangers with or without extended surfaces through which water, ethylene glycol solution, brine, volatile refrigerant, or steam is circulated for the purpose of total cooling (sensible cooling plus latent cooling) or sensible heating of a forced-circulation air stream.

Collection Device: A HEPA-filtered machine designed primarily to collect debris, filter particulate and discharge air back to the indoor environment, or a fan driven non-HEPA-filtered machine that is designed to collect debris and filter particulate while discharging the air outside the building envelope.

Conditions: For the purpose of this Standard, Conditions 1, 2, and 3 are defined for indoor environments relative to mold. Definitions for each Condition are as follows:

Condition 1 (normal ecology): An indoor environment that may have settled spores, fungal fragments or traces of actual growth whose identity, location and quantity is reflective of a normal fungal ecology for an indoor environment (See IICRC S520).

Condition 2 (settled spores and trace growth): An indoor environment, which is primarily contaminated with settled spores that were dispersed directly or indirectly from a Condition 3 area, and which may have traces of actual growth (See IICRC S520).

Condition 3 (actual growth): An indoor environment contaminated with the presence of actual mold growth and associated spores. Actual growth includes growth that is active or dormant, visible or hidden (See IICRC S520).

Contact Vacuum: A collection device, usually portable, that uses a nylon brush nozzle attached to the end of its inlet air hose. The brush head is applied directly to a surface for mechanical agitation and cleaning.

Containment Area: An engineered space within a work area designed to control the migration of contaminants to adjacent areas during assessment or cleaning procedures.

Contaminant: Any substance not intended to be present that is located within the HVAC system.

Debris: Non-adhered substances not intended to be present within the HVAC system.

Duct Access Door: Fabricated metal barrier (hatch) by which a service opening is accessed or closed; designated for permanent installation and may be available prefabricated in a variety of sizes and configurations. Most utilize cam locks for securing the removable door from the permanently installed doorframe. Types of Duct Access Doors are listed below:

Flush Mount - fabricated door and door frame which extends into the duct and is externally flush with the outside duct wall.

Surface Mount - fabricated door and door frame which extends out from the surface of the outside duct wall.

Hinged - fabricated door and doorframe attached together with a hinge.

Sandwich - two-part closure device in which the two sides are mechanically fastened together on both sides of the duct wall at the perimeter of the service opening.

Spin Door - round access door and door frame installed by spinning the door frame into a round opening.

Environmental Engineering Controls: Modifications to the work environment to permit safe operations and to prevent the escape or transfer of contaminants.

Friable: Easily crumbled or pulverized.

HEPA: High Efficiency Particulate Air. To be called a true HEPA filter, or certified HEPA filter, the filter will have a documented filtration efficiency of 99.97% at 0.3 micron-sized particles.

HVAC System: The heating, ventilation, and air conditioning (HVAC) system includes any interior surface of the facility's air distribution system for conditioned spaces and/or occupied zones. This includes the entire heating, air-conditioning, and ventilation system from the points where the air enters the system to the points where the air is discharged from the system. The return air grilles, return air ducts to the air-handling unit (AHU), the interior surfaces of the AHU, mixing box, coil compartment, condensate drain pans, humidifiers and dehumidifiers, supply air ducts, fans, fan housing, fan blades, air wash systems, spray eliminators, turning vanes, filters, filter housings, reheat coils, and supply diffusers are all considered part of the HVAC system. The HVAC system may also include other components such as dedicated exhaust and ventilation components and make-up air systems. For purposes of this Standard, non-ducted ceiling plenums of all types and design are not considered part of the HVAC system.

Indoor Environmental Professional (IEP): An individual who is qualified by education, training and experience to perform an assessment of the fungal ecology of property, systems and contents at the job site, create a sampling strategy, sample the indoor environment, interpret laboratory data, determine Condition 1, 2 and 3 status for the

purpose of establishing a scope of work, and verify the return of the fungal ecology to a Condition 1 status.

Inspection: A gathering of information for use in making determinations and assessments.

Mastic: Material used to caulk, seal, or cement gaps and cracks in air duct connections and joints.

MAY: When the term *MAY* is used in this document, it signifies permission expressed by the document, and means that a referenced practice or procedure is permissible within the limits of this document, but is not a requirement of the accepted "standard of care."

Mechanical Agitation: See "Agitation."

Mechanical Cleaning: Physical removal of contaminants and debris not intended to be present from internal HVAC system surfaces.

Mechanically Fasten: To affix two or more objects together through the use of screws, clamps, locks, or straps. (Contrast with mastic or tape)

Mold Contaminated: The presence of indoor mold growth and/or mold spores, whose identity, location and amplification are not reflective of a normal fungal ecology for an indoor environment, and which may produce adverse health effects, cause damage to materials, and adversely affect the operation or function of building systems.

MSDS: Material Safety Data Sheet.

Negative Air Machine: A HEPA-filtered air filtration device designed primarily for collecting particulate and limiting particulate migration while controlling workspace pressure differentials. These machines may or may not be ducted outside the building envelope.

Negative Duct Pressurization: A pressure differential inside the duct being worked on relative to the indoor non-work area. (see 4.1)

Non-Adhered Substance: Any material not intended or designed to be present in an HVAC system, and which can be removed by contact vacuuming.

Non-Porous HVAC System Component: Any component of the HVAC system in contact with the air stream that cannot be penetrated by water or air, such as sheet metal, aluminum

foil, or polymeric film used to line flexible duct.

Panel: Fabricated section of metal making up the structural shell of a piece of mechanical equipment.

Particulate: Any non-adhered substance present in the HVAC system that can be removed by contact vacuuming.

Permanent: The life of the system.

Porous HVAC System Component: Any component of the HVAC system in contact with the air stream that is capable of penetration by either water or air. Examples include fiber glass duct liner, fiber glass duct board, wood, and concrete.

Preliminary Determination: A conclusion drawn from the collection, analysis and summary of information obtained during an initial inspection and evaluation to identify areas of moisture intrusion and actual or potential mold growth (IICRC S520).

Pressure Drop: (1) Loss in pressure, as from one end of a refrigerant line to the other, from friction, static, heat, etc.; (2) Difference in pressure between two points in a flow system, usually caused by frictional resistance to fluid flow in a conduit, filter or other flow system (See ASHRAE Terminology of Heating, Ventilation, Air Conditioning, & Refrigeration, 1991).

RECOMMEND: When the term *RECOMMEND(ED)* is used in this document, it means the practice or procedure is advised or suggested, but is not a requirement of this Standard.

Requirement: Mandatory practice for compliance with this Standard.

Restoration: To bring back to, or put back into, a former or original state.

Seal: To make secure against leakage by a fastener, coating, or filler.

Service Panel: Used for closing a service opening in an HVAC system.

SHALL: The word *shall* shall be understood as denoting a mandatory requirement. The criterion for conformance to this Standard requires that there be no deviation when *shall* is used.

Standard of Care: Practices common to reasonably prudent members of the trade who are recognized in the industry as qualified and competent.

Surface Comparison Testing: A test used to determine the cleanliness of both non-porous and porous HVAC component surfaces (See Section 5.3 of this Standard).

Surface Treatment (non-antimicrobial): Coating or treatment designed to repair surface defects or modify surface characteristics.

Vacuum Collection Equipment: See “Collection Device.”

Visibly Clean: A condition in which the interior surfaces of the HVAC system are free of non-adhered substances and debris.

Visual Inspection: Visual examination with the naked eye of the cleanliness of the HVAC system.

Wet Process Cleaning: Any method of mechanical cleaning of HVAC components that utilizes water and/ or liquid chemicals as part of the process (e.g. power washing, steam cleaning, hand washing).

Reference Documents and Resources

ACCA: Air Conditioning Contractors of America

ACGIH: American Conference of Governmental Industrial Hygienists

Bioaerosols: Assessment and Control

Industrial Ventilation: A Manual of Recommended Practice

AHRI: Air Conditioning and Refrigeration Institute

AIHA: American Industrial Hygiene Association

Field Guide for the Determination of Biological Contaminants in Environmental Samples

AMCA: Air Movement & Control Association

AMCA-99-86, Standards Handbook

ANSI: American National Standards Institute

ARI 410-01 Forced Circulation Air Cooling and Air Heating Coils

ASHRAE: American Society of Heating, Refrigerating, and Air-Conditioning Engineers

Fundamentals Handbook, Terms and Definitions

ASHRAE 33-78, Methods of Testing Forced Circulation Air-Cooling and Air-Heating Coils

ASHRAE 62-1989, Ventilation for Acceptable Indoor Air Quality

ASHRAE S-180, Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems (ANSI/ASHRAE/ACCA Approved)

ASHRAE Terminology of Heating, Ventilation, Air Conditioning & Refrigeration

ASTM International: American Society for Testing and Materials

C1071-00 Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Materials)

E84-00a Standard Test Method for Surface Burning Characteristics of Building Materials

EPA: United States Environmental Protection Agency

Building Air Quality

Mold Remediation in Schools and Commercial Buildings

IAQA: Indoor Air Quality Association

Indoor Air Quality Association Guideline 01

IESO: Indoor Environmental Standards Organization

IESO/RIA 6001-2011 Evaluation of Heating, Ventilation and Air Conditioning (HVAC) Interior Surfaces to Determine the Presence of Fire-Related Particulate as a Result of a Fire in a Structure

IICRC: Institute of Inspection, Cleaning and Restoration

Institute of Inspection, Cleaning and Restoration Certification

IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration

IICRC S520 Standard and Reference Guide for Professional Mold Remediation

IKECA: International Kitchen Exhaust Cleaning Association

NADCA: National Air Duct Cleaners Association

Assessment, Cleaning and Restoration of HVAC Systems – ACR 2006

NADCA Position Paper: Using Chemical Products in HVAC Systems

General Specifications: Understanding
Microbial Contamination in HVAC Systems

Safety Manual

Standard 03, Requirements for Testing Vacuum
Collection Equipment

Standard 05, Requirements for the
Installation of Service Openings in HVAC
Systems

NAIMA: North American Insulation Manufacturers
Association

AH 122 Cleaning Fibrous Glass Insulated Duct
Systems

AH 116 Fibrous Glass Duct Construction
Standards

NFPA: National Fire Protection Association

90A Standard for the Installation of Air
Conditioning and Ventilating Systems Today

90B, Warm Air Heating and Air Conditioning
Systems

96, Standard for Ventilation Control and Fire
Protection of Commercial Cooking Operations

255, Standard Method of Test of Surface
Burning Characteristics of Building Materials

NIOSH: National Institute for Occupational Safety and
Health

Manual of Analytical Methods, Third Edition

New York City Department of Health,
Environmental Occupational Disease
Epidemiology Guidelines on Assessment and
Remediation of Fungi in Indoor Environments

RIA: Restoration Industry Association

SMACNA: Sheet Metal and Air Conditioning Contractors'
National Association

HVAC Duct Construction Standards – Metal and
Flexible, Second Edition

UL: Underwriter Laboratories, Inc

UL 181, Factory-Made Air Ducts and Air
Connectors

UL 181A, Closure Systems for Use with Rigid
Air Ducts and Air Connectors

UL 181B, Closure Systems for Use with Flexible
Air Ducts and Air Connectors

UL 723, Test for Surface Burning Characteristics
of Building Materials

**FORM TO REQUEST FORMAL INTERPRETATIONS OF
ACR
The NADCA Standard
2013**

Complete this form and send to:

Chairman, Standards Committee
National Air Duct Cleaners Association
15000 Commerce Parkway, Suite C
Mt . Laurel, NJ 08054
Fax: 856-439-0525
Email: jodi@nadca.com
Phone: 856-380-6810

Name: _____	Company: _____

City, State, Zip: _____	
Phone: _____	Fax: _____
Email: _____	
Organization Represented, if any: _____	

Section/Paragraph in Question: _____
Question: _____

I hereby grant NADCA all and full rights in copyright, to this request for interpretation. I understand that I acquire no rights in any publication of NADCA in which this request for interpretation may be published.

Signature: _____ Date: _____



1500 Commerce Parkway, Suite C
Mt. Laurel, NJ 08054
Toll Free: 855-GO-NADCA Phone: 856-380-6810 Fax 856-439-0525
www.nadca.com

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than \$10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than \$10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than \$10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here No. of employees__

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$14.05/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$15.66/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

 Company Name

 Street Address

 Signature of Authorized Representative

 Date

 City, State, Zip

 Print Name and Title

 Phone/Email address

CITY OF ANN ARBOR LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2021 - ENDING APRIL 29, 2022

\$14.05 per hour

If the employer provides health care benefits*

\$15.66 per hour

If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than \$10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than \$500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed \$.50 an hour for an average work week; and the employer cost or contribution must equal no less than \$1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

**For Additional Information or to File a Complaint contact
Colin Spencer at 734/794-6500 or cspencer@a2gov.org**



Vendor Conflict of Interest Disclosure Form
--

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor’s conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee’s immediate family member has an ownership interest in vendor’s company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor’s Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <hr/> <input type="checkbox"/> Interest in vendor’s company <input type="checkbox"/> Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	Vendor Phone Number	
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.
You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

MICHIGAN DEPARTMENT OF TRANSPORTATION CERTIFIED PAYROLL

COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a)	(b)	(c)	(d) DAY AND DATE							(e)	(f)	(g)	(h)	(i)	(j) DEDUCTIONS					(k)	
															TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED		TOTAL WEEKLY HOURS WORKED ALL JOBS
EMPLOYEE INFORMATION	WORK CLASSIFICATION	Hour Type	HOURS WORKED ON PROJECT							TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	FICA	FEDERAL	STATE	OTHER	TOTAL DEDUCT	TOTAL WEEKLY WAGES PAID FOR ALL JOBS
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00

Date _____

I, _____ (Name of Signatory Party) _____ (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the _____ (Contractor or Subcontractor)
 _____; that during the payroll period commencing on the _____ (Building or Work)
 _____ day of _____, _____, and ending the _____ day of _____, _____,
 all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full _____ (Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

- in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

- Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION
REMARKS:	
NAME AND TITLE	SIGNATURE
THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.	