

RFB NO. 318016



# **CONSTRUCTION DOCUMENTS PROJECT MANUAL**

DANE COUNTY DEPARTMENT OF PUBLIC WORKS,  
HIGHWAY AND TRANSPORTATION

**PUBLIC WORKS ENGINEERING DIVISION**  
1919 ALLIANT ENERGY CENTER WAY  
MADISON, WISCONSIN 53713

## **REQUEST FOR BIDS NO. 318016 MULTIPLE HIGHWAY GARAGE CNG RETROFIT YORK & SPRINGFIELD GARAGES**

**U.S. HIGHWAY 151/COUNTY HWY V  
TOWN OF YORK, DANE COUNTY, WISCONSIN**

**RAMFORD CT  
CROSS PLAINS, WISCONSIN**

Due Date / Time: **TUESDAY, NOVEMBER 27, 2018 / 2:00 P.M.**

Location: **PUBLIC WORKS OFFICE**

Performance / Payment Bond: **100% OF CONTRACT AMOUNT**

Bid Deposit: **5% OF BID AMOUNT**

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FOR INFORMATION ON THIS REQUEST FOR BIDS, PLEASE CONTACT:

ERIC URTES, AIA, PROJECT MANAGER  
TELEPHONE NO.: 608/266-4798  
FAX NO.: 608/267-1533  
E-MAIL: [urt.es.eric@countyofdane.com](mailto:urt.es.eric@countyofdane.com)

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### **DRAWINGS**

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- H100-Y – York Garage Ventilation New Work Floor Plan
- E100-Y – York Garage Electrical Plan and Specification

**LEGAL NOTICE**

**INVITATION TO BID**

Dane County Dept. of Public Works, Hwy & Transp., 1919 Alliant Energy Center Way, Madison, WI 53713, will receive sealed Bids until:

**2:00 P.M., TUESDAY, NOVEMBER 27, 2018**

**RFB NO. 318016**

**MULTIPLE HIGHWAY GARAGES CNG RETROFIT  
YORK & SPRINGFIELD HIGHWAY GARAGES**

**YORK HIGHWAY GARAGE**

**SE CORNER OF U.S. HWY 151 & CO HWY V**

**1312 GREENWAY RD**

**MARSHALL, WI**

**&**

**SPRINGFIELD HIGHWAY GARAGE**

**DANE COUNTY HIGHWAY DEPARTMENT GARAGE**

**RAMFORD CT (OFF OF U.S. HWY 12)**

**CROSS PLAINS, WI**

Dane County is inviting Bids for construction services to perform CNG retrofits for the aforementioned locations above. Only firms with capabilities, experience & expertise with similar projects should obtain this Request for Bids document & submit Bids.

Request for Bids document may be obtained after **2:00 p.m. on Thursday, October 18, 2018** by downloading it from [bids-pwht.countyofdane.com](http://bids-pwht.countyofdane.com). Please call Eric Urtes, AIA, Project Manager, at 608/266-4798, or our office at 608/266-4018, for any questions or additional information.

All Bidders must be pre-qualified as a Best Value Contractor before award of Contract. Complete Pre-qualification Application for Contractors at [countyofdane.com/pwht/BVC\\_Application.aspx](http://countyofdane.com/pwht/BVC_Application.aspx) or obtain one by calling 608/266-4029.

A pre-bid site tour will be held Tuesday, October 30, 2018 at 10:00 a.m. at the Highway Garages, starting at the Springfield Highway Garage at Ramford Ct, Cross Plains, WI Bidders are strongly encouraged to attend this tour.

**PUBLISH:   OCTOBER 16 & OCTOBER 23, 2018 - WISCONSIN STATE JOURNAL  
              OCTOBER 16 & OCTOBER 23, 2018 - THE DAILY REPORTER**



# DANE COUNTY DEPARTMENT of PUBLIC WORKS, HIGHWAY and TRANSPORTATION

County Executive  
Joseph T. Parisi

1919 Alliant Energy Center Way • Madison, Wisconsin 53713  
Phone: (608) 266-4018 • FAX: (608) 267-1533

Commissioner / Director  
Gerald J. Mandli

## BEST VALUE CONTRACTING APPLICATION

### CONTRACTORS / LICENSURE APPLICANTS

The Dane County Department of Public Works requires all contractors to be pre-qualified as a best value contractor with the County prior to being awarded a contract. In addition, the County pre-qualifies potential contractors and sub-contractors who wish to work on County contracts. Subcontractors must become pre-qualified ten (10) days prior to commencing work under any Dane County Public Works Contract. Potential subcontractors are urged to become pre-qualified as early as possible. This document shall be completed, properly executed, along with the necessary attachments and additional information that the County requires for the protection and welfare of the public in the performance of a County contract.

Contractors or subcontractors of any tier who attain pre-qualification status will retain that status for a period of two (2) years from the date of qualification. Contractors shall notify the Dane County Department of Public Works, Highway & Transportation within fifteen (15) days of any changes to its business or operations that are relevant to the pre-qualification application. Failure to do so could result in suspension, revocation of the contractor's pre-qualification, debarment from County contracts for up to three (3) years and / or other sanctions available under the law.

No contracts will be awarded for construction work performed on Dane County projects unless the contractor is currently approved as a Wisconsin Trade Trainer or has applied for approval as an Apprenticeship Trade Trainer to the Wisconsin Department of Workforce Development and agrees to an acceptable apprenticeship program. If you are not currently approved as a Wisconsin Trade Trainer, or have not applied for approval as an Apprenticeship Trade Trainer, please contact the Department of Workforce Development - Bureau of Apprenticeship Standards at 608/266-3133 or visit their web site at: [dwd.wisconsin.gov/apprenticeship/](http://dwd.wisconsin.gov/apprenticeship/).

### EXEMPTIONS

- Contractors who employ less than five (5) apprenticeable trade workers are not required to pre-qualify.
- Contractors performing work that does not apply to an apprenticeable trade, as outlined in Appendix A.
- The contractor / subcontractor provides sufficient documentation to demonstrate one or more of the following:
  - apprentices are not available in a specific geographic area;
  - the applicable apprenticeship program is unsuitable or unavailable; or
  - there is a documented depression of the local construction market which prevents compliance.

SEC.	PROOF OF RESPONSIBILITY	CHECK IF APPLICABLE
1	Does your firm possess all technical qualifications and resources, including equipment, personnel and financial resources, necessary to perform the work required for any project or obtain the same through the use of responsible, pre-qualified subcontractors?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
2	Will your firm possess all valid, effective licenses, registrations or certificates required by federal, state, county, or local law, which are necessary for the type of work to be performed including, but not limited to, those for any type of trade work or specialty work?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
3	Will your firm meet all bonding requirements as required by applicable law or contract specifications?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
4	Will your firm meet all insurance requirements as required by applicable law or specifications, including general liability insurance, workers compensation insurance and unemployment insurance requirements?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
5	Will your firm maintain a substance abuse policy for employees hired for public works contracts that comply with Wis. Stats. Sec. 103.503?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
6	Does your firm acknowledge that it must pay all craft employees on public works projects the wage rates and benefits required under Section 66.0903 of the Wisconsin Statutes?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
7	Will your firm fully abide by the equal opportunity and affirmative action requirements of all applicable laws, including County ordinances?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
8	In the past three (3) years, has your firm had control or has another corporation, partnership or other business entity operating in the construction industry controlled it? If so, please attach a statement explaining the nature of the firm relationship?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
9	In the past three (3) years, has your firm had any type of business, contracting or trade license, certification or registration revoked or suspended?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
10	In the past three (3) years, has your firm been debarred by any federal, state or local government agency?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
11	In the past three (3) years, has your firm defaulted or failed to complete any contract?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
12	In the past three (3) years, has your firm committed a willful violation of federal, state or local government safety laws as determined by a final decision of a court or government agency authority.	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
13	In the past three (3) years, has your firm been in violation of any law relating to your contracting business where the penalty for such violation resulted in the imposition of a penalty greater than \$10,000?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
14	Is your firm Executive Order 108 precertified with the State of Wisconsin?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
15	Is your firm an active Wisconsin Trade Trainer as determined by the Wisconsin Bureau of Apprenticeship Standards?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
16	Is your firm exempt from being pre-qualified with Dane County?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach reason for exemption.
17	Does your firm acknowledge that in doing work under any County Public Works Contract, it will be required to use as subcontractors only those contractors that are also pre-qualified with the County or become so ten days prior to commencing work?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
18	Contractor has been in business less than one year?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
19	Is your firm a first time Contractor requesting a one time exemption, but, intend to comply on all future contracts and are taking steps typical of a "good faith" effort?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
20	Not applicable. My firm does not intend to work on Best Value Contracts. Note: Best Value Contracting is required to bid on most Public Works Contracts (if unclear, please call Jan Neitzel Knox 608-266-4029).	Yes: <input type="checkbox"/> No: <input type="checkbox"/>

## SIGNATURE SECTION

Your firm's Officer, or the individual who would sign a bid and / or contract documents must sign this document.

I do hereby certify that all statements herein contained are true and correct to the best of my knowledge:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed or Typed Name and Title

NAME AND ADDRESS OF CONTRACTOR	
Name of Firm:	
Address:	
City, State, Zip:	
Telephone Number:	
Fax Number:	
E-mail Address:	

## REMEMBER!

Return all to forms and attachments, or questions to:

**JAN NEITZEL KNOX**  
**EMAIL: NEITZEL-KNOX@COUNTYOFDANE.COM**  
**OFFICE: (608)266-4029, FAX: (608)267-1533**

**DANE COUNTY DEPARTMENT OF PUBLIC WORKS,  
HIGHWAY & TRANSPORTATION  
1919 ALLIANT ENERGY CENTER WAY  
MADISON, WI 53713**

# APPENDIX A

## APPRENTICEABLE TRADES

Bricklayer  
Carpenter  
Cement Mason (Concrete Finisher)  
Cement Mason (Heavy Highway)  
Construction Craft Laborer  
Data Communications Installer  
Electrician  
Elevator Mechanic / Technician  
Environmental Systems Technician / HVAC Service Technician / HVAC Install & Service  
Glazier  
Heavy Equipment Operator / Operating Engineer  
Insulation Worker (Heat & Frost)  
Iron Worker (Assembler, Metal Buildings)  
Painter / Decorator  
Plasterer  
Plumber  
Roofer / Waterproofer  
Sheet Metal Worker  
Sprinkler Fitter  
Steamfitter (Service & Refrigeration)  
Taper & Finisher  
Telecommunications (Voice, Data & Video) Installer / Technician  
Tile Setter

# INSTRUCTIONS TO BIDDERS

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### **1. GENERAL**

- A. Before submitting Bid, bidder shall thoroughly examine all Construction Documents. Successful Bidder shall be required to provide all the Work that is shown on Drawings, set forth in Specifications, or reasonably implied as necessary to complete Contract for this project.
- B. Bidder shall visit site to become acquainted with adjacent areas, means of approach to site, conditions of actual site and facilities for delivering, storing, placing, and handling of materials and equipment.
- C. Pre-bid meeting is scheduled on Tuesday, October 30, 2018 at 2:00 PM starting at the Springfield Highway Garage, Ramford Ct (off of U.S. Hwy 12), Cross Plains, WI. Following the Springfield Highway Garage visit the York Highway Garage, 1312 Greenway Road (SE Corner of U.S. Hwy 151 & County Hwy V). Attendance by all bidders is optional, however bidders and subcontractors are strongly encouraged to attend.
- D. Failure to visit site or failure to examine any and all Construction Documents will in no way relieve successful Bidder from necessity of furnishing any necessary materials or equipment, or performing any work, that may be required to complete the Work in accordance with Drawings and Specifications. Neglect of above requirements will not be accepted as reason for delay in the Work or additional compensation.

### **2. DRAWINGS AND SPECIFICATIONS**

- A. Drawings and Specifications that form part of this Contract, as stated in Article 1 of General Conditions of Contract, are enumerated in Document Index of these Construction Documents.
- B. Complete sets of Drawings and Specifications for all trades will be available to all Bidders, irrespective of category of work to be bid on, in order that all Bidders may be familiar with work of other trades as they affect their bid.

### **3. INTERPRETATION**

- A. No verbal explanation or instructions will be given in regard to meaning of Drawings or Specifications before Bid Due Date. Bidders shall bring inadequacies, omissions or conflicts to Owner or Architect / Engineer's attention at least ten (10) calendar days before Bid Due Date. Prompt clarification will be available to all bidders by Addendum.
- B. Failure to so request clarification or interpretation of Drawings and Specifications will not relieve successful Bidder of responsibility. Signing of Contract will be considered as implicitly denoting that Contractor has thorough understanding of scope of the Work and comprehension of Construction Documents.
- C. Owner or Consultant / Engineer will not be responsible for verbal instructions.

### **4. QUALIFICATIONS OF BIDDER (CONTRACTOR AND SUBCONTRACTOR)**

- A. Before award of Contract can be approved, Owner shall be satisfied that Bidder involved meets following requirements:
  - 1. Has completed at least one (1) project of at least thirty percent (30%) of size or value of Division of work being bid and type of work completed is similar to that being bid. If greater magnitude of experience is deemed necessary, other than size or value of work, such requirements will be described in appropriate section of Specifications.
  - 2. Maintains permanent place of business.
  - 3. Can be bonded for terms of proposed Contract.
- B. County's Public Works Project Engineer will make such investigations as are deemed necessary to determine ability of bidder to perform the Work, and bidder shall furnish to County's Public Works Project Engineer or designee all such information and data for this purpose as County's Public Works Project Engineer may request. Owner reserves right to reject Bid if evidence submitted by, or investigation of, bidder fails to satisfy Owner that bidder is responsible and qualified to carry out obligations of Contract and to complete the Work contemplated therein.

### **5. BID GUARANTEE**

- A. Bank certified check, cashier's check or Bid Bond, payable to County in amount not less than five percent (5%) of maximum bid, shall accompany each Bid as guarantee that if Bid is accepted, Bidder will execute and return proposed Contract and Performance and Payment Bonds within ten (10) business days after being notified of acceptance of Bid. Company issuing bonds must be licensed to do business in Wisconsin.
- B. Any bid, which is not accompanied by bid guarantee, will be considered "No Bid" and will not be read at Bid Due Date.

- C. If successful Bidder so delivers Contract, Certificate of Insurance, and Performance and Payment Bonds, check will be returned to Bidder. In case Bidder fails to deliver such Contract, insurance, and bond, amount of bid guarantee will be forfeited to County as liquidated damages.
- D. All checks tendered as bid guarantee, except those of three (3) lowest qualified, responsible bidders, will be returned to their makers within three (3) business days after Bid Due Date. All such retained checks will be returned immediately upon signing of Contract and Performance and Payment Bonds by successful Bidder.

## **6. WITHDRAWAL OF BIDS**

- A. Bids may be withdrawn by written request received from bidder or authorized representative thereof prior to time fixed for Bid Due Date, without prejudice to right of bidder to file new Bid. Withdrawn Bids will be returned unopened. Negligence on part of bidder in preparing their Bid confers no right for withdrawal of Bid after it has been opened.
- B. No Bid may be withdrawn for period of sixty (60) calendar days after Bid Due Date.
- C. If Bid contains error, omission or mistake, bidder may limit liability to amount of bidder's guarantee by giving written Notice of Intent not to execute Contract to Owner within seventy-two (72) hours of Bid Due Date.

## **7. CONTRACT FORM**

- A. Sample copy of contract that successful Bidder will be required to enter into is included in these Construction Documents and bidders are required to familiarize themselves with all conditions contained therein.

## **8. CONTRACT INTERESTS BY COUNTY PUBLIC OFFICIALS**

- A. In accordance with Wisconsin Statute 946.13, county official may not bid for or enter into any contract involving receipts or disbursements of more than \$15,000.00 in a year, in which they have private pecuniary interest, direct or indirect if at same time they are authorized to take official action with respect to making of this Contract. Any contract entered into in violation of this Statute is void and County incurs no liability thereon. This subsection does not affect application and enforcement of Wisconsin Statute 946.13 by state prosecutors in criminal courts of this state.

## **9. EMERGING SMALL BUSINESS PROVISIONS**

- A. **Emerging Small Business Definition.** For purposes of this provision, ESB is defined as:
  - 1. Independent business concern that has been in business minimum of one year;
  - 2. Business located in State of Wisconsin;
  - 3. Business comprised of less than twenty-five (25) employees;
  - 4. Business must not have gross sales in excess of three million dollars (\$3,000,000.00) over past three years; and
  - 5. Business does not have history of failing to complete projects.

- B. **Emerging Small Business (ESB) Involvement.** Bidder shall make good faith effort to award minimum of ten percent (10%) of the Work to ESBs. Bidder shall submit report to Dane County Contract Compliance Officer within ten (10) business days of Bid Due Date demonstrating such efforts. Good faith efforts means significant contact with ESBs for purposes of soliciting bids from them. Failure to make or demonstrate good faith efforts will be grounds for disqualification.
- C. **Emerging Small Business Report.** Emerging Small Business Enterprise Report is to be submitted by Bidder in separate envelope marked "Emerging Small Business Report". This report is due by 2:00 p.m. following specified ten (10) business days after Bid Due Date. Bidder who fails to submit Emerging Small Business Report shall be deemed not responsive.
- D. **ESB Goal.** Goal of this project is ten percent (10%) ESB participation. ESB utilizations are shown as percentage of total Bid. If Bidder meets or exceeds specified goal, Bidder is only required to submit Form A - Certification, and Form B - Involvement. Goal shall be met if Bidder qualifies as ESB.
- E. **Report Contents.** Following award of Contract, Bidder shall submit copies of executed contracts for all Emerging Small Businesses. Emerging Small Business Report shall consist of these:
1. Form A - Certification;
  2. Form B - Involvement;
  3. Form C - Contacts;
  4. Form D - Certification Statement (if appropriate); and
  5. Supportive documentation (i.e., copies of correspondence, telephone logs, copies of advertisements).
- F. **ESB Listing.** Bidders may solicit bids from this ESB listing: [pdf.countyofdane.com/commissions/2013-2015\\_Targeted\\_Business\\_Directory.pdf](http://pdf.countyofdane.com/commissions/2013-2015_Targeted_Business_Directory.pdf).
- G. **ESB Certification.** All contractors, subcontractors and suppliers seeking ESB certification must complete and submit Emerging Small Business Report to Dane County Contract Compliance Program.
- H. **Certification Statement.** If ESB firm has not been certified by County as ESB prior to submittal of this Bid, ESB Report cannot be used to fulfill ESB goal for this project unless firm provides "Form D - Certification Statement". Certification statement must be completed and signed by ESB firm.
- I. **Questions.** Questions concerning Emerging Small Business provisions shall be directed to:
- Dane County Contract Compliance Officer  
City-County Building, Room 421  
210 Martin Luther King, Jr. Blvd.  
Madison, WI 53703  
608/266-5623
- J. **Substituting ESBs.** In event of any significant changes in subcontract arrangements or if need arises to substitute ESBs, Bidder shall report such proposed changes to Contract Compliance Officer to making any official changes and request authorization to substitute

ESB firm. Bidder further agrees to make every possible effort to replace ESB firm with another qualified ESB firm.

**K. Good Faith Efforts.** Good faith efforts can be demonstrated by meeting all of these obligations:

1. Selecting portions of the Work to be performed by ESBs in order to increase likelihood of meeting ESB goal including, where appropriate, breaking down Contract into smaller units to facilitate ESB participation.
2. Advertising in general circulation, trade associations and women / minority focus media concerning subcontracting opportunities.
3. Providing written notices to reasonable number of specific ESBs that their interest in Contract was being solicited in sufficient time to allow ESBs to participate effectively.
4. Following up on initial solicitations of interest by contacting ESBs within five (5) business days prior to Bid Due Date to determine with certainty whether ESB were interested, to allow ESBs to prepare bids.
5. Providing interested ESB with adequate information about Drawings, Specifications and requirements of Contract.
6. Using services of available minority, women and small business organizations and other organizations that provide assistance in recruitment of MBEs / WBEs / ESBs.
7. Negotiating in good faith with interested ESBs, not rejecting ESBs as unqualified without sound reason based on thorough investigation of their capabilities.
8. Submitting required project reports and accompanying documents to County's Contract Compliance Officer within twenty-four (24) hours after Bid Due Date.

**L. Appeals Disqualification of Bid.** Bidder who is disqualified may appeal to Public Works & Transportation Committee and Equal Opportunity Commission.

## **10. METHOD OF AWARD - RESERVATIONS**

- A. Following will be basis of award of Contract, providing cost does not exceed amount of funds then estimated by County as available to finance Contract(s):
1. Lowest dollar amount submitted by qualified responsible bidder on Base Bid for all work comprising project, combined with such additive Owner accepted alternates.
  2. Owner reserves right to reject all bids or any bid, to waive any informality in any bid, and to accept any bid that will best serve interests of County.
  3. Unit Prices and Informational Bids will not be considered in establishing low bidder.

## **11. SECURITY FOR PERFORMANCE AND PAYMENTS**

- A. Simultaneous with delivery of signed Contract, Bidder shall be required to furnish Performance and Payment Bonds as specified in Article 29 of General Conditions of Contract, "Contract Security". Surety Company shall be licensed to do business in Wisconsin. Performance and Payment Bonds must be dated same date or subsequent to date of Contract. Performance and Payment Bonds must emulate information in Sample Performance and Payment Bonds in Construction Documents.

- B. Provide certified copy of power of attorney from Surety Company showing that agent who signs Bond has power of attorney to sign for Surety Company. Secretary or Assistant Secretary of company must sign this certification, not attorney-in-fact. Certification must bear same or later date as Bond. Power of Attorney must emulate model power of attorney information detailed in Sample Performance and Payment Bonds.
- C. If Bidder is partnership or joint venture, State certified list, providing names of individuals constituting partnership or joint venture must be furnished. Contract itself may be signed by one partner of partnership, or one partner of each firm comprising joint venture, but Performance and Payment Bonds must be signed by all partners.
- D. If Bidder is corporation, it is necessary that current certified copy of resolution or other official act of directors of corporation be submitted showing that person who signs Contract is authorized to sign contracts for corporation. It is also necessary that corporate seal be affixed to resolution, contract, and performance and payment bonds. If your corporation has no seal, it is required that above documents include statement or notation to effect that corporation has no seal.

## **12. TAXES**

- A. Wisconsin Statute 77.54 (9m) allows building materials that become part of local unit government facilities to be exempt from sales & use tax. Vendors & materials suppliers may not charge Bidders sales & use tax on these purchases. This does not include highways, streets or roads. Any other Sales, Consumer, Use & other similar taxes or fees required by law shall be included in Bid.
- B. In accordance with Wisconsin Statute 71.80(16)(a), successful nonresident bidder, whether incorporated or not, and not otherwise regularly engaged in business in this state, shall file surety bond with State of Wisconsin Department of Revenue payable to Department of Revenue, to guarantee payment of income taxes, required unemployment compensation contributions, sales and use taxes and income taxes withheld from wages of employees, together with any penalties and interest thereon. Amount of bond shall be three percent (3%) of Contract or subcontract price on all contracts of \$50,000 or more.

## **13. SUBMISSION OF BIDS**

- A. All Bids shall be submitted on standard Bid Form bound herein and only Bids that are made on this Bid Form will be considered. Entire Bid Form and other supporting documents, if any, shall be removed or copied from Construction Documents, filled out, and submitted in manner specified hereinafter. Submit completed Bid Bond with Bid as well.
- B. No bids for any subdivision or any sub-classification of this Work, except as indicated, will be accepted. Any conditional Bid, amendment to Bid Form or appended item thereto, or inclusion of any correspondence, written or printed matter, or details of any nature other than that specifically called for, which would alter any essential provision of Construction Documents, or require consideration of unsolicited material or data in determining award of Contract, will disqualify Bid. Telecommunication alterations to Bid will not be accepted.
- C. Bidders must submit single Bid for all the Work.
- D. Bid amounts shall be inserted in words and in figures in spaces provided on Bid Form; in case of conflict, written word amounts will govern.
- E. Addenda issued after Bid Letting shall become part of Construction Documents. Bidders shall acknowledge receipt of such addenda in appropriate space provided on Bid Form. Bid

may be rejected if receipt of any particular addendum applicable to award of Contract has not been acknowledged on Bid Form.

- F. Bids shall be signed, placed in envelope, sealed and delivered before due time to place designated in Invitation to Bid, and identified with project name, bid number, location, category of work being bid upon, Bid Due Date, name and address of bidder.
- G. Bidder shall be responsible for sealed Bid being delivered to place designated for Bid Due Date on or before date and time specified. Bids received after time of closing will be rejected and returned to bidder unopened.
- H. Bid will be considered invalid and will be rejected if bidder has not signed it.
- I. Faxed or emailed Bids will not be accepted.
- J. Bidder's organization shall submit completed with Bid, Fair Labor Practices Certification form, included in these Construction Documents.

#### **14. SUBCONTRACTOR LISTING**

- A. Bidders shall be required to submit list of major subcontractors for General Construction, Plumbing, HVAC, and Electrical work proposed for this project to include committed prices for each subcontractor. List shall be placed in separate sealed envelope that must be clearly identified as "Major Subcontractor List", for named project and name of Bidder submitting it. County must receive envelope no later than date by which successful Bidder is required to submit his or her signed Contract, as established in Construction Documents.

#### **15. ALTERNATE BIDS**

- A. Bidder shall carefully read requests for Alternate Bids, and thoroughly examine Drawings and Specifications to determine extent various changes and conditions will affect Bid.
- B. Space is provided in Bid Form for requested Alternate Bids. Failure to submit bid for any requested Alternate Bids may result in rejection of entire Bid.
- C. Bidder shall state amount to be added / subtracted to Base Bid for providing alternates, including all incidentals, omissions, additions, and adjustments as may be necessary or required by such changes. If there is no difference in price, Bidder shall state, "No Change".
- D. Descriptions of requested Alternate Bids are as set forth in Construction Documents.

#### **16. INFORMATIONAL BIDS**

- A. Bidder shall state amount that is included in Base Bid for all equipment, materials and labor required to complete the Work described. Informational bids are amounts requested for accounting purposes and for allocation of funds only. It is not intended to omit any of the Work described or related items from this project.
- B. Description of requested Informational Bids, if any, is as set forth in Construction Documents.

#### **17. UNIT PRICES**

- A. Not Applicable.

**18. COMMENCEMENT AND COMPLETION**

- A. Successful Bidder shall commence work when schedule and weather permit, but no later than stated in Bid Form. Contractor shall pursue the Work regularly and continuously at reasonable rate to insure completion of the Work within time stated in Bid.
- B. Should it be found impossible to complete the Work on or before time specified for completion, written request may be submitted for extension of time setting forth reasons believed to justify granting of such request. Refer to Article 20 of General Conditions of Contract, titled "Time for Completion".

**19. WORK BY OWNER**

- A. Not Applicable.

**20. SPECIAL HAZARDS COVERAGE**

- A. Not Applicable.

**FORM A**

**DANE COUNTY  
EMERGING SMALL BUSINESS REPORT - CERTIFICATION**

In accordance with General Conditions of Contract, submit this Emerging Small Business Report within ten (10) days after Bid Due Date.

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

\_\_\_\_\_

BID NO.: \_\_\_\_\_ BID DUE DATE: \_\_\_\_\_

**BIDDER INFORMATION**

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

TELEPHONE NO.: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

**FORM B**

Page \_\_\_ of \_\_\_

**DANE COUNTY**

(Copy this Form as necessary to provide complete information)

**EMERGING SMALL BUSINESS REPORT - INVOLVEMENT**

COMPANY NAME: \_\_\_\_\_

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

BID NO.: \_\_\_\_\_ BID DUE DATE: \_\_\_\_\_

ESB NAME: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE NO & EMAIL.: \_\_\_\_\_

Indicate percentage of financial commitment to this ESB: \_\_\_\_\_ % Amount: \$ \_\_\_\_\_

ESB NAME: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE NO & EMAIL.: \_\_\_\_\_

Indicate percentage of financial commitment to this ESB: \_\_\_\_\_ % Amount: \$ \_\_\_\_\_

**FORM C**

Page \_\_\_ of \_\_\_

**DANE COUNTY  
EMERGING SMALL BUSINESS REPORT - CONTACTS**

(Copy this Form as necessary to provide complete information)

COMPANY NAME: \_\_\_\_\_

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

BID NO.: \_\_\_\_\_ BID DUE DATE: \_\_\_\_\_

	<u>ESB FIRM NAME CONTACTED</u>	<u>DATE</u>	<u>PERSON CONTACTED</u>	<u>DID ESB BID?</u>	<u>ACC- EPT BID?</u>	<u>REASON FOR REJECTION</u>
1)	_____	_____	_____	_____	_____	_____
2)	_____	_____	_____	_____	_____	_____
3)	_____	_____	_____	_____	_____	_____
4)	_____	_____	_____	_____	_____	_____
5)	_____	_____	_____	_____	_____	_____
6)	_____	_____	_____	_____	_____	_____
7)	_____	_____	_____	_____	_____	_____
8)	_____	_____	_____	_____	_____	_____

**FORM D**

**DANE COUNTY  
EMERGING SMALL BUSINESS REPORT - CERTIFICATION STATEMENT**

I, \_\_\_\_\_, \_\_\_\_\_ of  
Name Title

\_\_\_\_\_ certify to best of my knowledge and  
Company

belief that this business meets Emerging Small Business definition as indicated in Article 9 and  
that information contained in this Emerging Small Business Report is true and correct.

\_\_\_\_\_  
Bidder's Signature

\_\_\_\_\_  
Date

Name of Bidding Firm: \_\_\_\_\_

**BID FORM**

**BID NO. 318016**

**PROJECT: MULTIPLE HIGHWAY GARAGE CNG RETROFIT  
YORK & SPRINGFIELD GARAGES**

**TO: DANE COUNTY DEPARTMENT OF PUBLIC WORKS, HIGHWAY &  
TRANSPORTATION PROJECT MANAGER  
1919 ALLIANT ENERGY CENTER WAY  
MADISON, WISCONSIN 53713**

**NOTE: WISCONSIN STATUTE 77.54 (9M) ALLOWS FOR NO SALES & USE TAX ON  
THE PURCHASE OF MATERIALS FOR COUNTY PUBLIC WORKS PROJECTS.**

**BASE BID - LUMP SUM:**

Dane County is seeking to perform a CNG retrofit project for two (2) locations. The undersigned, having examined the site where the Work is to be executed and having become familiar with local conditions affecting the cost of the Work and having carefully examined the Drawings and Specifications, all other Construction Documents and Addenda thereto prepared by Dane County Department of Public Works, Highway & Transportation hereby agrees to provide all labor, materials, equipment and services necessary for the complete and satisfactory execution of the entire Work, as specified in the Construction Documents, for the Base Bid stipulated sum of:

\_\_\_\_\_ and \_\_\_\_\_ /100 Dollars  
Written Price

\$ \_\_\_\_\_  
Numeric Price

Receipt of the following addenda and inclusion of their provisions in this Bid is hereby acknowledged:

Addendum No(s). \_\_\_\_\_ through \_\_\_\_\_

Dated \_\_\_\_\_

Dane County Department of Highway and Transportation must have this project completed by July 31, 2019. Assuming this Work can be started by January 7, 2019, what dates can you commence and complete this job?

Commencement Date: \_\_\_\_\_ Completion Date: \_\_\_\_\_  
(final, not substantial)

I hereby certify that all statements herein are made on behalf of:

\_\_\_\_\_  
(Name of Corporation, Partnership or Person submitting Bid)

Select one of the following:

1. A corporation organized and existing under the laws of the State of \_\_\_\_\_, or
2. A partnership consisting of \_\_\_\_\_, or
3. A person conducting business as \_\_\_\_\_;

Of the City, Village, or Town of \_\_\_\_\_ of the State of \_\_\_\_\_.

I have examined and carefully prepared this Bid from the associated Construction Documents and have checked the same in detail before submitting this Bid; that I have full authority to make such statements and submit this Bid in (its) (their) (my) behalf; and that the said statements are true and correct. In signing this Bid, we also certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a Bid; that this Bid has been independently arrived at without collusion with any other bidder, competitor, or potential competitor; that this Bid has not been knowingly disclosed prior to the Bids Due Date to another bidder or competitor; that the above statement is accurate under penalty of perjury.

The undersigned further agrees to honor the Base Bid and the Alternate Bid(s) for sixty (60) calendar days from date of Award of Contract.

**SIGNATURE:** \_\_\_\_\_  
(Bid is invalid without signature)

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

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

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

Telephone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_

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

Contact Person: \_\_\_\_\_

**THIS PAGE IS FOR BIDDERS' REFERENCE AND NEED NOT BE SUBMITTED WITH BID FORM.**

**BID CHECK LIST:**

These items **must** be included with Bid:

Bid Form

Bid Bond

Fair Labor Practices Certification

**BIDDERS SHOULD BE AWARE OF THE FOLLOWING:**

**DANE COUNTY VENDOR REGISTRATION PROGRAM**

Any person bidding on any County contract must be registered with the Dane County Purchasing Division. A contract will not be awarded to an unregistered vendor. Obtain a *Vendor Registration Form* by calling 608/266-4131 or complete a new form or renewal online at:

[www.danepurchasing.com/registration](http://www.danepurchasing.com/registration)

**DANE COUNTY BEST VALUE CONTRACTING PRE-QUALIFICATION**

Contractors must be pre-qualified as a Best Value Contractor with the Dane County Public Works Engineering Division before the award of contract. Obtain a *Best Value Contracting Application* by calling 608/266-4018 or complete one online at:

[www.countyofdane.com/pwht/BVC\\_Application.aspx](http://www.countyofdane.com/pwht/BVC_Application.aspx)

**FAIR LABOR PRACTICES CERTIFICATION**

The undersigned, for and on behalf of the BIDDER, APPLICANT or PROPOSER named herein, certifies as follows:

- A. That he or she is an officer or duly authorized agent of the above-referenced BIDDER, APPLICANT or PROPOSER, which has submitted a bid, application or proposal for a contract or agreement with the county of Dane.
  
- B. That BIDDER, APPLICANT or PROPOSER has (check one):

\_\_\_\_\_ not been found by the National Labor Relations Board (“NLRB”) or the Wisconsin Employment Relations Commission (“WERC”) to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

\_\_\_\_\_ been found by the National Labor Relations Board (“NLRB”) or the Wisconsin Employment Relations Commission (“WERC”) to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

\_\_\_\_\_  
Officer or Authorized Agent Signature Date

\_\_\_\_\_  
Printed or Typed Name and Title

\_\_\_\_\_  
Printed or Typed Business Name

**NOTE:** You can find information regarding the violations described above at: [www.nlrb.gov](http://www.nlrb.gov) and [werc.wi.gov](http://werc.wi.gov).

For reference, Dane County Ordinance 25.09 is as follows:

- (1) BIDDER RESPONSIBILITY. (a) Any bid, application or proposal for any contract with the county, including public works contracts regulated under chapter 40, shall include a certification indicating whether the bidder has been found by the National Labor Relations Board (NLRB) or the Wisconsin Employment Relations Committee (WERC) to have violated any statute or regulation regarding labor standards or relations within the last seven years. The Controller shall investigate any such finding and make a recommendation to the committee, which shall determine whether the conduct resulting in the finding affects the bidder’s responsibility to perform the contract.

**If you indicated that the NLRB or WERC have found you to have such a violation, you must include copies of any relevant information regarding such violation with your proposal, bid or application.**

Include this completed Certification with your bid, application or proposal.

**COUNTY OF DANE**

**PUBLIC WORKS CONSTRUCTION CONTRACT**

Contract No. \_\_\_\_\_

Bid No. 318016

Authority: 2018 RES - \_\_\_\_\_

**THIS CONTRACT**, made and entered into as of the date by which authorized representatives of both parties have affixed their signatures, by and between the County of Dane (hereafter referred to as "COUNTY") and \_\_\_\_\_ (hereafter, "CONTRACTOR"), and

**WITNESSETH:**

**WHEREAS**, COUNTY, whose address is c/o Assistant Public Works Director, 1919 Alliant Energy Center Way, Madison, WI 53713, desires to have CONTRACTOR provide Multiple Highway Garage CNG Retrofit at York and Springfield Garages ("the Project"); and

**WHEREAS**, CONTRACTOR, whose address is \_\_\_\_\_ is able and willing to construct the Project, in accordance with the Construction Documents;

**NOW, THEREFORE**, in consideration of the above premises and the mutual covenants of the parties hereinafter set forth, the receipt and sufficiency of which is acknowledged by each party for itself, COUNTY and CONTRACTOR do agree as follows:

1. CONTRACTOR agrees to construct, for the price of \$\_\_\_\_\_ the Project and at the CONTRACTOR'S own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence labor, insurance, and other accessories and services necessary to complete the Project in accordance with the conditions and prices stated in the Bid Form, General Conditions of Contract, the drawings which include all maps, plats, plans, and other drawings and printed or written explanatory matter thereof, and the specifications therefore as prepared by \_\_\_\_\_ (hereinafter referred to as "the Architect / Engineer"), and as enumerated in the Project Manual Table of Contents, all of which are made a part hereof and collectively evidence and constitute the Contract.

2. COUNTY agrees to pay the CONTRACTOR in current funds for the performance of the Contract subject to additions and deductions, as provided in the General Conditions of Contract, and to make payments on account thereof as provided in Article entitled, "Payments to Contractor" of the General Conditions of Contract.

3. During the term of this Contract, CONTRACTOR agrees to take affirmative action to ensure equal employment opportunities. The CONTRACTOR agrees in accordance with Wisconsin Statute 111.321 and Chapter 19 of the Dane County Code of Ordinances not to discriminate on the basis of age, race, ethnicity, religion, color, gender, disability, marital status, sexual orientation, national origin, cultural differences, ancestry, physical appearance, arrest record or conviction record, military participation or membership in the national guard, state defense force or any other reserve component of the military forces of the United States, or political beliefs. Such equal opportunity shall include, but not be limited to, the following: employment,

upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation. CONTRACTOR agrees to post in conspicuous places, available to all employees and applicants for employment, notices setting forth the provisions of this paragraph.

**4.** CONTRACTOR shall file an Affirmative Action Plan with the Dane County Contract Compliance Officer in accord with Chapter 19 of the Dane County Code of Ordinances. CONTRACTOR must file such plan within fifteen (15) business days of the effective date of this Contract. During the term of this Contract CONTRACTOR shall also provide copies of all announcements of employment opportunities to COUNTY'S Contract Compliance Office, and shall report annually the number of persons, by race, ethnicity, gender, and disability status, which apply for employment and, similarly classified, the number hired and number rejected.

**5.** During the term of this Contract, all solicitations for employment placed on CONTRACTOR'S behalf shall include a statement to the effect that CONTRACTOR is an "Equal Opportunity Employer".

**6.** CONTRACTOR agrees to furnish all information and reports required by COUNTY'S Contract Compliance Officer as the same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and the provisions of this Contract.

**7.** This Contract is intended to be a Contract solely between the parties hereto and for their benefit only. No part of this Contract shall be construed to add to, supplement, amend, abridge or repeal existing rights, benefits or privileges of any third party or parties including, but not limited to, employees of either of the parties.

**8.** The entire agreement of the parties is contained herein and this Contract supersedes any and all oral agreements and negotiations between the parties relating to the subject matter hereof. The parties expressly agree that the express terms of this Contract shall not be amended in any fashion except in writing, executed by both parties.

**9.** CONTRACTOR must be pre-qualified as a Best Value Contractor with Dane County Public Works Engineering Division before award of Contract. Subcontractors must be pre-qualified ten (10) business days prior to commencing Work under this Contract.

**IN WITNESS WHEREOF**, COUNTY and CONTRACTOR, by their respective authorized agents, have caused this Contract and its Schedules to be executed, effective as of the date by which all parties hereto have affixed their respective signatures, as indicated below.

\* \* \* \* \*

**FOR CONTRACTOR:**

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

\_\_\_\_\_  
Printed or Typed Name and Title

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

\_\_\_\_\_  
Printed or Typed Name and Title

**NOTE:** If CONTRACTOR is a corporation, Secretary should attest. In accordance with IRS Regulations, unincorporated entities are required to provide either their Social Security or Employer Number in order to receive payment for services rendered.

\* \* \* \* \*

This Contract is not valid or effectual for any purpose until approved by the appropriate authority designated below, and no work is authorized until the CONTRACTOR has been given notice to proceed by COUNTY'S Assistant Public Works Director.

**FOR COUNTY:**

\_\_\_\_\_  
Joseph T. Parisi, County Executive Date

\_\_\_\_\_  
Scott McDonell, County Clerk Date

# AIA<sup>®</sup> Document A310<sup>™</sup> – 2010

## Bid Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

**BOND AMOUNT:**

**PROJECT:**

*(Name, location or address, and Project number, if any)*

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_

_____	<i>(Contractor as Principal)</i>	_____	<i>(Seal)</i>
<i>(Witness)</i>	_____	_____	<i>(Title)</i>
_____	<i>(Surety)</i>	_____	<i>(Seal)</i>
<i>(Witness)</i>	_____	_____	<i>(Title)</i>

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**

# AIA<sup>®</sup> Document A312<sup>™</sup> – 2010

## Performance Bond

**CONTRACTOR:**

(Name, legal status and address)

**SURETY:**

(Name, legal status and principal place of business)

**OWNER:**

(Name, legal status and address)

**CONSTRUCTION CONTRACT**

Date:

Amount:

Description:

(Name and location)

**BOND**

Date:

(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond:  None  See Section 16

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_  
(Corporate Seal)

**SURETY**

Company: \_\_\_\_\_  
(Corporate Seal)

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

**AGENT or BROKER:**

**OWNER'S REPRESENTATIVE:**

(Architect, Engineer or other party:)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### § 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

Sample

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

**SURETY**

Company: \_\_\_\_\_

*(Corporate Seal)*

Company: \_\_\_\_\_

*(Corporate Seal)*

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**



# AIA® Document A312™ – 2010

## Payment Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

**CONSTRUCTION CONTRACT**

Date:

Amount:

Description:

*(Name and location)*

**BOND**

Date:

*(Not earlier than Construction Contract Date)*

Amount:

Modifications to this Bond:  None  See Section 18

**CONTRACTOR AS PRINCIPAL**

Company: *(Corporate Seal)*

**SURETY**

Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

*(Any additional signatures appear on the last page of this Payment Bond.)*

*(FOR INFORMATION ONLY — Name, address and telephone)*

**AGENT or BROKER:****OWNER'S REPRESENTATIVE:**

*(Architect, Engineer or other party:)*

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### § 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_

(Corporate Seal)

**SURETY**

Company: \_\_\_\_\_

(Corporate Seal)

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**

## GENERAL CONDITIONS OF CONTRACT

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## **1. CONSTRUCTION DOCUMENTS**

- A. Construction Documents, listed in Table of Contents of this Specification volume shall form part of this Contract and provisions of Construction Documents shall be as binding upon parties as if they were fully set forth in Contract itself.
- B. These shall also be considered as part of Construction Documents: Addenda, including additions and modifications incorporated in such addenda before execution of Contract; requests for information; construction bulletins; change orders; and written interpretations by Architect / Engineer or Public Works Project Manager that are made after execution of Contract.
- C. Construction Documents are complementary, and what is required by one shall be as binding as if required by all. Intent of Construction Documents is to include all labor, materials and equipment necessary for proper execution of the Work.

## **2. DEFINITIONS**

- A. These terms as used in this Contract are respectively defined as follows:
  - 1. All uses of term “County” in Construction Documents shall mean Dane County.
  - 2. All uses of term “Department” in Construction Documents shall mean Department of Public Works, Highway & Transportation, which is a unit of Dane County government. Department is County agency overseeing Contract with Contractor.
  - 3. Public Works Project Manager is appointed by and responsible to Department. Public Works Project Manager has authority to act on behalf of Department and will sign change orders, payment requests and other administrative matters related to projects.
  - 4. Public Works Project Manager is responsible for supervision, administration and management of field operations involved in construction phase of this Work.
  - 5. Term “Work” includes all labor, equipment and materials necessary to produce project required by Construction Documents.
  - 6. Term “Substantial Completion” is date when project or specified area of project is certified by Architect / Engineer that construction is sufficiently completed, in accordance with Construction Documents, and as modified by any subsequent changes agreed to by parties, so that County may occupy project or specified area of project for use for which it was intended subject to permit approval for occupancy.
  - 7. Contractor is person, firm, or corporation with whom County makes Contract. Though multiple contracts may be involved, Construction Documents treat them throughout as if each were of singular number.

## **3. ADDITIONAL INSTRUCTIONS AND DRAWINGS**

- A. Contractor may be furnished additional instructions and detail drawings as necessary to carry out the Work included in Contract. Additional drawings and instructions thus supplied to Contractor will coordinate with Construction Documents and will be so prepared that they can be reasonably interpreted as part thereof. Contractor shall carry out the Work in accordance with additional detail drawings and instructions.

#### **4. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

- A. Unless otherwise specified, Contractor shall submit three (3) copies of all Shop Drawings for each submission, until receiving final approval. After final approval, provide five (5) additional copies for distribution and such other copies as may be required.
- B. Contractor shall submit, on an on-going basis and as directed, Product Data such as brochures that shall contain catalog cuts and specifications of all furnished mechanical and electrical equipment. After Architect / Engineer's approval, one (1) copy shall remain in Architect / Engineer's file, one (1) kept at Department's office and one (1) kept at job site by Contractor for reference purposes.
- C. Samples shall consist of physical examples furnished by Contractor in sufficient size and quantity to illustrate materials, equipment or workmanship, and to establish standards to compare the Work.
  - 1. Submit Samples in sufficient quantity (minimum of two (2)) to permit Architect / Engineer to make all necessary tests and of adequate size showing quality, type, color range, finish, and texture. Label each Sample stating material, type, color, thickness, size, project name, and Contractor's name.
  - 2. Submit transmittal letter requesting approval, and prepay transportation charges to Architect / Engineer's office on samples forwarded.
  - 3. Materials installed shall match approved Samples.
- D. Contractor shall review Shop Drawings and place their dated stamp thereon to evidence their review and approval and shall submit with reasonable promptness and in orderly sequence to cause no delay in the Work or in work of any other contractor. At time of submission, Contractor shall inform Architect / Engineer in writing of any deviation in Shop Drawings or Samples from requirements of Construction Documents. Architect / Engineer will not consider partial lists.
- E. Architect / Engineer will review and approve or reject Shop Drawings with reasonable promptness to cause no delay. Architect / Engineer's approval shall not relieve Contractor from responsibility for errors or omissions in Shop Drawings.
- F. Contractor shall not commence any work requiring Shop Drawing, Product Data or Sample submission until Architect / Engineer has approved submission. All such work shall be in accordance with approved Shop Drawings, Product Data and Samples.
- G. Contractor shall keep on site of the Work, approved or conformed copy of Shop Drawings and shall at all times give Department access thereto.
- H. By stamping and submitting Shop Drawings, Product Data and Samples, Contractor thereby represents that he or she has or will determine and verify all field measurements, field construction criteria, materials, catalog numbers, and similar data and that he or she has checked and coordinated each Shop Drawing, Product Data and Sample with requirements of the Work and of Construction Documents. Architect / Engineer shall return without examination, Shop Drawings, Product Data and Samples not so noted.
- I. All Shop Drawings from any one Contractor should be numbered consecutively and on cover sheet shall bear name and location of project, name of Contractor, date of submittal and date of each correction or revision and associated Specification section and page number.

#### **5. CUTTING AND PATCHING**

- A. Contractor shall be responsible for all cutting, fitting or patching required to complete the Work or to make its parts fit together properly.
- B. Contractor shall not damage or endanger portion of the Work or fully or partially completed construction of County or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. Contractor shall not cut or otherwise alter such construction by County or separate contractor except with written consent of County and of such separate contractor; such consent shall not be unreasonably withheld. Contractor shall not withhold unreasonably from County or separate contractor, Contractor's consent to cutting or otherwise altering the Work.

## **6. CLEANING UP**

- A. Contractor shall keep premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under Contract. Contractor shall remove from and about the Work waste materials, rubbish, Contractor's tools, construction equipment, machinery, and surplus materials at completion of the Work. Contractor shall maintain streets and sidewalks around the Work site in clean condition. Contractor shall remove all spillage and prevent tracking of spillage arising from performance of the Work, into, out of, and within the Work site. Contractor shall establish regular maintenance program of sweeping, vacuuming and / or hosing to minimize accumulation of dirt and dust upon such areas.
- B. If Contractor fails to clean up as directed in Construction Documents, County may do so and shall charge Contractor cost thereof.
- C. Contractor shall be responsible for broken windows and glass, and at completion of the Work shall replace such damaged or broken windows and glass. After replacing damaged or broken windows and glass, Contractor shall remove all labels, wash and polish both sides of all windows and glass.
- D. In addition to general cleaning (sweeping, vacuuming and / or hosing, as is appropriate to work surface), Contractor shall perform following final cleaning for all trades at completion of the Work:
  - 1. Remove temporary protections;
  - 2. Remove marks, stains, fingerprints and other soil or dirt from painted, decorated and finished woodwork and wall surfaces;
  - 3. Remove spots, plaster, soil and paint from ceramic tile, marble and other finished materials, and wash or wipe clean;
  - 4. Clean fixtures, cabinet work and equipment, removing stains, paint, dirt and dust, and leave same in undamaged, new condition;
  - 5. Clean aluminum in accordance with recommendations of manufacturer; and
  - 6. Clean resilient floors thoroughly with well-rinsed mop containing only enough moisture to clean off any surface dirt or dust and buff dry by machine to bring surfaces to sheen.

## **7. USE OF SITE**

- A. Contractor shall provide County and Architect / Engineer access to the Work under all circumstances.
- B. Contractor shall confine operations at site to areas permitted by County, law, ordinance, permits and Construction Documents and shall not unreasonably encumber site with materials

or equipment. Contractor shall assure free, convenient, unencumbered, direct and safe access to all properties adjacent to the Work for County, its employees, invitees and guests.

## **8. MATERIALS AND WORKMANSHIP**

- A. Contractor shall perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, necessary to complete the Work required by this Contract, within time specified, in accordance with provisions of Construction Documents.
- B. All equipment and materials incorporated in the Work covered by this Contract are to be new; use recycled and / or recovered materials to extent that such use is technically and economically feasible. Recovered materials are products recovered from solid waste in form identical to original form for use that is same as, or similar to original use. Recycled materials are products manufactured from solid waste.
- C. If requested, Contractor shall furnish satisfactory evidence as to kind and quality of construction materials proposed or used. Contractor shall furnish to Architect / Engineer, for approval, manufacturer name and model, performance capacities and other pertinent information of machinery, mechanical, electrical or other types of equipment, which Contractor plans to install.
- D. If not otherwise provided, materials and labor called for in this Contract shall be provided and performed in accordance with established practice and standards recognized by Architects, Engineers, Department, and construction industry.
- E. Reference to “Standard” specifications of any association or manufacturer, or codes of County authorities, intends most recent printed edition or catalog in effect on date that corresponds with date of Construction Documents.
- F. Whenever reference is made in Specifications that work shall be “performed”, “applied”, in accordance with “manufacturer’s directions or instructions”, Contractor to whom those instructions are directed shall furnish three (3) printed copies of such instructions to Architect / Engineer before execution of the Work.

## **9. CONTRACTOR’S TITLE TO MATERIALS**

- A. Contractor or any subcontractor shall not purchase materials or supplies for the Work subject to any chattel mortgage or under conditional sale contract or other agreement by which seller retains interest. Contractor warrants that all materials and supplies used in the Work are free from all liens, claims or encumbrances and Contractor has good title to them.

## **10. “OR EQUAL” CLAUSE**

- A. Whenever equipment or materials are identified on Drawings or in Specifications by reference to manufacturer’s or vendor’s name, trade name, catalog number, and other identifying information, it is intended to establish standards; and any equipment or material of other manufacturers and vendors which will perform adequately duties imposed by general design will be considered equally accepted provided equipment or material so proposed is, in opinion of Architect / Engineer, of equal substance and function. Architect / Engineer and Department shall provide written approval before Contractor may purchase or install it.

- B. Equipment or materials of manufacturers, other than those named, may be used only upon following conditions:
1. That, in opinion of Architect / Engineer and Department, proposed material or equipment item is fully equal or superior (in design, materials, construction, workmanship, performance, finish, etc.) to named item. No compromise in quality level, however small, is acceptable.
  2. That, in substituting materials or equipment, Contractor assumes responsibility for any changes in system or for modifications required in adjacent or related work to accommodate such substitution despite Architect / Engineer's and Department's approval, and all costs growing out of approval of "or equal" items shall be responsibility of Contractor. No extra costs resulting from such approval shall become responsibility of Department, Architect / Engineer or any other separate Contractor.
  3. It shall be understood that use of materials or equipment other than those specified, or approved equal by Architect / Engineer and Department, shall constitute violation of Contract, and that Architect / Engineer and Department shall have right to require removal of such materials or equipment and their replacement with specified materials or equipment at Contractor's expense.
  4. Product and manufacturer named first in Specifications or on information shown on Drawings is basis of selection of manufactured items and equipment, particularly mechanical equipment. In using other than first named products or manufacturers, including those specified as additionally approved or acceptable, Contractor assumes responsibility for any changes in system and for modifications in any work required to accommodate them. Architect / Engineer's approval of such additionally acceptable products or manufacturers, either in Specifications or in Addendum, does not relieve Contractor from obligation to coordinate such optional products with other Contractors, whose work may be affected by them, and to pay all additional costs resulting from their inclusion into the Work. Contractor's liability shall include payment of Architect / Engineer's fees for any additional services made necessary by or directly connected to such product changes. No extra costs resulting from such changes shall become responsibility of Department, Architect / Engineer or any other separate Contractor.
- C. No request for approval of "or equal" materials will be entertained except from Contractor. Identify any request for substitution as substitution on Contractor's letter of transmittal and give reasons for substitution. Department may in its sole discretion allow substitutions of materials.

## **11. PATENTS AND ROYALTIES**

- A. If Contractor uses any design, device or material covered by letters, patent or copyright, it is mutually agreed and understood, that, without exception, contract prices shall include all royalties or costs arising from use of such design, device or materials, in any way involved in the Work.
- B. Contractor shall indemnify and save harmless County from any and all claims for infringement by reason of use of such patent or copyright in connection with the Work agreed to be performed under this Contract, and shall indemnify County for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during prosecution of the Work or after completion of the Work.

## **12. SURVEYS, PERMITS, REGULATIONS AND TAXES**

- A. Department will furnish to Contractor all site, topography and property surveys necessary for execution of the Work.

- B. Contractor shall procure all permits, licenses and approvals necessary for execution of this Contract.
- C. Contractor shall give all notices and comply with all State of Wisconsin, Federal and local laws, codes, rules and regulations relating to performance of the Work, protection of adjacent property, and maintenance of passageways, guard fences or other protective facilities.
- D. Contractor shall pay all Sales, Consumer, Use and other similar taxes required by law.
- E. Contractor shall promptly notify Architect / Engineer of any variances of Drawings or Specifications with that of any State of Wisconsin, federal or local law, code, rule or regulation. Upon such notification, Architect / Engineer will require correction of variance to comply with applicable law, code, rule or regulation at no additional cost to Contractor.
- F. Work under this Contract shall comply with all applicable State of Wisconsin, Federal and local laws, codes and regulations.
- G. Contractor shall pay charges for water, sewer and other utility connections made by municipalities where required by Specifications.

### **13. CONTRACTOR'S OBLIGATIONS AND SUPERINTENDENCE**

- A. Contractor shall provide and pay for all materials, labor, tools, equipment, transportation and superintendence necessary to execute, complete and deliver the Work within specified time. Contractor agrees to secure at their own expense all personnel necessary to carry out the Work. Such personnel shall not be deemed County employees nor shall they have or be deemed to have any direct contractual relationship with County.
- B. Performance of any work necessary after regular working hours, on Sundays or Legal Holidays shall be without additional expense to County. Performance of any work at site at other than normal working hours must be coordinated with Public Works Project Manager.
- C. Contractor shall furnish, erect, maintain and remove such temporary works as may be required.
- D. Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of Construction Documents.
- E. At the Work site, Contractor shall give personal superintendence to the Work or shall employ construction superintendent or foreman, experienced in character of work covered by Contract, who shall have full authority to act for Contractor. Understand that such superintendent or foreman shall be acceptable to Architect / Engineer and Department.
- F. Remove from project or take other corrective action upon notice from Architect / Engineer or Department for Contractor's employees whose work is considered by Architect / Engineer or Department to be unsatisfactory, careless, incompetent, unskilled or otherwise objectionable.
- G. Contractor and subcontractors shall be required to conform to Labor Laws of State of Wisconsin and various acts amendatory and supplementary thereto and to other laws, ordinances and legal requirements applicable to the Work.

- H. Presence and observation of the Work by Architect / Engineer or Public Works Project Manager shall not relieve Contractor of any obligations.

#### **14. WEATHER CONDITIONS**

- A. In event of temporary suspension of work, or during inclement weather, or whenever Architect / Engineer shall direct, Contractor shall, and shall cause subcontractors to protect carefully all work and materials against damage or injury from weather. If, in opinion of Architect / Engineer or Department, any work or materials that have been damaged or injured due to failure on part of Contractor or any subcontractors so to protect the Work, such materials shall be removed and replaced at expense of Contractor.

#### **15. PROTECTION OF WORK AND PROPERTY**

- A. Contractor shall at all times safely guard County's property from injury or loss in connection with this Contract. Contractor shall at all times safely guard and protect the Work, and adjacent property, from damage. Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in Contract, or by County, or County's duly authorized representative.
- B. Contractor may act diligently, without previous instructions from Architect / Engineer and / or Department, in emergency that threatens loss or injury of property, or safety of life. Contractor shall notify Architect / Engineer and / or Department immediately thereafter. Promptly submit any claim for compensation by Contractor due to such extra work to Architect / Engineer and / or Department for approval as provided for in Article 18 herein.

#### **16. INSPECTION AND TESTING OF MATERIALS**

- A. Authorized representatives and agents of County government shall have access at all times to the Work wherever it is in preparation or progress and Contractor shall provide facilities for such access and for inspection.
- B. Should it be considered necessary or advisable at any time before final acceptance of the Work to make examination of work already completed, by removing or tearing out same, Contractor shall upon request, promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any aspect, due to fault of Contractor or subcontractors thereof, Contractor shall assume all expenses of such examination and of satisfactory reconstruction. Contractor will be reimbursed for such examination and replacement in accordance with Article 18 - A.3., of these General Conditions of Contract if such work is found to meet requirements of Contract.
- C. If Specifications, Architect / Engineer's, or Public Works Project Manager's instructions require any work to be specially tested or approved, Contractor shall give Architect / Engineer and Public Works Project Manager timely notice of its readiness for testing or inspection. Test all materials and equipment requiring testing in accordance with accepted or specified standards, as applicable. Architect / Engineer shall recommend laboratory or inspection agency and Department will select and pay for all initial laboratory inspection services. Should retesting be required, due to failure of initial testing, cost of such retesting shall be borne by Contractor.
- D. Cost of any testing performed by manufacturers or Contractor for substantiating acceptability of proposed substitution of materials and equipment, or necessary conformance testing in

conjunction with manufacturing processes or factory assemblage, shall be borne by Contractor or manufacturer responsible.

## **17. REPORTS, RECORDS AND DATA**

- A. Contractor shall submit to Architect / Engineer and Public Works Project Manager such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, invoices, records and other data as either may request concerning work performed or to be performed under this Contract.

## **18. CHANGES IN THE WORK**

- A. Make no changes, except in cases of emergency, in the Work covered by approved Construction Documents without having prior written approval of Department. Charges or credits for the Work covered by approved change shall be determined by one of these methods:
1. Unit bid prices previously approved.
  2. Agreed lump sum based on actual cost of:
    - a) Labor, including foremen, and all fringe benefits that are associated with their wages.
    - b) Materials entering permanently into the Work.
    - c) Ownership or rental cost of construction tools and equipment during time of use on extra work.
    - d) Power and consumable supplies for operation of power equipment.
    - e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
    - f) Social Security and old age and unemployment contributions.
    - g) Add to cost under (2), fixed fee to be agreed upon, but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force. Fee shall be compensation to cover cost of supervision, overhead, bond, profit and any other general expense.
    - h) On that portion of the Work under (2) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit and any other general expense.
    - i) Department may require correct amount of costs with supporting vouchers; Contractor shall keep and present in such form as directed.
  3. Cost-plus work, with not-to-exceed dollar limit, based on actual cost of:
    - a) Labor, including foremen, and all fringe benefits that are associated with their wages.
    - b) Materials entering permanently into the Work.
    - c) Ownership or rental cost of construction tools and equipment during time of use on extra work. Rental cost cannot exceed fifty percent (50%) replacement value of rented equipment.
    - d) Power and consumable supplies for operation of power equipment.
    - e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
    - f) Social Security and old age and unemployment contributions.
    - g) To cost under (3), there shall be added fixed fee to be agreed upon but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force. Fee shall be compensation to cover cost of supervision, overhead, bond, profit, and any other general expense.
    - h) On that portion of the Work under (3) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit, and any other general expense.

- i) Contractor shall keep and present, in such form as directed, correct amount of cost together with such supporting vouchers as may be required by Department.
- B. If Contractor claims that by any instructions given by Architect / Engineer, Department, by drawings or otherwise, regarding performance of the Work or furnishing of material under Contract, involves extra cost, Contractor shall give Department written notice of cost thereof within two (2) weeks after receipt of such instructions and in any event before proceeding to execute work, unless delay in executing work would endanger life or property.
- C. No claim for extra work or cost shall be allowed unless it was done in pursuance of written Change Order from Architect / Engineer and approved by Department, as previously mentioned, and claim presented with payment request submitted after changed or extra work is completed.
- D. Negotiation of cost for change in the Work shall not be cause for Contractor to delay prosecution of the Work if Contractor has been authorized in writing by Public Works Project Manager to proceed.

## **19. EXTRAS**

- A. Without invalidating Contract, Department may order extra work or make changes by altering, adding to or deducting from the Work, contract sum being adjusted in accordance with Article 18 herein.

## **20. TIME FOR COMPLETION**

- A. Contractor agrees that the Work shall be prosecuted regularly and diligently and complete the Work as stated in Construction Documents.

## **21. CORRECTION OF WORK**

- A. All work, all materials whether incorporated in the Work or not, and all processes of manufacture shall at all times and places be subject to inspection of Architect / Engineer and Public Works Project Manager who shall be judge of quality and suitability of the Work, materials, and processes of manufacture for purposes for which they are used. Should they fail to meet Architect / Engineer's and Public Works Project Manager's approval they shall be reconstructed, made good, replaced or corrected, by Contractor at Contractor's expense. Immediately remove all rejected material from site.
- B. If Contractor defaults or neglects to carry out the Work in accordance with Construction Documents or fails to perform any provision of Contract, Department may, after ten (10) business days' written notice to Contractor and without prejudice to any other remedy County may have, make good such deficiencies. In such case, appropriate Change Order shall be issued deducting from Contractor's payments then or thereafter, cost of correcting such deficiencies, including cost of Architect / Engineer's additional services made necessary by such default, neglect or failure.

## **22. SUBSURFACE CONDITIONS FOUND DIFFERENT**

- A. If Contractor encounters subsurface or latent conditions at site materially differing from those shown on Drawings or indicated in Specifications, Contractor shall immediately give notice to Architect / Engineer and Public Works Project Manager of such conditions before they are

disturbed. Architect / Engineer will thereupon promptly investigate conditions, and if Architect / Engineer finds that they materially differ from those shown on Drawings or indicated in Specifications, Architect / Engineer will at once make such changes as necessary, any increase or decrease of cost resulting from such changes to be adjusted in manner provided in above Article 18 entitled "Changes in the Work".

### **23. RIGHT OF DEPARTMENT TO TERMINATE CONTRACT**

- A. In event that any provisions of this Contract are violated by Contractor or by any subcontractors, County may serve written notice upon Contractor and Surety of its intention to terminate Contract, such notice to contain reasons for such intention to terminate Contract, and unless within ten (10) business days after serving of such notice upon Contractor, such violation or delay shall cease and satisfactory arrangement or correction be made, Contract shall, upon expiration of said ten (10) business days, cease and terminate.
- B. In event of any such termination, County shall immediately serve notice thereof upon Surety and Contractor, and Surety shall have right to take over and perform Contract subject to County's approval; provided, however, that if Surety does not commence performance thereof within ten (10) business days from date of mailing to such Surety of notice of termination, County may take over the Work and prosecute same to completion by contract, or by force account, at expense of Contractor; Contractor and Surety shall be liable to County for any excess cost occasioned County thereby, and in such event County may take possession of and utilize in completing the Work, such materials and equipment as may be on the Work site and therefore necessary.

### **24. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES**

- A. Contractor shall be responsible for Construction Schedule and coordination. Immediately after execution and delivery of Contract and before making first payment, Contractor shall notify all subcontractors to furnish all required information to develop Construction Schedule. Contractor and all subcontractors associated with the Work shall furnish following information from each Division of Specifications:
  - 1. List of construction activities;
  - 2. Start, finish and time required for completion of each activity;
  - 3. Sequential relationships between activities;
  - 4. Identify all long lead-time items, key events, meetings or activities such as required submittals, fabrication and delivery, procurement of materials, installation and testing;
  - 5. Weekly definition of extent of work and areas of activity for each trade or Subcontract; and
  - 6. Other information as determined by Public Works Project Manager.
- B. In addition to above requested items, Contractor shall request delivery dates for all County-furnished equipment, materials or labor. This shall include any work handled by Department under separate contracts such as asbestos abatement, air and water balancing, etc. Indicate on Construction Schedule these associated delivery and installation dates.
- C. Progress Reporting:
  - 1. Contractor shall update and publish Construction Schedule on monthly basis. Revisions to Schedule shall be by Contractor and made in same detail as original Schedule and accompanied by explanation of reasons for revision; and shall be subject to approval by Department.

2. Failure of Contractor to keep Schedule in updated format shall result in County hiring firm specializing in construction schedule development and deducting those costs associated with updating process from payments due Contractor.
  3. Contractor shall submit show actual percentage of each activity completed, estimated future progress, and anticipated completion time.
- D. Responsibility for timely completion requires:
1. Contractor and subcontractors understand that performance of each is interdependent upon performance of others.
  2. Whenever it becomes apparent from current schedule, that phasing or progress completion dates will not be met, Contractor must take some or all following actions at no additional cost to County:
    - a) Increase construction labor in such quantities and crafts as will eliminate backlog of work.
    - b) Increase number of working hours per shift, shifts per working day, working days per week, amount of construction equipment, or any combination of foregoing to eliminate backlog of work.
    - c) Reschedule work (yet remain in conformance with Drawings and Specifications).
  3. Prior to proceeding with any of above actions, Contractor shall notify Public Works Project Manager.
- E. Maintain current Construction Schedule at all times. Revise Construction Schedule in same detail as original and accompany with explanation of reasons for revision. Schedule shall be subject to approval by Architect / Engineer and Public Works Project Manager.

## **25. PAYMENTS TO CONTRACTOR**

- A. Contractor shall provide:
1. Detailed estimate giving complete breakdown of contract price by Specification Division; and
  2. Periodic itemized estimates of work done for purpose of making partial payments thereon.
- B. Submit these estimates for approval first to Architect / Engineer, then to Public Works Project Manager. Costs employed in making up any of these schedules are for determining basis of partial payments and not considered as fixing basis for additions to or deductions from Contract price.
- C. County will make partial payments to Contractor for value, proportionate to amount of Contract, of all labor and material incorporated in the Work during preceding calendar month upon receipt of Application and Certificate for Payment form from Architect / Engineer and approval of Department.
- D. Contractor shall submit for approval first to Architect / Engineer, and then to Public Works Project Manager all Application and Certificate for Payment forms. If requested, Application and Certificate for Payment shall be supported by such additional evidence as may be required, showing Contractor's right to payment claimed.
- E. Application and Certificate for Payment for preparatory work and materials delivered and suitably stored at site to be incorporated into the Work at some future period, will be given due consideration. Requesting payment for materials stored off site, may be rejected, however, if deemed essential for reasons of job progress, protection, or other sufficient cause, requests will be considered, conditional upon submission by Contractor of bills of sale,

photographs and such other procedures as will adequately protect County's interest such as storage in bonded warehouse with adequate coverage. If there is any error in payment, Contractor is obligated to notify Department immediately, but no longer than ten (10) business days from receipt of payment.

- F. Payments by County will be due within forty-five (45) business days after receipt by Department of Application and Certificate for Payment.
- G. County will retain five percent (5%) of each Application and Certificate for Payment until final completion and acceptance of all the Work covered by Contract. However, anytime after fifty percent (50%) of the Work has been furnished and installed at site, County will make remaining payments in full if Architect / Engineer and Public Works Project Manager find that progress of the Work corresponds with Construction Schedule. If Architect / Engineer and Public Works Project Manager find that progress of the Work does not correspond with Construction Schedule, County may retain up to ten percent (10%) of each Application and Certificate for Payment for the Work completed.
- H. All material and work covered by partial payments made shall become sole property of County, but this provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made, or restoration of any damaged work, or as waiver of right of County to require fulfillment of all of terms of Contract.
- I. County will make final payment within sixty (60) calendar days after final completion of the Work, and will constitute acceptance thereof.
- J. County may make payment in full, including retained percentages and less authorized deductions, upon completion and acceptance of each Division where price is stated separately in Contract.
- K. Every contractor engaged in performance of any contract for Department of Public Works, Highway & Transportation shall submit to this Department, as requested and with final application for payment for work under said contract, affidavit(s) as required to prove that all debts and claims against this Work are paid in full or otherwise satisfied, and give final evidence of release of all liens against the Work and County. Use "Dane County, Wisconsin Contractor Wage Affidavit" form included in Supplementary Conditions.

## **26. WITHHOLDING OF PAYMENTS**

- A. County, after having served written notice on said Contractor, may either pay directly any unpaid bills of which Department has written notice, or withhold from Contractor's unpaid compensation sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged; whereupon, payment to Contractor shall be resumed in accordance with terms of this Contract, but in no event shall these provisions be construed to impose any obligations upon County to either Contractor or Contractor's Surety.
- B. In paying any unpaid bills of Contractor, County shall be deemed agent of Contractor, and any payment so made by County, shall be considered as payment made under Contract by County to Contractor and County shall not be liable to Contractor for any such payment made in good faith.

- C. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from all claims growing out of lawful demands of subcontractors, laborers, workers, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in performance of this Contract.
- D. At Department's request, Contractor shall furnish satisfactory evidence that all obligations of nature designated above have been paid, discharged or waived.

## **27. ACCEPTANCE OF FINAL PAYMENT AS RELEASE**

- A. Making of final payment shall constitute waiver of all claims by County except those arising from:
  - 1. Unsettled lien;
  - 2. Faulty or defective work appearing after substantial completion;
  - 3. Failure of the Work to comply with requirements of Construction Documents; or
  - 4. Terms of any special guarantees required by Construction Documents.
- B. Acceptance of final payment shall constitute waiver of all claims by Contractor.

## **28. PAYMENTS BY CONTRACTOR**

- A. Contractor shall pay following not later than fifth (5<sup>th</sup>) business day following each payment received from County:
  - 1. All transportation and utility services rendered;
  - 2. All materials, tools, and other expendable equipment that have been delivered at site of the Work to extent of ninety percent (90%) of cost thereof, and balance of cost thereof when said balance is paid to Contractor; and
  - 3. Each subcontractor, respective amount allowed Contractor because of work performed by subcontractor to extent of subcontractor's interest therein.

## **29. CONTRACT SECURITY**

- A. Contractor shall furnish Performance and Payment Bonds in amount at least equal to one hundred percent (100%) of Contract price as security for faithful performance of this Contract and payment of all persons performing labor on project under this Contract and furnishing materials in connection with this Contract.
- B. Sample Performance and Payment Bonds that Contractor will be required to execute is bound into these Construction Documents. Before construction Contract is consummated, completed Performance and Payment Bonds must be approved by Department.

## **30. ASSIGNMENTS**

- A. Contractor shall not assign whole or any part of this Contract or any moneys due or to become due hereunder without written consent of Department. In case Contractor assigns all or any part of any moneys due or to become due under this Contract, instrument of assignment shall contain clause substantially to effect that it is agreed that right of assignee in and to any moneys due or to become due to Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for performance of the Work called for in this Contract.

### **31. MUTUAL RESPONSIBILITY OF CONTRACTORS**

- A. If, through acts of neglect on part of Contractor or any subcontractor shall suffer loss or damage on the Work, Contractor agrees to settle with such subcontractor by agreement or arbitration if such other subcontractor will so settle. If such subcontractor shall assert any claim against County on account of any damage alleged to have been sustained, Department shall notify Contractor, who shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives against any such claim.

### **32. SEPARATE CONTRACTS**

- A. Department may award other contracts for the Work and all Contractors shall fully cooperate with each other and carefully adjust their work to that provided under other contracts as may be directed by Department. No Contractor shall commit or permit any act that will interfere with performance of the Work by any other Contractor.
- B. Contractor shall coordinate the Work with those of other Contractors. Cooperation will be required in arrangement for storage of materials and in detailed execution of the Work. Contractor, including subcontractors, shall keep informed of progress and detail work of others and shall notify Architect / Engineer or Department immediately of lack of progress or defective workmanship on part of others. Failure of Contractor to keep informed of the Work progressing on site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by Contractor of status of the Work as being satisfactory for proper coordination with Contractor's own work.

### **33. SUBCONTRACTS**

- A. Contractor may use services of specialty subcontractors on those parts of the Work that, under normal contracting practices, are performed by specialty subcontractors.
- B. Contractor shall not award any work to any subcontractor without prior approval of Department. Qualifications of subcontractors shall be same as qualifications of Contractor. Request for subcontractor approval shall be submitted to Department fifteen (15) business days before start of subcontractor's work. If subcontractors are changed or added, Contractor shall notify Department in writing.
- C. Contractor shall be as fully responsible to County for acts and omissions of subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for acts and omissions of persons directly employed by Contractor.
- D. Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to Contractor by terms of General Conditions of Contract and other Construction Documents insofar as applicable to work of subcontractors and to give Contractor same power as regards terminating any subcontract that Department may exercise over Contractor under any provision of Construction Documents.
- E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and County.
- F. Contractor shall insert in all subcontracts, Articles 26, 33, 43 and 45, respectively entitled: "Withholding of Payments", "Subcontracts", "Affirmative Action Provision and Minority /

Women / Disadvantaged Business Enterprises”, and “Minimum Wages”, and shall further require all subcontractors to incorporate physically these same Articles in all subcontracts.

#### **34. PUBLIC WORKS PROJECT MANAGER’S AUTHORITY**

- A. Public Works Project Manager shall:
  - 1. Administer and ensure compliance with Construction Documents;
  - 2. Provide responsible on-site observations of construction and have authority to request work and to stop work whenever necessary to insure proper enforcement of Construction Documents;
  - 3. Convene and chair project meetings and foreman’s coordination meetings when necessary to coordinate resolution of conflicts between Contractors, Architects, Engineers, Consultants, and Department; and
  - 4. Check and inspect material, equipment and installation procedures of all trades for proper workmanship and for compliance with Drawings, Specifications and Shop Drawings, permit no material on project site that is not satisfactory and reject work not in compliance with Construction Documents.

#### **35. ARCHITECT / ENGINEER’S AUTHORITY**

- A. Architect / Engineer is retained by, and is responsible to Department acting for County.
- B. Architect / Engineer shall determine amount, quality, acceptability, and fitness of several kinds of work and materials that are provided under this Contract and shall decide all questions that may arise in relation to said work and construction thereof.
- C. Architect / Engineer shall decide meaning and intent of any portion of Specifications and of any Drawings where they may be found obscure or be in dispute.
- D. Architect / Engineer shall provide responsible observation of construction. Architect / Engineer has authority to stop the Work whenever such stoppage may be necessary to insure proper execution of Construction Documents.
- E. Architect / Engineer shall be interpreter of conditions of Construction Documents and judge of its performance.
- F. Within reasonable time, Architect / Engineer shall make decisions on all matters relating to progress of the Work or interpretation of Construction Documents.
- G. Architect / Engineer’s decisions are subject to review by Public Works Project Manager.

#### **36. STATED ALLOWANCES**

- A. Stated allowances enumerated in Instructions to Bidders shall cover net cost of materials or equipment, and all applicable taxes. Contractor’s cost of delivery and unloading at site, handling costs on site, labor, installation costs, overhead, profit and any other incidental costs shall be included in Contractor’s bid, but not as part of cash allowance.
- B. Department will solicit at least two (2) bids on materials or equipment for which allowance is stated and select on basis of lowest qualified responsible bid. Contractor will then be instructed to purchase “Allowed Materials”. If actual price for purchasing “Allowed Materials”, including taxes, is more or less than “Cash Allowance”, Contract price shall be

adjusted accordingly. Adjustment in Contract price shall not contain any cost items excluded from cash allowance.

### **37. ESTIMATES OF QUANTITIES**

- A. Whenever estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of Construction Documents, they are given for use in comparing bids and right is especially reserved to increase or diminish them as they may be deemed reasonably necessary or desirable by Department to complete the Work included in this Contract, and cost for such increase or diminution shall be adjusted in manner provided for in General Conditions of Contract Article 18 entitled "Changes in the Work".

### **38. LANDS AND RIGHTS-OF-WAY**

- A. Prior to start of construction, County shall furnish all land and rights-of-way necessary for carrying out and completion of the Work to be performed under this Contract.

### **39. GENERAL GUARANTEE**

- A. Neither final certificate of payment nor any provision in Construction Documents nor partial or entire occupancy of premises by County shall constitute acceptance of work not done in accordance with Construction Documents or relieve Contractor of liability in respect to any expressed warranties or responsibility for faulty materials or workmanship.
  - 1. In no event shall making of any payment required by Contract constitute or be construed as waiver by County of any breach of covenants of Contract or waiver of any default of Contractor and making of any such payment by County while any such default or breach shall exist shall in no way impair or prejudice right of County with respect to recovery of damages or other remedy as result of such breach or default.
- B. Contractor shall remedy and make good all defective workmanship and materials and pay for any damage to other work resulting there from, which appear within period of one (1) year from date of substantial completion, providing such defects are not clearly due to abuse or misuse by County. Department will give notice of observed defects with reasonable promptness.
- C. Guarantee on work executed after certified date of substantial completion will begin on date when such work is inspected and approved by Architect / Engineer and Public Works Project Manager.
- D. Where guarantees or warranties are required in sections of Specifications for periods in excess of one (1) year, such longer terms shall apply; however, Contractor's Performance and Payment Bonds shall not apply to any guarantee or warranty period in excess of one (1) year.

### **40. CONFLICTING CONDITIONS**

- A. Any provision in any of Construction Documents which may be in conflict or inconsistent with any Articles in these General Conditions of Contract or Supplementary Conditions shall be void to extent of such conflict or inconsistency.
- B. In case of ambiguity or conflict between Drawings and Specifications, Specifications shall govern.

- C. Printed dimensions shall be followed in preference to measurements by scale. Large-scale drawings take precedence over small-scale drawings. Dimensions on Drawings and details are subject to field measurements of adjacent work.

#### **41. NOTICE AND SERVICE THEREOF**

- A. Any notice to Contractor from Department relative to any part of this Contract shall be in writing and considered delivered and service thereof completed, when said notice is posted, by certified or registered mail, to Contractor at Contractor's last given address, or delivered in person to said Contractor, or Contractor's authorized representative on the Work.

#### **42. PROTECTION OF LIVES AND HEALTH**

- A. In order to protect lives and health of Contractor's employees under Contract, Contractor shall comply with all pertinent provisions of Wisconsin Administrative Code, Rules of Department of Commerce, relating to Safety and Health.
- B. Contractor alone shall be responsible for safety, efficiency and adequacy of Contractor's tools, equipment and methods, and for any damage that may result from their failure or their improper construction, maintenance or operation.

#### **43. AFFIRMATIVE ACTION PROVISION AND MINORITY / WOMEN / DISADVANTAGED BUSINESS ENTERPRISES**

- A. Affirmative Action Provisions.
  - 1. During term of their Contract, Contractor agrees not to discriminate on basis of race, religion, color, sex, handicap, age, sexual preference, marital status, physical appearance, or national origin against any person, whether recipient of services (actual or potential), employee, or applicant for employment. Such equal opportunity shall include but not be limited to following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation or level of service(s). Contractor agrees to post in conspicuous places, these affirmative action standards so as to be visible to all employees, service recipients and applicants for this paragraph. Listing of prohibited bases for discrimination shall not be construed to amend in any fashion state or federal law setting forth additional bases and exceptions shall be permitted only to extent allowable in state or federal law.
  - 2. Contractor is subject to this Article only if Contractor has ten (10) or more employees and receives \$10,000.00 or more in annual aggregate contracts with County. Contractor shall file and Affirmative Action Plan with Dane County Contract Compliance Officer in accord with Chapter 19 of Dane County Code of Ordinances. Such plan must be filed within fifteen (15) business days of effective date of this Contract and failure to do so by said date shall constitute ground for immediate termination of Contract by County. Contractor shall also, during term of this Contract, provide copies of all announcements of employment opportunities to County's Contract Compliance Office, and shall report annually number of persons, by race, sex and handicap status, who apply for employment, and, similarly classified, number hired and number rejected.
  - 3. Contact Dane County Contract Compliance Officer at Dane County Contract Compliance Office, 210 Martin Luther King, Jr. Blvd., Room 421, Madison, WI 53703, 608/266-4114.
  - 4. In all solicitations for employment placed on Contractor's behalf during term of this Contract, Contractor shall include statement to affect Contractor is "Equal Opportunity Employer". Contractor agrees to furnish all information and reports required by

County's Contract Compliance Officer as same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and provision of this Contract.

- B. Minority / Women / Disadvantaged / Emerging Small Business Enterprises.
  - 1. Chapter 19.508 of Dane County Code of Ordinances is official policy of Dane County regarding utilization of, to fullest extent of, Minority Business Enterprises (MBEs), Women Business Enterprises (WBEs) Disadvantage Business Enterprises (DBEs) and Emerging Small Business Enterprises (ESBEs).
  - 2. Contractor may utilize MBEs / WBEs / DBEs / ESBEs as subcontractors or suppliers. List of subcontractors will be required of low bidder as stated in this Contract. List shall indicate which are MBEs / WBEs / DBEs / ESBEs and percentage of subcontract awarded, shown as percentage of total dollar amount of bid.

#### **44. COMPLIANCE WITH FAIR LABOR STANDARDS**

- A. During term of this Contract, Contractor shall report to County Contract Compliance Officer, within ten (10) business days, any allegations to, or findings by National Labor Relations Board (NLRB) or Wisconsin Employment Relations Commission (WERC) that Contractor has violated statute or regulation regarding labor standards or relations. If investigation by Contract Compliance Officer results in final determination that matter adversely affects Contractor's responsibilities under this Contract, and which recommends termination, suspension or cancellation of this Contract, County may take such action.
- B. Contractor may appeal any adverse finding by Contract Compliance Officer as set forth in Dane County Ordinance 25.015(11)(c) through (e).
- C. Contractor shall post this statement in prominent place visible to employees: "As condition of receiving and maintaining contract with Dane County, this employer shall comply with federal, state and all other applicable laws prohibiting retaliation or union organizing."

#### **45. DOMESTIC PARTNERSHIP BENEFITS**

- A. Not Used.

#### **46. USE AND OCCUPANCY PRIOR TO ACCEPTANCE**

- A. Contractor agrees to use and occupancy of portion or unit of the Work before formal acceptance by Department, provided Department:
  - 1. Secures written consent of Contractor; except when in opinion of Public Works Project Manager, Contractor is chargeable with unwarranted delay in final cleanup of punch list items or other Contract requirements.
  - 2. Secures endorsement from insurance carrier and consent of Surety permitting occupancy of building or use of the Work during remaining period of construction, or, secures consent of Surety.
  - 3. Assumes all costs and maintenance of heat, electricity and water.
  - 4. Accepts all work completed within that portion or unit of the Work to be occupied, at time of occupancy.

#### **47. MINIMUM WAGES**

- A. Not Used.

#### **48. CLAIMS**

- A. No claim may be made until Department's Assistant Public Works Director has reviewed Architect / Engineer's decision as provided for in Article 35 of General Conditions of Contract. If any claim remains unresolved after such review by Department's Assistant Public Works Director the claim may be filed under Wisconsin Statute 893.80. Work shall progress during period of any dispute or claim. Unless specifically agreed between parties, venue will be in Dane County, Wisconsin.

#### **49. ANTITRUST AGREEMENT**

- A. Contractor and County recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by County. Therefore, Contractor hereby assigns to County any and all claims for such overcharges as to goods and materials purchased in connection with this Contract, except as to overcharges which result from antitrust violations commencing after price is established under this Contract and any change order thereto.

#### **50. INSURANCE**

- A. Contractor Carried Insurance:
  - 1. Contractor shall not commence work under this Contract until Contractor has obtained all insurance required under this Article and has provided evidence of such insurance to Risk Manager, 425 City-County Building, 210 Martin Luther King Jr. Blvd., Madison, WI 53703. Contractor shall not allow any subcontractor to commence work until insurance required of subcontractor has been so obtained and approved. Company providing insurance must be licensed to do business in Wisconsin.
  - 2. Worker's Compensation Insurance:
    - a) Contractor shall procure and shall maintain during life of this Contract, Worker's Compensation Insurance as required by statute for all of Contractor's employees engaged in work at site of project under this Contract and, in case of any such work sublet, Contractor shall require subcontractor similarly to provide Worker's Compensation Insurance for all of latter's employees to be engaged in such work unless such employees are covered by protection afforded by Contractor's Worker's Compensation Insurance.
    - b) If any claim of employees engaged in hazardous work on project under this Contract is not protected under Worker's Compensation Statute, Contractor shall provide and shall cause each subcontractor to provide adequate Employer's Liability Insurance for protection of such of Contractor's employees as are not otherwise protected.
  - 3. Contractor's Public Liability and Property Damage Insurance:
    - a) Contractor shall procure and maintain during life of this Contract, Contractor's Public Liability Insurance and Contractor's Property Damage Insurance in amount not less than \$1,000,000 bodily injury, including accidental death, to any one person, and subject to same limit for each person, in amount not less than \$1,000,000 on account of one accident, and Contractor's Property Damage Insurance in amount not less than \$1,000,000 or combined single limit of at least \$1,000,000 with excess coverage over and above general liability in amount not less than \$5,000,000. Contractor shall add "Dane County" as additional insured for each project.
    - b) Contractor's Public Liability and Property Damage Insurance shall include Products, Completed Operation, and Contractual Liability under Insurance Contract. "Contractor shall in all instances save, defend, indemnify and hold harmless County and Architect / Engineer against all claims, demands, liabilities, damages or any other

costs which may accrue in prosecution of the Work and that Contractor will save, defend, indemnify and hold harmless County and Architect / Engineer from all damages caused by or as result of Contractor's operations" and each shall be listed as additional insured on Contractor's and sub-contractors' insurance policies.

- c) Obligations of Contractor under Article 50.A.2.b) shall not extend to liability of Architect / Engineer, agents or employees thereof, arising out of:
  - 1) Preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications; or
  - 2) Giving of or failure to give directions or instructions by Architect / Engineer, agents or employees thereof provided such giving or failure to give is primary cause of injury or damage.
- d) Contractor shall procure and shall maintain during life of this Contract, Comprehensive Automobile Liability Insurance covering owned, non-owned and hired automobiles for limits of not less than \$1,000,000 each accident single limit, bodily injury and property damage combined with excess coverage over and above general liability in amount not less than \$5,000,000.
- e) Contractor shall either:
  - 1) Require each subcontractor to procure and to maintain during life of subcontract, subcontractor's Public Liability Property Damage Insurance, and Comprehensive Automobile Liability Insurance of type and in same amount specified in preceding paragraphs; or
  - 2) Insure activities of subcontractors in Contractor's own policy.
4. Scope of Insurance and Special Hazards: Insurance required under Article 50.A.2 & 50.A.3. hereof shall provide adequate protection for Contractor and subcontractors, respectively, against damage claims which may arise from operations under this Contract, whether such operation be by insured or by anyone directly or indirectly employed by insured and also against any of special hazards which may be encountered in performance of this Contract as enumerated in Supplementary Conditions.
5. Proof of Carriage of Insurance: Contractor shall furnish Risk Manager with certificates showing type, amount, class of operations covered, effective dates, dates of expiration of policies and "Dane County" listed as additional insured. Such certificates shall also contain (substantially) following statement: "Insurance covered by this certificate will not be canceled or materially altered, except after ten (10) business days written notice has been received by Risk Manager."

**B. Builder's Risk:**

1. County shall provide Builder's Risk insurance coverage for its insurable interests in construction or renovation projects with completed value of \$1,000,000 or less. Therefore, if project completed value is more than \$1,000,000, Contractor shall obtain and maintain in force, at its own expense, Builder's Risk Insurance on all risks for amount equal to full completed value of covered structure or replacement value of alterations or additions. Any deductible shall not exceed \$25,000 for each loss. Policy shall include occupancy clause and list Dane County as loss payee.

**C. Indemnification / Hold Harmless:**

1. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from and against all claims, damages, losses and expenses including attorneys' fees arising out of or resulting from performance of the Work, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, and is caused in whole or in part by any act or omission of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of

- them may be liable, regardless of whether or not it is caused in part by part indemnified hereunder.
2. In any and all claims against Dane County, its boards, commissions, agencies, officers, employees and representatives or by any employee of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, indemnification obligation under this Contract shall not be limited in any way by any limitation on amount or type of damages, compensation or benefits payable by or for Contractor or any subcontractor under worker's compensation acts, disability benefits or other employee benefit acts.
  3. Obligations of Contractor under this Contract shall not extend to liability of Architect / Engineer, its agents or employees arising out of:
    - a) Preparation or approval of maps, drawings, opinion, reports, surveys, change orders, designs or specifications; or
    - b) Giving of or failure to give directions or instruction by Architect / Engineer, its agents or employees provided such giving or failure to give is primary cause of injury or damage.
  4. Dane County shall not be liable to Contractor for damages or delays resulting from work by third parties or by injunctions or other restraining orders obtained by third parties.

#### **51. WISCONSIN LAW CONTROLLING**

- A. It is expressly understood and agreed to by parties hereto that in event of any disagreement or controversy between parties, Wisconsin law shall be controlling.

# SUPPLEMENTARY CONDITIONS

## 1. APPLICATION & CERTIFICATE FOR PAYMENT

- A. Every contractor engaged in performance of any contract for Department of Public Works, Highway & Transportation shall submit partial and final Application & Certificate for Payment for work under said contract. Form shall provide similar information as shown on AIA G702™ and G703™ forms (samples shown below). Forms shall be submitted to Public Works Project Manager for approval.


**AIA** Document G702™ – 1992

**Application and Certificate for Payment**

TO OWNER:	PROJECT:	APPLICATION NO:	<b>Distribution to:</b>
FROM CONTRACTOR:	VIA ARCHITECT:	PERIOD TO:	OWNER <input type="checkbox"/>
		CONTRACT FOR:	ARCHITECT <input type="checkbox"/>
		CONTRACT DATE:	CONTRACTOR <input type="checkbox"/>
		PROJECT NOS:	FIELD <input type="checkbox"/>
			OTHER <input type="checkbox"/>

---

**CONTRACTOR'S APPLICATION FOR PAYMENT**

Application is made for payment, as shown below, in connection with the Contract. AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM ..... \$ \_\_\_\_\_

2. NET CHANGE BY CHANGE ORDERS ..... \$ \_\_\_\_\_

3. CONTRACT SUM TO DATE (Line 1 ± 2) ..... \$ \_\_\_\_\_

4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ..... \$ \_\_\_\_\_

5. RETAINAGE:

a. \_\_\_\_\_% of Completed Work  
(Columns D + E on G703) ..... \$ \_\_\_\_\_

b. \_\_\_\_\_% of Stored Material  
(Column F on G703) ..... \$ \_\_\_\_\_

Total Retainage (Lines 5a + 5b, or Total in Column I of G703) ..... \$ \_\_\_\_\_

6. TOTAL EARNED LESS RETAINAGE ..... \$ \_\_\_\_\_  
*(Line 4 minus Line 5 Total)*

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... \$ \_\_\_\_\_  
*(Line 6 from prior Certificate)*

8. CURRENT PAYMENT DUE ..... \$ \_\_\_\_\_

9. BALANCE TO FINISH, INCLUDING RETAINAGE ..... \$ \_\_\_\_\_  
*(Line 3 minus Line 6)*

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ _____	\$ _____
Total approved this month	\$ _____	\$ _____
<b>TOTAL</b>	<b>\$ _____</b>	<b>\$ _____</b>
NET CHANGES by Change Order	\$ _____	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

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

By: \_\_\_\_\_ State of: \_\_\_\_\_  
Country of: \_\_\_\_\_  
Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_

Notary Public: \_\_\_\_\_  
My commission expires: \_\_\_\_\_

---

**ARCHITECT'S CERTIFICATE FOR PAYMENT**

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... \$ \_\_\_\_\_  
*(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)*

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

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

**CAUTION:** You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.  
 AIA Document G702™ – 1992, Copyright © 1953, 1953, 1965, 1971, 1978, 1983 and 1992 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. Purchasers are permitted to reproduce ten (10) copies of this document when completed. To report copyright violations of AIA Contract Documents, e-mail The American Institute of Architects' legal counsel, copyright@aia.org.

**Continuation Sheet**

AIA Document G702™-1992, Application and Certificate for Payment, or G732™-2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached. In tabulations below, amounts are in US dollars. Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:  
APPLICATION DATE:  
PERIOD TO:  
ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	G TOTAL COMPLETED AND STORED TO DATE <i>(D+E-F)</i>	H BALANCE TO FINISH <i>(C-G)</i>	I RETAINAGE <i>(if variable rate)</i>
			FROM PREVIOUS APPLICATION <i>(D-E)</i>	THIS PERIOD				
GRAND TOTAL								

**CAUTION:** You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

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**2. CONTRACTOR WAGE AFFIDAVIT**

- A. Every contractor engaged in performance of any contract for Department of Public Works, Highway & Transportation shall submit to this Department, as requested and with final application for payment for work under said contract, affidavit in form as hereinafter set forth in this section. Affidavit affirms that all persons employed by contractor or by any of contractor's subcontractors on such contract have been paid no less than minimum wages established under Dane County Ordinances, Chapter 40, Subchapter II (Minimum Wage Ordinance) and in effect at date of execution of contract, that full payment of wages earned has been made, and that no rebates either directly or indirectly have been made. Form of such affidavit is included in this section.
  
- B. Form should be included with a copy of the final contract invoice forwarded to your contract representative at Dane County.



### 3. INSURANCE

A. **Contractor Carried Insurance.** In order to protect itself and the County, Contractor shall not commence work under this Contract until obtaining all required insurance and the County has approved such insurance. Contractor shall not allow any subcontractor to commence work on subcontract until insurance required of subcontractor has been so obtained and approved.

1. **Pollution Insurance Policy**

Contractor shall procure and maintain during life of this Contract, Pollution Insurance Policy in amount of at least \$1,000,000 per occurrence, \$5,000,000 aggregate.

SECTION 01 00 00  
BASIC REQUIREMENTS

PART 1 GENERAL

1.1 SECTION SUMMARY

- A. Section Includes:
1. Section Summary
  2. Summary of the Work
  3. Contractor Use of Premises
  4. Applications for Payment
  5. Change Procedures
  6. Alternates
  7. Coordination
  8. Cutting and Patching
  9. Conferences
  10. Progress Meetings
  11. Submittal Procedures
  12. Proposed Products List
  13. Shop Drawings
  14. Product Data
  15. Samples
  16. Manufacturers' Instructions
  17. Manufacturers' Certificates
  18. Quality Assurance / Quality Control of Installation
  19. References
  20. Interior Enclosures
  21. Protection of Installed Work
  22. Parking
  23. Staging Areas
  24. Occupancy During Construction and Conduct of Work
  25. Protection
  26. Progress Cleaning
  27. Products
  28. Transportation, Handling, Storage and Protection
  29. Product Options
  30. Substitutions
  31. Starting Systems
  32. Demonstration and Instructions
  33. Contract Closeout Procedures
  34. Final Cleaning
  35. Adjusting
  36. Operation and Maintenance Data
  37. Spare Parts and Maintenance Materials
  38. As-Built and Record Drawings and Specifications

## 1.2 SUMMARY OF THE WORK

- A. Project Description: Perform the Work as specified and detailed in Construction Documents package. Contractor to provide a CNG (Compressed Natural Gas) detection and ventilation system. Work will consist of Heating/Ventilating (HV), Electrical, Electronic Safety and Security (Gas Detection System).
- B. Work by Owner: Not applicable.
- C. Permits: Prior to commencement of the Work, Contractor to secure any and all necessary permits for completion of the Work and facility occupancy.

## 1.3 CONTRACTOR USE OF PREMISES

- A. Limit use of premises to allow work by Contractors or Subcontractors and access by Owner.
- B. Coordinate utility outages and shutdowns with Owner.

## 1.4 APPLICATIONS FOR PAYMENT

- A. Submit one (1) original copies with “wet” signatures of each application on AIA G702™ and G703™ forms or approved contractors invoice form.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: Monthly.
- D. Submit Applications for Payment to Architect / Engineer for initial approval. Architect / Engineer will forward approved copies to Owner who will also approve & process for payment.
- E. Submit Applications for Payment to Public Works Project Manager for approval & processing for payment.

## 1.5 CHANGE PROCEDURES

- A. Contractor's costs for Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Order Requests.

## 1.6 ALTERNATES

- A. Alternates quoted on Bid Form shall be reviewed and accepted or rejected at Owner's option.
- B. Coordinate related work and modify surrounding work as required.

- C. Schedule of Alternates: there are no alternates proposed for this project.

#### 1.7 COORDINATION

- A. Coordinate scheduling, submittals, and work of various sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements. Provide Public Works Project Manager with Work Schedule at the project start and provide updates during the project at progress meetings.
- B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.
- C. Coordinate space requirements and installation of mechanical and electrical work that are indicated diagrammatically on Drawings.

#### 1.8 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching new work; restore work with new Products.
- B. Submit written request in advance of cutting or altering structural or building enclosure elements.
- C. Fit work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- D. Refinish surfaces to match adjacent finishes.

#### 1.9 CONFERENCES

- A. Project shall have pre-bid conference; see Instructions to Bidders.
- B. Owner will schedule preconstruction conference after Award of Contract for all affected parties.
- C. Contractor shall submit Construction Schedule at pre-construction meeting.
- D. When required in individual Specification section, convene pre-installation conference at project site prior to commencing work of Section.

#### 1.10 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at minimum of one bi-weekly after work begins on-site with Public Works Project Manager.
- B. Preside at meetings, record minutes, and distribute copies within two (2) business days to those affected by decisions made.

- C. Attendance at progress meetings by General Contractor, subcontractors, or their authorized representative, is mandatory.
- D. Contractors shall give verbal reports of progress on the Work, discuss schedule for upcoming period and present all conflicts, discrepancies or other difficulties for resolution.
- E. Day & time of progress meetings to be determined at pre-construction meeting.

#### 1.11 SUBMITTAL PROCEDURES

- A. Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Construction Documents references.
- B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with requirements of the Work and Construction Documents.
- C. Identify variations from Construction Documents and Product or system limitations that may be detrimental to successful performance of completing the Work.
- D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

#### 1.12 PROPOSED PRODUCTS LIST

- A. Within thirty(30) business days after date of Award of Contract, submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

#### 1.13 SHOP DRAWINGS

- A. Submit in electronic format to all parties, including Engineering 370 and the Public Works Project Manager.

#### 1.14 PRODUCT DATA

- A. Submit number of copies that Contractor requires, plus two (2) copies that shall be retained by Public Works Project Manager.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.

#### 1.15 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of Product.

- B. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Public Works Project Manager's selection.

#### 1.16 MANUFACTURERS' INSTRUCTIONS

- A. When specified in individual Specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

#### 1.17 MANUFACTURERS' CERTIFICATES

- A. When specified in individual Specification sections, submit manufacturers' certificate to Public Works Project Manager for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

#### 1.18 QUALITY ASSURANCE / QUALITY CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply fully with manufacturers' instructions.
- C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

#### 1.19 REFERENCES

- A. Conform to reference standard by date of issue current as of date for receiving bids.
- B. Should specified reference standard conflict with Construction Documents, request clarification from Public Works Project Manager before proceeding.

#### 1.20 INTERIOR ENCLOSURES

- A. Provide temporary partitions as required to separate work areas from Owner occupied areas, to prevent distribution of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

#### 1.21 PROTECTION OF INSTALLED WORK

- A. Protect installed work and provide special protection where specified in individual Specification sections.

#### 1.22 PARKING

- A. . Parking shall be available at the Work site.

- B. All contractors and their employees shall cooperate with General Contractor and others in parking of vehicles to avoid interference with normal operations and construction activities.
- C. Do not obstruct existing service drives and parking lots with equipment, materials and / or vehicles. Keep accessible for Owner's use at all times.

#### 1.23 STAGING AREAS

- A. Coordinate staging areas with Public Works Project Manager prior to starting the Work.
- B. On-site space for use as staging areas and storage of materials is limited and will be apportioned among various Contractors as their needs dictate with due regard for storage requirements of each Contractor. Each Contractor shall be responsible for safety of equipment and materials that are stored on site.

#### 1.24 OCCUPANCY DURING CONSTRUCTION AND CONDUCT OF WORK

- A. Smoking is prohibited on Dane County property.
- B. Owner reserves right at any time to dismiss from premises any Contractor or construction personnel that do not uphold requirements of this Section.
- C. Owner shall not be held liable for any lost time, wages, or impacts to construction schedule by any Contractor or construction personnel dismissed for failure to uphold requirements of this Section.
- D. Areas of existing facility will be occupied during period when the Work is in progress. Work may be done during normal business hours (8:00 am to 4:30 pm), but confer with Owner, schedule work and store materials so as to interfere as little as possible with normal use of premises. Notify Owner when coring or similar noise making work is to be done and obtain Owner's written approval of schedule. If schedule is not convenient for Owner, reschedule and resubmit new times for Owner approval. Coring of floor along with other noisy work may have to be done on second and third shifts.
- E. Work shall be done and temporary facilities furnished so as not to interfere with access to any occupied area and so as to cause least possible interference with normal operation of facility or any essential service thereof.
- F. Contractor shall, at all times, provide approved, safe walkways and facility entrances for use by Owner, employees and public.
- G. Contractor shall provide adequate protection for all parts of facility, its contents and occupants wherever the Work under this Contract is to be performed.
- H. Each Contractor shall arrange with Owner to make necessary alterations, do new work, make connections to all utilities, etc., at such times as will not cause interruption of utility services to facility. Contractor doing this work shall protect, cap, cut off and / or replace

and relocate existing pipes, electrical work and other active utilities encountered which may interfere with new construction work.

- I. New work in extension of existing work shall correspond in all respects with that to which it connects or similar existing work unless otherwise indicated or specified.
  - 1. Existing work shall be cut, altered, removed or replaced as necessary for performance of Contract obligations.
  - 2. Work remaining in place, damaged or defaced by reason of work done under this Contract shall be restored equal to its condition at time of Award of Contract.
  - 3. If removal of work exposes discolored or unfinished surfaces or work out of alignment, such surfaces shall be refinished or materials replaced as necessary to make continuous work uniform and harmonious.
- J. Contractor is not responsible for providing & maintaining temporary toilet facilities.

#### 1.25 PROTECTION

- A. Contractor shall protect from damage / injury all trees, shrubs, hedges, plantings, grass, mechanical, electrical & plumbing equipment, walks and driveways and pay for any damage to same resulting from insufficient or improper protection.
- B. Contractor shall provide and maintain barricades & signage to prohibit public access to construction site.
- C. Contractor shall provide and maintain guard lights at all barricades, railings, obstructions in streets, roads or sidewalks and at all trenches adjacent to public walks or roads.

#### 1.26 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

#### 1.27 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by Construction Documents.

#### 1.28 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

- A. Transport, handle, store and protect Products in accordance with manufacturer's instructions.

## 1.29 PRODUCT OPTIONS

- A. Where definite material is specified, it is not intentional to discriminate against "equal" product made by another manufacturer. Intention is to set definite standard of material quality. Should bidder choose to bid materials other than those specified, bidder shall submit said materials specifications to Public Works Project Manager for consideration.. Owner reserves right to approve or reject substitutions based on Specification requirements or intended use.
- B. Products and materials that are not specified, but have been approved for use by Public Works Project Manager shall be identified in addenda to all bidding contractors.
- C. Owner reserves right to approve or reject substitutions based on Specification requirements and intended use.

## 1.30 SUBSTITUTIONS

- A. Public Works Project Manager shall consider requests for Substitutions only within fifteen (15) calendar days after date of Public Works Construction Contract.
- B. Document each request with complete data substantiating compliance of proposed Substitution with Construction Documents.
- C. Submit three (3) copies of requests for Substitution for consideration. Limit each request to one (1) proposed Substitution.
- D. Substitutions shall not change contract price established at Bid Due Date.

## 1.31 STARTING SYSTEMS

- A. Provide written notification prior to start-up of each equipment item or system.
- B. Ensure that each piece of equipment or system is ready for operation.
- C. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.
- D. Submit written report that equipment or system has been properly installed and is functioning correctly.

## 1.32 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of final inspection.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

- C. Owner may choose to photograph or videotape demonstration session; demonstration and demonstrator shall be to level of satisfaction of Owner.

#### 1.33 CONTRACT CLOSEOUT PROCEDURES

- A. Submit written certification that Construction Documents have been reviewed, the Work has been inspected, and the Work is complete in accordance with Construction Documents and ready for Public Works Project Manager's inspection.
- B. Submit final Application for Payment identifying total adjusted Contract Sum / Price, previous payments, and amount remaining due.

#### 1.34 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior surfaces exposed to view.
- C. Remove waste and surplus materials, rubbish, and construction facilities from site.

#### 1.35 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

#### 1.36 OPERATION AND MAINTENANCE MANUAL

- A. Provide two (2) bound, hard-copy operation and maintenance manuals that include all systems, materials, products, equipment, mechanical and electrical equipment and systems supplied and installed in the Work. Provide electronic version of operation and maintenance manual also.

#### 1.37 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.
- B. Deliver to the Work site and place in location as directed.

#### 1.38 AS-BUILT AND RECORD DRAWINGS AND SPECIFICATIONS

- A. Contractor-produced Drawings and Specifications shall remain property of Contractor whether Project for which they are made is executed or not. Contractor shall furnish Public Works Project Manager with original marked up redlines of Construction Documents' drawings and specifications that shall include all Addendums, Change Orders, Construction Bulletins, on-site changes, field corrections, etc. These are project As-Built Drawings & Specifications. R

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

## SECTION 01 74 19

### CONSTRUCTION WASTE MANAGEMENT, DISPOSAL & RECYCLING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Summary
  - 2. Waste Management Goals
  - 3. Construction and / or Demolition Waste Management
  - 4. Waste Management Plan
  - 5. Reuse
  - 6. Recycling
  - 7. Materials Sorting and Storage On Site
  - 8. Lists of Recycling Facilities Processors and Haulers
  - 9. Waste Management Plan Form
  
- B. Related Sections:
  - 1. Section 01 00 00 - Basic Requirements

##### 1.2 WASTE MANAGEMENT GOALS

- A. Dane County requires that as many waste materials as possible produced as result of this project be salvaged, reused or recycled in order to minimize impact of construction waste on landfills and to minimize expenditure of energy and cost in fabricating new materials. Additional information may be found in Dane County Green Building Policy, Resolution 299, 1999-2000.

##### 1.3 CONSTRUCTION AND / OR DEMOLITION WASTE MANAGEMENT

- A. All construction and demolition waste suitable for recycling may go to Dane County Construction & Demolition Recycling Facility located at 7102 US Hwy 12, Madison, located across from Yahara Hills Golf Course. This facility can receive mixed loads of construction and demolition waste. For complete list of acceptable materials see [www.countyofdane.com/pwht/recycle/CD\\_Recycle.aspx](http://www.countyofdane.com/pwht/recycle/CD_Recycle.aspx).
- B. Dane County Landfill, also at 7102 US Hwy 12, Madison, must receive all other waste from this project. [www.countyofdane.com/pwht/recycle/landfill.aspx](http://www.countyofdane.com/pwht/recycle/landfill.aspx).

##### 1.4 WASTE MANAGEMENT PLAN

- A. Contractor shall develop Waste Management Plan (WMP) for this project. Dane County's Special Projects & Materials Manager may be contacted with questions. Outlined in RECYCLING section of this specification are examples of materials that can be recycled or reused as well as recommendations for waste sorting methods.

B. Contractor shall complete WMP and include cost of recycling / reuse in Bid. WMP will be submitted to Public Works Project Manager within fifteen (15) business days of Bid Due date. Copy of blank WMP form is in this Section. Submittal shall include cover letter and WMP form with:

1. Information on:
  - a. Types of waste materials produced as result of work performed on site;
  - b. Estimated quantities of waste produced;
  - c. Identification of materials with potential to be recycled or reused;
  - d. How materials will be recycled or reused;
  - e. On-site storage and separation requirements (on site containers);
  - f. Transportation methods; and
  - g. Destinations.

#### 1.5 REUSE

A. Contractors and subcontractors are encouraged to reuse as many waste materials as possible. Salvage should be investigated for materials not reusable on site.

#### 1.6 RECYCLING

A. These materials may be recycled at Dane County Construction & Demolition Recycling Facility:

1. Wood.
2. Wood Pallets.
3. PVC Plastic (pipe, siding, etc.).
4. Cardboard.
5. Metal.

B. These materials can be recycled elsewhere in Dane County area:

1. Fluorescent Lamps.
2. Foam Insulation & Packaging (extruded and expanded).
3. Barrels & Drums.

C. All materials must be recycled at WDNR permitted waste processing facilities that adhere to all State Statutes.

#### 1.7 MATERIALS SORTING AND STORAGE ON SITE

A. Contractor shall provide separate containers for recyclable materials. Number of containers will be dependent upon project and site conditions.

B. Contractor shall provide on-site locations for subcontractors supplied recycling containers to help facilitate recycling.

C. Mixed loads of recycled materials are allowed only per instructions at [www.countyofdane.com/pwht/recycle/CD\\_Recycle.aspx](http://www.countyofdane.com/pwht/recycle/CD_Recycle.aspx).

## 1.8 LISTS OF RECYCLING FACILITIES PROCESSORS AND HAULERS

- A. Refer to [www.countyofdane.com/pwht/recycle/CD\\_Recycle.aspx](http://www.countyofdane.com/pwht/recycle/CD_Recycle.aspx) for information on Dane County Construction & Demolition Recycling Facility.
- B. Web site [www.countyofdane.com/pwht/recycle/categories.aspx](http://www.countyofdane.com/pwht/recycle/categories.aspx) lists current information for Dane County Recycling Markets. Contractors can also contact Allison Hackner at 608/266-4990, or local city, village, town recycling staff listed at site [www.countyofdane.com/pwht/recycle/contacts.aspx](http://www.countyofdane.com/pwht/recycle/contacts.aspx). Statewide listings of recycling / reuse markets are available from UW Extension at <https://www.uwgb.edu/shwec/>.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

Not Used.

END OF SECTION

## WASTE MANAGEMENT PLAN FORM



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

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

Phone No.: \_\_\_\_\_ Recycling Coordinator: \_\_\_\_\_

MATERIAL	ESTIMATED QUANTITY	DISPOSAL METHOD (CHECK ONE)		RECYCLING / REUSE COMPANY OR DISPOSAL SITE
Salvaged & reused building materials	_____ cu. yds. _____ tons	_____ Recycled	_____ Reused	Name: _____
Wood	_____ cu. yds. _____ tons	_____ Recycled	_____ Reused	Name: _____
Wood Pallets	_____ units	_____ Recycled	_____ Reused	Name: _____
PVC Plastic	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Asphalt & Concrete	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Bricks & Masonry	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Vinyl Siding	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Cardboard	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Metals	_____ cu. yds. _____ tons	_____ Recycled	_____ Reused	Name: _____
Unpainted Gypsum / Drywall	_____ cu. yds. _____ tons	_____ Recycled	_____ Reused	Name: _____
Shingles	_____ cu. yds. _____ tons	_____ Recycled	_____ Reused	Name: _____
Fluorescent Lamps	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Foam Insulation	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Carpet Padding	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Barrels & Drums	_____ units	_____ Recycled	_____ Reused	Name: _____

## WASTE MANAGEMENT PLAN FORM

Glass	_____ cu. yds. _____ tons	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____

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**SECTION 23 05 00**  
**COMMON WORK RESULTS FOR HV**

**PART 1 - GENERAL**

**SCOPE**

This section includes information common to two or more technical specification sections or items that are of a general nature, not conveniently fitting into other technical sections.

Division 23 sections include all material and equipment required for York and Springfield Garages. Not all items specified may be required for both sites.

**RELATED WORK**

Section 23 05 13 - Common Motor Requirements for HV Equipment.

Section 23 33 00 - Air Duct Accessories.

**REFERENCE**

Applicable provisions of GENERAL CONDITIONS OF THE CONTRACT AND SECTION 01 00 00, BASIC REQUIREMENTS shall govern work under all Sections of Division 23.

**REFERENCE STANDARDS**

Abbreviations of standards organizations referenced in other sections are as follows:

AABC	Associated Air Balance Council
ADC	Air Diffusion Council
AGA	American Gas Association
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
EPA	Environmental Protection Agency
GAMA	Gas Appliance Manufacturers Association
IEEE	Institute of Electrical and Electronics Engineers
ISA	Instrument Society of America
MCA	Mechanical Contractors Association
MICA	Midwest Insulation Contractors Association
NBS	National Bureau of Standards
NEBB	National Environmental Balancing Bureau
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association. Inc.
UL	Underwriters Laboratories Inc.
ASTM E814	Standard Test Method for Fire Tests of Through-Penetration Fire Stops
ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials
UL1479	Fire Tests of Through-Penetration Firestops
UL723	Surface Burning Characteristics of Building Materials

**QUALITY ASSURANCE**

Refer to General Conditions of the Contract for Equals and Substitutions.

Where equipment or accessories are used which differ in arrangement, configuration, dimensions, ratings, or engineering parameters from those indicated on the contract documents, the contractor is responsible for all costs involved in integrating the equipment or accessories into the system and for obtaining the performance from the system into which these items are placed. This may include changes found necessary during the testing, adjusting, and balancing phase of the project.

**CONTINUITY OF EXISTING SERVICES**

Do not interrupt or change existing services without prior written approval from the Dane County Project Manager. When interruption is required, coordinate the down-time with the user to minimize disruption to their activities. Unless specifically stated, all work involved in interrupting or changing existing services is to be done during normal working hours.

1  
2 **SEALING AND FIRESTOPPING**

3 Sealing and firestopping of sleeves/openings between ductwork, piping, etc. and the sleeve, structural or  
4 partition opening shall be the responsibility of the contractor whose work penetrates the opening. The  
5 contractor responsible shall hire individuals skilled in such work to do the sealing and fireproofing. These  
6 individuals hired shall normally and routinely be employed in the sealing and fireproofing occupation.  
7

8 **SUBMITTALS**

9 Refer to General Conditions of the Contract for Shop Drawings, Product Data and Samples.

10  
11 Submit for all equipment and systems as indicated in the respective specification sections, marking each  
12 submittal with that specification section number. Mark general catalog sheets and drawings to indicate  
13 specific items being submitted and proper identification of equipment by name and/or number, as indicated  
14 in the contract documents.  
15

16 Before submitting electrically powered equipment, verify that the electrical power and control requirements  
17 for the equipment are in agreement with the motor starter schedule on the electrical drawings. Include a  
18 statement on the shop drawing transmittal to the engineer that the equipment submitted and the motor starter  
19 schedule are in agreement or indicate any discrepancies. See related comments in Section 23 05 13 in Part 1  
20 under Electrical Coordination.  
21

22 Include wiring diagrams of electrically powered equipment.

23  
24 Submit sufficient quantities of shop drawings to allow the following distribution:

- 25 • Operating and Maintenance Manuals 2 copies
  - 26 • Testing, Adjusting and Balancing Contractor 1 copy
  - 27 • Dane County Public Works 1 copy
  - 28 • Engineer 1 copy
- 29

30 Electronic submittals are acceptable in PDF format. Submittals shall clearly identify the specific  
31 item being submitted for review. Electronic submittals may not be returned or partially returned as  
32 required to identify conditions of the review. A Submittal Review Form will be returned with  
33 conditions of the approval or rejection to the submittal  
34

35 **OPERATION AND MAINTENANCE DATA**

36 All operations and maintenance data shall comply with the submission and content requirements specified  
37 under section Basic Requirements.  
38

39 In addition to the general content specified under Basic Requirements supply the following additional  
40 documentation:

- 41 1. Records of tests performed a to certify compliance with system requirements
  - 42 2. Certificates of inspection by regulatory agencies
  - 43 3. Lubrication instructions, including list/frequency of lubrication
- 44

45 **CERTIFICATES AND INSPECTIONS**

46 Refer to General Conditions of the Contract for Inspections and Testing.  
47

48 Obtain and pay for all required State installation inspections except those provided by the Architect/Engineer  
49 in accordance with local Authority Having Jurisdiction requirements or Wis Adm Code. Deliver originals  
50 of these certificates to the Dane County Project Manager. Include copies of the certificates in the Operating  
51 and Maintenance Instructions.  
52

53 **OPERATING AND MAINTENANCE INSTRUCTIONS**

54 Refer to Division 1, Basic Requirements, Operating and Maintenance Instructions.  
55

56 Assemble material in three-ring or post binders, using an index at the front of each volume and tabs for each  
57 system or type of equipment. In addition to the data indicated in the General Requirements, include the  
58 following information:  
59

- 60 • Copies of all approved shop drawings.
- 61 • Manufacturer's wiring diagrams for electrically powered equipment
- 62 • Records of tests performed to certify compliance with system requirements
- 63 • Certificates of inspection by regulatory agencies
- 64 • Control record drawings and control sequences

- Parts lists for manufactured equipment
- Lubrication instructions, including list/frequency of lubrication done during construction
- Warranties
- Additional information as indicated in the technical specification sections

#### **TRAINING OF OWNER PERSONNEL**

Instruct user personnel in the proper operation and maintenance of systems and equipment provided as part of this project. Include minimum one hour of instruction, using the Operating and Maintenance manuals during this instruction. Demonstrate startup and shutdown procedures for all new or newly controlled existing equipment. All training to be during normal working hours.

#### **RECORD DRAWINGS**

Refer to Division 1, Basic Requirements, Record Drawings.

In addition to the data indicated in the Basic Requirements, maintain control record drawings on originals prepared by the installing contractor/subcontractor. Include copies of these record drawings with the Operating and Maintenance manuals.

### **PART 2 - PRODUCTS**

#### **IDENTIFICATION**

##### **STENCILS:**

Not less than 1 inch high letters/numbers for marking pipe and equipment.

##### **ENGRAVED NAME PLATES:**

White letters on a black background, 1/16 inch thick plastic laminate, beveled edges, screw mounting, Setonply Style 2060 by Seton Name Plate Company or Emedolite- Style EIP by EMED Co., or equal by Marking Services, or W. H. Brady.

#### **SEALING AND FIRESTOPPING**

##### **FIRE AND/OR SMOKE RATED PENETRATIONS:**

###### **Manufacturers:**

3M, Hilti, Rectorseal, STI/SpecSeal, Tremco, or approved equal.

All firestopping systems shall be provided by the same manufacturer.

###### **Submittals:**

Contractor shall submit product data for each firestop system. Submittals shall include product characteristics, performance and limitation criteria, test data, MSDS sheets, installation details and procedures for each method of installation applicable to this project. For non-standard conditions where no UL tested system exists, submit manufacturer's drawings for UL system with known performance for which an engineering judgement can be based upon.

###### **Product:**

Fire stop systems shall be UL listed or tested by an independent testing laboratory approved by the Department of Commerce.

Use a product that has a rating not less than the rating of the wall or floor being penetrated. Reference architectural drawings for identification of fire and/or smoke rated walls and floors.

Contractor shall use firestop putty, caulk sealant, intumescent wrapstrips, intumescent firestop collars, firestop blocks, firestop mortar or a combination of these products to provide a UL listed system for each application required for this project. Provide mineral wool backing where specified in manufacturer's application detail.

##### **NON-RATED PENETRATIONS:**

###### **Pipe Penetrations:**

At pipe penetrations of non-rated interior walls, floors and exterior walls above grade, use urethane caulk in annular space between pipe insulation and sleeve. For non-rated drywall, plaster or wood walls where sleeve is not required use urethane caulk in annular space between pipe insulation and wall material.

1 Duct Penetrations:  
2 Annular space between duct (with or without insulation) and the non-rated walls or floor opening shall not  
3 be larger than 2". Where existing openings have an annular space larger than 2", the space shall be patched  
4 to match existing construction to within 2" around the duct.  
5  
6

### 7 **PART 3 - EXECUTION**

#### 8 **DEMOLITION**

9 Perform all demolition as indicated on the drawings to accomplish new work. Coordinate work with the user  
10 to minimize disruption to the existing building occupants.  
11  
12

13 All pipe, wiring and associated conduit, ductwork, and similar items demolished, abandoned, or deactivated  
14 are to be removed from the site by the Contractor.  
15

#### 16 **CUTTING AND PATCHING**

17 Refer to General Conditions of the Contract for Cutting and Patching.  
18

#### 19 **COORDINATION**

20 Coordinate all work with other contractors prior to installation. Any installed work that is not coordinated  
21 and that interferes with other contractor's work shall be removed or relocated at the installing contractor's  
22 expense.  
23

24 Cooperate with the test and balance agency in ensuring Section 23 05 93 specification compliance. Verify  
25 system completion to the test and balance agency with controls adjusted and calibrated, controls cycled  
26 through their sequences, etc.), ready for testing, adjusting and balancing work. Demonstrate the starting,  
27 interlocking and control features of each system so the test and balance agency can perform its work.  
28

#### 29 **IDENTIFICATION**

30 Identify equipment new or existing modified or newly controlled in this project by stenciling equipment  
31 number on or near the equipment item.  
32

33 Where stenciling is not appropriate for equipment identification, engraved name plates may be used.  
34

#### 35 **LUBRICATION**

36 Lubricate all bearings with lubricant as recommended by the manufacturer before the equipment is operated  
37 for any reason. Once the equipment has been run, maintain lubrication in accordance with the manufacturer's  
38 instructions until the work is accepted by the owner. Maintain a log of all lubricants used and frequency of  
39 lubrication; include this information in the Operating and Maintenance Manuals at the completion of the  
40 project.  
41

#### 42 **SEALING AND FIRESTOPPING**

##### 43 **FIRE AND/OR SMOKE RATED PENETRATIONS:**

44 Install approved product in accordance with the manufacturer's instructions where pipes penetrate a  
45 fire/smoke rated surface. When pipe is insulated, use a product which maintains the integrity of the insulation  
46 and vapor barrier.  
47

48 Where firestop mortar is used to infill large fire-rated floor openings that could be required to support weight,  
49 provide permanent structural forming. Firestop mortar alone is not adequate to support any substantial  
50 weight.  
51

##### 52 **NON-RATED PARTITIONS:**

53 At all interior partitions penetrations are required to be sealed. Apply sealant to both sides of the penetration  
54 in such a manner that the annular space between the sleeve or cored opening.  
55

#### 56 **TRAINING**

57 Provide training for Owner designated personnel for all new or modified existing system in the proper  
58 operation and maintenance. Training sessions may be video taped. The owner will provide video equipment  
59 and operator.  
60

61 **END OF SECTION**

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**SECTION 23 05 13**  
**COMMON MOTOR REQUIREMENTS FOR HV EQUIPMENT**

**PART 1 - GENERAL**

**SCOPE**

This sections includes requirements for single phase motors that are used with equipment specified in other sections.

**RELATED WORK**

Section 23 09 14 - Electric Control Devices for HV  
Section 23 09 26 - Gas Detection System  
Section 23 09 93 - Sequence of Operation for HV Controls  
Section 23 34 00 - HV Fans  
Division 26 00 00 – Electrical ON ELECTRICAL DRAWINGS

**REFERENCE**

Refer to Section 23 05 00 Common Work Results for HV

**REFERENCE STANDARDS**

ANSI/IEEE 112 Test Procedure for Polyphase Induction Motors and Generators  
ANSI/NEMA MG-1 Motors and Generators  
ANSI/NFPA 70 National Electrical Code

**QUALITY ASSURANCE**

Refer to Section 23 05 00 Common Work Results for HV

**SHOP DRAWINGS**

Refer to Section 23 05 00 Common Work Results for HV

Include with the equipment which the motor drives the following motor information: motor manufacturer, horsepower, voltage, phase, hertz, rpm, full load efficiency. Include project wiring diagrams prepared by the contractor specifically for this work.

**OPERATION AND MAINTENANCE DATA**

All operations and maintenance data shall comply with the submission and content requirements specified under section Basic Requirements.

**ELECTRICAL COORDINATION**

All starters, overload relay heater coils, disconnect switches and fuses, relays, wire, conduit, pushbuttons, pilot lights, and other devices required for the control of motors or electrical equipment are furnished and installed by the Electrical Contractor, except as specifically noted elsewhere in this division of specifications or on equipment schedules.

Electrical drawings and/or specifications show number and horsepower rating of all motors furnished by this Contractor, together with their actuating devices if these devices are furnished by the Electrical Contractor. Should any discrepancy in size, horsepower rating, electrical characteristics or means of control be found for any motor or other electrical equipment after contracts are awarded, Contractor is to immediately notify the architect/engineer of such discrepancy. Costs involved in any changes required due to equipment substitutions initiated by this contractor will be the responsibility of this contractor. See related comments in Section 23 05 00 - Common Work Results for HVAC, under Shop Drawings.

Electrical Contractor will provide all power wiring as indicated on the electrical drawings, control wiring to be provided by Division 23. Line voltage power wiring required by division 23 and not indicated on the electrical drawings shall be provided by Division 23 contractor or Division 23 sub-contractor.

**PRODUCT CRITERIA**

Motors to conform to all applicable requirements of NEMA, IEEE, ANSI, and NEC standards and shall be listed by U.L. for the service specified.

Select motors for conditions in which they will be required to perform; i.e., general purpose, splashproof, explosion proof, standard duty, high torque or any other special type as required by the equipment or motor manufacturer's recommendations.

1 Furnish motors for starting in accordance with utility requirements and compatible with starters as specified.  
2  
3

## 4 **PART 2 - PRODUCTS**

### 5 **SINGLE PHASE, SINGLE SPEED MOTORS**

6 Use NEMA rated 115 volt, or 230 volt single phase, 60 hertz motors as scheduled.  
7

8 Use permanent split capacitor or capacitor start, induction run motors equipped with permanently lubricated  
9 and sealed ball or sleeve bearings and Class A insulation. Service factor to be not less than 1.35.  
10

11 Use open drip-proof motors unless totally enclosed fan-cooled, totally enclosed non-ventilated, explosion-  
12 proof, or encapsulated motors are specified in the equipment sections.  
13

### 14 **THREE PHASE, SINGLE SPEED MOTORS**

15 Use NEMA rated motors of voltage specified, three phase, 60 hertz motors for all motors 1/2 HP and larger  
16 unless specifically indicated.  
17

18 Use NEMA general purpose, continuous duty, Design B , normal starting torque, T-frame or U-frame motors  
19 with Class B or better insulation unless the manufacturer of the equipment on which the motor is being used  
20 has different requirements. Use open drip-proof motors unless totally enclosed fan-cooled, totally enclosed  
21 non-ventilated, explosion-proof, or encapsulated motors are specified in the equipment sections.  
22

23 Use grease lubricated anti-friction ball bearings with housings equipped with plugged/capped provision for  
24 relubrication, rated for minimum AFBMA 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA  
25 minimum V-belt pulley with belt center line at the end of NEMA standard shaft extension. Stamp bearing  
26 sizes on nameplate.  
27

28 All open drip-proof motors to have a 1.15 service factor. Other motor types may have minimum 1.0 service  
29 factors.  
30

31 All motors 1 HP and larger, except specially wound motors and inline pump motors 56 frame and smaller, to  
32 be high efficiency design with full load efficiencies which meet or exceed the values listed below when tested  
33 in accordance with NEMA MG 1.  
34

35 ----Totally Enclosed Fan-Cooled----

36	37	38 -----Nominal Motor Speed-----		
39	MOTOR	1200 rpm	1800 rpm	3600 rpm
40	HP			
41	1	82.5	85.5	77.0
42	1-1/2	87.5	86.5	84.0
43	2	88.5	86.5	85.5
44	3	89.5	89.5	86.5

## 45 **PART 3 - EXECUTION**

### 46 **INSTALLATION**

47 When motor will be connected to the driven device by means of a belt drive, mount sheaves on the appropriate  
48 shafts in accordance with the manufacturer's instructions. Use a straight edge to check alignment of the  
49 sheaves; reposition sheaves as necessary so that the straight edge contacts both sheave faces squarely. After  
50 sheaves are aligned, loosen the adjustable motor base so that the belt(s) can be added and tighten the base so  
51 that the belt tension is in accordance with the drive manufacturer's recommendations. Frequently recheck  
52 belt tension and adjust if necessary during the first day of operation and again after 80 hours of operation.  
53

54 Lubricate all motors requiring lubrication. Record lubrication material used and the frequency of use.  
55 Include this information in the maintenance manuals.  
56

57 **END OF SECTION**  
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**SECTION 23 05 23**  
**VALVES AND PIPING FOR FUEL GAS**

**PART 1 - GENERAL**

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**SCOPE**

This section includes valve specifications for all HV.

**RELATED WORK**

Section 23 09 14 - Electric Control Devices for HVAC  
Section 23 09 93 - Sequence of Operation for HV Controls

**REFERENCE**

Refer to Section 23 05 00 Common Work Results for HV

**QUALITY ASSURANCE**

Refer to Section 23 05 00 Common Work Results for HV

**SUBMITTALS**

Refer to Section 23 05 00 Common Work Results for HV

Contractors shall submit a schedule of all valves indicating type of service, dimensions, materials of construction, and pressure/temperature ratings for all valves to be used on the project. Temperature ratings specified are for continuous operation.

**OPERATION AND MAINTENANCE DATA**

All operations and maintenance data shall comply with the submission and content requirements specified under section Basic Requirements.

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**PART 2 - PRODUCTS**

**LP GAS PIPING**

2-1/2" and Smaller: ASTM A53, type E or S, standard weight (schedule 40) black steel pipe with ASTM A197/ANSI B16.3 class 150 black malleable iron threaded fittings or ASTM A234 grade WPB/ANSI B16.9 standard weight, seamless, carbon steel weld fittings.

2-1/2" and Larger: ASTM A53, type E or S, standard weight black steel pipe with ASTM A234 grade WPB/ANSI B16.9 standard weight, seamless, carbon steel weld fittings.

**UNIONS AND FLANGES**

2-1/2" and Smaller: ASTM A197/ANSI B16.3 malleable iron unions with brass seats. Use black malleable iron on black steel piping and galvanized malleable iron on galvanized steel piping. Use unions of a pressure class equal to or higher than that specified for the fittings of the respective piping service but not less than 250 psi.

2-1/2" and Larger: ASTM A181 or A105, grade 1 hot forged steel flanges of threaded, welding and of a pressure class compatible with that specified for valves, piping specialties and fittings of the respective piping service. Flanges smaller than 2-1/2" may be used as needed for connecting to equipment and piping specialties. Use ANSI B16.1 flat face flanges with full face gaskets for mating with other flat face flanges on equipment.

**WELDER QUALIFICATIONS**

Before any metallic welding is performed, Contractor to submit his Standard Welding Procedure Specification together with the Procedure Qualification Record as required by Section IX of the ASME Boiler and Pressure Vessel Code and/or the National Certified Pipe Welding Bureau.

Before any polyethylene fusion welding is performed, Contractor to submit certification that the welders to be used on this project have successfully demonstrated proper welding procedures in accordance with the Code of Federal Regulations, Title 49, Part 192, Section 192.285.

1 **LP GAS SYSTEMS VALVES**

2  
3 **SHUT OFF VALVES:**

4 2" and smaller: Ball valve, bronze body, threaded ends, chrome-plated bronze or stainless steel ball, full or  
5 conventional port, teflon seat, blowout-proof stem, two-piece construction, suitable for 150 psig working  
6 pressure, U.L. listed for use as LP gas shut-off.

7  
8 **GAS SOLENOID VALVES**

9  
10 Based on ASCO LP fuel gas solenoid valve. Prior approved valves by Honeywell or equivalent.

11  
12 Operating pressure differential range: 0 to 5 PSI, max. fluid temp. 125 F, fluid/ambient temp. max. 125 F.,  
13 120 volts, 60 Hz, coil enclosure NEMA Type 4, 4X.

14  
15 York Garage:

16 Solenoid valve, combustion gas, 2 way, 2 position, normally open configuration, brass body,  
17 1 inch pipe size.

18  
19 Springfield Garage:

20 Solenoid valve, combustion gas, 2 way, 2 position, normally open configuration, aluminum body,  
21 3 inch pipe size.

22  
23  
24 **PART 3 - EXECUTION**

25  
26 **GENERAL**

27 Properly align piping before installation of valves in an upright position; operators installed below the valves  
28 will not be accepted.

29  
30 Install valves in strict accordance with valve manufacturer's installation recommendations. Do not support  
31 weight of piping system on valve ends.

32  
33 Install all valves with the stem in the upright position. Valves may be installed with the stem in the horizontal  
34 position only where space limitations do not allow installation in an upright position  
35 Install stem extensions when shipped loose from valve.

36  
37 **THREADED PIPE JOINTS**

38 Use a Teflon based thread lubricant or Teflon tape when making joints; no hard setting pipe thread cement  
39 or caulking will be allowed

40  
41 **WELDED PIPE JOINTS**

42 Make all welded joints by fusion welding in accordance with ASME Codes, ANSI B31, and State Codes  
43 where applicable.

44  
45 **FLEXIBLE GAS CONNECTOR**

46 Make gas connection to gas fired heating equipment with flexible connectors as indicated on the drawings  
47 and/or details.

48  
49 **GAS SOLENOID VALVES**

50 Install gas solenoid valve where indicated on the drawings.

51 When valve is smaller than the pipe size provide required reducers and increasers to install in the piping.

52 Install in accordance with the manufacturers requirements.

53 Control valve operation as specified in the Control Sequences.

54  
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56 **END OF SECTION**

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**SECTION 23 05 29**  
**HANGERS AND SUPPORTS FOR HV PIPING AND EQUIPMENT**

**PART 1 - GENERAL**

**SCOPE**

This section includes hangers and supports for HV piping and equipment.

**RELATED WORK**

Section 23 05 29 - Valves and Piping for Fuel Gas

**REFERENCE**

Refer to Section 23 05 00 Common Work Results for HV

**REFERENCE STANDARDS**

MSS SP-58 Pipe Hangers and Supports - Materials, Design and Manufacture.

MSS SP-59 Pipe Hangers and Supports - Selection and Application.

**QUALITY ASSURANCE**

Refer to Section 23 05 00 Common Work Results for HV

**DESCRIPTION**

Provide all supporting devices as required for the installation of mechanical piping. All supports and installation procedures are to conform to the latest requirements of the ANSI Code for pressure piping.

Do not hang any mechanical item directly from a metal deck.

Support apparatus and material under all conditions of operation, variations in installed and operating weight of equipment and piping, to prevent excess stress, and allow for proper expansion and contraction.

Protect insulation at all hanger points; see Related Work above.

**SHOP DRAWINGS**

Refer to Section 23 05 00 Common Work Results for HV.

**DESIGN CRITERIA**

Materials and application of pipe hangers and supports shall be in accordance with MSS Standard Practice SP-58 and SP-69 unless noted otherwise.

Allow sufficient space between adjacent pipes and ducts for insulation, valve operation, routine maintenance, etc.

**PART 2 - PRODUCTS**

**PIPE HANGER AND SUPPORT MANUFACTURERS**

Anvil, B-Line, Fee and Mason, Kindorf, Michigan Hanger, Unistrut, or approved equal. Anvil figure numbers are listed below; equivalent material by other manufacturers is acceptable.

**STRUCTURAL SUPPORTS**

Provide all supporting steel required for the installation of mechanical equipment and materials, whether or not it is specifically indicated or sized, including angles, channels, beams, etc. to suspend equipment, install roof curbs or floor support for equipment.

**BEAM CLAMPS**

MSS SP-69 Type 23 malleable black iron clamp for attachment to beam flange to 0.62 inches thick for single threaded rods of 3/8, 1/2, and 5/8 inch diameter, for use with pipe sizes 4 inch and less. Furnish with a hardened steel cup point set screw. Anvil figure 86.

MSS SP-69 Type 28 or Type 29 forged steel jaw type clamp with a tie rod to lock clamp in place, suitable for rod sizes to 1-1/2 inch diameter but limited in application to pipe sizes 8 inch and less without prior approval. Anvil figure 228.

1 **EQUIPMENT CURBS**  
2 Refer to section 23 34 00 for new power roof exhaust fan curbs.

3  
4  
5 **PART 3 - EXECUTION**

6  
7 **INSTALLATION**  
8 Install supports to provide for free expansion of the piping and duct system.

9  
10 **POWER ROOF FAN EQUIPMENT CURBS**  
11 Install new power roof exhausters on new curbs installed in existing metal roofing system. Provide  
12 reinforcement at curbs as indicated on the drawings. New curbs shall be installed per manufacturers  
13 requirements and sealed water tight to existing roof system.

14  
15 **POWER WALL FAN MOUNTING**  
16 Provide required wall framing required to properly support installation of wall mounted power exhaust fans  
17 in accordance with manufacturer requirements. Flash base of fan water tight to existing wall.

18  
19  
20 **END OF SECTION**

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**SECTION 23 05 93**  
**TESTING, ADJUSTING, AND BALANCING FOR HVAC**

**PART 1 - GENERAL**

**SCOPE**

An independent test and balance agency shall perform all testing, adjusting, and balancing of air systems for this project.

This project is balancing of the existing make up air unit, existing exhaust systems and new exhaust systems as indicated on the drawings and specified in this specification section.

The extent of test-adjust-balance (TAB) work is indicated by the requirements of this section and noted on the project drawings and schedules and is defined to include the balance of and verification of performance of mechanical exhaust air and make-up supply air equipment, all in accordance with standards published by AABC or NEBB. The work consists of setting speed and volume (flow) adjusting apparatus provided for the systems, recording data, conducting tests, preparing and submitting reports and recommending modifications to the work as required by the Contract Documents.

The scope of this project is to rebalance the air systems to the original contract document requirements. This includes

- Air Systems:
  1. Existing Make-up Air Unit.
  2. Existing Exhaust Fans
  3. New Exhaust Fans

Refer to project drawings equipment schedules for air flow requirements of new equipment and Part 3 of this section for air flow requirements for existing equipment.

If problems are found, handle as specified in Part 3 under Deficiencies.

**CONDITIONS OF THE CONTRACT**

Refer to Section 23 05 00 Common Work Results for HV

**RELATED WORK**

Section 23 05 00 Common Work Results for HVAC  
Section 23 09 14 Electric Control Devices for HV  
Section 23 09 93 Sequences of Operation for HV Controls  
Section 23 31 00 HVAC Ducts  
Section 23 33 00 Air Duct Accessories  
Section 23 34 00 HVAC Fans

**REFERENCE**

Refer to Section 23 05 00 Common Work Results for HV

**REFERENCE STANDARDS**

AABC National Standards for Total System Balance, Sixth Edition, 2002.  
ASHRAE ASHRAE Handbook, 2007 HVAC Applications, Chapter 37, Testing Adjusting and Balancing.  
NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems, Seventh Edition, 2005.

**QUALITY ASSURANCE**

**Qualifications**

An independent Firm specializing in the Testing and Balancing of HVAC systems for a minimum of 3 years. A Firm not engaged in the commerce of furnishing or providing equipment or material generally related to HVAC work other than that specifically related to installing Testing and Balancing components necessary for work in this section such as, but not limited to sheaves, pulleys, and balancing dampers.

A certified member of AABC or certified by NEBB in the specific area of work performed. Maintain certification for the entire duration of the project.

1 **SUBMITTALS**

2 See also Related Work in this section.

3  
4 Submit testing, adjusting and balancing reports bearing the seal and signature of the NEBB or AABC  
5 Certified Test and Balance Supervisor. The reports certify that the systems have been tested, adjusted and  
6 balanced in accordance with the referenced standards; are an accurate representation of how the systems have  
7 been installed and are operating; and are an accurate record of all final quantities measured to establish normal  
8 operating values of the systems.

9  
10 Contents: Provide the following minimum information, forms and data:

11  
12 General Information: Inside cover sheet identifying Test and Balance Agency, Contractor, Architect,  
13 Engineer, Project Name and Project Number. Include addresses, contact names and telephone numbers. Also  
14 include a certification sheet containing the seal and signature of the Test and Balance Supervisor.

15  
16 Summary: Provide summary sheet describing mechanical system deficiencies. Describe objectionable noise  
17 or drafts found during testing, adjusting and balancing. Provide recommendations for correcting  
18 unsatisfactory performances and indicate whether modifications required are within the scope of the contract,  
19 are design related or installation related. List instrumentation used during testing, adjusting and balancing  
20 procedures.

21  
22 The remainder of the report to contain the appropriate standard NEBB or AABC forms for each respective  
23 item and system. Fill out forms completely. Where information cannot be obtained or is not applicable  
24 indicate same.

25  
26  
27 **PART 2 - PRODUCTS**

28  
29 **INSTRUMENTATION**

30 Provide all required instrumentation to obtain proper measurements. Application of instruments and  
31 accuracy of instruments and measurements to be in accordance with the requirements of NEBB or AABC  
32 Standards and instrument manufacturer's specifications.

33  
34 All instruments used for measurements shall be accurate, and calibration histories for each instrument to be  
35 available for examination by Owner or Engineer upon request. Calibration and maintenance of all  
36 instruments to be in accordance with the requirements of NEBB or AABC Standards

37  
38  
39 **PART 3 - EXECUTION**

40  
41 **PRELIMINARY PROCEDURES**

42 Review applicable construction documents, applicable change orders. Original project drawings are available  
43 for review.

44  
45 Check existing and new equipment for proper rotation and belt tension, temperature controls for completion  
46 of installation. If deficiencies are identified in existing equipment notify the Owners Project Manager and  
47 Engineer for determination of work required to return the existing equipment to proper operation. Proceed  
48 with corrective work on approval of Project Manager.

49  
50 Do not proceed until systems are fully operational with all components necessary for complete testing,  
51 adjusting and balancing. Installing Contractors are required to provide personnel to check and verify system  
52 completion, readiness for balancing and assist Balancing Agency in providing specified system performance.

53  
54 **PERFORMING TESTING, ADJUSTING AND BALANCING**

55 Perform testing, adjusting and balancing procedures on each system identified, in accordance with the  
56 detailed procedures outlined in the referenced standards except as may be modified below.

57  
58 Unless specifically instructed in writing, all work in this specification section is to be performed during the  
59 normal workday. Refer to requirements for coordinating access to selected areas of the building.

60  
61 Cut insulation and ductwork for installation of test probes to the minimum extent necessary for adequate  
62 performance of procedures. Patch using materials identical to those removed, maintaining vapor barrier  
63 integrity and pressure rating of systems.

1 Measure and record system measurements at the fan to determine total flow. Adjust equipment as required  
2 to yield specified total flow at terminals. Proceed taking measurements in mains and branches as required  
3 for final terminal balancing. Perform terminal balancing to specified flows balancing branch dampers,  
4 deflectors and extractors prior to adjustment of terminals.

5  
6 Measure and record static air pressure conditions across fans. Spot check static air pressure conditions  
7 directly ahead of terminal units.

8  
9 Adjust outside air, return air and relief air dampers for design conditions at both the minimum and maximum  
10 settings and record both sets of data. Balance modulating dampers at extreme conditions and record both  
11 sets of data.

12  
13 Provide fan and motor drive sheave adjustments necessary to obtain design performance. Provide drive  
14 changes specifically noted on drawings, if any. If work of this section indicates that any drive or motor is  
15 inadequate for the application, advise the owner's project manager by giving the representative properly sized  
16 motor/drive information (in accordance with manufacturers original service factor and installed motor  
17 horsepower requirements); Confirm any change will keep the duct system within its design limitations with  
18 respect to speed of the device and pressure classification of the distribution system. Required motor/drive  
19 changes not specifically noted on drawings or in specifications will be considered an extra cost and will  
20 require an itemized cost breakdown submitted to owner's project representative. Prior authorization is needed  
21 before this work is started.

22  
23 Final air system measurements to be within the following range of specified cfm:

24 Fans – supply and exhaust 0% to +10%  
25 Supply grilles, 0% to +10%

26  
27 Contact the Control Contractor for assistance in operation and adjustment of controls during testing, adjusting  
28 and balancing procedures. Cycle controls and verify proper operation and setpoints. Include in report  
29 description of temperature control operation and any deficiencies found.

30  
31 Permanently mark equipment settings, including damper and valve positions, control settings, and similar  
32 devices allowing settings to be restored. Set and lock memory stops.

33  
34 Leave systems in proper working order, replacing belt guards, closing access doors and electrical boxes, and  
35 restoring temperature controls to normal operating settings.

### 36 37 **EQUIPMENT AIR BALANCING**

#### 38 39 **Springfield Garage:**

40  
41 The following existing equipment shall be rebalanced. The air flows are taken from the original construction  
42 document equipment schedules.

43  
44 Makeup Air Unit MAU-1 Unit CFM 15,000 CFM  
45 Makeup Air Unit MAU-1 Supply Grilles 7,500 CFM Each grille  
46  
47 Roof Exhaust Fans EF-1A to 1D Low Intake 3,750 CFM Each of 4 Fans KEY NOTE 2  
48 Roof Exhaust Fans EF-2A to 2B High Intake 10,000 CFM Each of 2 Fans KEY NOTE 6  
49 Wall Exhaust Fans EF-4 Wall Intake 600 CFM KEY NOTE 13

50  
51 The following new equipment shall be balanced. The air flows are included in the new equipment schedules  
52 on the project construction documents.

53  
54 Roof Exhaust Fans EF-7A to 7D CNG Exhaust 11,000 CFM Each of 4 Fans KEY NOTE 14  
55 Open End Duct Inlet EF-7A to 7D CNG Exhaust 5,500 CFM per each of 8 KEY NOTE 20

56  
57  
58

1 **York Garage:**

2  
3 The following existing equipment shall be rebalanced. The air flows are taken from the original construction  
4 document equipment schedules.

5  
6

Wall Exhaust Fans	EF-1	Low Intake	210 CFM	KEY NOTE 17 and 20
Wall Exhaust Fans	EF-2	Low Intake	3,150 CFM	KEY NOTE 16 and 20

7  
8

9 The following new equipment shall be balanced. The air flows are included in the new equipment schedules  
10 on the project construction documents.

11 .

Wall Exhaust Fans	EF-3A to 3E	CNG Exhaust	2,000 CFM	Each of 5 Fans KEY NOTE 1, 2
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12  
13  
14

15 **DEFICIENCIES**

16 Test and balance agency will notify the Owners Project Representative and Engineer of these items and  
17 instructions will be issued to the Division 23 contractor for correction. Retest mechanical systems,  
18 equipment, and devices once corrective work is complete as specified.

19  
20 **END OF SECTION**

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**SECTION 23 07 00  
HVAC INSULATION**

**PART 1 - GENERAL**

**SCOPE**

This section includes insulation specifications for piping and/or ductwork.

**REFERENCE STANDARDS**

ASTM C165	Test Method for Compressive Properties of Thermal Insulations
ASTM C177	Heat Flux and Thermal Transmission Properties
ASTM C195	Mineral Fiber Thermal Insulation Cement
ASTM C355	Test Methods for Test for Water Vapor Transmission of Thick Materials
ASTM C449	Mineral Fiber Hydraulic Setting Thermal Insulation Cement
ASTM C518	Heat Flux and Thermal Transmission Properties
ASTM C921	Properties of Jacketing Materials for Thermal Insulation
ASTM C1136	Flexible Low Permeance Vapor Retarders for Thermal Insulation
ASTM D2240	Standard Test Method for Rubber Property—Durometer Hardness
ASTM E84	Surface Burning Characteristics of Building Materials
MICA	National Commercial & Industrial Insulation Standards
NFPA 225	Surface Burning Characteristics of Building Materials
UL 723	Surface Burning Characteristics of Building Materials

**QUALITY ASSURANCE**

Label all insulating products delivered to the construction site with the manufacturer's name and description of materials.

**DESCRIPTION**

Furnish and install all insulating materials and accessories as specified or as required for a complete installation. The following types of insulation are specified in this section:

- Duct Insulation

Install all insulation in accordance with the latest edition of MICA (Midwest Insulation Contractors Association) Standard and manufacturer's installation instructions. Exceptions to these standards will only be accepted where specifically modified in these specifications, or where prior written approval has been obtained from the Dane County Project Manager.

**ENVIRONMENTAL REQUIREMENTS**

Do not store insulation materials on grade or where they are at risk of becoming wet. Do not install insulation products that have been exposed to water.

Protect installed insulation work with plastic sheeting to prevent water damage.

**PART 2 - PRODUCTS**

**MATERIALS**

Manufacturers: Certainteed, Johns Manville, Knauf, Owens-Corning, VentureTape or approved equal.

Materials or accessories containing asbestos will not be accepted.

Use composite insulation systems (insulation, jackets, sealants, mastics, and adhesives) that have a flame spread rating of 25 or less and smoke developed rating of 50 or less, with the following exceptions:

**INSULATION TYPES**

Insulating materials shall be fire retardant, moisture and mildew resistant, and vermin proof. Insulation shall be suitable to receive jackets, adhesives and coatings as indicated.

**RIGID FIBERGLASS INSULATION:**

Minimum nominal density of 3 lbs. per cu. ft., and thermal conductivity of not more than 0.23 at 75 degrees F, minimum compressive strength of 25 PSF at 10% deformation, rated for service to 450 degrees F.

1 **JACKETS**

2 **FOIL SCRIM ALL SERVICE JACKETS (FSJ):**

3 Glass fiber reinforced foil kraft laminate, factory applied to insulation. Maximum permeance of .02 perms  
4 and minimum beach puncture resistance of 25 units.

5  
6 Vapor retarding tape shall be specifically designed and manufactured for use with the self-adhering jacket  
7 specified above. Tape shall be provided by the same manufacturer that provides jacketing. Vapor retarding  
8 tapes used with self-adhering jackets shall have a maximum permeance of 0.0 perms.  
9

10 **ACCESSORIES**

11 All products shall be compatible with surfaces and materials on which they are applied, and be suitable for  
12 use at operating temperatures of the systems to which they are applied.

13  
14 Adhesives, sealants, and protective finishes shall be as recommended by insulation manufacturer for  
15 applications specified.  
16

17  
18 **PART 3 - EXECUTION**  
19

20 **INSTALLATION**

21 All materials shall be installed in strict accordance with manufacturer’s recommendations, building codes,  
22 and industry standards. Do not install products when the ambient temperature or conditions are not consistent  
23 with the manufacturer’s recommendations. Surfaces to be insulated must be clean and dry.  
24

25 Locate insulation and cover seams in the least visible location. All surface finishes shall be extended in such  
26 a manner as to protect all raw edges, ends and surfaces of insulation.  
27

28 Provide a complete vapor barrier for insulation on the following systems:

- 29 • Insulated Duct

30  
31 **DUCT INSULATION**

32 **GENERAL:**

33 Secure rigid board insulation to ductwork with weld pins. Apply insulation with joints firmly butted as close  
34 as possible to the equipment surface. Pins shall be located a maximum of 3” from each edge and spaced no  
35 greater than 12” on center.  
36

37  
38 Install weld pins without damage to the interior galvanized surface of the duct. Clip pins back to washer and  
39 cover penetrations with tape of same material as jacket. Firmly butt seams and joints and cover with 4” tape  
40 of same material as jacket. Seal tape with plastic applicator and secure with staples. All joints, seams, edges  
41 and penetrations to be fully vapor sealed.  
42

43 Stop and point insulation around access doors and damper operators to allow operation without disturbing  
44 insulation or jacket material.  
45

46 External supply duct insulation is not required where ductwork contains continuous 1” acoustical liner.  
47 Provide 4” overlap of external insulation over ends of acoustically lined sections.  
48

49 Where insulated low temperature (below 45°F) ductwork is supported by steel metal straps or wire ropes that  
50 are secured directly to the duct, the straps or ropes shall be completely covered with insulation and sealed to  
51 provide a complete vapor barrier.  
52

53 **DUCT INSULATION SCHEDULE:**

54 Provide duct insulation on new and existing remodeled ductwork in the following schedule:  
55

56 <b>Service</b>	57 <b>Insulation Type</b>	58 <b>Jacket</b>	59 <b>Insulation Thickness</b>
60 Outside air ducts	Rigid Fiberglass	FSJ	2"

61 Outside air intake ductwork providing untampered supply air shall have ductwork insulated from the location  
62 of the duct entering the building to the intake air control damper. .  
63

**END OF SECTION**

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**SECTION 23 09 14**  
**ELECTRIC CONTROL DEVICES FOR HV**  
**PART 1 - GENERAL**

**SCOPE**

This sections includes control system specifications for HV work of this project.

**RELATED WORK**

Section 23 05 93 - Testing, Adjusting, and Balancing for HV - Coordination  
Section 23 09 26 - Gas Detection Systems  
Section 23 09 93 - Sequence of Operation  
Section 23 33 00 - Ductwork Accessories - for control damper installation  
Division 26 – Electrical Specification on Drawings - Installation requirements

**REFERENCE**

Refer to Section 23 05 00 Common Work Results for HV

**REFERENCE STANDARDS**

AMCA 500-D Laboratory Method of Testing Dampers for Rating

**SYSTEM DESCRIPTION**

The scope of this project is the control of make-up air units and exhaust fans for various modes of operation based on normal occupied-unoccupied cycles and on detection of carbon monoxide (CO), Nitrogen Dioxide (NO<sub>2</sub>, diesel exhaust) or Methane (CH<sub>4</sub>, natural gas, aka CNG).

System is to be electric/electronic.

**SUBMITTALS**

Include the following information:

Manufacturer's data sheets indicating model number, pressure/temperature ratings, capacity, methods and materials of construction, installation instructions, and recommended maintenance. General catalog sheets showing a series of the same device is not acceptable unless the specific model is clearly marked.

Schematic flow diagrams of systems showing fans, dampers, and other control devices. Indicate all wiring, clearly, differentiating between factory and field installed wiring. Wiring should be shown in schematics that detail contact states, relay references, etc. Diagrammatic representations of devices alone are not acceptable.

Details of construction, layout, and location of the temperature control panel within the building, including instruments location in panel and labeling. Also include on drawings equipment number and location of mechanical equipment controlled, horsepower of motorized equipment, locations of all remote sensors and control devices (either by room number or column lines).

Schedule of control dampers indicating size, and size of operators required.

A complete description of each control sequence for mode of operation.

**DEMOLITION**

Where existing control devices, or wiring are discontinued from use, remove and remove from premises. Remove any previously abandoned control devices in a similar manner.

**DESIGN CRITERIA**

Size all control apparatus to properly supply and/or operate and control the apparatus served.

Use only UL labeled products that comply with NEMA Standards. Electrical components and installation to meet all requirements of the electrical sections (Division 26) of project specifications.

**OPERATION AND MAINTENANCE DATA**

All operations and maintenance data shall comply with the submission and content requirements specified under section GENERAL REQUIREMENTS.

1 In addition to the general content specified under GENERAL REQUIREMENTS supply the following  
2 additional documentation:

- 3 1. A complete set of record control drawings.

#### 4 **MATERIAL DELIVERY AND STORAGE**

5 Provide factory shipping cartons for each piece of equipment and control device. This contractor is  
6 responsible for storage of equipment and materials inside and protected from the weather.  
7

### 8 **PART 2 - PRODUCTS**

#### 9 **CONTROL DAMPERS**

10 Steel framed dampers: Nailor models 2010 & 2020; Greenheck models VCD-33 & VCD-42; Johnson  
11 Controls model VD-1630; Ruskin Models CD60 & CD40; other approved equal.

12 Aluminum frame and blade dampers: Nailor models 2010EAF & 202EAF; Greenheck model VCD-43;  
13 Ruskin model CD50; Arrow model AFD-20; other approved equal.  
14

15 Provide control dampers shown on the plans and as required to perform the specified functions. Dampers  
16 shall be rated for velocities that will be encountered at maximum system design and rated for pressure equal  
17 or greater than the ductwork pressure class of the ductwork where the damper is installed.  
18

19 Use only factory fabricated dampers with mechanically captured replaceable resilient blade seals, stainless  
20 steel jamb seals and with entire assembly suitable for the maximum temperature and air velocities  
21 encountered in the system.  
22

23 Dampers in galvanized ductwork shall be constructed of galvanized steel and/or aluminum.  
24

25 All power required for electric actuation shall be provided by this contractor.  
26

27 All dampers, unless otherwise specified, to be rated at a minimum of 180° F working temperature. Leakage  
28 testing shall be certified to be based on latest edition of AMCA Standard 500-D and all dampers, unless  
29 otherwise specified, shall have leakage ratings as follows:

30 Damper Class	31 Differential Pressure	32 Leakage
33 Class IA	34 1" w.g.	35 ≤3 CFM/ft <sup>2</sup>

#### 36 **TIME CLOCKS**

37 UL listed, digital, electric astronomic timing, 12 or 24 hour format, full year programming, automatic  
38 daylight savings time adjustment, 10 on/off programs per day, holiday programming, number of circuits  
39 required to provide control sequence programming, manual override by disabling automatic operation and  
40 using ON/OFF switch. Unit to have minimum of seven-day battery back-up.  
41

#### 42 **TEMPERATURE CONTROL PANELS**

43 Constructed of steel or extruded aluminum, with hinged door, keyed lock, and baked enamel finish. Install  
44 controls, relays, transducers and automatic switches inside panels. Label devices with permanent printed  
45 labels and provide as-built wiring diagram within enclosure. Provide raceways for wiring within panel for  
46 neat appearance. Provide termination blocks for all wiring terminations. Label outside of panel with panel  
47 number corresponding to plan tags and as-built control drawings as well as building system(s) served.  
48

49 Control panels that have devices or terminations that are fed or switch 50V or higher shall enclose the devices,  
50 terminations, and wiring so that Personal Protective Equipment (PPE) is not required to service the under  
51 50V devices and terminations within the control panel. As an alternative, a separate panel for only the 50V  
52 and higher devices may be provided and mounted adjacent to the under 50V control panel.  
53

54 For panels that have 120 VAC power feeds provide a resettable circuit breaker. Provide label within the  
55 panel indicating circuit number of 120 VAC serving panel  
56

#### 57 **CURRENT STATUS SWITCHES**

58 Provide a current sensor with adjustable threshold and digital output with LED display, equal to a Veris  
59 model H-708/H-904. Threshold adjustment must be by a multi-turn potentiometer or set by multiprocessor  
60 that will automatically compensate for frequency and amperage changes associated with variable frequency  
61 drives. When used on variable speed motor applications, use a current sensor that will not change state due  
62 to varying speeds.  
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**HORN STROBE ALARM**

EST Life Safety and Communications or approved equivalent.

Field Configurable indoor wall or ceiling horn strobe EST Genesis Series Model GC-HDVM with white housing

Lens to be optical grade polycarbonate (clear)

Mounting 4” square box, deep, indoor wall or ceiling

Agency Listings and Approvals: ULC-S525 & ULC-S526, year 2004 UL requirements for standards UL1638 and UL1971, and complies with UL1480. All horn-strobes comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule. CSFM, MEA, FM.

Strobe Output Rating: UL 1971, UL 1638, ULC S526: selectable 15/30/75/95 cd (GC-HDVM) and 95/115/150/177 cd (GC-HDVMH)

Strobe Flash Rate: GC-HDVM series temporal-tone horn-strobes: one flash per second synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) Temporal setting (private mode only): synchronized to temporal output of horns on same circuit

Strobe Output Rating: UL 1971, UL 1638, ULC S526: selectable 15/30/75/95 cd (GC-HDVM) and 95/115/150/177 cd (GC-HDVMH)

Horn Pulse Rate: GC-HDVM series temporal-tone horn-strobes: temporal rate synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master)

**POWER SUPPLIES**

Provide all required power supplies for transducers, sensors, transmitters and relays. All low voltage transformers shall have a resettable secondary circuit breaker and be listed as class 2 power supplies.

**PART 3 - EXECUTION**

**INSTALLATION**

Install all control equipment, accessories, and wiring in a neat and workmanlike manner. All control devices must be installed in accessible locations. This contractor shall verify that all control devices furnished under this Section are functional and operating the mechanical equipment as specified in Section 23 09 93.

All components required to provide the control system sequences specified shall be provided by this section unless specifically specified otherwise. This includes all switches, relays, actuators, dampers.

All cables to the electronic input/output devices, sensors, relays and interlocking wiring shall be supplied and installed under this section of specification

Label all control devices with the exception of dampers, with printed labels that correspond to control drawings. Control junction and pullboxes shall be identified utilizing spray painted green covers. Other electrical system identification shall follow the 26 05 53 specification.

Provide all electrical relays and wiring, line and low voltage, devices and components required to provide a complete control system.

Install all high voltage and low voltage wiring (includes low voltage cable) in metal conduit, Electrical Non-metallic Tubing (ENT), or Electrical Metallic Tubing (EMT), as scheduled below and hereafter referred to generically as conduit. See Wire Conduit Installation Schedule below for specific conduit or tubing to be used. All conduit must be installed in accordance with electrical sections (Division 26) of this specification and the National Electrical code.

1 Conduit shall be a minimum of 1/2 " for low voltage control provided the pipe fill does not exceed 40%.

2  
3 Minimum low voltage wiring gauge to be 18 AWG for outputs and 20 AWG for inputs. All low voltage  
4 wiring to be stranded.

5  
6 Wiring shall not be attached to existing cabling, existing tubing, ductwork, ceiling supports or electrical or  
7 communications conduit.

8  
9 This contractor shall be responsible for all 120VAC power, not provided in the Division 26 Electrical,  
10 required for equipment provided under this section.

11  
12 All wiring in control panels shall be terminated on a terminal strip. Wire nuts are not acceptable. A maximum  
13 of two wires shall be terminated under any one terminal.

14  
15 All electrical wiring is to be permanently tagged or labeled within one inch of terminal strip with a numbering  
16 system to correspond with the "Record Drawings".

17  
18 After completion of installation, test and adjust control equipment. Submit data showing set points and final  
19 adjustments of controls.

## 20 21 **WIRE CONDUIT AND TUBING INSTALLATION SCHEDULE**

22  
23 The following conduit schedule shall apply to wire in conduit where conduit is specified for wiring. Conduit  
24 and tubing referenced below shall meet specifications in Section 26 05 33 and as defined below.

25  
26 Conduit other than that specified below for specific applications shall not be used.

27  
28 Wet Interior Locations: Rigid steel conduit. Schedule 40 PVC conduit,PVC coated rigid steel conduit].

29  
30 Exposed Dry Interior Locations: Rigid steel conduit. Intermediate metal conduit. Electrical metallic tubing.

## 31 32 33 **CONTROL DAMPERS**

34 All control dampers furnished are to be installed by the Mechanical Contractor under the coordinating control  
35 and supervision of the Control Contractor in locations shown on plans or where required to provide specified  
36 sequence of control. Coordinate installation with the sheetmetal installer.

37  
38 Damper end switches, where required, shall be independently mounted to the damper drive shaft or auxiliary  
39 shaft attached to a damper drive blade. End switches shall be adjusted to prove the damper the position  
40 opposite the fail position of the damper actuator unless the control sequence requires a different position to  
41 be proven to accomplish the specified control sequence.

## 42 43 **TEMPERATURE CONTROL PANELS**

44 Mount control panels adjacent to associated equipment on vibration-free walls or freestanding angle iron  
45 supports. All control panel openings shall be plugged. Conduits and other penetrations on the top of the  
46 cabinets shall be sealed on the exterior of the cabinet with silicone caulk to resist water penetration. One  
47 cabinet may accommodate more than one system in same equipment room. Provide permanent printed  
48 labeling for instruments and controls inside cabinet and engraved plastic nameplates on cabinet face.

49  
50 Provide as-built control drawings of all systems served by each local panel in a location adjacent to or inside  
51 of panel cover. Provide a protective cover or envelope for drawings.

## 52 53 **TRAINING**

54 Contractor to provide representative and/or field personnel knowledgeable with the operations, maintenance  
55 and troubleshooting of the system and/or components defined within this section for a minimum period of 1  
56 hour per building site.

57  
58 **END OF SECTION**

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**SECTION 23 09 26**  
**GAS DETECTION SYSTEM**

**PART 1 - GENERAL**

**SCOPE**

The work covered by this section of the specifications includes the furnishing of all labor, equipment, materials, and performance of all operations associated with the installation of the new CH<sub>4</sub>, Methane (CNG) Gas Detection and Alarm System as shown on the drawings and as herein specified.

Both the Springfield Garage and York Garage have existing Carbon Monoxide (CO) and Nitrogen Dioxide (NO<sub>2</sub>) detection systems. These systems shall remain in place and have control sequences modified as specified in Section 23 09 93, Sequences of Operation for HV Controls.

**RELATED WORK**

The work covered by this section of the specifications shall be coordinated with the related work as specified elsewhere under the following project sections:

- Section 23 05 00 – Common Work Results for HV
- Section 23 05 93 – Testing, Adjusting and Balancing for HV
- Section 23 09 14 – Electric Control Devices for HV
- Section 23 09 93 – Sequences of Operation for HV Controls

**DESCRIPTION OF WORK**

**Springfield Highway Garage**

Furnish and install a complete Combustible Gas Detection System within the Springfield Highway Garage as described herein and as shown on the plans; to be wired, connected, and left in first class operating condition.

**York Highway Garage**

Furnish and install a complete Combustible Gas Detection System within the York Highway Garage as described herein and as shown on the plans; to be wired, connected, and left in first class operating condition.

**DETECTION SYSTEM MANUFACTURER**

The Gas Detection System shall be manufactured by Quatrosense Environmental, LTD. ([www.QELSafety.com](http://www.QELSafety.com)), or prior approved equivalent, and shall be provided for the monitoring of combustible gas concentrations, and any other 4-20mA input parameter.

The complete installation shall be done in a neat, workmanlike manner in accordance with all applicable Codes and the manufacturer's recommendations.

**REGULATORY REQUIREMENTS**

The complete installation shall conform to the applicable sections of the latest edition of the following Codes and Standards:

- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):
- |          |                                |
|----------|--------------------------------|
| NFPA-70  | National Electrical Code (NEC) |
| NFPA 101 | Life Safety Code               |
| IBC      | International Building Code    |
| IFC      | International Fire Code        |
| IMC      | International Mechanical Code  |
|          | Wisconsin Administrative Code  |

**SUBMITTALS**

Refer to Section 23 05 00 Common Work Results for HV  
Under the provisions of Section 23 05 00, submit all products for approval prior to ordering any equipment.

1 **PRODUCT DELIVERY, STORAGE AND HANDLING**

2  
3 Receive equipment at job site; verify applicable components and quantity delivered.

4  
5 Handle equipment to prevent internal components' damage and breakage, as well as denting and scoring of  
6 enclosure finish.

7  
8 Do not install damaged equipment.

9  
10 Store equipment in a clean, dry space and protect from dirt, fumes, water, and construction debris and  
11 physical damage. Make arrangements with the Owner at the pre-construction meeting for storage of  
12 equipment on the premises

13  
14 **SPARE PARTS**

15  
16 Contractor shall provide the following spare parts in quantities shown:

17  
18 Quantity: Type of Device

19 (1) CH4 Gas Transmitter/Sensor (one spare for each building site)

20  
21  
22 **PART 2 - PRODUCTS**

23  
24 **ENCLOSURES**

25  
26 All panels and peripheral devices shall be the standard product of a single manufacturer and shall display the  
27 manufacturer's name on each component.

28  
29 **CONTROL PANEL**

30  
31 Provide QEL Model M-CONTROLLER with CTS-M-Series Gas Detectors or 4-20mA inputs from gas  
32 detectors and/or auxiliary input devices.

33  
34 Controller requirements:

- 35 • 4 parallel RS 485 ports for up to 32 gas sensors wired in a 'daisy chain' configuration,  
36 and a total of 99 relays wired in a 'daisy chain' configuration without compromising  
37 sensor count.
  - 38 • 8 analog (4-20mA) input ports for monitoring from any other measurement device.
  - 39 • Three on board DPDT relays rated 5 Amp resistive 3.7 Amp inductive at 240 VAC / 30  
40 VDC.
  - 41 • Relay assignment individually set to one or all transmitter/sensors in any combination.  
42 May be set for averaging, or voting.
  - 43 • Time delays individually set, make, break, average, voting.
  - 44 • Audio indicator with three modes of alarm.
  - 45 • 24VDC Horn and strobe outputs.
  - 46 • Available 8 channel scalable analog 4-20mA output from controller configurable for any  
47 sensor or group of sensors to host computer, BAS, DDC or data acquisition system.
  - 48 • RS-422 output to computer/PLC with Modbus Protocol.
  - 49 • RS-232 programming port and interconnect cable for programming configuration of  
50 system (includes non-proprietary M-View software CD for system configuration).
  - 51 • 5 LED status lights.
  - 52 • Digital display and keypad for manual programming.
  - 53 • Test Function for microprocessor, lights, relays, audio calibration disable through front  
54 keypad.
  - 55 • Locking door latch.
  - 56 • Non-proprietary configuration software and access password to controller.
- 57  
58  
59  
60

1 Sequence of Operation:

- 2 • Refer to Section 23 09 93 for complete sequence of operation
- 3 • Activate visual alarm at low warning, visual alarm at high warning, audible device fully
- 4 configurable for either or both.

5  
6 **TRANSMITTER/SENSORS**

7  
8 **COMBUSTIBLE GAS TRANSMITTER/SENSOR – CH4**

9  
10 Provide QEL Model CTS-M1710 Series stand-alone, analog and/or networked combustible gas

11 transmitter/sensor.

12  
13 Combustible Gas Transmitter/Sensor requirements:

- 14 • Catalytic Bead Sensor.
- 15 • Range 0 to 100 % LEL
- 16 • Digital display of gas concentration
- 17 • Scalable 4-20 mA or 2-10 VDC linearized output
- 18 • RS-485 digital communication
- 19 • 2 SPDT relay output Form C, 1 amp dry contact and buzzer (optional)
- 20 • Time delays (make and break) on relay outputs
- 21 • Outputs, range, relay enable/disable, time delays, digital addressing, configuration
- 22 adjustable through 3 switches on side of unit
- 23 • Input voltage 24VAC or 24VDC
- 24 • Non-proprietary calibration protocol

25  
26 Sequence of Operation:

- 27 • Refer to Section 23 09 93 for complete sequence of operation required at each building.
- 28 • Activate fan(s) when the level of gas reaches 2.5% (50% of Lower Explosive Limit
- 29 (LEL) Methane, CNG concentration in the zone.
- 30 • Activate visual and audible alarm warning when the level of gas reaches 2.50%
- 31 concentration in the zone,
- 32 • At a 4.00% concentration in the zone alarm shall also be transmitted to the fire alarm
- 33 system for reporting CH4 detection to central monitoring.

34  
35  
36 **PART 3 - EXECUTION**

37  
38 **GENERAL**

39  
40 The complete installation shall be done in a neat, workmanlike manner in accordance with the applicable

41 requirements of NFPA 70 and the manufacturer's recommendations.

42  
43 Commissioning shall be performed by authorized technician.

44  
45 **TESTING**

46  
47 Before proceeding with any testing, all persons, facilities and building occupants whom receive alarms or

48 trouble signals shall be notified by the contractor to prevent unnecessary response or building occupant

49 distress. At the conclusion of testing, those previously notified shall be notified that testing has been

50 concluded.

51  
52 The manufacturer's authorized representative shall provide on-site supervision of the complete system

53 installation, perform a complete functional test of the system, and submit a written report to the Owner

54 attesting to the proper operation of the completed system prior to final inspection.

55  
56 The manufacturer's authorized representative shall provide additional testing/demonstration of system

57 operation in conjunction with fire alarm system test with the City of Madison Fire Department.



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**SECTION 23 09 93**  
**SEQUENCE OF OPERATION FOR HV CONTROLS**

**PART 1 - GENERAL**

**SCOPE**

This section includes control sequences for HVAC equipment provided or modified by this project.

The work covered by this section of the specifications includes the furnishing of all labor, equipment, materials, and performance of all operations associated with the installation of the new CH<sub>4</sub>, Methane (CNG) Gas Detection and Alarm System as shown on the drawings and as herein specified.

Both the Springfield Garage and York Garage have existing Carbon Monoxide (CO) and Nitrogen Dioxide (NO<sub>2</sub>) detection systems. These systems shall remain in place and have control sequences modified as specified in this Section.

**RELATED WORK**

Applicable provisions of Division 1 govern work under this Section.

Section 23 05 00 - Common Work Results for HV

Section 23 05 23 - Valves and Piping for Fuel Gas

Section 23 05 93 - Testing, Adjusting, and Balancing for HV

Section 23 09 14 - Electric Control Devices for HVAC

Section 23 09 26 - Gas Detection System

Section 23 34 00 - HV Fans

Division 26 - Electrical Drawings

**REFERENCE**

Section 23 09 14 work includes furnishing and installing all field devices, and all related field wiring, interlocking control wiring between equipment, that is covered in that section.

Motorized control dampers and actuators are also covered in Section 23 09 14 except motor operated dampers included as part of specific equipment.

**DESCRIPTION OF WORK**

Control sequences are hereby defined as the manner and method by which automatic controls function.

Requirements for each type of operation are specified in this section.

Operation equipment, devices and system components required to be controlled are specified in other Division 23 control sections of these specifications or may be existing equipment as described the control sequence.

Each building, Springfield Garage and York Garage shall be provided with an independent system to provide the control sequence specified.

**SUBMITTALS**

Shop drawings for material and equipment shall be provided under Sections 23 09 14.

This section shall provide a complete narrative of the sequence of operation and wiring diagrams of the system for equipment that is controlled by this section or directly from that equipment provided controls. The narrative of the sequence of operation shall not be a verbatim copy of the sequences contained herein, but shall reflect the actual operation as applied by the control section contractor.

1 **OPERATION AND MAINTENANCE DATA**

2  
3 Refer to Section 23 05 00 Common Work Results for HV

4  
5 **DESIGN CRITERIA**

6  
7 Reference Section 23 09 14.

8  
9 **CODE REFERENCES**

10  
11 International Mechanical Code sections 404.1 and 404.2 and  
12 Wisconsin Administrative Code SPS 364.0404 alternative to the requirements in IMC sections 404.1 and  
13 404.2.

14  
15  
16 **PART 2 - PRODUCTS**

17  
18 Not applicable to this Section – reference Section 23 09 14, Electric Control Devices for HV and Section 23 09 26,  
19 Gas Detection System for product descriptions .

20  
21  
22 **PART 3 - EXECUTION**

23  
24 In the sequence descriptions the following are the designated gases detected:

- 25  
26 CO is Carbon Monoxide  
27 NO<sub>2</sub> is Nitrogen Dioxide  
28 CH<sub>4</sub> is Methane, Natural Gas (CNG)  
29

30 **SPRINGFIELD GARAGE CONTROL SEQUENCES**

31  
32 GENERAL:

33  
34 The scope of this project is the control of make-up air units and exhaust fans for various modes of operation  
35 based on existing normal cycles and on detection of Methane (CH<sub>4</sub>, natural gas aka CNG) in conjunction  
36 with the existing or new time clock and detection of carbon dioxide (CO), Nitrogen Dioxide (NO<sub>2</sub>, diesel  
37 exhaust).

38  
39 The garage area ventilation is to be controlled into three modes as modified in this project:

- 40  
41
  - Mode 1: The entire garage, for “normal” existing ventilation.
  - Mode 2: CO or NO<sub>2</sub> detection ventilation
  - Mode 2: CH<sub>4</sub> (Natural Gas CNG) detection ventilation.

42  
43  
44 EXISTING GARAGE VENTILATION CONTROL

45  
46 Makeup air unit is 100% OA

47  
48  
49 The existing controls for normal ventilation and CO and NO<sub>2</sub> are located at in a panel located below the  
50 MUA.

51  
52 The following is the existing Mode 1 “normal” control sequence:

- 53  
54
  - MAU-1 and EF-1A thru EF-1D are controlled by a time clock to operate on a programmed  
55 schedule.
  - MAU-1 discharge temperature is controlled by unit control to maintain the required supply air  
56 temperature.  
57

1 The following is the existing Mode 2 control sequence:

- 2
- 3 • MAU-1 and EF-1A thru EF-1D are controlled by the existing CO and NO<sub>2</sub> detection system.
- 4 • On detection of CO and NO<sub>2</sub> above the concentration set point level MAU-1 and EF-1A thru EF-1D shall start and operate until the detection concentration is below the set point.
- 5 • MAU-1 discharge temperature is controlled by unit control to maintain the required supply air temperature.
- 6
- 7
- 8

#### 9 REVISED GARAGE VENTILATION CONTROL

10 Mode 1 “normal” (non-detection of CH<sub>4</sub> natural gas (CNG)) mode the ventilation and heating system will operate as currently installed.

11 Mode 2 When MAU-1 and EF-1A thru D are off the detection of CO or NO<sub>2</sub> gas will start the MAU-1 and associated EF-1A thru D when the detection threshold set point is reached.

- 12
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- 16
- 17 • MAU-1 fan shall continue to operate or shall start if off.
- 18 • Once the gas level drops below the threshold set point set point the fans will stop unless the time clock is now in the ON mode.
- 19
- 20

21 Mode 3: When CH<sub>4</sub> (natural gas) is detected at any one of the transmitters/sensors the detection system will provide a signal to change the ventilation mode to the following sequence:

- 22
- 23
- 24 • The CH<sub>4</sub> control will provide a signal to the shunt trip breakers to shut off power to Existing MAU-1, UH-1A thru UH-1D, RH-1A thru RH-1D, furnace FAF-1 and water heater/pressure washer.
- 25 • EF-1A thru D shall shut off
- 26 • EF-2A and 2B shall shut off.
- 27 • The new LP gas shut off solenoid valve shall close.
- 28 • The new exhaust fans EF-7A thru EF-7D shall start and the backdraft dampers shall open.
- 29 • The new CNG Alarm horn/strobes shall be activated.
- 30 • Once the gas concentration reaches the specified level the fire alarm system shall be provided with a supervisory signal indicating the CH<sub>4</sub> detection system has been activated.
- 31 • The two overhead garage doors shall open to provide a 1’-6” opening at the floor level. Coordinate with the Electrical Contractor for door control modifications.
- 32 • Once the gas level drops below the threshold set point
  - 33 ○ The exhaust fans EF-7A thru EF-7D will stop.
  - 34 ○ Shunt trip breakers shall restore power to the equipment shut off when CH<sub>4</sub> was detected.
  - 35 ○ The new LP gas shut off solenoid valve shall open.
  - 36 ○ The existing ventilation system will return to the existing garage ventilation control.
  - 37 ○ The overhead garage door shall CLOSE.
  - 38 ○ The CNG Alarm horn/strobe shall be deactivated
- 39
- 40
- 41
- 42
- 43

#### 44 **YORK GARAGE CONTROL SEQUENCES**

##### 45 GENERAL:

46 The scope of this project is the control of make-up air intake louver/damper, unit heater and exhaust fans for various modes of operation based on existing normal cycles and on detection of Methane (CH<sub>4</sub>, natural gas aka CNG) in conjunction with the existing or new time clock and detection of carbon dioxide (CO), Nitrogen Dioxide (NO<sub>2</sub>, diesel exhaust).

47 The garage area ventilation is to be controlled into three modes as modified in this project:

- 48
- 49
- 50
- 51
- 52
- 53
- 54
- 55 • Mode 1: The entire garage, for “normal” existing ventilation.
- 56 • Mode 2: CO or NO<sub>2</sub> detection ventilation
- 57 • Mode 2: CH<sub>4</sub> (Natural Gas CNG) detection ventilation.
- 58

1  
2 EXISTING GARAGE VENTILATION CONTROL  
3

4 Makeup air unit is through an intake louver with a motor operated damper.  
5 Heating is provide by one gas fired unit heater located at the OA intake.  
6

7 The existing controls for normal ventilation and CO and NO<sub>2</sub> are located at the rear of the garage.  
8

9 The following is the existing Mode 1 “normal” control sequence:  
10

- 11 • EF-1 operates continuous.
- 12 • UH-1 discharge temperature is controlled by unit control to maintain the required space air  
13 temperature.  
14

15 The following is the existing Mode 2 control sequence:  
16

- 17 • EF-1 operates continuous.
- 18 • On detection of CO and NO<sub>2</sub> above the concentration set point level EF-2 shall start and operate  
19 until the detection concentration is below the set point.
- 20 • The existing motor operated intake damper will open.
- 21 • UH-1 discharge temperature is controlled by unit control to maintain the required space air  
22 temperature.  
23

24 REVISED GARAGE VENTILATION CONTROL  
25

26 Mode 1 “normal” (non-detection of CH<sub>4</sub> natural gas (CNG)) mode the ventilation and heating system will  
27 operate as currently installed.

- 28 • A time clock shall be installed to operate EF-2 the code required minimum of 5 hours per 24 hour  
29 period. The OA intake damper shall open when EF-2 operates. Suggest the schedule of 1.5 hours  
30 each 6 hour period.  
31

32 Mode 2 On detection of CO or NO<sub>2</sub> above the threshold set point is reached.  
33

- 34 • EF-2 shall start
- 35 • The existing intake damper shall open
- 36 • EF-1 shall continue to operate.
- 37 • UH-1 discharge temperature is controlled by unit control to maintain the required space air  
38 temperature.
- 39 • Once the gas level drops below the threshold set point set point the EF-2 will stop and the OA  
40 damper shall close unless the time clock is now in the 5 hour minimum higher ventilation mode.  
41

42 Mode 3: When CH<sub>4</sub> (natural gas) is detected at any one of the transmitters/sensors the detection system will  
43 provide a signal to change the ventilation mode to the following sequence:  
44

- 45 • EF-1 and EF-2 shall shut off. This section shall provide relays shut off power to stop the operation  
46 of these fans.
- 47 • The existing high outside air damper shall be closed.
- 48 • UH-1 shall be disabled. This section shall provide relays shut off power to stop the operation of  
49 this unit heater.
- 50 • The new LP gas shut off solenoid valve shall close.
- 51 • The new exhaust fans EF-3A thru EF-3E shall start and the backdraft dampers shall open.
- 52 • The new CNG Alarm horn/strobes shall be activated.
- 53 • Once the gas concentration the reaches the specified level the controller shall provide a signal an  
54 reporting system connection to be provide with a supervisory signal indicating the CH<sub>4</sub> detection  
55 system has been activated. This device/system will be provided by the owner separate form this  
56 contract.
- 57 • The new outside intake damper at the new louver shall open.

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- .Once the gas level drops below the threshold set point
  - Exhaust fan EF-2 shall stop unless mode 1 or mode 2 requires operation
  - The existing ventilation system will return to the existing garage ventilation control.
  - The CNG Alarm horn/strobe shall be deactivated.
  - The new LP gas shut off solenoid valve shall open.
  - The new outside air damper will close.

**UPON GAS DETECTION ALARM ALL PERSONNEL SHALL EVACUATE THE GARAGE  
NO OCCUPANTS SHALL BE IN THE AREA DURING THE ALARM.**

CLEARING OF GAS DETECTION ALARMS

When the alarm of a detected gas CH<sub>4</sub> returns to normal and the alarm is cleared the system shall return to the programmed mode of operation once the gas detection alarm is cleared and the heating and ventilation be activated to maintain the normal required heating and ventilation. The space can be re-occupied.

**TRAINING**

At each building provide up to 1 hours training on the operation of the ventilation control system to designate user personnel. This training shall be coordinated with the Gas Detection System training to provide training of the detection and control system in the same time period.

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**SECTION 23 31 00**  
**HVAC DUCTS**

**PART 1 - GENERAL**

**SCOPE**

This section includes specifications for all duct systems used on this project

**RELATED WORK**

Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC

Section 23 33 00 – Air Duct Accessories

Section 23 34 00 – HVAC Fans

**REFERENCE**

Refer to Section 23 05 00 Common Work Results for HV.

**REFERENCE STANDARDS**

ASTM A90 Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles

ASTM A623 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

ASTM A527 Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Lock-Forming Quality

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

UL 181 Standard for Safety for Factory Made Air Ducts and Air Connectors.

**DESIGN CRITERIA**

Construct all ductwork to be free from vibration, chatter, objectionable pulsations and leakage under specified operating conditions.

Use material, weight, thickness, gauge, construction and installation methods as outlined in the following SMACNA publications, unless noted otherwise:

\* HVAC Duct Construction Standards, Metal and Flexible, 3rd Edition, 2005

\* HVAC Air Duct Leakage Test Manual, 2<sup>nd</sup> Edition, 2012

\* HVAC Systems - Duct Design, 4th Edition, 2006

Use products which conform to NFPA 90A, possessing a flame spread rating of not over 25 and a smoke developed rating no higher than 50.

**DELIVERY, STORAGE AND HANDLING**

Promptly inspect shipments to ensure that Ductwork is undamaged and complies with the specification.

Protect Ductwork against damage.

Storage and protection methods must allow inspection to verify products.

**PART 2 - PRODUCTS**

**GENERAL**

All sheet metal used for construction of duct shall be 24 gauge or heavier except for round 12” and below may be 26 gauge where allowed in SMACNA HVAC Duct Construction Standards.

**MATERIALS**

**GALVANIZED STEEL SHEET:**

Use ASTM A 653 galvanized steel sheet of lock forming quality. Galvanized coating to be 1.25 ounces per square foot, both sides of sheet, G90 in accordance with ASTM A90.

**LOW PRESSURE DUCTWORK (Maximum 2 inch pressure class)**

Fabricate and install ductwork in sizes indicated on the drawings and in accordance with SMACNA recommendations, except as modified below.

1 Construct so that all interior surfaces are smooth. Use slip and drive or flanged and bolted construction when  
2 fabricating rectangular ductwork. Use spiral lock seam construction when fabricating round spiral ductwork.  
3 Sheet metal screws may be used on duct hangers, transverse joints and other SMACNA approved locations  
4 if the screw does not extend more than 1/2 inch into the duct.  
5

6 Provide expanded take-offs or 45 degree entry fittings for branch duct connections with branch ductwork  
7 airflow velocities greater than 700 fpm. Square edge 90-degree take-off fittings or straight taps will not be  
8 accepted.  
9

#### 10 **DUCT SEALANT**

11 Manufacturer: 3M 800, 3M 900, H.B. Fuller/Foster, Hardcast, Hardcast Peal & Seal, Lockformer cold  
12 sealant, Mon-Eco Industries, United Sheet Metal, or approved equal. Silicone sealants are not allowed in  
13 any type of ductwork installation.  
14

15 Install sealants in strict accordance with manufacturer's recommendations, paying special attention to  
16 temperature limitations. Allow sealant to fully cure before pressure testing of ductwork, or before startup of  
17 air handling systems.  
18

### 19 **PART 3 - EXECUTION**

#### 20 **INSTALLATION**

21 Verify dimensions at the site, making field measurements and drawings necessary for fabrication and  
22 erection. Check plans showing work of other trades and consult with Architect in the event of any  
23 interference.  
24

25 Install duct to pitch toward outside air intakes and drain to outside of building. Solder or seal seams to form  
26 watertight joints.  
27

28 Install all motor operated dampers. Do not install ductwork through dedicated electrical rooms or spaces  
29 unless the ductwork is serving this room or space.  
30

31 Protect diffusers, registers and grilles with plastic wrap or some other approved form of protection to  
32 maintain dirt and dust free and to prevent entry of dirt, dust and foreign material into the Ductwork.  
33

#### 34 **DUCTWORK SUPPORT**

35 Support ductwork in accordance with SMACNA HVAC Duct Construction Standards.  
36

#### 37 **LOW PRESSURE DUCT (Maximum 2 inch pressure class)**

38 Seal all duct, with the exception of transfer ducts, in accordance with SMACNA seal class "A"; all seams,  
39 joints, and penetrations shall be sealed.  
40

41 Install a manual balancing damper in each branch duct and for each diffuser or grille.  
42  
43

44 **END OF SECTION**  
45

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**SECTION 23 33 00**  
**AIR DUCT ACCESSORIES**

**PART 1 - GENERAL**

**SCOPE**

This sections includes accessories used in the installation of duct systems.

**REFERENCE STANDARDS**

NFPA 90A	Standard for Installation of Air Conditioning and Ventilating Systems
SMACNA	HVAC Duct Construction Standards - Metal and Flexible, 2nd Edition, 1995
UL 214	
UL 555 (6 <sup>th</sup> edition)	Standard for Fire Dampers and Ceiling Dampers
UL 555S (4 <sup>th</sup> edition)	Leakage Rated Dampers for Use in Smoke Control Systems

**SHOP DRAWINGS**

Submit for all accessories and include dimensions, capacities, ratings, installation instructions, and appropriate identification.

**PART 2 - PRODUCTS**

**MANUAL VOLUME DAMPERS**

Manufacturers: Ruskin, Vent Products, Air Balance, or approved equal.

Dampers must be constructed in accordance with SMACNA Fig. 2-12, Fig. 2-13, and notes relating to these figures, except as modified below.

**TURNING VANES**

Manufacturers: Aero Dyne, Anemostat, Barber-Colman, Hart & Cooley, or approved equal.

Construct turning vanes and runners for square elbows in accordance with SMACNA Fig. 2-3 and Fig. 2-4 except use only airfoil type vanes. Construct turning vanes for short radius elbows and elbows where one dimension changes in the turn in accordance with SMACNA Fig. 2-5 and Fig. 2-6.

**ACCESS DOORS**

Access door to be designed and constructed for the pressure class of the duct in which the door is to be installed. Doors in exposed areas shall be hinged type with cam sash lock. Hinges shall be aluminum or steel full length continuous piano type. Doors in concealed spaces may be secured in place with cam sash latches. For both hinged and non hinged doors provide sufficient number of camp sash latches to provide air tight seal when door is closed. Do not use hinged doors in concealed spaces if this will restrict access. Use minimum 1" deep 24 gauge galvanized steel double wall access doors with minimum 24 gauge galvanized steel frames. For non-galvanized ductwork, use minimum 1" deep double wall access door with frame that shall use materials of construction identical to adjacent ductwork. Provide double neoprene gasket that shall provide seals from the frame to the door and frame to the duct. When access doors are installed in insulated ductwork or equipment provide insulated doors with insulation equivalent to what is provided for adjacent ductwork or equipment. Access doors constructed with sheet metal screw fasteners will not be accepted.

**LOUVERS**

Manufacturers: Greenheck, or approved equivalent by Airolite, Industrial Louvers, American Warming and Ventilating, Construction Specialties, Ruskin.

Extruded aluminum alloy as and accessories and construction as scheduled. Provide with bird screen of 1/2" x 1/2" mesh aluminum in 12 gauge aluminum.

Louver to bear the AMCA certified ratings seal for both air performance and water penetration, having a free area not less than scheduled based on a 48" x 48" section

1  
2  
3 **PART 3 - EXECUTION**

4 **MANUAL VOLUME DAMPERS**

5 Install manual volume dampers in each branch duct and for each grille, register, or diffuser as far away from  
6 the outlet as possible while still maintaining accessibility to the damper. Install so there is no flutter or  
7 vibration of the damper blade(s).

8 **TURNING VANES**

9 Install turning vanes in all rectangular, mitered elbows in accordance with SMACNA standards and/or  
10 manufacturer's recommendations.

11  
12 If duct size changes in a mitered elbow, use single wall type vanes with a trailing edge extension. If duct  
13 size changes in a radius elbow or if short radius elbows must be used, install sheetmetal turning vanes in  
14 accordance with SMACNA Figure 2-5 and Figure 2-6.

15  
16 **ACCESS DOORS**

17 Install access doors where specified, indicated on the drawings, and in locations where maintenance, service,  
18 cleaning or inspection is required. Examples include, but are not limited to motorized dampers, fire and  
19 smoke dampers, smoke detectors, fan bearings, heating and cooling coils, filters, valves, and control devices  
20 needing periodic maintenance.

21  
22 Size and numbers of duct access doors to be sufficient to perform the intended service. Minimum access  
23 door size shall be 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, or other size as  
24 indicated.

25  
26 Install duct access doors for access to all motor operated dampers. Where the damper is accessible through  
27 an open end duct an access door is not required.

28  
29 **LOUVERS**

30 Louvers mounted in exterior walls at locations indicated on the drawings. Connect outside air intake duct to  
31 the louver, sealing all connections air and water tight.

32  
33 **FLASHINGS**

34 Flashing for wall penetrations with ductwork or the installation of louvers and wall mounted fans, shall be  
35 sealed water tight to the building wall.

36  
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38 **END OF SECTION**

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**SECTION 23 34 00**  
**HVAC FANS**

**PART 1 - GENERAL**

**SCOPE**

This section includes specifications for fans that are not an integral part of a manufactured device.

**RELATED WORK**

Section 23 05 13 - Common Motor Requirements for HVAC Equipment  
Section 23 05 29 – Hangers and Supports for Piping and Equipment  
Section 23 05 93 –Testing, Adjusting and Balancing for HVAC  
Section 23 09 93 – Sequence of Operation for HV Controls  
Section 23 05 31 - HVAC Ducts  
Section 23 05 33 - Air Duct Accessories

**REFERENCE**

Refer to Section 23 05 00 Common Work Results for HV

**REFERENCE STANDARDS**

AMCA 203      AMCA Fan Application Manual - Troubleshooting  
AMCA 210      Laboratory Method of Testing Fans for Rating  
NFPA 90A      Standard for the Installation of Air Conditioning and Ventilating Systems  
NFPA 96      Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations

**QUALITY ASSURANCE**

Refer to Section 23 05 00 Common Work Results for HV

**SHOP DRAWINGS**

Refer to Section 23 05 00 Common Work Results for HV

Include dimensions, capacities, fan curves, materials of construction, ratings, weights, motors and drives, sound power levels, appropriate identification and vibration isolation for all equipment. Sound power levels to be based on tests performed in accordance with AMCA Standard 300.

Fan curves shall indicate the relationship of CFM to static or total pressure for various fan speeds. Brake horsepower, recommended selection range, and limits of operation are to also be indicated on the curves. Indicate operating point on the fan curves at design air quantity and indicate the manufacturer's recommended drive loss factor for the specific application. Tabular fan performance data is not acceptable.

**OPERATION AND MAINTENANCE DATA**

All operations and maintenance data shall comply with the submission and content requirements specified under section GENERAL REQUIREMENTS.

**DESIGN CRITERIA**

Tested and certify all fans in accordance with the applicable AMCA test code.

Each fan and motor combination shall be capable of delivering 110% of air quantity scheduled at scheduled static pressure. The motor furnished with the fan shall not operate into the motor service factor when operating under these conditions. Consider drive efficiency in motor selection according to manufacturer's published recommendation or according to AMCA Publication 203, Appendix L.

Where inlet and outlet ductwork at any fan is changed from that shown on the drawings, provide any motor, drive and/or wiring changes required due to increased static.

All roof mounted equipment to be provided with curbs as an accessory to the fan and be compatible with the roof on which the equipment is installed .

1  
2  
3 **PART 2 - PRODUCTS**

4 **GENERAL**

5 Use fan size, class, type, arrangement, and capacity as scheduled.

6 Furnish complete with motors, wheels, drive assemblies, bearings, vibration isolation devices, and  
7 accessories required for specified performance and proper operation. All single phase motors to have  
8 inherent thermal overload protection. Provide variable pitch sheaves for drives 3 hp and smaller, fixed pitch  
9 sheaves for drives 5 hp and larger. Design all drives for 150% of motor rating.

10  
11 Use OSHA approved belt guards that totally enclose the entire drive. Construct guards of expanded metal to  
12 allow for ventilation; provide tachometer openings at shaft locations.

13  
14 Statically and dynamically balance all fans so they operate without objectionable noise or vibration.

15  
16 Use AMCA Type A spark resistant construction for all fans handling flammable or explosive vapors.

17  
18 **POWER ROOF EXHAUST FANS**

19 Manufacturers: Carnes, Greenheck, Penn, Jenn-Air, Cook, ACME or approved equal.

20  
21 Provide upblast or downblast units, as scheduled, with aluminum housing, non-overloading type centrifugal  
22 wheel, inlet cone, factory mounted and wired motor and disconnect switch, and bird screen.

23  
24 Units shall belt or direct drive as scheduled, electrically operated control damper with blade edge and jamb  
25 seals, damper operator of voltage as scheduled.

26  
27 For upblast units motor and disconnect switch housed in a separate ventilated compartment.

28  
29 Provide disconnect switches and thermal overload protection for units with single or three phase motors as  
30 scheduled.

31  
32 Provide accessories as scheduled.

33  
34 Provide roof curb as scheduled or specified.

35  
36 **SIDEWALL CENTRIFUGAL FANS**

37 Manufacturers: Carnes, Greenheck, Cook, Jenn-Air, ACME or approved equal.

38  
39 Dome type with spun aluminum housing, non-overloading centrifugal wheel, factory mounted and wired  
40 motor and disconnect switch housed in a separate ventilated compartment, belt or direct drive as scheduled,  
41 electrically operated control damper with blade edge and jamb seals, damper operator of voltage as scheduled,  
42 and birdscreen.

43  
44 Provide accessories as scheduled.

45  
46 **PART 3 - EXECUTION**

47  
48 **INSTALLATION**

49 Install as shown on the drawings, as detailed, and according to manufacturer's installation instructions.

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END OF SECTION



# MULTIPLE HIGHWAY GARAGES CNG RETROFIT

## YORK & SPRINGFIELD HIGHWAY GARAGES

### REQUEST FOR BID NO. 318016

**YORK HIGHWAY GARAGE**  
 SE CORNER OF U.S. HWY 151 & CO HWY V  
 1312 GREENWAY RD  
 MARSHALL, WI

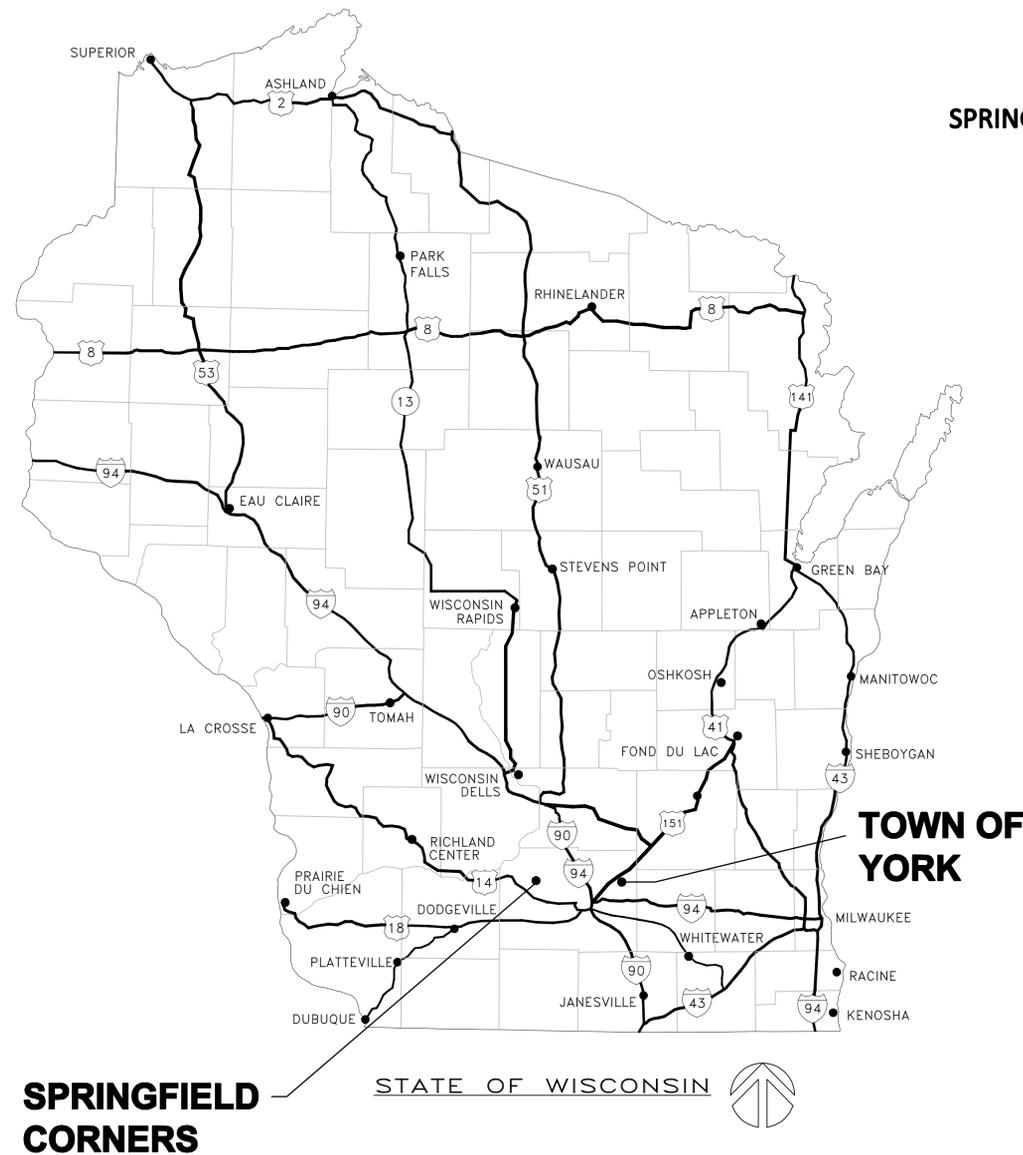
**&**

**SPRINGFIELD HIGHWAY GARAGE**  
 DANE COUNTY HIGHWAY DEPARTMENT GARAGE  
 RAMFORD CT (OFF OF U.S. HWY 12)  
 CROSS PLAINS, WI

**Engineering 370, LLC**  
 MECHANICAL CONSULTING

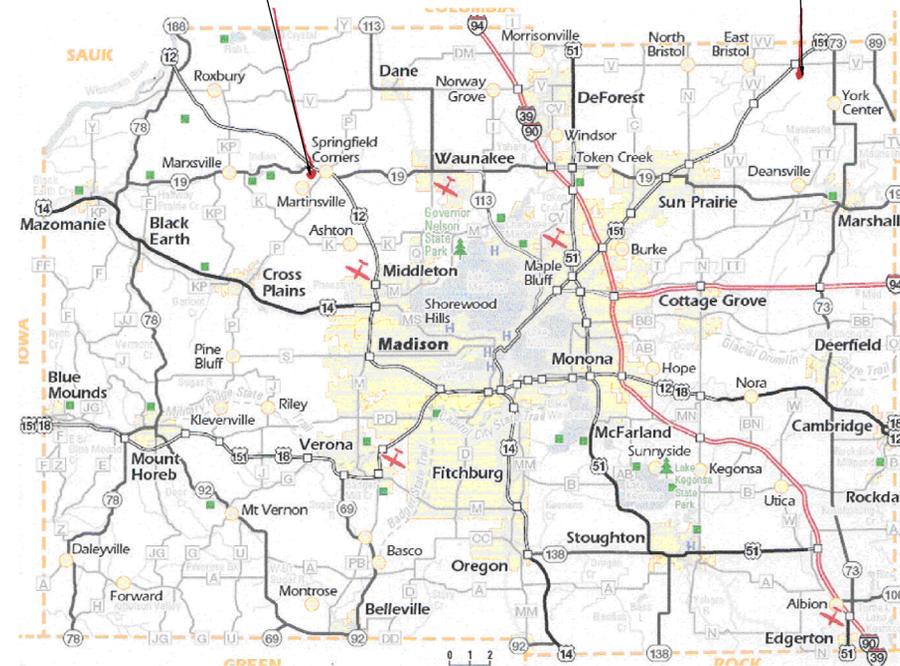
Oregon, WI 53575  
 T: 608-225-9273  
 Email: info@eng370.com

Project No. 18-0705 & 18-0706



SPRINGFIELD HIGHWAY GARAGE

YORK HIGHWAY GARAGE



### SHEET INDEX

**T100 TITLE SHEET**

**SPRINGFIELD GARAGE**

**H100-S VENTILATION NEW WORK FLOOR PLAN**  
**E100-S ELECTRICAL PLAN AND SPECIFICATION**

**YORK GARAGE**

**H100-Y VENTILATION NEW WORK FLOOR PLAN**  
**E100-Y ELECTRICAL PLAN AND SPECIFICATION**

10/16/18	ISSUED FOR BIDDING AND CONSTRUCTION	
Date		Symbol

**MULTIPLE HIGHWAY GARAGES CNG RETROFIT**

**SPRINGFIELD AND YORK HIGHWAY DEPT. GARAGE**

Dane County Department of Public Works, Highway and Transportation  
 Public Works Engineering Division  
 1919 Alliant Energy Center Way  
 Madison, WI 53713

Drawing Title:  
**TITLE SHEET**

Drawing No.	<b>T100</b>
Drawn By:	FBN

**FAN SCHEDULE**

MARK	MANUFACTURER	MODEL NO.	FAN DATA				CURB OR WALL DATA				MOTOR DATA				REMARKS		
			AIR FLOW (CFM)	EXT. STATIC PRESS.	FAN TYPE	WHEEL TYPE	DRIVE TYPE	RPM	TIP SPEED	OPENING SIZE	DAMPER	ENCL.	BHP	HP		VOLTS / PHASE	
EF-1A, B, C, D	GREENHECK	CUBE-360-20	11000	0.35	ROOF	BI	BELT	1725	470	4434	38.5 X 38.5	36 X 36	TEFC	1.66	2	460/60/3	1, 2, 3, 4, 5, 6

Notes:  
1 ALUMINUM SPARK RESISTANT WHEEL.  
2 ALUMINUM RUB RING.  
3 JUNCTION BOX MOUNTED & WIRED, MOTOR OPERATED DAMPER, END SWITCH, DAMPER ACTUATOR SAME VOLTAGE AS MOTOR.  
4 COMBINATION STARTER / DISCONNECT BY THE CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.  
5 DISCONNECT IN FAN BY MECHANICAL CONTRACTOR.  
6 PROVIDE CURB FOR MOUNTING FAN ON 1 IN 12 SLOPED METAL ROOF.

**GAS DETECTION SYSTEM LEGEND**

- ◇ CO - CARBON MONOXIDE DETECTOR
- ◇ NO2 - NITROGEN DIOXIDE DETECTOR
- ◇ CH4 - METHANE (NATURAL GAS - NG) DETECTOR. MOUNT 6" MIN / 12" MAX. BELOW HIGH POINT OF CEILING.
- ◇ CH4 (METHANE) HORN-STROBE ALARM MOUNT 90° ABOVE FLOOR

- HVAC NEW WORK KEYED NOTES:**
- 1 EXISTING CO (LOW) & NO2 (HIGH) SENSORS TO REMAIN. EXISTING CO AND NO2 SENSORS SHALL BE CHECKED FOR PROPER OPERATION AND CALIBRATED TO REQUIRED SENSING LEVELS FOR CONTROL OF THE VENTILATION SYSTEM. REFER TO SPEC. SECTION 23 09 26 AND 23 09 93.
  - 2 EXISTING LOW 30 X 16 EXHAUST DUCT UP TO ROOF EXHAUST FAN TO REMAIN (4 UNITS, EF-1 A, B, C, D).
  - 3 EXISTING MAKE UP AIR UNIT MUA-1 TO REMAIN.
  - 4 EXISTING MAKEUP AIR UNIT CONTROL PANEL TO REMAIN (BELOW EXISTING DETECTION PANEL).
  - 5 EXISTING CO & NO2 GAS DETECTION PANEL.
  - 6 EXISTING HIGH ROOF EXHAUST FAN (EF-1 A, B) TO REMAIN.
  - 7 EXISTING LP GAS SERVICE REGULATOR.
  - 8 EXISTING ELECTRICAL PANELS.
  - 9 EXISTING FIRE ALARM PANEL.
  - 10 EXISTING GAS FIRED UNIT HEATER (4 UNITS, UH-1 A, B, C, D).
  - 11 EXISTING GAS FIRED WATER HEATER.
  - 12 EXISTING GAS FIRED RADIANT HEATER (4 UNITS, RH-1 A, B, C, D).
  - 13 EXISTING WALL EXHAUST FAN (EF-4) TO REMAIN.
  - 14 NEW CH4 EXHAUST FAN EF-7A, 7B, 7C, AND 7D TO MOUNTED APPROXIMATELY 6 FEET FROM PEAK OF ROOF. COORDINATE EXACT LOCATION WITH EXISTING ROOF FRAMING, LIGHTING AND PIPING.
    - a. PROVIDE ROOF CURB FOR METAL ROOF WITH 1" IN 12 PITCH.
    - b. PROVIDE SUPPORT FRAMING BELOW CURB CONNECTED TO EXISTING ROOF PERLINS.
    - c. PROVIDE OPENING IN ROOF FOR NEW DUCT RISER TO NEW FAN. VERIFY OPENING SIZE WITH FAN MANUFACTURER.
  - 15 NEW GAS DETECTION CONTROL. LOCATE ADJACENT TO EXISTING CO & NO2 CONTROL PANEL.
  - 16 NEW VENTILATION PANEL. LOCATE ADJACENT TO EXISTING CO & NO2 CONTROL PANEL.
  - 17 NEW 4 INCH LP GAS SOLENOID CONTROL VALVE INSTALLED IN THE 4" PIPE RISER.
  - 18 INTERIOR CH4 HORN-STROBE ALARM.
  - 19 INTERIOR CH4 HORN-STROBE ALARM.
  - 20 30" X 30" OPENING IN TOP OF DUCT. TYPICAL OF ALL CH4 EXHAUST DUCT INLETS.
  - 21 ON DETECTION OF CH4 GARAGE DOOR SHALL BE ACTIVATED TO RISE 1'-6" ABOVE FLOOR FOR EXHAUST CH4/CNG MAKE-UP AIR.
  - 22 GAS FIRED FURNACE SERVING OFFICE AREA. UNIT WILL BE DISABLED DURING CH4 DETECTION MODE.
  - 23 AT EACH GARAGE ENTRY/EXIT DOOR PROVIDE A WARNING SIGN STATING "WHEN THE GAS DETECTION HORN/STROBE ALARMS ARE ACTIVE DO NOT ENTER THE FACILITY" SIGNS LETTERING SHALL BE MINIMUM OF 1.5 INCHES HIGH.

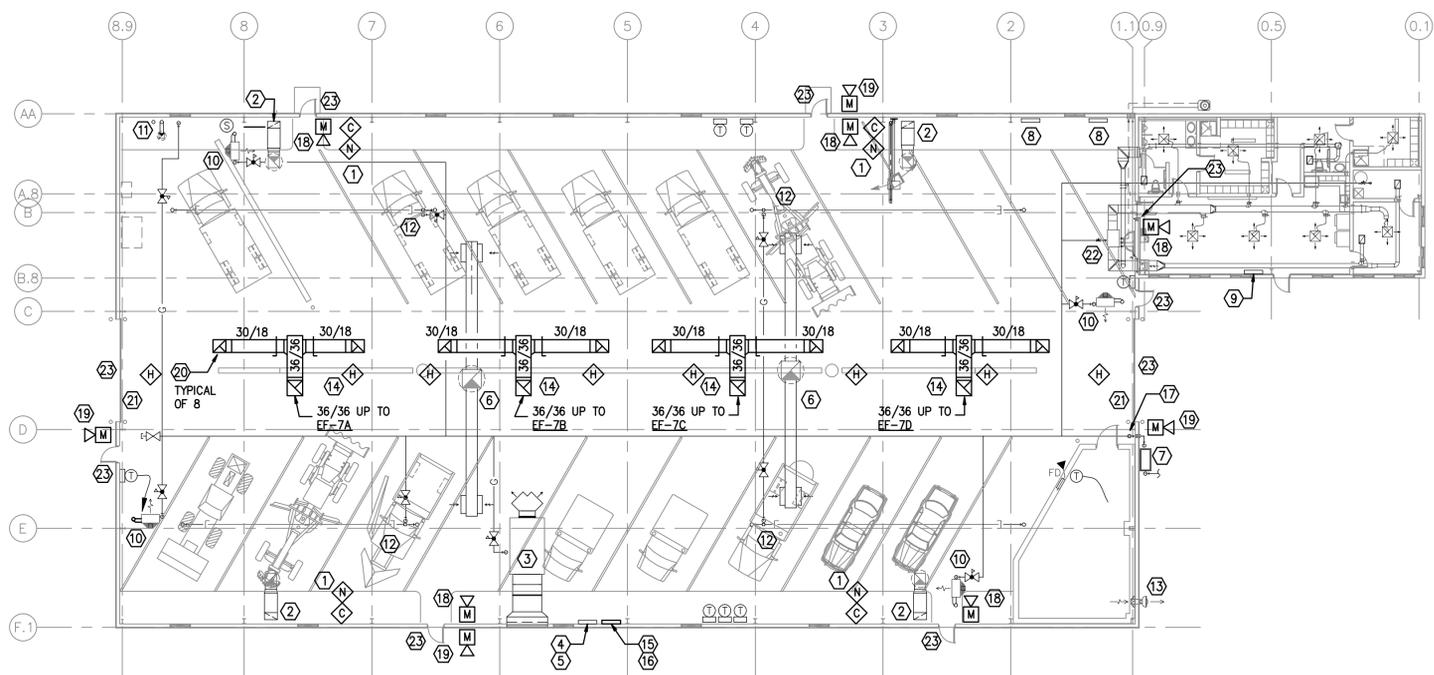
GARAGE VENTILATION		Date	09/10/18
Project: Dane County Springfield Shop		Use Classification:	Equipment Parking
Location: Highway 12 & 19 Town of Springfield, Dane County, WI		SPS 364.0404 & Table 364.0403 Enclosed Parking Garages	
E370 Project No.	18-0705		
Dane County RFB No.	318016		

Room Name or Number	Length Feet	Width Feet	Height Average Feet	Floor Area SF	Room Volume CF	Air Volume Calculates				Air Changes		Air Volumes Design				Notes
						CFM @ 0.05 / SF	CFM @ 0.5 / SF	CFM @ 0.75 / SF	CFM @ 1 / 12 CF	CFM	ACH Installed	CFM Low	CFM Low	CFM Low	CFM High	
Garage	199.667	100	28.083	19,967	520,791	998	9,983	14,975	43,399	43,399	5.07					44,000
<b>TOTAL</b>				19,967	520,791	998	9,983	14,975	43,399	43,399	0.00					

1 CNG exhaust volume is 43,400 / 8 = 5,425 CFM / bay CALCULATED use 5,500 CFM design for a total of 44,000 CFM  
2 Volume is based on average ceiling height 24'0" low, 28'2" high = 26'1" (26.083)

- GENERAL VENTILATION NOTES:**
1. REFER TO SPECIFICATION SECTION 23 09 26 AND 23 09 93 FOR CONTROL MODIFICATIONS TO SEQUENCE OF OPERATION OF EXISTING CO AND NO2 DETECTION SYSTEM.
  2. REFER TO SPECIFICATION SECTION 23 09 26 AND 23 09 93 FOR CONTROL MODIFICATIONS TO SEQUENCE OF OPERATION OF EXISTING MAKE UP AIR UNIT, GAS RADIANT HEATERS, UNIT HEATERS AND EXHAUST FANS.
  3. ALL LP GAS FIRED EQUIPMENT WILL BE DISABLED DURING CH4/CNG DETECTION AND VENTILATION MODE.
  4. UPON DETECTION OF CH4 THE NORMAL OCCUPIED VENTILATION EQUIPMENT WILL BE DISABLED.
  5. DURING THE DETECTION OF CH4 THE ASSOCIATED AUDIBLE/USUAL HORN/STROBES WILL BE ACTIVATED. WHILE THE CH4 DETECTION AND VENTILATION SYSTEM IS ACTIVE ALL PERSONAL SHALL EXIT THE GARAGE AREA.



**A**  
V100.1  
VENTILATION NEW WORK FLOOR PLAN  
SCALE: 1/16" = 1'-0"

10/16/18	ISSUED FOR BIDDING AND CONSTRUCTION	
Date	Issuance/Revisions	Symbol

**GAS DETECTION AND CNG VENTILATION SYSTEM**  
**SPRINGFIELD HIGHWAY DEPARTMENT GARAGE**  
TOWN OF SPRINGFIELD, DANE COUNTY, WI

**DANE COUNTY RFB# 318016**

Dane County Department of Public Works, Highway and Transportation  
Public Works Engineering Division  
1919 Alliant Energy Center Way  
Madison, WI 53713

Drawing Title:  
**VENTILATION NEW WORK FLOOR PLAN**

Eng. 370 Project Number: 18-?????  
Drawing No.: **H100-S**

Drawn By: FBN

DEMOLITION AND EXISTING CONDITIONS

- A. THE DRAWINGS ARE INTENDED TO PROVIDE A GUIDELINE FOR THE EXTENT OF DEMOLITION WORK REQUIRED. ACTUAL DEMOLITION WORK REQUIRED MAY DIFFER FROM THAT OBSERVED DURING THE SITE SURVEY MADE IN THE PREPARATION OF THESE DRAWINGS. CONTRACTOR SHALL VISIT THE SITE AND FIELD VERIFY THE EXTENT OF DEMOLITION AND REMODELING DURING THE BIDDING PERIOD.
- B. INCLUDE CUTTING, PATCHING AND RESTORATION OF FINISHES NECESSARY FOR THIS WORK. SURFACES DAMAGED BY THIS WORK AND SPACES AROUND CONDUITS PASSING THROUGH FLOORS AND WALLS SHALL BE NEATLY PATCHED AND FINISHED TO MATCH THE ADJACENT CONSTRUCTION, INCLUDING PAINTING AND OTHER FINISHES.
- C. CORE DRILLING SHALL BE DONE ON AN "AFTER HOURS" BASIS UNLESS A PRIOR AGREEMENT HAS BEEN REACHED WITH THE LANDLORD.
- D. REMOVE, CLEAN, AND REINSTALL FIXTURES LOCATED IN AREAS WHERE EXISTING CEILINGS OR WALLS ARE BEING REMOVED OR REPLACED.
- E. COORDINATE WITH BUILDING OWNER CONCERNING ANY SERVICE INTERRUPTIONS REQUIRED IN PERFORMING THIS PROJECT AND SCHEDULE FOR THE LEAST INCONVENIENCE TO THE BUILDING OCCUPANTS.

PERMITS, FEES, CODES, ORDINANCES AND REGULATIONS

- A. OBTAIN AND PAY FOR ALL PERMITS, INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THE WORK. DELIVER CERTIFICATES OF INSPECTION TO THE OWNER.
- B. ALL WORK SHALL COMPLY WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS OF CITY, COUNTY AND STATE HAVING JURISDICTION, AND THE NATIONAL ELECTRICAL CODE, AND REQUIREMENTS OF THE BOARD OF HEALTH.

QUALITY ASSURANCE

- A. INDUSTRY STANDARDS AND CODES: UNLESS MODIFIED BY THESE SPECIFICATIONS, THE DESIGN, MANUFACTURE, TESTING AND METHOD OF INSTALLING ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:
  - 1. NEC
- B. WHERE U.L. STANDARDS AND LISTING EXIST FOR ELECTRICAL MATERIALS, USE ONLY MATERIALS LISTED AND LABELED BY U.L.
- C. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR AND MATERIALS WHICH ARE OBVIOUS, REASONABLE, AND NECESSARY TO COMPLETE THE INSTALLATION. LEAVE ALL AREAS CLEAN AND READY FOR OCCUPANCY. REMOVE ALL DIRT, DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS, AND MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THIS DIVISION OF WORK DURING THE CONSTRUCTION. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT, AND FOREIGN MATERIALS AND LEFT AS NEW.
- E. SUBSTITUTIONS: SEE ARCHITECTURAL GENERAL CONDITIONS

SUBMITTALS

- A. SHOP DRAWINGS: SUBMIT ON ALL MATERIALS, PRODUCTS, EQUIPMENT AND SYSTEMS AS SPECIFIED UNDER HVAC SECTION IN THIS DIVISION IN ACCORDANCE WITH THE ARCHITECTURAL GENERAL CONDITIONS.
- B. PRODUCT DATA: SUBMIT ON ALL MATERIALS, PRODUCTS AND EQUIPMENT UNLESS OTHERWISE SPECIFIED OR ACKNOWLEDGED IN WRITING.
- C. SAMPLES: SUBMIT WHEN SPECIFIED OR REQUESTED.
- D. OPERATION AND MAINTENANCE MANUALS: SUBMIT COPIES IN COMPLIANCE WITH SECTION, OPERATION AND MAINTENANCE MANUALS.

1.06 JOB CONDITIONS

- A. PROTECT MATERIALS, APPARATUS AND EQUIPMENT FROM DAMAGE, MOISTURE, DIRT, DEBRIS AND WORK OF OTHER TRADES.
- B. FURNISH OWNER WITH ONE SET OF ACCURATELY MARKED FULL SIZE COPIES OF THE DRAWINGS, INDICATING ALL CHANGES FROM THE CONTRACT DRAWINGS AND ALL ELECT WORK AND CONTROLS AS INSTALLED.

GUARANTEE AND SERVICE

- A. REFER TO GENERAL CONDITIONS FOR GUARANTEE.
- B. WHERE EXTENDED GUARANTEES ARE CALLED FOR HEREIN, FURNISH THREE COPIES TO BE INSERTED IN OPERATION AND MAINTENANCE MANUALS.
- C. ALL PREVENTATIVE MAINTENANCE AND NORMAL SERVICE WILL BE PERFORMED BY THE OWNER'S MAINTENANCE PERSONNEL AFTER FINAL ACCEPTANCE OF THE WORK. THIS SHALL NOT ALTER THE CONTRACTOR'S OBLIGATIONS.
- D. ALL LABELS SHALL BE SURELY AFFIXED.

CONDUCTORS & CONDUIT

- A. PROVIDE AS REQUIRED AND DESCRIBED HERIN.
- B. CONDUCTORS SHALL BE #12 AWG UNLESS INDICATED OTHERWISE.
- C. ALL WIRING SHALL BE IN STEEL CONDUIT.

MATERIALS

- A. ALL CONDUCTORS SHALL BE COPPER WITH THHN OR XHHW 600V INSULATION AND SIZED AS INDICATED ON THE DRAWINGS. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED.

INSTALLATION

- A. PROVIDE ACCORDING TO NEC AND ALL LOCAL CODES.

WIRING DEVICES

- A. WIRING DEVICES SHALL CONFORM TO FEDERAL SPECIFICATIONS, ANSI AND NEMA STANDARDS.
- B. SWITCHES SHALL BE 20 AMP; 120-277 VOLT; A.C. ONLY; SINGLE POLE UNLESS OTHERWISE NOTED.
- C. ACCEPTABLE MANUFACTURERS: HUBBELL, LUTRON, PASS & SEYMOUR.
- D. RECEPTACLES SHALL BE 15 AMP OR 20 AMP AS REQUIRED, 125 VOLT, A.C. DUPLEX TYPE UNLESS OTHERWISE NOTED. ACCEPTABLE MANUFACTURERS: LUTRON, PASS & SEYMOUR.

INSTALLATION

- A. PROVIDE STAINLESS STEEL COVER PLATES IN ALL AREAS.

ELECTRICAL GENERAL NOTES

1. CONTRACTOR SHALL CAREFULLY REVIEW CONTRACT DOCUMENTS INCLUDING ALL MEP DRAWINGS AND SPECIFICATIONS. SPECIFICATIONS & INFORMATION REGARDING WORK FOR THE VARIOUS TRADES & SUBCONTRACTORS IS DISPERSED THROUGHOUT THE DOCUMENTS & CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE FULL SET OF DOCUMENTS.
2. CONTRACTOR TO VERIFY PLACEMENT OF ALL DEVICES SHOWN ON THE ELECTRICAL CONSTRUCTION DOCUMENTS WITH ARCHITECTURAL, MECHANICAL, PLUMBING, AND ANY OTHER RELEVANT TRADES PRIOR TO FINAL PLACEMENT.
3. EXPOSED CONDUIT AT THE CEILING SHALL BE HELD TIGHT TO STRUCTURE & LOCATED SO AS TO KEEP IT AS INCONSPICUOUS AS POSSIBLE.
4. THE EC SHALL UTILIZE EXISTING STEEL FRAMING MEMBERS AS MUCH AS PRACTICAL. OTHERWISE, PROVIDE ALL STEEL FRAMING AND SUPPORT NECESSARY TO ACCOMMODATE THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, BOXES, RACEWAY, ETC. PROVIDE ALL HARDWARE AND ACCESSORIES NECESSARY FOR A COMPLETE INSTALLATION.

MOTOREQUIPMENT SCHEDULE

IDENTIFICATION	EF-7A TO EF-7D	VENTILATION CONTROL PANEL	GAS DETECTION CONTROL PANEL
PANEL			
CIRCUIT	SEE PLANS	SEE PLANS	SEE PLANS
BREAKER	15/3	20/1	20/1
WIRING			
NUMBER	3 + GR	2 + GR	2 + GR
TYPE	THWN	THWN	THWN
SIZE	#12	#12	#12
CONDUIT	1/2"	1/2"	1/2"
ELECTRICAL			
VOLTAGE	480	120	120
PHASE	3	1	1
HP	2	-	-
KW	2.8	0.5	0.5
FLA	3.4	4	4
STARTER			
TYPE	-	-	-
SIZE	-	-	-
BY	HVAC	-	-
DISCONNECT			
TYPE	-	-	-
SIZE	-	-	-
MCP	-	-	-
BY	HVAC	-	-
REMARKS	NOTE-1	-	-

- NOTES:  
1. DISCONNECT PROVIDED BY HEATING CONTRACTOR, INSTALLED AND WIRED BY E.C.

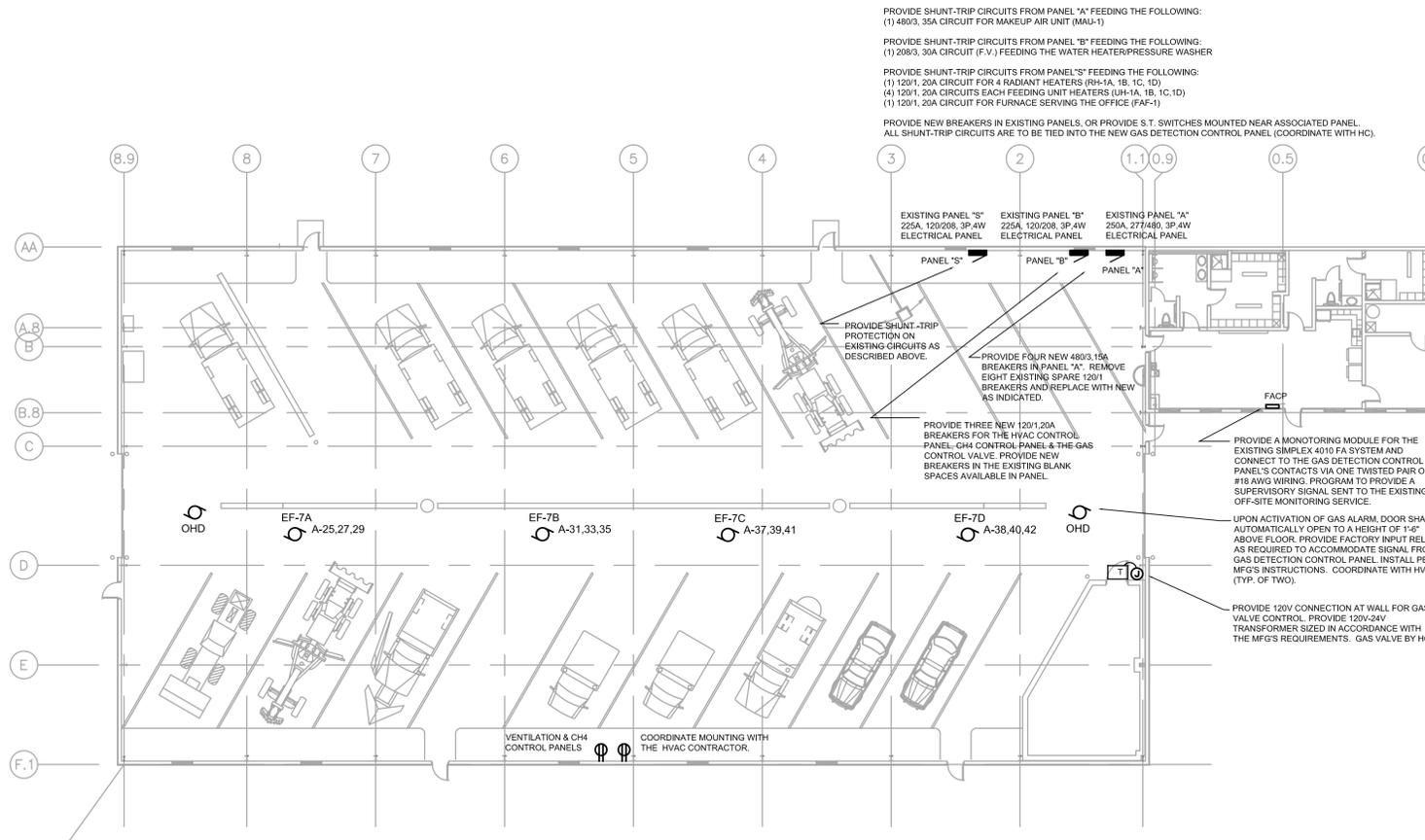
GENERAL ELECTRICAL REQUIREMENTS/LEGEND

POWER:

- ⊕ GENERAL USE DUPLEX RECEPTACLE  
PROVIDE 1-20A CIRCUIT FOR A MAXIMUM OF SIX (6) RECEPTACLES. MOUNT @ 18" A.F.F. (UNLESS NOTED)
- ⊕ QUADRUPLX RECEPTACLE  
PROVIDE 1-20A CIRCUIT FOR A MAXIMUM OF THREE (3) RECEPTACLES. MOUNT @ 18" A.F.F. (UNLESS NOTED)
- ⊕ GFI DUPLEX RECEPTACLE  
PROVIDE 1-20A CIRCUIT FOR A MAXIMUM OF FOUR (4) RECEPTACLES. MOUNT @ 18" A.F.F. (UNLESS NOTED)
- ⊕ WATERPROOF GFI DUPLEX RECEPTACLE  
PROVIDE 1-20A CIRCUIT FOR A MAXIMUM OF FOUR (4) RECEPTACLES. MOUNT @ 18" A.F.F. (UNLESS NOTED)
- ⊕ DEDICATED RECEPTACLES  
PROVIDE 1-20A CIRCUIT PER RECEPTACLE. MOUNT @ 18" A.F.F. (UNLESS NOTED)
- ⊕ TELEPHONE & STUB UP CONDUIT- WIRING BY THE TENANT
- ⊕ TELEPHONE/COMPUTER BOX & STUB UP CONDUIT- WIRING BY THE TENANT
- ⊕ CATV BOX & STUB UP CONDUIT- WIRING BY THE TENANT
- ⊕ MOTOR (SEE MOTOR SCHEDULE FOR REQUIREMENTS)
- ⊕ DISCONNECT SWITCH
- ⊕ DIRECT ELECTRICAL CONNECTION
- ⊕ PANELBOARD
- ⊕ GFI GROUND FAULT INTERRUPT

LIGHTING:

- ⊕ EXISTING FIXTURES
- ⊕ NO WORK REQUIRED.



1 ELECTRICAL PLAN  
E100S SCALE: 1/16"=1'-0"



10/16/18	ISSUED FOR BIDDING & CONSTRUCTION	
Date	Issuance/Revisions	Symbol

GAS DETECTION AND CNG VENTILATION SYSTEM  
SPRINGFIELD HIGHWAY DEPARTMENT GARAGE  
TOWN OF SPRINGFIELD, DANE COUNTY, WI

DANE COUNTY RFB# 318016

Dane County Department of Public Works, Highway and Transportation  
Public Works Engineering Division  
1919 Alliant Energy Center Way  
Madison, WI 53713

Drawing Title:  
**ELECTRICAL PLAN**

Drawing No. <b>E100-S</b>
Drawn By

FAN SCHEDULE																	
MARK	MANUFACTURER	MODEL NO.	FAN DATA						CURB OR WALL DATA			MOTOR DATA		REMARKS			
			AIR FLOW (CFM)	EXT STATIC PRESS	FAN TYPE	WHEEL TYPE	DRIVE TYPE	RPM	TIP SPEED	OPENING SIZE	DAMPER	ENCL	BHP		HP	VOLTS / PHASE	
EF-3A, B, C, D, E	GREENHECK	GW-161-C	2000	0.35	WALL	BI	DIRECT	860	860	3743	15.5 X 15.5	15 X 15	TEFC	0.24	1/3	120/60/1	1, 2, 3, 4, 5, 6

Notes

- ALUMINUM SPARK RESISTANT WHEEL
- ALUMINUM RUB RING
- JUNCTION BOX MOUNTED & WIRED. MOTOR OPERATED DAMPER, END SWITCH, DAMPER ACTUATOR SAME VOLTAGE AS MOTOR
- COMBINATION STARTER / DISCONNECT BY HV CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR
- DISCONNECT IN FAN BY MECHANICAL CONTRACTOR
- MOUNT FAN IN WALL AT LOCATION INDICATED. PROVIDE SUPPORT IN EXISTING WALL FOR MOUNTING FAN. SEE DETAIL.

LOUVER SCHEDULE															
MARK	MFR	MODEL NO.	INTAKE OR RELIEF	AIR FLOW (CFM)	SIZE W X H X D INCHES	FREE AREA MIN SF	AIR PRESSURE		CONSTRUCTION				REMARKS		
							DRIP	MAX " W.C.	BLADE STYLE	MATERIAL	THICKNESS (IN) BLADE	FRAME		BLADE ANGLE	BLADE ALIGNMENT
L-1	GREENHECK	ESD-603	INTAKE	10,000	54 X 48	9.19	0.2	DRAINABLE	ALUM	0.061	0.081	FLANGE	37	HORIZ	1, 2, 3, 4

NOTES

- FREE AREAS FOR SCHEDULED SIZE
- BIRDSCREEN 3/4 IN. X 0.051 IN. FLATTENED EXPANDED ALUMINUM
- MILL FINISH
- PROVIDE CONTROL DAMPER WITH LOW VOLTAGE ACTUATOR

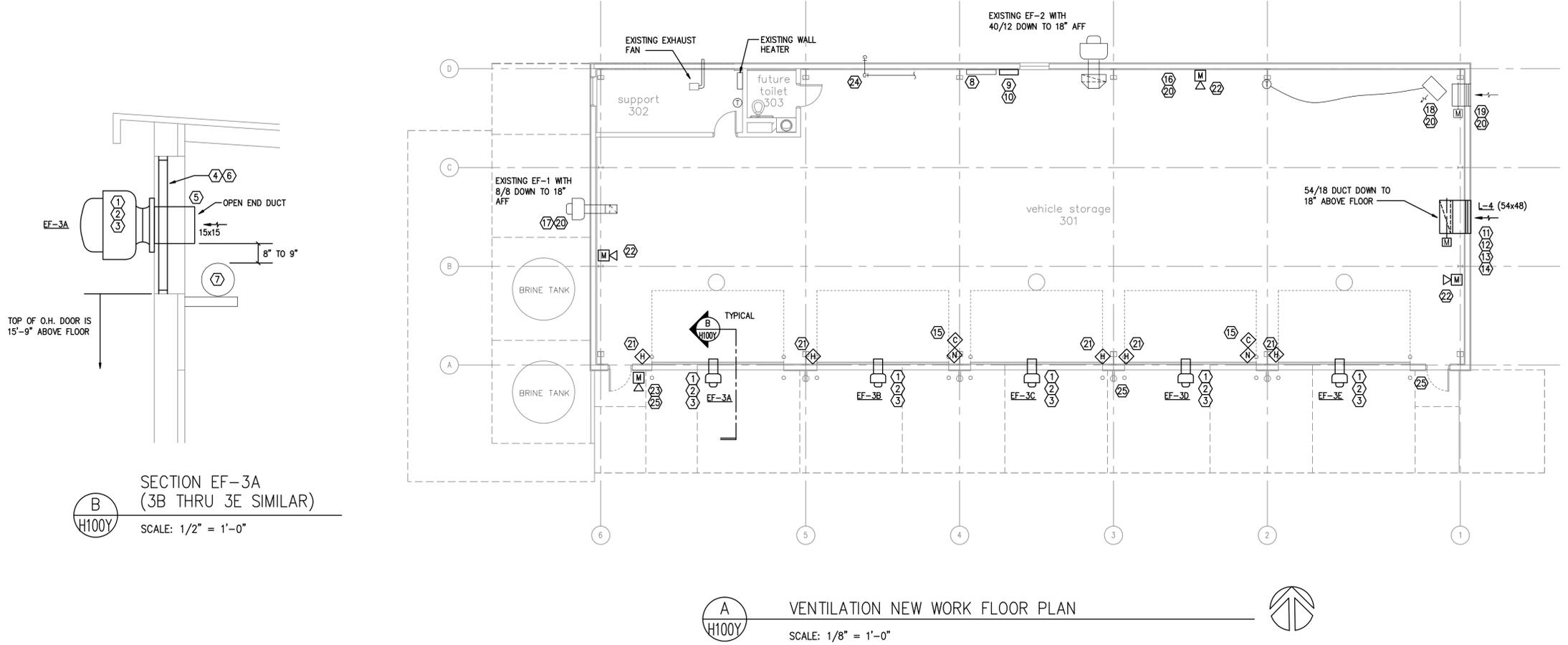
GARAGE VENTILATION															
Project: Dane County York Shop										Date: 09/10/18					
Location: Highway 151 & CTH V, Town of York, Dane County, WI										Use Classification: Equipment Parking Enclosed Parking Garages					
E370 Project No. 18-0706										Dane County RFB No. 318016					
Room Name or Number	Length Feet	Width Feet	Height Average Feet	Floor Area SF	Room Volume CF	Air Volume Calculates				Air Changes		Air Volumes Design		Notes	
						CFM @ Low	CFM @ Low	CFM @ High	CFM @ High	CFM	ACH	CFM	CFM		
						0.05 / SF	0.5 / SF	0.75 / SF	1 / 12 CF	5 ACH	Installed	0.05 / SF	0.5 / SF	0.75 / SF	
GARAGE	119.33	51.66	19.25	6,165	118,668	308	3,082	4,623	9,889	9,889	5.06			10,000	
TOTAL				6,165	118,668	308	3,082	4,623	9,889	9,889	0.00				
								USE						10,000	

1 Total SF area is out to out of garage walls.  
2 Volume is based on average ceiling height 16'0" low, 22'6" high = 19'3" (19.25)  
3 CNG ventilation exhaust volume of building is 9889 CFM / 5 = 1,977.8 CFM / bay CALCULATED use 2,000 CFM design for a total of 10,000 CFM

- GAS DETECTION SYSTEM LEGEND**
- ◇ C CO- CARBON MONOXIDE DETECTOR
  - ◇ N NO2 - NITROGEN DIOXIDE DETECTOR
  - ◇ H CH4 - METHANE (NATURAL GAS - NG) DETECTOR. MOUNT 6" MIN / 12" MAX. BELOW HIGH POINT OF CEILING.
  - ◻ M CH4 (METHANE) HORN-STROBE ALARM MOUNT 90° ABOVE FLOOR

- HVAC NEW WORK KEYED NOTES:**
- CENTER FAN OVER CENTER EAST SPRING OF OVERHEAD DOOR.
  - REFER TO SECTION DETAIL OF FOR ELEVATION OF DUCT 15" X 15" EXHAUST DUCT.
  - FLASH BASE OF FAN WATERTIGHT TO EXISTING RIBBED EXTERIOR WALL PANEL.
  - PROVIDE METAL STUDS EACH SIDE OF DUCT AND AT MOUNTING LOCATION OF FAN FROM EXISTING LOWER AND UPPER HORIZONTAL METAL WALL GRIDS.
  - STUB 15" X 15" DUCT APPROXIMATELY 3 INCHES BEYOND EXISTING INTER WALL SURFACE.
  - REPAIR EXISTING WALL INSULATION DAMAGED DURING INSTALLATION OF DUCT AND FAN.
  - OVERHEAD DOOR SPRING ON JACK SHAFT.
  - EXISTING ELECTRICAL PANELS AND LIGHT SWITCHES.
  - NEW VENTILATION CONTROL PANEL AND CH4 DETECTION CONTROL PANEL.
  - HV CONTRACTOR TO PROVIDE PLYWOOD BACKING FASTENED TO WALL FOR MOUNTING NEW CONTROL PANELS.
  - INSTALL LOUVER CENTERED ON WINDOW ABOVE.
  - TOP OF LOUVER TIGHT TO LOWER WALL HORIZONTAL FRAMING.
  - PROVIDE ADDITIONAL METAL STUDS REQUIRED FOR MOUNTING LOUVER AND SUPPORTING EXISTING WALL FRAMING.
  - FLASH LOUVER WATERTIGHT TO EXISTING RIBBED EXTERIOR WALL PANEL.
  - EXISTING CO AND NO2 DETECTORS TO REMAIN. REFER TO CONTROL SEQUENCES FOR MODIFICATIONS TO EXISTING EXHAUST FAN CONTROL.
  - EXISTING CO/NO2 ALARM EXHAUST FAN. PRESENT OPERATION IS TO OPERATE ON DETECTION OF CO OR NO2 ABOVE SET POINT LEVEL.
  - EXISTING CONTINUOUS EXHAUST FAN.
  - EXISTING GAS FIRED UNIT HEATER.
  - EXISTING INTAKE LOUVER WITH MOTOR OPERATED DAMPER.
  - REFER TO SPECIFICATION SECTION 23 09 93 FOR MODIFICATIONS TO THIS EQUIPMENT CONTROL SEQUENCE ON DETECTION OF CH4 (NATURAL GAS).
  - CH4 (METHANE/NATURAL GAS) SENSOR. MOUNT 6" TO 12" BELOW CEILING, 12" TO 18" FROM WALL AT HIGH POINT OF SLOPED CEILING SURFACE.
  - INTERIOR CH4 HORN-STROBE ALARM.
  - EXTERIOR CH4 HORN-STROBE ALARM.
  - NEW 1 INCH LP GAS SOLENOID CONTROL VALVE INSTALLED IN THE 1" PIPE RISER. INSTALL SHUT-OFF VALVE AT INLET SIDE OF SOLENOID VALVE.
  - AT EACH GARAGE ENTRY/EXIT DOOR PROVIDE A WARNING SIGN STATING "WHEN THE GAS DETECTION HORN/STROBE ALARMS ARE ACTIVE, DO NOT ENTER THE FACILITY" SIGNS LETTERING SHALL BE MINIMUM OF 1.5 INCHES HIGH.

- GENERAL VENTILATION NOTES**
- REFER TO SPECIFICATION SECTION 23 09 26 AND 23 09 93 FOR CONTROL MODIFICATIONS TO SEQUENCE OF OPERATION OF EXISTING CO AND NO2 DETECTION SYSTEM.
  - REFER TO SPECIFICATION SECTION 23 09 26 AND 23 09 93 FOR CONTROL MODIFICATIONS TO SEQUENCE OF OPERATION OF EXISTING AIR INTAKE AND UNIT HEATER AND EXHAUST FANS.
  - ALL LP GAS FIRED EQUIPMENT WILL BE DISABLED DURING CH4/CNG DETECTION AND VENTILATION MODE.
  - UPON DETECTION OF CH4 THE NORMAL OCCUPIED VENTILATION EQUIPMENT WILL BE DISABLED.
  - DURING THE DETECTION OF CH4 THE ASSOCIATED AUDIBLE/VISUAL HORN/STROBES WILL BE ACTIVATED. WHILE THE CH4 DETECTION AND VENTILATION SYSTEM IS ACTIVE ALL PERSONAL SHALL EXIT THE GARAGE AREA.



SECTION EF-3A  
(3B THRU 3E SIMILAR)  
SCALE: 1/2" = 1'-0"

VENTILATION NEW WORK FLOOR PLAN  
SCALE: 1/8" = 1'-0"

10/16/18	ISSUED FOR BIDDING AND CONSTRUCTION	
Date		Symbol

**GAS DETECTION AND CNG VENTILATION SYSTEM YORK HIGHWAY DEPARTMENT GARAGE**  
U.S. HIGHWAY 151 AND CTH V TOWN OF YORK, DANE COUNTY, WI DANE COUNTY RFB# 318016

Dane County Department of Public Works, Highway and Transportation  
Public Works Engineering Division  
1919 Alliant Energy Center Way  
Madison, WI 53713

Drawing Title:  
**VENTILATION NEW WORK FLOOR PLAN**

Eng. 370 Project Number: 18-0706  
Drawing No.: **H100-Y**  
Drawn By: FBN

DEMOLITION AND EXISTING CONDITIONS

- A. THE DRAWINGS ARE INTENDED TO PROVIDE A GUIDELINE FOR THE EXTENT OF DEMOLITION WORK REQUIRED. ACTUAL DEMOLITION WORK REQUIRED MAY DIFFER FROM THAT OBSERVED DURING THE SITE SURVEY MADE IN THE PREPARATION OF THESE DRAWINGS. CONTRACTOR SHALL VISIT THE SITE AND FIELD VERIFY THE EXTENT OF DEMOLITION AND REMODELING DURING THE BIDDING PERIOD.
- B. INCLUDE CUTTING, PATCHING AND RESTORATION OF FINISHES NECESSARY FOR THIS WORK. SURFACES DAMAGED BY THIS WORK AND SPACES AROUND CONDUITS PASSING THROUGH FLOORS AND WALLS SHALL BE NEATLY PATCHED AND FINISHED TO MATCH THE ADJACENT CONSTRUCTION, INCLUDING PAINTING AND OTHER FINISHES.
- C. CORE DRILLING SHALL BE DONE ON AN 'AFTER HOURS' BASIS UNLESS A PRIOR AGREEMENT HAS BEEN REACHED WITH THE LANDLORD.
- D. REMOVE, CLEAN, AND REINSTALL FIXTURES LOCATED IN AREAS WHERE EXISTING CEILINGS OR WALLS ARE BEING REMOVED OR REPLACED.
- E. COORDINATE WITH BUILDING OWNER CONCERNING ANY SERVICE INTERRUPTIONS REQUIRED IN PERFORMING THIS PROJECT AND SCHEDULE FOR THE LEAST INCONVENIENCE TO THE BUILDING OCCUPANTS.

PERMITS, FEES, CODES, ORDINANCES AND REGULATIONS

- A. OBTAIN AND PAY FOR ALL PERMITS, INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THE WORK. DELIVER CERTIFICATES OF INSPECTION TO THE OWNER.
- B. ALL WORK SHALL COMPLY WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS OF CITY, COUNTY AND STATE HAVING JURISDICTION, AND THE NATIONAL ELECTRICAL CODE, AND REQUIREMENTS OF THE BOARD OF HEALTH.

QUALITY ASSURANCE

- A. INDUSTRY STANDARDS AND CODES: UNLESS MODIFIED BY THESE SPECIFICATIONS, THE DESIGN, MANUFACTURE, TESTING AND METHOD OF INSTALLING ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:
  - 1. NEC
- B. WHERE U.L. STANDARDS AND LISTING EXIST FOR ELECTRICAL MATERIALS, USE ONLY MATERIALS LISTED AND LABELED BY U.L.
- C. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR AND MATERIALS WHICH ARE OBVIOUS, REASONABLE, AND NECESSARY TO COMPLETE THE INSTALLATION.
- D. LEAVE ALL AREAS CLEAN AND READY FOR OCCUPANCY. REMOVE ALL DIRT, DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS, AND MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THIS DIVISION OF WORK DURING THE CONSTRUCTION. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT, AND FOREIGN MATERIALS AND LEFT AS NEW.
- E. SUBSTITUTIONS: SEE ARCHITECTURAL GENERAL CONDITIONS

SUBMITTALS

- A. SHOP DRAWINGS: SUBMIT ON ALL MATERIALS, PRODUCTS, EQUIPMENT AND SYSTEMS AS SPECIFIED UNDER HVAC SECTION IN THIS DIVISION IN ACCORDANCE WITH THE ARCHITECTURAL GENERAL CONDITIONS.
- B. PRODUCT DATA: SUBMIT ON ALL MATERIALS, PRODUCTS AND EQUIPMENT UNLESS OTHERWISE SPECIFIED OR ACKNOWLEDGED IN WRITING.
- C. SAMPLES: SUBMIT WHEN SPECIFIED OR REQUESTED.
- D. OPERATION AND MAINTENANCE MANUALS: SUBMIT COPIES IN COMPLIANCE WITH SECTION, OPERATION AND MAINTENANCE MANUALS.

1.06 JOB CONDITIONS

- A. PROTECT MATERIALS, APPARATUS AND EQUIPMENT FROM DAMAGE, MOISTURE, DIRT, DEBRIS AND WORK OF OTHER TRADES.
- B. FURNISH OWNER WITH ONE SET OF ACCURATELY MARKED FULL SIZE COPIES OF THE DRAWINGS, INDICATING ALL CHANGES FROM THE CONTRACT DRAWINGS AND ALL ELECT WORK AND CONTROLS AS INSTALLED.

GUARANTEE AND SERVICE

- A. REFER TO GENERAL CONDITIONS FOR GUARANTEE.
- B. WHERE EXTENDED GUARANTEES ARE CALLED FOR HEREIN, FURNISH THREE COPIES TO BE INSERTED IN OPERATION AND MAINTENANCE MANUALS.
- C. ALL PREVENTATIVE MAINTENANCE AND NORMAL SERVICE WILL BE PERFORMED BY THE OWNER'S MAINTENANCE PERSONNEL AFTER FINAL ACCEPTANCE OF THE WORK. THIS SHALL NOT ALTER THE CONTRACTOR'S OBLIGATIONS.
- D. ALL LABELS SHALL BE SURELY AFFIXED.

CONDUCTORS & CONDUIT

- A. PROVIDE AS REQUIRED AND DESCRIBED HEREIN.
- B. CONDUCTORS SHALL BE #12 AWG UNLESS INDICATED OTHERWISE.
- C. ALL WIRING SHALL BE IN STEEL CONDUIT.

MATERIALS

- A. ALL CONDUCTORS SHALL BE COPPER WITH THHN OR XHHW 600V INSULATION AND SIZED AS INDICATED ON THE DRAWINGS. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED.

INSTALLATION

- A. PROVIDE ACCORDING TO NEC AND ALL LOCAL CODES.

WIRING DEVICES

- A. WIRING DEVICES SHALL CONFORM TO FEDERAL SPECIFICATIONS, ANSI AND NEMA STANDARDS.
- B. SWITCHES SHALL BE 20 AMP, 120-277 VOLT, A.C. ONLY: SINGLE POLE UNLESS OTHERWISE NOTED.
- C. ACCEPTABLE MANUFACTURERS: HUBBELL, LUTRON, PASS & SEYMOUR.
- D. RECEPTACLES SHALL BE 15 AMP OR 20 AMP AS REQUIRED, 125 VOLT, A.C. DUPLEX TYPE UNLESS OTHERWISE NOTED. ACCEPTABLE MANUFACTURERS: LUTRON, PASS & SEYMOUR.

INSTALLATION

- A. PROVIDE STAINLESS STEEL COVER PLATES IN ALL AREAS.

ELECTRICAL GENERAL NOTES

1. CONTRACTOR SHALL CAREFULLY REVIEW CONTRACT DOCUMENTS INCLUDING ALL MEP DRAWINGS AND SPECIFICATIONS, SPECIFICATIONS & INFORMATION REGARDING WORK FOR THE VARIOUS TRADES & SUBCONTRACTORS IS DISPERSED THROUGHOUT THE DOCUMENTS & CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE FULL SET OF DOCUMENTS.
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4. THE EC SHALL UTILIZE EXISTING STEEL FRAMING MEMBERS AS MUCH AS PRACTICAL. OTHERWISE, PROVIDE ALL STEEL FRAMING AND SUPPORT NECESSARY TO ACCOMMODATE THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, BOXES, RACEWAY, ETC. PROVIDE ALL HARDWARE AND ACCESSORIES NECESSARY FOR A COMPLETE INSTALLATION.

MOTOR/EQUIPMENT SCHEDULE

IDENTIFICATION	LABEL	EF-3A to EF-3E		VENTILATION	GAS DETECTION
		SEE PLANS	SEE PLANS	CONTROL PANEL	CONTROL PANEL
PANEL					
	CIRCUIT	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS
	BREAKER	15/1	20/1	20/1	20/1
WIRING	NUMBER	2 + GR	2 + GR	2 + GR	2 + GR
	TYPE	THWN	THWN	THWN	THWN
	SIZE	#12	#12	#12	#12
	CONDUIT	1/2"	1/2"	1/2"	1/2"
ELECTRICAL	VOLTAGE	120	120	120	120
	PHASE	1	1	1	1
	HP	FRACT.	-	-	-
	KW	0.3	0.5	0.5	0.5
	FLA	2.6	4	4	4
STARTER	TYPE	-	-	-	-
	SIZE	-	-	-	-
	BY	HVAC	-	-	-
DISCONNECT	TYPE	-	-	-	-
	SIZE	-	-	-	-
	MCP	-	-	-	-
	BY	HVAC	-	-	-
REMARKS		NOTE-1			

NOTES:

- 1. STARTER & DISCONNECT PROVIDED BY HEATING CONTRACTOR, INSTALLED AND WIRED BY EC.

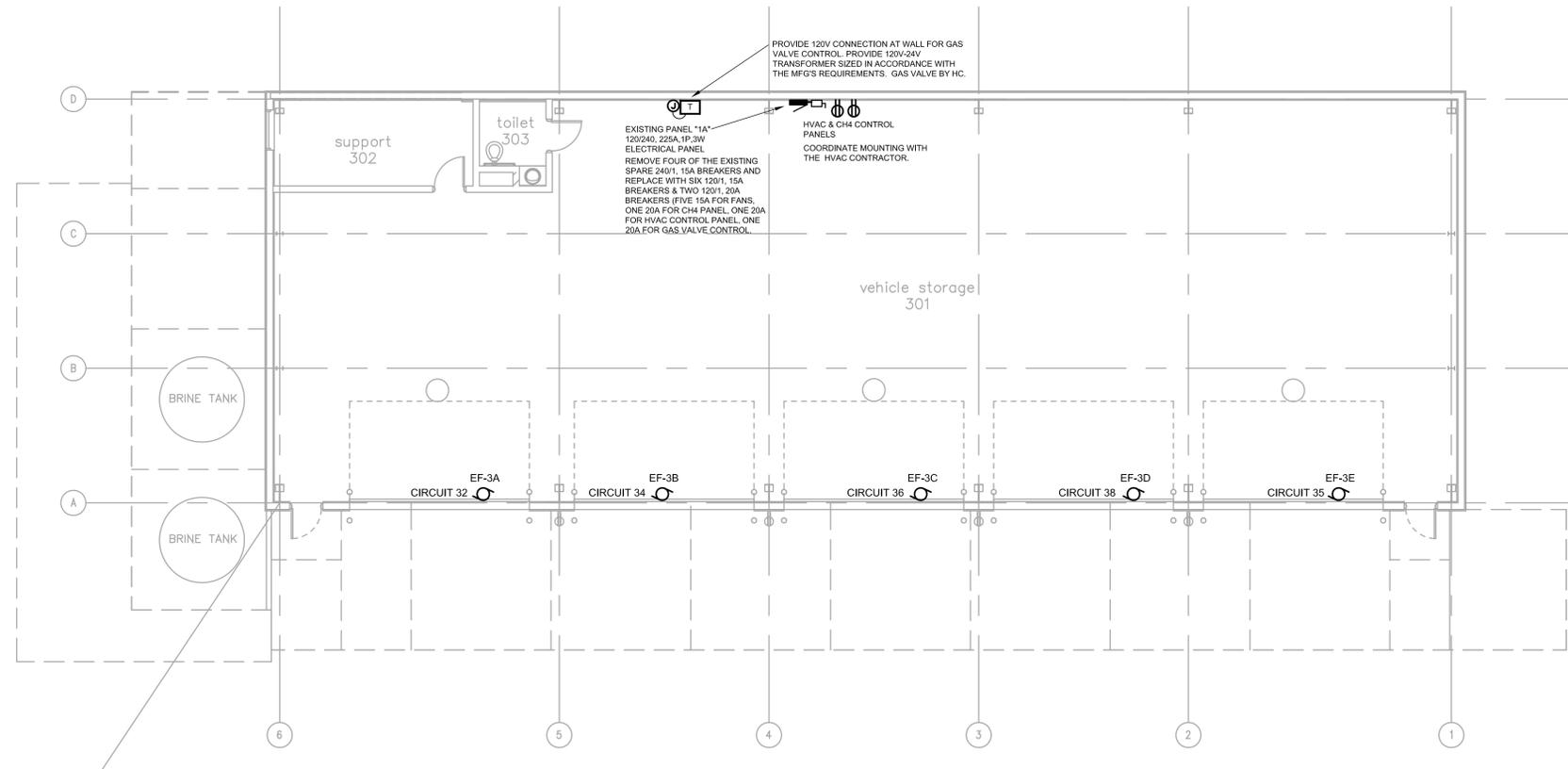
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POWER:

- ⊕ GENERAL USE DUPLEX RECEPTACLE  
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- ☒ TELEPHONE & STUB UP CONDUIT- WIRING BY THE TENANT
- ☒ TELEPHONE/COMPUTER BOX & STUB UP CONDUIT- WIRING BY THE TENANT
- ☒ CATV BOX & STUB UP CONDUIT- WIRING BY THE TENANT
- ⊕ MOTOR (SEE MOTOR SCHEDULE FOR REQUIREMENTS)
- ⊕ DISCONNECT SWITCH
- ⊕ DIRECT ELECTRICAL CONNECTION
- ⊕ PANELBOARD
- ⊕ GFI GROUND FAULT INTERRUPT

LIGHTING:

- EXISTING FIXTURES
- NO WORK REQUIRED.



1 ELECTRICAL PLAN  
SCALE: 1/8"=1'-0"

Engineering 370, LLC  
MECHANICAL CONSULTING

Oregon, WI 53575  
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Project No. 18-0706



10/16/18	ISSUED FOR BIDDING & CONSTRUCTION	
Date	Issuance/Revisions	Symbol

GAS DETECTION AND CNG VENTILATION SYSTEM  
YORK HIGHWAY  
DEPARTMENT GARAGE  
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TOWN OF YORK, DANE COUNTY, WI  
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Dane County Department of Public Works, Highway and Transportation  
Public Works Engineering Division  
1919 Alliant Energy Center Way  
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Drawing Title:  
**ELECTRICAL PLAN**

Drawing No.  
**E100-Y**