

RFB NO. 314016



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. 314016
PLUMBING FIXTURES & EQUIPMENT UPGRADES
JUVENILE SHELTER HOME
2402 ATWOOD AVENUE
MADISON, WISCONSIN

Due Date / Time: **THURSDAY, AUGUST 7, 2014 / 2:00 P.M.**

Location: **PUBLIC WORKS OFFICE**

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

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

FOR INFORMATION ON THIS REQUEST FOR BIDS, PLEASE CONTACT:

SCOTT CARLSON, PROJECT MANAGER
TELEPHONE NO.: 608/266-4179
FAX NO.: 608/267-1533
E-MAIL: CARLSON.SCOTT@COUNTYOFDANE.COM

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DRAWINGS

Plot drawings on 24" x 36" (ARCH D) paper for correct scale or size.
P-100 - Plumbing / Electrical Floor Plans, Diagrams & Details

LEGAL NOTICE

INVITATION TO BID

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

2:00 P.M., THURSDAY, AUGUST 7, 2014

REQUEST FOR BIDS NO. 314016

PLUMBING FIXTURES & EQUIPMENT UPGRADES

JUVENILE SHELTER HOME

2402 ATWOOD AVENUE

MADISON, WISCONSIN

Dane County is inviting Bids for construction services to furnish & install plumbing fixtures & equipment. Only firms with capabilities, experience & expertise with similar projects should obtain this Request for Bids document & submit Bids.

Request for Bids package may be obtained after **2:00 p.m. on Friday, July 18, 2014** by downloading it from countyofdane.com/pwbids. Please call Scott Carlson, Project Manager, at 608/266-4179, or our office at 608/266-4018, for any questions or additional information.

All Bidders must be a registered vendor with Dane County & pay an annual registration fee before award of Contract. Complete Vendor Registration Form at danepurchasing.com/registration or obtain one by calling 608/266-4131.

A pre-bid facility tour will be held Wednesday, July 30, 2014 at 9:00 a.m. at the Juvenile Shelter Home, starting in the lobby. Bidders are strongly encouraged to attend this tour.

PUBLISH: JULY 18 & 24, 2014 - WISCONSIN STATE JOURNAL

JULY 18 & 24, 2014 - THE DAILY REPORTER

INSTRUCTIONS TO BIDDERS

**Plumbing Fixtures & Equipment Upgrades
Juvenile Shelter Home
2402 Atwood Avenue
Madison, Wisconsin**

1. SECURING DOCUMENTS

- A. Construction Documents may be obtained at countyofdane.com/pwbids.
- B. Bidder is responsible to check back regularly at the web site for Addenda.

2. BID REQUIREMENTS

- A. Bidder shall submit lump sum bid for providing all labor, equipment, tools and materials necessary to perform all Work described in Construction Documents. Only firms with capabilities, experience and expertise with similar projects should submit Bids.
- B. Envelope containing Bid shall be clearly marked as for this project (note title at top of page). Bids shall be delivered to:

Dane County Department of Public Works, Highway & Transportation
1919 Alliant Energy Center Way
Madison, Wisconsin 53713

- C. One (1) Bid Form shall be submitted with your Bid. Bid Form is provided with Construction Documents; no other form or letter shall be accepted.
- D. Bidders shall not add any conditions, escalator clauses or qualifying statements to Bid Form.
- E. Erasures or other changes to Bid must be explained or noted, and shall be accompanied by initials of bidder.
- F. Legally authorized official of bidder's organization shall sign Bids.
- G. Bidder's organization shall submit completed Fair Labor Practices Certification form, included in these Construction Documents.
- H. Bid Bond shall be made payable to Dane County in amount of five percent (5%) of bid amount. Bid Bond shall be either certified check or bid bond issued by surety licensed to conduct business in the State of Wisconsin. Successful bidder's Bid Bond shall be retained until Contract is signed and required Performance / Payment Bond is submitted. Bids shall be binding on bidder for sixty (60) days after Bid Due Date. Bid Bond must be submitted with Bid.
- I. Successful bidder shall furnish and pay for Performance / Payment Bond as called for in Conditions of Contract.

3. INQUIRIES

- A. Written inquiries regarding intent of Construction Documents should be directed to:

Scott Carlson, Public Works Project Manager
Dane County Department of Public Works, Highway & Transportation
1919 Alliant Energy Center Way, Madison, Wisconsin 53713
Fax: 608/267-1533
Email: Carlson.Scott@countyofdane.com

- B. Bidders shall bring questions, discrepancies, omissions, conflicts or doubt as to meaning of any part of Construction Documents to attention of Department of Public Works, Highway & Transportation at least ten (10) days before due date for Bids. Prompt clarification of intent of Construction Documents shall be made available to bidders in form of Addendum. Bidder shall acknowledge all Addenda on Bid Form.
- C. Failure to request clarification of interpretation of Construction Documents shall not relieve bidders of their responsibilities to perform Work.

4. EXAMINATION OF SITE

- A. Coordinate site access activities with Community Program Manager, Suzanne Stute, 608/246-3277.
- B. A bidders facility tour will be held on July 30, 2014 at 9:00 a.m. at Juvenile Shelter Home, 2402 Atwood Avenue, Madison, Wisconsin, starting in the lobby. This tour will go until approximately 10:00 a.m. Bidders are strongly encouraged to attend this tour, however attendance is optional.

5. ALTERNATES

- A. Each bidder shall carefully read requests for alternate bids. Thoroughly examine Drawings and Specifications to determine to what extent various changes and conditions affect Bids. Base Bid shall be considered void if alternate bids are not submitted in space available on Bid Form. Award of Contract shall be based on amount of lowest qualified Base Bid and additive Owner accepted alternates.
- B. Bidders shall state amount to be added or deducted from Base Bid for making changes, including all incidentals, omissions, additions, and adjustments as may be necessary of required by stated alternates.
- C. See Bid Form, Section 01 00 00 - Basic Requirements, and indicated specification sections for alternates included in this project.

6. WITHDRAWAL OF BIDS

- A. Any bidder may withdraw their Bid any time prior to Bid Due Date. Withdrawn Bids shall be returned unopened.

7. BID DUE DATE

- A. See Legal Notice (advertisement).

8. COMMENCEMENT AND COMPLETION OF WORK

- A. Work shall commence by September 15, 2014.
- B. Work shall be completed by December 5, 2014.

9. RESERVATION

- A. Dane County reserves the right to reject any or all Bids, to waive any informalities in the Bid, and to accept any Bid which shall be in the best interest of Dane County.

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Name of Bidding Firm: _____

BID FORM

BID NO. 314016

**PROJECT: PLUMBING FIXTURES & EQUIPMENT UPGRADE
JUVENILE SHELTER HOME**

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

BASE BID - LUMP SUM:

Dane County is inviting Bids for construction services to furnish & install plumbing fixtures & equipment. Only firms with capabilities, experience & expertise with similar projects should obtain this packet & submit Bids. 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

The undersigned agrees to add the alternate(s) portion of the Work as described, for the following addition(s) to or subtraction(s) from the Base Bid, as stipulated below.

ALTERNATE BID 1 - LUMP SUM:

Add price for providing dishwasher upgrade. Substitute Hobart Model LXi for base bid Bosch Model SHP7PT55UC specified in 22 42 00.

_____ and _____ /100 Dollars
Written Price

\$ _____
Numeric Price (circle: Add or Deduct)

ALTERNATE BID 2 - LUMP SUM:

Add price for providing gas fired water heater upgrade. Substitute Rheem Model GHE100ES-200(A) for base bid Rheem Model GHE100ES-200 specified in 22 30 00.

_____ and _____ /100 Dollars
Written Price

\$ _____
Numeric Price (circle: Add or Deduct)

ALTERNATE BID 3 - LUMP SUM:

Add price for providing kitchen sink (KS-1) upgrade. Substitute 16 gauge, type 304 stainless steel for base bid 18 gauge, type 304 stainless steel specified in 22 42 00.

_____ and _____ /100 Dollars
Written Price

\$ _____
Numeric Price (circle: Add or Deduct)

ALTERNATE BID 4 - LUMP SUM:

Add price for modifying lavatory L-3 height. Remove lavatory from wall and re-install so rim of lavatory is 34" above floor.

_____ and _____ /100 Dollars
Written Price

\$ _____
Numeric Price (circle: Add or Deduct)

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

Addendum No(s). _____ through _____

Dated _____

Dane County Juvenile Courts must have this project completed by November 21, 2014. Assuming this Work can be started by September 16, 2014, 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) 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 & pay an annual registration fee. 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

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

EQUAL BENEFITS REQUIREMENT

By submitting a Bid, the contractor acknowledges that a condition of this contract is to provide equal benefits as required by Dane County Code of Ordinances Chapter 25.016. Contractor shall provide equal benefits as required by that Ordinance to all required employees during the term of the contract. Equal Benefits Compliance Payment Certification shall be submitted with final pay request. For more information:

www.danepurchasing.com/partner_benefit.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 a submitted a proposal, bid or application for a contract 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.nlr.gov and werc.wi.gov.

For reference, Dane County Ordinance 25.11(28)(a) is as follows:

(28) 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 purchasing manager 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.

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COUNTY OF DANE

PUBLIC WORKS CONSTRUCTION CONTRACT

Contract No. _____ Bid No. 314016

Authority: 2014 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 Plumbing Fixtures & Equipment Upgrades at the Juvenile Shelter Home [including Alternate Bid[s] X, Y & Z (if applicable)] ("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, 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 Select Plumbing Design, LLC (hereinafter referred to as "the Architect / Engineer"), and as enumerated in the Project Manual Document Index, 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 Conditions of Contract, and to make payments on account thereof as provided in Article entitled, "Payments to Contractor" of the 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) 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 comply with provisions of Chapter 25.016 of the Dane County Code of Ordinances, which pertains to domestic partnership benefits.

7. 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.

8. CONTRACTOR agrees that all persons employed by CONTRACTOR or any subcontractor shall be paid no less than the minimum wage established under Chapter 40, Subchapter II, Dane County Code of Ordinances. CONTRACTOR agrees to abide by and comply with the provisions of Chapter 40, Subchapter II of the Dane County Code of Ordinances, and said Subchapter is fully incorporated herein by reference.

9. 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.

10. 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.

11. NOT USED.

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

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A310

Bid Bond

Bond No.

KNOW ALL MEN BY THESE PRESENTS, that we (Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called the Principal, and (Here insert full name and address or legal title of Surety)

a corporation duly organized under the laws of the State of WI as Surety, hereinafter called the Surety, are held and firmly bound unto (Here insert full name and address or legal title of Owner)

as Obligee, hereinafter called Obligee, in the sum of () Percent of total amount bid Dollars (\$) Percent of attached bid.

For the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for Project No.: (Here insert full name, address, and description of project)

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee 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.

Signed and sealed this day of , 20 .

(Witness) (Principal) (Seal) (Title) (Surety) (Seal) (Witness) ATTORNEY-IN-FACT

THE AMERICAN INSTITUTE OF ARCHITECTS



Bond No. _____

AIA Document A312

Performance Bond

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

CONTRACTOR (Name and Address): _____

SURETY (Name and Principal Place of Business): _____

OWNER (Name 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 Page 3

CONTRACTOR AS PRINCIPAL
COMPANY: _____
(Corporate Seal)

SURETY COMPANY: _____
(Corporate Seal)

Signature: _____
Name and Title:

Signature: _____
Name and Title:

Attorney-in-Fact

(Any additional signatures appear on page 3)

FOR INFORMATION ONLY-Name, Address and Telephone
AGENT OR BROKER: _____

OWNER'S REPRESENTATIVE (Architect,
Engineer or other party): _____

1. The Contractor and the 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 to participate in conferences as provided in Subparagraph 3.1.

3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. 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; and

3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and

3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

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

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

4.3 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 the 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 Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

4.4 Waive its rights 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, tender payment therefor to the Owner; or

2. Deny liability in whole or in part and notify the Owner citing reasons therefor.

5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen 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 Subparagraph 4.4, and the Owner refuses the payment tendered 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.

6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, 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. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

6.2 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 Paragraph 4; and

6.3 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.

7. 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, or successors.

8. 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.

9. 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 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.

10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11. 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 here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12 DEFINITIONS

12.1 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.

12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

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
Company: (Corporate Seal)

SURETY
Company: (Corporate Seal)

Signature: _____
Name and Title:
Address:

Signature: _____
Name and Title:
Address:

THE AMERICAN INSTITUTE OF ARCHITECTS



Bond No. _____

AIA Document A312

Payment Bond

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

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name 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 Page 6

CONTRACTOR AS PRINCIPAL
COMPANY: (Corporate Seal)

SURETY COMPANY:
(Corporate Seal)

Signature: _____
Name and Title:

Signature: _____
Name and Title:
Attorney-in-Fact

(Any additional signatures appear on page 6)

FOR INFORMATION ONLY-Name, Address and Telephone
AGENT OR BROKER:

OWNER'S REPRESENTATIVE (Architect,
Engineer or other party):

1. The Contractor and the 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.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
 - 2.1 Promptly makes payment, directly, or indirectly, for all sums due Claimants, and
 - 2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2 Claimants who do not have a direct contract with the Contractor:
 1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
 - 6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2 Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. 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 the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
9. 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 payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
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. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, 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.
12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
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. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor

shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1 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 Contract. 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.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

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
Company: (Corporate Seal)

SURETY
Company: (Corporate Seal)

Signature: _____
Name and Title:
Address:

Signature: _____
Name and Title:
Address:

EQUAL BENEFITS COMPLIANCE PAYMENT CERTIFICATION

PURPOSE

25.016(8) of the Dane County Ordinance requires that each contractor receiving payment for contracted services must certify that he or she has complied fully with the requirements of Chapter 25.016 "Equal Benefits Requirement" of the Dane County Ordinances. Such certification must be submitted prior to the final payment on the contract.

This form should be included with a copy of the final contract invoice forwarded to your contract representative at Dane County.

CERTIFICATION

I, _____ certify that
Printed or Typed Name and Title

Printed or Typed Name of Contractor

has complied fully with the requirements of Chapter 25.016 of the Dane County Ordinances "Equal Benefits Requirements".

Signed _____

Date _____

For questions on this form, please contact Chuck Hicklin at 608-266-4109 or your contract representative at Dane County.

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CONDITIONS OF CONTRACT

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1. BIDS AND QUOTATIONS

- A. **Addressing of Bids.** Bids shall be addressed to the attention of Public Works Engineering Division and received at the Dane County Department of Public Works, Highway & Transportation, 1919 Alliant Energy Center Way, Madison, WI 53713, on or before the local time and date specified herein for the Bid Due Date. Seal all bids in envelopes and clearly mark the front with bid number and a reference to the specified contents of the bid. All uses of the term “County” in the Construction Documents shall mean Dane County.
- B. **Only One Copy Required.** Unless otherwise specified, only one copy of a bid or quotation on prescribed Bid Form will be required.
- C. **Additional Data with Bid.** Bidder may submit, on the firm’s letterhead only, additional data and information deemed advantageous to the County. The County shall hold optional the consideration of such data and information.
- D. **More than One Bid.** Bidders desiring to submit more than one bid may do so provided such additional bid or bids are properly submitted on the Dane County Department of Public Works, Highway & Transportation’s Bid Form. Obtain extra sets of Construction Documents from the Dane County Department of Public Works, Highway & Transportation. All uses of the term “Department” in the Construction Documents shall mean the Department of Public Works, Highway & Transportation, which is a unit of Dane County government.
- E. **Withdrawal or Late Bids.** The County will not accept formal bids, amendments thereto, or requests for withdrawal of a bid or any part thereof, after the time of Bid Due Date.
- F. **Preparation and Submission.** All written bids, unless otherwise provided for, must be submitted on and in accordance with forms provided by the County properly signed in ink. Bids not signed by hand are not accepted. Bidders must register in advance with the Purchasing Division.
- G. **Products by Name.** Intention of Specifications of products by name is to be descriptive of quality, workmanship, finish, function and approximate characteristics desired; intention is not necessarily restriction. Consideration of products substitution for those named is possible, provided the substitute offered is, in the opinion of the Dane County Public Works

Project Manager, equal or superior in quality, workmanship, finish, function and approximate characteristics to that specified in the Project Manual Specifications listed herein.

- H. **Visitation of Sites.** Bidder shall visit the site(s) that will receive the intended work or installation, and in so doing, be held responsible for a job deemed satisfactory by the County after completion of the Work or installation. No additional compensation shall be allowed for any condition of which bidder could have been informed.
- I. **Completeness.** Supply all information required by Construction Documents to constitute a regular bid. This shall include:
 - 1. Completed Bid Form.
 - 2. Completed Fair Labor Practices Certification.
 - 3. Completed Bid Bond.
- J. **Bids Binding Sixty (60) Days.** Unless otherwise specified all formal bids submitted shall be binding for sixty (60) calendar days following Bid Due Date.
- K. **Conditional Bids.** Qualified bids are subject to complete rejection, or partial rejection.
- L. **All or Part.** Bids or quotations may be considered and award made for all or any part of total quantities as specified in the Construction Documents.
- M. **Errors.** Unit bid price shall govern when extending total prices has errors. Carelessness in quoting prices or in preparation of bid otherwise, will not relieve the bidder. Explain all erasures in bids and include signature of bidder.
- N. **Regulation by State Statutes.** The bidding and letting of contracts are subject to provisions of Wisconsin Statutes 59.52(29) and 66.0901 and all subsequent sections and amendments thereof.
- O. **Bidders Present.** The Bid Due Date is the time fixed for the opening of formal bids. The Bids' contents will be made public for the information of bidders and others properly interested, who may be present either in person or by representative. Bidders are encouraged to attend all openings, and to offer constructive suggestions for improvements to bid format or ways in which County can realize greater savings.
- P. **Taxes.** Contractor shall pay applicable State and local sales taxes.

2. GUARANTEE AND BOND

- A. **Bid Bond / Guarantee.** A Bid Bond shall accompany Bids, which shall be either a flat sum or a percentage figure as shown on the Project Manual Cover. This Bid Bond shall serve as a warrant that the successful bidder will fulfill the terms of the bid within the time limit as indicated in the bid after notice of award by the Dane County. The Bid Bond may be a certified bank check (note: uncertified checks will not be acceptable), a cashier's check or a United State money order payable to the order of the Treasurer of Dane County; or on a Bid Bond with corporate surety authorized to do business in the State of Wisconsin and a warranty of attorney to confess judgment thereon attached thereto. The County will return negotiable Bid Bonds to unsuccessful bidders after awarding of bid. The County shall return

a check held from a Contractor after satisfactory completion of the Contract or after receipt by the County of a Performance Bond from the Contractor, if one is required. Surety Bid Bonds will not be returned unless specifically requested by individual bidders.

- B. **Guarantor Liability.** When guarantee is required, failure of bidder to furnish an acceptable Performance Bond (Article 2.C.) within twenty (20) days after receipt of notice of award shall render the guarantor liable to the County. Bids covered by certified check or bond such security shall become the absolute property of the County and shall be deposited with the County Treasurer for the benefit of the County as liquidated damages. The County shall forthwith proceed to collect on the Bid Bond.
- C. **Performance / Payment Bond.** When required, file a guarantee that the successful bidder will faithfully perform the obligations of the bid as accepted. Such guarantee must be a bond complying with Wisconsin Statute 779.14 with corporate surety authorized to do business in this State, and that the Contractor or subcontractors will be responsible for all claims for injuries to persons or damages to property or premises arising out of or in connection with their operations prior to the acceptance of the finished work or supplies, and that they will promptly make payments to all persons supplying them with labor or materials in the execution of the Work provided for in the Contract; guarantee to indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from all costs, damages and expenses growing out of or by reason of the successful bidder's failure to comply and perform the Work and complete the Contract in accordance with the Construction Documents; attach thereto a warrant of attorney authorizing the confession of judgment thereon for the benefit of the County.

3. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- A. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a subcontractor, sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
- B. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- C. Samples are physical examples that illustrate materials, equipment or workmanship and establish standards to compare the Work.
- D. Shop Drawings, Product Data, Samples and similar submittals are not Construction Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Construction Documents.
- E. The Contractor shall review, approve and submit to the Public Works Project Manager Shop Drawings, Product Data, Samples and similar submittals required by the Construction Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the County or of separate contractors. Submittals made by the Contractor not required by the Construction Documents, may be returned without action.
- F. The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the Public Works Project

Manager has approved the respective submittal. Such Work shall be in accordance with approved submittals.

- G. By approving and submitting, Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Construction Documents.
- H. The Contractor shall not be relieved of responsibility for deviations from requirements of the Construction Documents by the Public Works Project Manager's approval of Shop Drawings, Product Data, Samples and similar submittals unless the Contractor has specifically informed the Public Works Project Manager in writing of such deviation at the time of submittal and the Public Works Project Manager has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Sample or similar submittals by the Public Works Project Manager's approval thereof.
- I. The Contractor shall in writing direct specific attention to revised and / or resubmitted Shop Drawings, Product Data, Samples or similar submittals that were not requested by the Architect / Engineer or the Public Works Project Manager on previous submittals.
- J. Unless specified otherwise, Contractor shall submit three (3) copies of all Shop Drawings, Product Data, Samples or similar submittals 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.

4. AWARDS

- A. **Lowest Responsible Bidder.** Award will be to the lowest responsible bidder conforming to Construction Documents or on the most advantageous bid to the County.
- B. **Other Considerations.** Quantities involved, time of delivery, purpose for which required, competency of bidder, the ability to render satisfactory service and past performance will be considered in determining responsibility.
- C. **Rejection of Bids.** The County reserves the right to reject any or all bids or quotations in whole or in part and to award by items, parts of items, or by any aggregate group of items specified. The County reserves also the right to waive technical defects when in its judgment the best interests of the County thereby will be served.
- D. **Notice of Acceptance.** Sufficient notification of acceptance of bid will be written notice of award to a bidder in the form of a Purchase Order or similar, mailed or delivered to the address shown on the Bid Form.
- E. **Tie Bids.** If two or more bidders submit identical bids, the decision of the County to make award to one or more of such bidders shall be final. Cash discount will be taken into consideration determining an award. Also, see Article 7.A. IDENTICAL BIDDING, Antitrust Laws.
- F. **Qualifying Bidders.** Prior to solicitation and / or awarding of bid, the County may require submission by bidder of complete financial statement and questionnaire describing bidder's

financial ability and experience in performance of similar work. Refer to Instructions to Bidders.

- G. **Disqualification.** Awards will not be made to any person, firm or company in default of a Contract with the County, or to any bidder having as its sales agent or representative or as a member of the firm, any individual previously in default or guilty of misrepresentation.
- H. **Bid Results.** Bidders may secure information pertaining to results of bids by visiting the County Purchasing Division Office Monday through Friday, between 7:45 a.m. and 4:30 p.m.

5. CONTRACT PROVISIONS

- A. **Acceptance Constitutes Contract.** Written acceptance by the Public Works Project Manager of a proposal for services shall constitute a Contract, which shall bind the bidder to perform the Work as detailed in the Construction Documents, for the bid amount and in accordance with all conditions of said accepted bid. A formal Contract containing all provisions of the Contract signed by both parties shall be used when required by the Public Works Project Manager.
- B. **Local Restrictions and Permits.** All work shall be done according to applicable laws, ordinances and codes. The Contractor shall procure and pay for all required permits for permanent or temporary work.
- C. **Payment of Invoices.** Payment may be made only after inspection and acceptance by the using agency and approval by the Dane County Public Works Project Manager, and, where required by ordinances, approval by the Dane County Board of Supervisors. If materials or equipment were delivered, constructed, erected, installed or tested on site, payment shall be made based on ninety-five percent (95%) of the value of all the Work performed up to fifty percent (50%) of scheduled values less the total of previous payments. Authorized extra work will be included in progress payments. Payment of balances will be made only after approval and final acceptance by the County in consideration and elimination of the possibilities of imperfect work, faulty materials or equipment, liens that have been filed, or if evidence indicates the possible filing of claims.
- D. **Contract Alterations.** No alterations or variables in the terms of a contract shall be valid or binding upon the County unless made in writing and signed by the Purchasing Agent or authorized agent.
- E. **Assignments.** No contract may be assigned, sublet or transferred without written consent of the Public Works Project Manager.
- F. **Cancellations.** A contract may be canceled or voided by the Public Works Project Manager upon non-performance or violation of contract provisions, and an award made to the next low bidder or articles specified may be purchased on the open market. In either event, the defaulting contractor (or their surety) shall be liable to Dane County for costs to the County in excess of the defaulting contractor's contract prices.
- G. **Right of the Department to Terminate Contract.**
 - 1. In the event that the Contractor or any subcontractors violate any of the provisions of this Contract, the County may serve written notice upon the Contractor and the Surety of its intention to terminate the Contract. Such notice to contain the reasons for such intention to terminate the Contract, and unless within ten (10) days after the serving of such notice

upon the Contractor, such violation or delay shall cease and satisfactory arrangement or correction be made, the Contract shall, upon the expiration of said ten (10) days, cease and terminate.

2. In the event of any such termination, the County shall immediately serve notice thereof upon the Surety and the Contractor, and the Surety shall have the right to take over and perform the Contract subject to County's approval. However, if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the County may take over the Work and prosecute the same to completion by Contract or by force account for the account and at the expense of the Contractor. The Contractor and Surety shall be liable to the County for any excess cost occasioned the County thereby, and in such event the County may take possession of and utilize in completing the Work, such equipment, materials and / or supplies as may be on the site of the Work and therefore necessary.

H. **Non-Liability.** The Contractor shall not be liable in damages for delay in shipment or failure to deliver when such delay or failure is the result of fire, flood, strike, the transporting carrier, act of God, act of government, act of an alien enemy or by any other circumstances which, in the Public Works Project Manager's opinion, is beyond the control of the Contractor. Under such circumstances, however, the Public Works Project Manager may in the discretion, cancel the Contract.

I. **Quality Assurance.** Inspection of equipment, materials and / or supplies shall be made by or at the direction of the County or the Agency to which the goods are delivered, and any articles supplied that are defective, or fails in any way to meet Specifications or other requirements of the Contract, will be rejected. The Public Works Project Manager shall direct all required laboratory tests. The decision of the Public Works Project Manager on acceptance shall be final.

J. **Time for Completion.** The Contractor agrees that the Work shall be prosecuted regularly and diligently and complete the entire project as stated in the Construction Documents.

K. **Changes in the Work.**

1. Except in cases of emergency, no changes in the Work covered by the approved Construction Documents shall be made without having prior written approval of the Department. Charges or credits for the work covered by the approved change shall be determined by one of the following methods:
 - a) Unit bid prices previously approved.
 - b) An agreed lump sum based on actual cost of:
 - 1) Labor, including foremen, and all fringe benefits that are associated with their wages;
 - 2) Materials entering permanently into the Work;
 - 3) The ownership or rental cost of construction plant and equipment during the time of use on the extra work;
 - 4) Power and consumable supplies for the operation of construction or power equipment;
 - 5) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance;
 - 6) Social Security, pension and unemployment contributions;
 - 7) To the cost under K.1.b) 2), there shall be added a fixed fee to be agreed upon, but not to exceed fifteen percent (15%) of the actual cost of the Work performed

- with their own labor force; the fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expense;
- 8) On that portion of the work under K.1.b) 2) done under subcontract, the Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit and any other general expense; and
 - 9) The Contractor shall keep and present in such form as directed, a correct amount of the cost together with such supporting vouchers as may be required by the Department.
- c) Cost-Plus Work, with a not-to-exceed dollar limit, based on actual cost of:
- 1) Labor, including foremen, and all fringe benefits that are associated with their wages;
 - 2) Materials entering permanently into the Work;
 - 3) The ownership or rental cost of construction plant and equipment during the time of use on the extra work. (Rental cost cannot exceed fifty percent (50%) replacement value of rented equipment);
 - 4) Power and consumable supplies for the operation of construction or power equipment;
 - 5) Workmen's Compensation, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance;
 - 6) Social Security, pension and unemployment contributions;
 - 7) To the cost under K.1.c) 3) there shall be added a fixed fee to be agreed upon, but not to exceed fifteen percent (15%) of the actual cost of the Work performed with their own labor force; the fee shall be compensation to cover the cost of supervision, overhead, bond, profit, and any other general expense;
 - 8) On that portion of the work under K.1.c) 3) done under subcontract, the Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit, and any other general expense; and
 - 9) The Contractor shall keep and present in such form as directed, a correct amount of the cost together with such supporting vouchers as may be required by the Department.
2. If the Contractor claims that by any instructions given by the Architect / Engineer, the Department, by drawings or otherwise, regarding the performance of the Work or the furnishing of material under the Contract, involves extra cost, the Contractor shall give the Department written notice thereof within two weeks after the receipt of such instructions and in any event before proceeding to execute the work, unless delay in executing the work would endanger life or property.
 3. No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written order of the Architect / Engineer and approved by the Department, as previously mentioned, and the claim presented with the payment request submitted after the changed or extra work is completed.
 4. Negotiation of cost for a change in the Work shall not be cause for the Contractor to delay prosecution of the Work if the Contractor has been authorized in writing by the Public Works Project Manager to proceed.

L. Payments to Contractor.

1. The County will make partial payments to the Contractor for the value, proportionate to the amount of the Contract, of all labor and material incorporated in the work during the preceding calendar month upon receipt of approved Application and Certificate of Payment from the Architect / Engineer and approval of the Department.

2. The Contractor shall submit to the Architect / Engineer an Application and Certificate of Payment. The Architect / Engineer will review and approve this before sending it to the Public Works Project Manager. Evidence may be required, and supplied on demand, that supports the request and the Contractor's right to the payment claimed.
3. Request for payment for preparatory work and materials delivered and suitably stored at the site to be incorporated into the Work at some future period, will be given due consideration. Requests involving materials stored off the site, may be rejected; however, if deemed essential for reasons of job progress, protection, or other sufficient cause, requests will be considered conditional upon the submission by the Contractor of bills of sale and such other procedures as will adequately protect the County's interest such as storage in a bonded warehouse with adequate coverage. If there is any error in a payment, the Contractor is obligated to notify the Department immediately, but no longer than ten (10) days from receipt of payment.
4. Payments by the County will be due within forty-five (45) days after receipt by the Department of a certified request.
5. Five percent (5%) of each request for certification will be retained until final completion and acceptance of all the Work covered by the Contract. However, anytime after fifty percent (50%) of the Work has been furnished and installed at the site, the remaining payments will be made in full if the Architect / Engineer and Public Works Project Manager find that the progress of the Work corresponds with the construction progress schedule. If the Architect / Engineer and Public Works Project Manager find that the progress of the Work does not correspond with the construction progress schedule, up to ten percent (10%) of each request for payment may be retained for the Work completed.
6. All material and work covered by partial payments made shall become the sole property of the County. This provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the County to require the fulfillment of all of the terms of the Contract.
7. Final payment will be made within sixty (60) days after final completion of the Work, and will constitute acceptance thereof. Submit Equal Benefits Compliance Payment Certification with final pay request. Payment may be denied if Certification is not included.
8. On completion and acceptance of each separate division of the Contract, on which the stated price is separated in the Contract, payment may be made in full, including retained percentages thereon, less authorized deductions.
9. 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. If Wisconsin Prevailing Wage Rate Determination is required for this Work, use "Prime Contractor Affidavit of Compliance With Prevailing Wage Rate Determination" and "Agent or Subcontractor Affidavit of Compliance With Prevailing Wage Rate Determination" (if applicable). If Wisconsin Prevailing Wage Rate Determination is not required for this

Work, use “Dane County, Wisconsin Contractor Wage Affidavit”. Forms of such affidavits are included in Supplementary Conditions.

M. Withholding of Payments.

1. The County, after having served written notice on the said Contractor, may either pay directly any unpaid bills of which the Department has written notice, or withhold from the Contractor’s unpaid compensation a 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. Then payment to the Contractor shall be resumed in accordance with the terms of this Contract, but in no event shall these provisions be construed to impose any obligations upon the County to either the Contractor or the Contractor’s Surety.
2. In paying any unpaid bills of the Contractor, the County shall be deemed the Agent of the Contractor, and any payment so made by the County, shall be considered as a payment made under the Contract by the County to the Contractor and the County shall not be liable to the Contractor for any such payment made in good faith.
3. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the performance of this Contract.
4. At the Department’s request, the Contractor shall furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged or waived.

N. Acceptance of Final Payment as Release.

1. The making of final payment shall constitute a waiver of all claims by the County except those arising from:
 - a) Unsettled lien;
 - b) Faulty or defective work appearing after substantial completion;
 - c) Failure of the work to comply with the requirements of the Construction Documents;
or
 - d) Terms of any special guarantees required by the Construction Documents.
2. The acceptance of final payment shall constitute a waiver of all claims by the Contractor.

O. Lien Waivers. The Contractor warrants that title to all work covered by an application for Payment will pass to the County no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all work for which Certificates for Payment have been previously issued and payments received from the County shall, to the best of the Contractor’s knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, subcontractor, material suppliers, or other persons or entities making a claim by reason of having provide labor, materials and equipment related to the Work.

P. Use and Occupancy Prior to Acceptance. The Contractor agrees to the use and occupancy of a portion or unit of the project before formal acceptance by the Department, provided the Department:

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

Q. Correction of Work.

1. 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 the inspection of the Architect / Engineer and the Public Works Project Manager who shall be the judge of the quality and suitability of the work, materials, and processes of manufacture for the purposes for which they are used. Should they fail to meet the Architect / Engineer's and the Public Works Project Manager's approval they shall be reconstructed, made good, replaced or corrected, as the case may be, by the Contractor at the Contractor's expense. Rejected material shall immediately be removed from the site.
2. If the Contractor defaults or neglects to carry out the Work in accordance with the Construction Documents or fails to perform any provision of the Contract, the Department may, after ten (10) days written notice to the Contractor and without prejudice to any other remedy the County may have, make good such deficiencies. In such case, an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including the cost of the Architect / Engineer's additional services made necessary by such default, neglect or failure.

6. GENERAL GUARANTEE

A. Neither the final certificate of payment nor any provision in the Construction Documents nor partial or entire occupancy of the premises by the County shall constitute an acceptance of work not done in accordance with the Construction Documents or relieve the Contractor of liability in respect to any expressed warranties or responsibility for faulty materials or workmanship.

1. In no event shall the making of any payment required by the Contract constitute or be construed as a waiver by County of any breach of the covenants of the Contract or a waiver of any default of Contractor and the making of any such payment by County while any such default or breach shall exist shall in no way impair or prejudice the right of County with respect to recovery of damages or other remedy as a result of such breach or default.

B. The Contractor shall remedy and make good all defective workmanship and materials and pay for any damage to other work resulting therefrom, which appear within a period of one year from the date of substantial completion, providing such defects are not clearly due to abuse or misuse by the County. The Department will give notice of observed defects with reasonable promptness.

- C. Guarantee on work executed after certified date of substantial completion will begin on the date when such work is inspected and approved by the Architect / Engineer and the Public Works Project Manager.
- D. Where guarantees or warranties are required in sections of Construction Documents for periods in excess of one year, such longer terms shall apply; however, the Contractor's Performance / Payment Bond shall not apply to any guarantee or warranty period in excess of one year.

7. IDENTICAL BIDDING

- A. **Antitrust Laws.** All identical bids submitted to the County because of advertised procurement for materials, supplies, equipment or services exceeding \$1,000,000.00 in total amount shall be reported to the Attorney Generals of the United States and the State of Wisconsin for possible violation and enforcement of antitrust laws.

8. BINDING CONTRACTS

- A. **Contract Commitment.** Any contracts resulting from this bid shall be binding on a successful bidder(s) to its conclusion and on its assigns, heirs, executors, administrators or successors.

9. AFFIRMATIVE ACTION PROVISION AND MINORITY / WOMEN / DISADVANTAGED BUSINESS ENTERPRISES

- A. **Affirmative Action Provisions.** During the term of its Contract, Contractor agrees not to discriminate on the basis of race, religion, color, sex, handicap, age, sexual preference, marital status, physical appearance, or national origin against any person, whether a recipient of services (actual or potential), an employee, or an applicant for employment. 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 or level of service(s). Contractor agrees to post in conspicuous places, available to all employees, service recipients and applicants for this paragraph. The 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 the extent allowable in state or federal law.
- B. Contractor is subject to this paragraph 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 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) days of the effective date of this Contract and failure to do so by that date shall constitute grounds for immediate termination of the Contract. During the term of this Contract, Contractor shall also provide copies of all announcements of employment opportunities to the County's Contract Compliance Office, and shall report annually the number of persons, by race, sex and handicap status, which apply for employment and, similarly classified, the number hired and the number rejected.
- C. Contact the 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.

- D. In all solicitations for employment placed on Contractor's behalf during the term of this Contract, Contractor shall include a statement to the effect the Contractor is an "Equal Opportunity Employer."
- E. 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 provision of this Contract.
- F. **Minority / Women / Disadvantaged / Emerging Small Business Enterprises.** Chapter 19.508 of the Dane County Code of Ordinances is the official policy of Dane County to utilize Minority Business Enterprises (MBEs), Women Business Enterprises (WBEs), Disadvantage Business Enterprises (DBEs) and Emerging Small Business Enterprises (ESBEs) fully.
- G. The Contractor may utilize MBEs / WBEs / DBEs / ESBEs as subcontractors or suppliers. A list of subcontractors will be required of the low bidder as stated in this Contract. The list shall indicate which subcontractors or suppliers are MBEs / WBEs / DBEs / ESBEs and what percentage of subcontract is awarded, shown as a percentage of the total dollar amount of the bid.

10. COMPLIANCE WITH FAIR LABOR STANDARDS

- A. During term of this Contract, Contractor shall report to County Contract Compliance Officer, within ten (10) 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."

11. DOMESTIC PARTNERSHIP BENEFITS

- A. Contractor agrees to provide same economic benefits to all of its employees with domestic partners as it does to employees with spouses, or cash equivalent if such benefit cannot reasonably be provided. Contractor agrees to make available for County inspection Contractor's payroll records relating to employees providing services on or under this Contract or subcontract. If any payroll records of Contractor contain any false, misleading or fraudulent information, or if Contractor fails to comply with provisions of Chapter 25.016, Dane County Ordinances, contract compliance officer may withhold payments on Contract; terminate, cancel or suspend Contract in whole or in part; or, after due process hearing, deny Contractor right to participate in bidding on future County contracts for period of one year after first violation is found and for period of three years after second or subsequent violation is found.

12. INSURANCE REQUIREMENTS

- A. 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 the 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 the loss of use resulting there from, and is caused in whole or in part by any act or omission of the 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 a part indemnified hereunder.
- B. In any and all claims against Dane County, its boards, commissions, agencies, officers, employees and representatives or by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Contract shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under worker's compensation acts, disability benefits or other employee benefit acts.
- C. The obligations of the Contractor under this Contract shall not extend to the liability of the Architect / Engineer, its agents or employees arising out of (1) the preparation or approval of maps, drawings, opinion, reports, surveys, change orders, designs or specifications; or (2) the giving of or the failure to give directions or instruction by the Architect / Engineer, its agents or employees provided such giving or failure to give is the primary cause of the injury or damage.
- D. The County shall not be liable to the Contractor for damages or delays resulting from work by third parties or by injunctions or other restraining orders obtained by third parties.
- E. **Contractor Carried Insurance.** In order to protect itself and the County, the Contractor shall not commence work under this Contract until obtaining all the required insurance and the County has approved such insurance. The Contractor shall not allow any subcontractor to commence work on the subcontract until the insurance required of the subcontractor has been so obtained and approved.
1. **Worker's Compensation Insurance**
The Contractor shall procure and shall maintain during the life of this Contract, Worker's Compensation Insurance as required by statute for all of its employees engaged in work at the site of the project under this Contract and, in case of such work sublet, the Contractor shall require the subcontractor similarly to provide Worker's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Worker's Compensation Insurance.
 2. **Contractor's Public Liability and Property Damage Insurance**
The Contractor shall procure and maintain during the life of this Contract, Contractor's Public Liability Insurance and Contractor's Property Damage Insurance in an amount not less than \$1,000,000.00 per occurrence for bodily injury and death, and Contractor's

Property Damage Insurance in an amount not less than \$1,000,000.00 and shall be primary with Dane County as an “Additional Insured”.

3. Auto Liability Insurance

The Contractor shall procure and maintain during the life of this Contract, Comprehensive Automobile Liability Insurance covering owned, non-owned and hired automobiles for limits of not less than \$1,000,000.00 and shall be primary with Dane County as an “Additional Insured”.

- F. Contractor either (1) shall require each subcontractors 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 that activities of subcontractors in their own policy.
- G. Contractor shall furnish the County with certificates showing type, amount, class of operations covered, effective dates and dates of expiration of policies. Such certificates shall also contain substantially this statement: “Insurance covered by this certificate will not be canceled or materially altered, except after ten (10) days written notice has been received by the County.”
- H. **Builder’s Risk.** County shall provide Builder’s Risk policy. Terms of this policy will be made available by County’s Risk Manager upon Contractor’s request. By executing this Contract, Contractor warrants it is familiar with terms of said policy.

SUPPLEMENTARY CONDITIONS

1. 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.

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 construction services to furnish & install plumbing fixtures & equipment.
- B. Work by Owner:
 - 1. Modification of boiler piping in advance of contractor's work.
 - 2. Any necessary repair of floor / subfloor beneath kitchen sink after existing sink removal & before new sink is installed.
 - 3. Tile restoration at shower head installation.
- 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.

1.4 APPLICATIONS FOR PAYMENT

- A. Submit two (2) 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.

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 Orders authorizing expenditure of funds from the contingency allowance.

1.6 ALTERNATES

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

- C. Schedule of Alternates:
 - 1. Dishwasher Upgrade.
 - a. Substitute Hobart Model LXi for base bid Bosch Model SHP7PT55UC specified in 22 42 00.
 - 2. Gas Fired Water Heater Upgrade.
 - a. Substitute Rheem Model GHE100ES-200(A) for base bid Rheem Model GHE100ES-200 specified in 22 30 00.
 - 3. Kitchen Sink (KS-1) Upgrade.
 - a. Substitute 16 gauge, type 304 stainless steel for base bid 18 gauge, type 304 stainless steel specified in 22 42 00.
 - 4. Modify Lavatory L-3 Height.
 - a. Remove lavatory from wall and re-install so rim of lavatory is 34" above floor.

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.
- 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 a 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. Owner will schedule a preconstruction conference after Award of Contract for all affected parties.
- B. When required in individual Specification section, convene a pre-installation conference at project site prior to commencing work of the section.

1.10 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at minimum of one (1) per week.
- B. Preside at meetings, record minutes, and distribute copies within two (2) days to those affected by decisions made.

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 fifteen (15) 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 number of copies that Contractor requires, plus three (3) copies that shall be retained by 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 the Product.
- B. Submit samples of finishes from the 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. Arrange for temporary parking areas to accommodate construction personnel. Limited parking shall be available at the Work site.

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. 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. 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 floors or walls along with other noisy work may have to be done on second and third shifts.
- B. 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.
- C. Contractor shall, at all times, provide approved, safe walkways and facility entrances for use by Owner, employees and public.
- D. Contractor shall provide adequate protection for all parts of facility, its contents and occupants wherever the Work under this Contract is to be performed.
- E. 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.
- F. 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.

1.25 PROTECTION

- A. Contractor shall provide and maintain barricades & signage to prohibit public access to construction site.

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 approval at least seven (7) days prior to Bid Due Date.
- 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. Requests for material or product substitutions submitted after Bid Due Date may be considered. 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 up to seven (7) days prior to date of Bid Due Date.
- 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 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 operation and maintenance manual for all mechanical and electrical equipment and systems supplied and installed in the Work.

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 Architect / Engineer 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 the project As-Built Drawings & Specifications.
- B. Architect / Engineer shall update the original Construction Documents to include all Addendums & any other changes including those provided by the Contractor in the As-Built Drawings & Specifications. These updates are the project Record Drawings & Specifications.
- C. Architect / Engineer shall furnish the Public Works Project Manager with Record Drawings as detailed in the Professional Services Agreement.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 74 19

RECYCLING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Waste Management Goals
 - 2. Waste Management Plan
 - 3. Reuse
 - 4. Recycling
 - 5. Materials Sorting and Storage On Site
 - 6. Lists of Recycling Facilities Processors and Haulers
 - 7. 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 The Dane County Green Building Policy, Resolution 299, 1999-2000.

- B. Contractor shall develop, with assistance of Public Works Project Manager and Architect / Engineer, Waste Management Plan (WMP) for this project. 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.

1.3 WASTE MANAGEMENT PLAN

- A. Contractor shall complete WMP and include cost of recycling / reuse in Bid. WMP will be submitted to Public Works Project Manager within fifteen (15) days of Notice to Proceed 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.

1.4 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.

1.5 RECYCLING

- A. These materials can be recycled in Dane County area:
 1. Wood.
 2. Wood Pallets.
 3. Fluorescent Lamps.
 4. Foam Insulation & Packaging (extruded and expanded).
 5. PVC Plastic (pipe, siding, etc.).
 6. Asphalt & Concrete.
 7. Bricks & Masonry
 8. Corrugated Cardboard.
 9. Metal.
 10. Carpet Padding.
 11. Gypsum Drywall.
 12. Shingles.
 13. Barrels & Drums.
 14. Solvents.

1.6 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.

1.7 LISTS OF RECYCLING FACILITIES PROCESSORS AND HAULERS

- A. Web site www.countyofdane.com/pwht/recycle/categories.aspx lists current information for Dane County Recycling Markets. Contractors can also contact Dane County's Special Projects & Materials Manager at 608/266-4990, or local city, village, town recycling staff listed at site www.countyofdane.com/pwht/recycle/contacts.aspx. Statewide listings of recycling / reuse markets are available from UW Extension at www4.uwm.edu/shwec/wrmd/search.cfm.

1.8 WASTE MANAGEMENT PLAN FORM

A. Contractor Information:

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: _____
Foam Insulation	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
PVC Plastic	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Corrugated Cardboard	_____ cu. ft. _____ lbs.	_____ Recycled	_____ Reused	Name: _____
Metals	_____ cu. yds. _____ tons	_____ Recycled	_____ Reused	Name: _____
Other	_____	_____ Recycled	_____ Reused	Name: _____
Other	_____	_____ Recycled	_____ Reused	Name: _____

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 22 05 00
COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

SCOPE

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

PART 1 - GENERAL

- Scope
- Reference
- Standards
- Quality Assurance
- Continuity of Existing Services
- Codes
- Certificates and Inspections
- Submittals
- Operating and Maintenance Data
- Training of Owner Personnel
- Record Drawings

PART 2 - PRODUCTS

- Identification
- Sealing and Fire Stopping

PART 3 - EXECUTION

- Demolition
- Cutting and Patching
- Building Access
- Equipment Access
- Coordination
- Identification
- Lubrication
- Training

REFERENCE

Applicable provisions of Division 1 govern work under this section.

This section applies to all Division 22 00 00 sections of plumbing.

STANDARDS

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

- ABMA American Boiler Manufacturers Association
- ANSI American National Standards Institute
- ASME American Society of Mechanical Engineers
- ASPE American society of Plumbing Engineers
- ASSE American Society of Sanitary Engineering
- ASTM American Society for Testing and Materials
- AWS American Welding Society
- CS Commercial Standards, Products Standards Sections, Office of Eng. Standards Service, NBS
- EPA Environmental Protection Agency
- FS Federal Specifications, Superintendent of Documents, U.S. Government Printing Office
- IAPMO International Association of Plumbing & Mechanical Officials
- MCA Mechanical Contractors Association

- 1 MICA Midwest Insulation Contractors Association
- 2 MSS Manufacturer's Standardization Society of the Valve & Fitting Industry, Inc.
- 3 NBS National Bureau of Standards
- 4 NEC National Electric Code
- 5 NEMA National Electrical Manufacturers Association
- 6 NFPA National Fire Protection Association
- 7 NSF National Sanitation Foundation
- 8 PDI Plumbing and Drainage Institute
- 9 UL Underwriters Laboratories Inc.

10

11 Standards referenced in this section:

- 12 ACI 614 Recommended Practice for Measuring, Mixing and Placing of Concrete
- 13 ASTM E814 Standard Test Method for Fire Tests of Through-Penetration Fire Stops
- 14 ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- 15 D.O.T. Standard Specifications for Road and Bridge Construction, State of Wisconsin, Dept. of
- 16 Transportation
- 17 UL1479 Fire Tests of Through-Penetration Firestops
- 18 UL723 Surface Burning Characteristics of Building Materials

19

20 **QUALITY ASSURANCE**

21 Substitution of Materials: Refer to Division 1 - Basic Requirements

22

23 All products and materials used are to be new, undamaged, clean and in good condition. Existing products
24 and materials are not to be reused unless specifically indicated.

25

26 Where equipment or accessories are used which differ in arrangement, configuration, dimensions, ratings,
27 or engineering parameters from those indicated on the contract documents, the contractor is responsible for
28 all costs involved in integrating the equipment or accessories into the system and for obtaining the intended
29 performance from the system into which these items are placed.

30

31 **CONTINUITY OF EXISTING SERVICES**

32 Do not interrupt or change existing services without prior written approval from the Owner's Project
33 Representative. When interruption is required, coordinate scheduling of down-time with the Owner to
34 minimize disruption to his activities. Unless specifically stated, all work involved in interrupting or
35 changing existing services is to be done during "OFF" hours.

36

37 **CODES**

38 Comply with requirements of Wisconsin Administrative Code.

39

40 **CERTIFICATES AND INSPECTIONS**

41 Refer also to Division 1.

42

43 Obtain and pay for all required City of Madison or State of Wisconsin installation inspections except those
44 provided by the Architect/Engineer in accordance with Wis. Admin. Code Section ILHR 50.12. Deliver
45 originals of these certificates to the Owner's Project Representative. Include copies of the certificates in the
46 Operating and Maintenance Instructions.

47

48 **SUBMITTALS**

49 Refer to Division 1.

50

51 Not more than two weeks after award of contract but before any shop drawings are submitted, contractor to
52 submit the following plumbing system data sheet. List piping material type for each piping service on the
53 project, ASTM number, schedule or pressure class, joint type, manufacturer and model number where
54 appropriate. List valves and specialties for each piping service, fixture and equipment with manufacturer

1 and model number. The approved plumbing system data sheet(s) will be made available to the Owner's
2 Project Representative for their use on this project.

3
4 **PLUMBING SYSTEM DATA SHEET**

5 Item Pipe Service/Sizes Manufacturer/Model No. Remarks

- 6 Pipe
7 Fittings
8 Unions
9 Valves:
10 Ball
11 Gas
12 Balancing
13 Check
14 Pipe Specialties:
15 Thermometers
16 Press Gauges
17 Strainers
18 Hangers & Supports
19 Insulation
20 Plbg. Equipment

21
22 Shop drawing submittals are to be bound, labeled, contain the project manual cover page and a material
23 index list page showing item designation, manufacturer and additional items supplied with the installation.
24 Submit for all equipment and systems as indicated in the respective specification sections, marking each
25 submittal with that specification section number. Mark general catalog sheets and drawings to indicate
26 specific items being submitted and proper identification of equipment by name and/or number, as indicated
27 in the construction documents. Include wiring diagrams of electrically powered equipment.

28
29 Submit sufficient quantities of equipment data sheets and shop drawings to allow the following
30 distribution:

- 31 • Insertion into Operating and Maintenance Manuals 2 copies
32 • Dane County Public Works - record copy 1 copy
33 • Engineers - record copies 2 copies

34
35 **OPERATION AND MAINTENANCE DATA**

36 All operations and maintenance data shall comply with the submission and content requirements specified
37 under Division 1 - Basic Requirements.

38
39 Two copies of Operations and Maintenance Manuals shall be provided for the following distribution:

- 40 • Dane County Public Works 1 copy
41 • Dane County Facilities Management 1 copy

42
43 In addition to the general content specified under - Basic Requirements supply the following additional
44 documentation:

- 45 1. Records of tests performed a to certify compliance with system requirements
46 2. Manufacturer's wiring diagrams for electrically powered equipment
47 3. Certificates of inspection by regulatory agencies
48 4. Valve schedules
49 5. Lubrication instructions, including list/frequency of lubrication
50 6. Parts lists for fixtures, equipment, valves and specialties.
51 7. Manufacturers installation, operation and maintenance recommendations for fixtures, equipment,
52 valves and specialties.
53 8. Additional information as indicated in the technical specification sections

54
55

1 **TRAINING OF OWNER PERSONNEL**

2 Instruct owner personnel in the proper operation and maintenance of systems and equipment provided as
3 part of this project. Include not less than 2 hours of instruction, using the Operating and Maintenance
4 manuals during this instruction. Demonstrate startup, operation and shutdown procedures for all
5 equipment. All training to be during normal working hours.

6
7 **RECORD DRAWINGS**

8 Refer to Division 1 - Basic Requirements, As Built and Record Drawings and Specifications.
9

10
11 **PART 2 - PRODUCTS**

12
13 **IDENTIFICATION**

14 **STENCILS:**

15 Not less than 1 inch high letters/numbers for marking pipe and equipment.
16

17 **ENGRAVED NAME PLATES:**

18 White letters on a black background, 1/16 inch thick plastic laminate, beveled edges, screw mounting,
19 Setonply Style 2060 by Seton Name Plate Company or Emedolite Style EIP by EMED Co., or equal by W.
20 H. Brady.
21

22 **SNAP-AROUND PIPE MARKERS:**

23 One-piece, preformed, vinyl construction, snap-around or strap-around pipe markers with applicable
24 labeling and flow direction arrows, 3/4" min. size for lettering. Provide nylon ties on each end of pipe
25 markers. Equal to Seton Setmark.
26

27 **VALVE TAGS:**

28 Round brass tags with 1/2 inch numbers, 1/4 inch system identification abbreviation, 1-1/4 inch minimum
29 diameter, with brass jack chains, brass "S" hooks or one piece nylon ties around the valve stem, available
30 from EMED Co., Seton Name Plate Company, or W. H. Brady.
31

32 **SEALING AND FIRESTOPPING**

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

34 Manufacturers: 3M, Hilti, Rectorseal, STI/SpecSeal, Tremco, or approved equal.
35

36 All firestopping systems shall be provided by the same manufacturer.
37

38 Fire stop systems shall be UL listed or tested by an independent testing laboratory approved by the
39 Department of Commerce.
40

41 Submittals: Contractor shall submit product data for each firestop system. Submittals shall include product
42 characteristics, performance and limitation criteria, test data, MSDS sheets, installation details and
43 procedures for each method of installation applicable to this project. For non-standard conditions where no
44 UL tested system exists, submit manufacturer's drawings for UL system with known performance for
45 which an engineering judgement can be based upon.
46

47 Use a product that has a rating not less than the rating of the wall or floor being penetrated. Reference
48 architectural drawings for identification of fire and/or smoke rated walls and floors.
49

50 Use firestop putty, caulk sealant, intumescent wrapstrips, intumescent firestop collars, firestop blocks,
51 firestop mortar or a combination of these products to provide a UL listed system for each application
52 required for this project. Provide mineral wool backing where specified in manufacturer's application detail.
53
54

1 NON-RATED PENETRATIONS:
2

3 In exterior wall openings below grade, use a modular mechanical type seal consisting of interlocking
4 synthetic rubber links shaped to continuously fill the annular space between the uninsulated pipe and the
5 cored opening or a water-stop type wall sleeve. The operating bolts of the mechanical type seal shall be
6 accessible from the interior of the building.
7

8 At pipe penetrations of non-rated interior partitions, floors and exterior walls, use urethane caulk in
9 annular space between pipe insulation and sleeve. For non-rated drywall, plaster or wood partitions where
10 sleeve is not required use urethane caulk in annular space between pipe insulation and wall material
11

12
13 **PART 3 - EXECUTION**
14

15 **DEMOLITION**

16 Perform all demolition as indicated on the drawings to accomplish new work. Where demolition work is to
17 be performed adjacent to existing work that remains in an occupied area, construct temporary dust partition
18 to minimize the amount of contamination of the occupied space. Where pipe is removed and not
19 reconnected with new work, cap ends of existing services as if they were new work. Coordinate work with
20 the Owner to minimize disruption to the existing building occupants.
21

22 All pipe, fixtures, equipment, wiring and associated conduit, insulation and similar items demolished,
23 abandoned, or deactivated are to be removed from the site by the Contractor except as specifically noted
24 otherwise. Maintain the condition of material and/or equipment that is indicated to be reused equal to that
25 existing before work began.
26

27 **CUTTING AND PATCHING**

28 Provide required Cutting and Patching to complete the work. Refer to Division 1 – Basic Requirements.
29

30 **BUILDING ACCESS**

31 Arrange for the necessary openings in the building to allow for admittance or removal of all apparatus.
32 When the building access was not previously arranged and must be provided by this contractor, restore any
33 opening to its original condition after the apparatus has been brought into the building.
34

35 When access to the work area is through occupied areas coordinate building access times with the Owner's
36 Project Representative.
37

38 **EQUIPMENT ACCESS**

39 Install all piping, conduit and accessories to permit access to equipment for maintenance and service.
40

41 **COORDINATION**

42 Coordinate all work with other contractors prior to installation. Any work that is not coordinated and that
43 interferes with other contractor's work shall be removed or relocated at the installing contractor's expense.
44

45 Verify that all devices are compatible for the type of construction and surfaces on which they will be used.
46

47 **IDENTIFICATION**

48 Identify equipment in mechanical equipment rooms by stenciling equipment number and service with one
49 coat of black enamel against a light background or white enamel against a dark background. Use a primer
50 where necessary for proper paint adhesion.
51

52 Where stenciling is not appropriate for equipment identification, engraved name plates may be used.
53

1 Identify all new interior piping. Place flow directional arrows at each pipe identification location. Use one
2 coat of black enamel against a light background or white enamel against a dark background.

3
4 Identify valves with brass tags bearing a system identification and a valve sequence number. Valve tags
5 are not required at a terminal device unless the valves are greater than ten feet from the device, located in
6 another room or not visible from device. Provide a typewritten valve schedule and pipe identification
7 schedule indicating the valve number and the equipment or areas supplied by each valve and the symbols
8 used for pipe identification; locate schedules in mechanical room and in each Operating and Maintenance
9 manual. Schedule in mechanical room to be framed under clear plastic.

10
11 **LUBRICATION**

12 Lubricate all bearings with lubricant as recommended by the manufacturer before the equipment is
13 operated for any reason. Once the equipment has been run, maintain lubrication in accordance with the
14 manufacturer's instructions until the work is accepted by the Owner. Maintain a log of all lubricants used
15 and frequency of lubrication; include this information in the Operating and Maintenance Manuals at the
16 completion of the project.

17
18 **TRAINING**

19 Contractor to provide factory authorized representative and/or field personnel knowledgeable with the
20 operations, maintenance and troubleshooting of the system and/or components defined within this section
21 for a minimum period of 2 hours. Session may be videotaped.

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SECTION 22 05 15
PIPING SPECIALTIES

PART 1 - GENERAL

SCOPE

This section contains specifications for plumbing piping specialties for all piping systems. Included are the following topics:

PART 1 - GENERAL

- Scope
- Related Work
- Reference
- Reference Standards
- Quality Assurance
- Shop Drawings
- Operation and Maintenance Data
- Design Criteria

PART 2 - PRODUCTS

- Thermometers
- Thermometer Sockets
- Test Wells
- Test Plugs
- Pressure Gauges
- Strainers
- Natural Gas Piping and Valves

PART 3 - EXECUTION

- Thermometers
- Thermometer Sockets
- Test Wells
- Test Plugs
- Pressure Gauges
- Strainers

RELATED WORK

- Section 22 05 23 - General-Duty Valves for Plumbing Piping
- Section 22 07 00 - Plumbing Insulation
- Section 22 11 00 - Facility Water Distribution
- Section 22 30 00 - Plumbing Equipment

REFERENCE

Applicable provisions of Division 1 govern work under this section.

REFERENCE STANDARDS

ASTM B650 Electrodeposited Engineering Chromium Coatings on Ferrous Substrates

QUALITY ASSURANCE

Substitution of Materials: Refer to Division 1 - Basic Requirements.

SHOP DRAWINGS

Required for all items in this section. Include materials of construction, dimensional data, ratings/capacities/ranges, approvals, test data, pressure drop data where appropriate, and identification as referenced in this section and/or on the drawings.

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OPERATION AND MAINTENANCE DATA

All operations and maintenance data shall comply with the submission and content requirements specified under Division 1 - Basic Requirements.

DESIGN CRITERIA

All piping specialties are to be rated for the highest pressures and temperatures in the respective system in accordance with ANSI B31, but not less than 125 psig unless specifically indicated otherwise.

PART 2 - PRODUCTS

THERMOMETERS

Manufacturers: Ashcroft, Marsh, Taylor, H. O. Trerice, Ametek/U. S. Gauge, Weiss, Wika, Weksler.

Stem Type: Cast aluminum case, nine inch scale, clear acrylic window. adjustable angle brass stem with stem of sufficient length so the end of the stem is near the middle of a pipe without reducing the thickness of any insulation, red indicating fluid, black lettering against a white background, with scale ranges as follows:

Service	Hot Water
Scale Range, °F	30 - 180
Increment, °F	2

THERMOMETER SOCKETS

Brass with threaded connections suitable for thermometer stems and temperature control sensing elements in pipeline. Furnish with extension necks for insulated piping systems.

TEST WELLS

Similar to thermometer sockets except with a brass cap that threads into the inside of the test well to prevent dirt from accumulating. Secure cap to body with a short chain. Furnish with extension necks, where appropriate, to accommodate the pipeline insulation.

TEST PLUGS

Brass threaded pressure and temperature test plug with neoprene self-closing valve, valve retainer, brass threaded cap, rated for 150 psi and 0-200 degrees F.

PRESSURE GAUGES

Manufacturers: Ametek/U. S. Gauge, Ashcroft, Marsh, Taylor, H. O. Trerice, Weiss, Wika, Weksler.

Cast aluminum case of not less than 4.5 inches in diameter, double strength glass window, black lettering on a white background, phosphor bronze bourdon tube with bronze bushings, recalibration from the front of the dial, 99% accuracy over the middle half of the scale, 98.5% accuracy over the remainder of the scale, with scale range as follows:

Service	Hot Water	Cold Water	Compressed Air
Scale Range, psig	0-100	0-100	0-200
Increment, psig	1	1	2

Pressure Snubbers: Bronze construction, 300 psig working pressure, 1/4" size.

Gauge Valves: Use ball valves as specified in Section 22 05 23 - General-Duty Valves for Plumbing Piping.

1 **STRAINERS**

2 Manufacturers: Armstrong, Illinois, Keckley, Metraflex, Mueller Steam, Sarco, Watts.

3

4 Y type; cast bronze body, ASTM B62; 20 mesh stainless steel screens; bolted or threaded screen retainer
5 tapped for a blowoff valve; sweat, threaded or flanged body rated at not less than 150 psi WOG.

6

7 Y type; cast iron body, ASTM A126; 20 mesh stainless steel screens; bolted or threaded screen retainer
8 tapped for a blowoff valve; threaded or flanged ends; rated at not less than 150 psi WOG.

9

10 **NATURAL GAS PIPING AND VALVES**

11 **ABOVE GROUND 2" AND SMALLER:**

12 Black steel pipe, Schedule 40, Type F, Grade A, ASTM A53; with black malleable iron threaded fittings,
13 Class 150, ASTM A197/ANSI B16.3; seamless carbon steel weld fittings, standard weight, ASTM A234
14 grade WPB/ANSI B16.9.

15

16 **SHUT-OFF VALVES:**

17 Manufacturers: Apollo 80-100, DeZurik 425.

18

19 4" and smaller: Ball or eccentric plug valve, bronze or cast iron body, 2" and under threaded ends, 2-1/2"
20 and over flanged ends, chrome plated bronze ball, bronze or nickel plated cast iron plug, TFE or Hycar
21 seats and seals, lever handle, 175 psi W.O.G., U.L listed for use as natural gas shut-off.

22

23

24

PART 3 - EXECUTION

25

26 **THERMOMETERS**

27 Stem Type: Install in piping systems as indicated on the drawings and/or details using a separable socket in
28 each location.

29

30 **THERMOMETER SOCKETS**

31 Install at each point where a thermometer or temperature control sensing element is located in a pipeline.

32

33 **TEST WELLS**

34 Install in piping systems as indicated on the drawings and/or details wherever provisions are needed for
35 inserting a thermometer at a later date.

36

37 **TEST PLUGS**

38 Install in piping systems as indicated on the drawings and/or details wherever provisions are needed for
39 short-term measurement of pressure or temperature.

40

41 **PRESSURE GAUGES**

42 Install in locations where indicated on the drawings and/or details, with scale range appropriate to the
43 system operating pressures.

44

45 Pressure Snubbers: Install in gauge piping for all gauges used on water services.

46

47 Gauge Valves: Install at each gauge location as close to the main as possible and at each location where a
48 gauge tapping is indicated.

49

50 **STRAINERS**

51 Install all strainers where indicated allowing sufficient space for the screens to be removed. Install a ball
52 valve in the tapped screen retainer.

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SECTION 22 05 23
GENERAL DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

SCOPE

This section includes valve specifications for all plumbing systems except where indicated under Related Work. Included are the following topics:

PART 1 - GENERAL

- Scope
- Related Work
- Reference
- Quality Assurance
- Submittals
- Operation and Maintenance Data
- Design Criteria

PART 2 - PRODUCTS

- Water System Valves
 - Ball Valves
 - Swing Check Valves
 - Balance Valves
 - Drain Valves

PART 3 - EXECUTION

- General
- Shut-off Valves
- Balancing Valves
- Drain Valves

RELATED WORK

Section 22 30 00 - Plumbing Equipment

REFERENCE

Applicable provisions of Division 1 govern work under this section.

QUALITY ASSURANCE

Substitution of Materials: Refer to Division 1 - Basic Requirements.

SUBMITTALS

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 Division 1 - Basic Requirements.

DESIGN CRITERIA

ASSE 1003 - Water Pressure Reducing Valves for Domestic Water Supply Systems.

Where valve types (ball, butterfly, etc.) are specified for individual plumbing services (i.e. domestic water, gas, etc.), each valve type shall be of the same manufacturer unless prior written approval is obtained from the Owner.

1 Valves to be line size unless specifically noted otherwise.
2
3

4 **PART 2 - PRODUCTS**

5 6 **WATER SYSTEM VALVES**

7 All water system valves to be rated at not less than 125 water working pressure at 240 degrees F unless
8 noted otherwise.
9

10 **BALL VALVES:**

11 Manufacturer: Apollo 70-200, Jomar T/S 100, Hammond 8511, Milwaukee BA150, Nibco S580-70, Watts
12 B-6001.
13

14 3" and smaller: Two or three piece bronze body; sweat ends, chrome plated bronze ball; glass filled teflon
15 seat; teflon packing and threaded packing nut; blowout-proof stem; 600 psig WOG. Provide valve stem
16 extensions for valves installed in all piping with insulation.
17

18 **SWING CHECK VALVES:**

19 Manufacturer: Crane 1342, Hammond IB941, Nibco S413B, Watts CVYS, Jomar, Apollo and Milwaukee
20 equals.
21

22 3" and smaller: Bronze body, sweat ends, Y-pattern, regrindable bronze seat, renewable bronze disc, Class
23 125, suitable for installation in a horizontal or vertical line with flow upward.
24

25 **BALANCE VALVES:**

26 Manufacturer: Flowset AccuSetter, Armstrong CBV, Bell & Gossett Circuit Setter Plus, Illinois 6000
27 series, Tapco Circuit Setter, tour and Anderson.
28

29 Bronze body globe or ball valve with calibrated brass orifice, integral pointer and calibrated scale to
30 register degree of valve opening, memory stop, drain tapping, sweat or threaded ends, with or without
31 integral unions, pressure taps with integral check valves and seals, adjustable memory stop, suitable for 125
32 psig water working pressure at 240 degrees F.
33

34 **DRAIN VALVES:**

35 Manufacturer: Watts B-6000-CC/B-6001-CC series.
36

37 3/4 inch ball valve with integral threaded hose adapter, sweat or threaded inlet connections, with threaded
38 cap and chain on hose threads.
39
40

41 **PART 3 - EXECUTION**

42 43 **GENERAL**

44 Properly align piping before installation of valves. Install and test valves in strict accordance with valve
45 manufacturer's installation recommendations. Do not support weight of piping system on valve ends.
46

47 Mount valves in locations which allow access for operation, servicing and replacement.
48

49 Provide valve handle extensions for all valves installed in insulated piping.
50

51 Install all valves with the stem in the upright or horizontal position. If possible, install butterfly valves with
52 the stem in the horizontal position. Valves installed with the stems down will not be accepted.
53

54 Prior to flushing of piping systems, place all valves in the full-open position.

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SHUT-OFF VALVES

Install shut-off valves at each piece of equipment, at each branch take-off from mains for isolation or repair and elsewhere as indicated.

BALANCING VALVES

Install where indicated on the drawings and details for balancing of flow in pumped hot water recirculation piping systems.

Upon project completion, adjust each valve and set position stop. Balance system to minimum flow in return piping branches needed to maintain even supply water temperature throughout building.

DRAIN VALVES

Provide drain valves for complete drainage of all systems. Locations of drain valves include low points of piping systems, downstream of riser isolation valves, equipment locations specified or detailed, other locations required for drainage of systems and elsewhere as indicated.

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SECTION 22 05 29
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

SCOPE

This section includes specifications for supports of all plumbing equipment and materials as well as piping system anchors. Included are the following topics:

PART 1 - GENERAL

- Scope
- Related Work
- Reference
- Reference Standards
- Quality Assurance
- Description
- Shop Drawings
- Design Criteria

PART 2 - PRODUCTS

- Manufacturers
- Structural Supports
- Pipe Hangers and Supports
- Pipe Hanger Rods
- Beam Clamps
- Concrete Inserts
- Anchors

PART 3 - EXECUTION

- Installation
- Hanger and Support Spacing
- Riser Clamps
- Concrete Inserts
- Anchors

RELATED WORK

Section 22 07 00 - Plumbing Insulation.

REFERENCE

Applicable provisions of Division 1 shall govern work under this section.

REFERENCE STANDARDS

- MSS SP-58 Pipe Hangers & Support
- MSS SP-69 Pipe Hangers & Support

QUALITY ASSURANCE

Substitution of Materials: Refer to Division 1 - Basic Requirements.

DESCRIPTION

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

Do not hang any mechanical item directly from a metal deck or run piping so its rests on the bottom chord of any truss or joist.

1 Fasteners depending on soft lead for holding power or requiring powder actuation will not be accepted.
2
3 Support apparatus and material under all conditions of operation, variations in installed and operating
4 weight of equipment and piping, to prevent excess stress, and allow for proper expansion and contraction.
5
6 Protect insulation at all hanger points; see Related Work above.
7

8 **SHOP DRAWINGS**

9 Schedule of all hanger and support devices indicating attachment methods and type of device for each pipe
10 size and type of service.

11
12 All submittals are to comply with submission and content requirements specified Division 1 - Basic
13 Requirements.

14
15 **DESIGN CRITERIA**

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

18
19 Piping connected to pumps, compressors, or other rotating or reciprocating equipment is to have vibration
20 isolation supports for a distance of one hundred pipe diameters or three supports away from the equipment,
21 whichever is greater. Standard pipe hangers/supports as specified in this section are required beyond the
22 100 pipe diameter/3 support distance.
23

24
25 **PART 2 - PRODUCTS**

26
27 **MANUFACTURERS**

28 Manufacturers: Anvil, B-Line, Pate, Piping Technology or approved equal.
29

30 **STRUCTURAL SUPPORTS**

31 Provide all supporting steel required for the installation of mechanical equipment and materials, including
32 angles, channels, beams, etc. to suspended or floor supported tanks and equipment. All of this steel may
33 not be specifically indicated on the drawings.
34

35 **PIPE HANGERS AND SUPPORTS**

36 **HANGERS FOR PIPE SIZES 1/2" THROUGH 2":**

37 Carbon steel, adjustable swivel ring. B-Line B3170NF, Anvil 69 or 70.

38 Carbon steel, adjustable clevis, standard. B-Line B3100, Anvil 260.
39

40 **HANGERS FOR PIPE SIZES 2" AND LARGER:**

41 Carbon steel, adjustable clevis, standard. B-Line B3100, Anvil 260.
42

43 **MULTIPLE OR TRAPEZE HANGERS:**

44 Steel channels with welded spacers and hanger rods.
45

46 **WALL SUPPORT:**

47 Carbon steel welded bracket with hanger. B-Line 3068 Series, Anvil 194 Series.
48

49 Perforated, epoxy painted finish, 16-12 gauge, min., steel channels securely anchored to wall structure,
50 with interlocking, split-type, bolt secured, galvanized pipe/tubing clamps. B-Line type S channel with B-
51 2000 series clamps, Anvil type PS 200 H with PS 1200 clamps. When copper piping is being supported,
52 provide flexible elastomeric/thermoplastic isolation cushion material to completely encircle the piping and
53 avoid contact with the channel or clamp, equal to B-Line B1999 Vibra Cushion or provide manufacturers
54 clamp and cushion assemblies, B-Line BVT series, and Anvil PS 1400 series.

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VERTICAL SUPPORT:

Carbon steel riser clamp. B-Line B3373, Anvil 261 for above floor use.

FLOOR SUPPORT:

Carbon steel pipe saddle, stand and bolted floor flange. B-Line B3088T/B3093.

COPPER PIPE SUPPORTS:

All supports, fasteners, clamps, etc. directly connected to copper piping shall be copper plated or polyvinylchloride coated. Where steel channels are used, provide isolation collar between supports/clamps/fasteners and copper piping.

PIPE HANGER RODS

STEEL HANGER RODS:

Threaded both ends, threaded one end, or continuous threaded, complete with adjusting and lock nuts.

Size rods for individual hangers and trapeze support as indicated in the following schedule.

Total weight of equipment, including valves, fittings, pipe, pipe content, and insulation, are not to exceed the limits indicated.

Maximum Load (Lbs.)	Rod Diameter
<u>(650°F Maximum Temp.)</u>	<u>(inches)</u>
610	3/8
1130	1/2
1810	5/8
2710	3/4
3770	7/8
4960	1
8000	1-1/4

BEAM CLAMPS

MSS SP-69 Types 19 & 23 malleable black iron clamp for attachment to beam flange to 0.62 inches thick with a retaining ring and threaded rod of 3/8, 1/2, and 5/8 inch diameter. Furnish with a hardened steel cup point set screw. B-Line B3036L/B3034, Anvil 86/92.

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. B-Line B3054, Anvil 228.

CONCRETE INSERTS

POURED IN PLACE:

MSS SP-69 Type 18 wedge type to be constructed of a black carbon steel body with a removable malleable iron nut that accepts threaded rod to 7/8 inch diameter. Wedge design to allow the insert to be held by concrete in compression to maximize the load carrying capacity. B-Line B2505, Anvil 281.

MSS SP-69 Type 18 universal type to be constructed of black malleable iron body with a removable malleable iron nut that accepts threaded rod to 7/8 inch diameter. B-Line B3014N, Anvil 282.

DRILLED FASTENERS:

Carbon steel expansion anchors, vibration resistant, with ASTM B633 zinc plating. Use drill bit of same manufacturer as anchor. Hilti, Rawl, Redhead.

ANCHORS

Use welding steel shapes, plates, and bars to secure piping to the structure.

1 **PART 3 - EXECUTION**

2
3 **INSTALLATION**

4 Size, apply and install supports and anchors in compliance with manufacturers recommendations.

5
6 Install supports to provide for free expansion of the piping system. Support all piping from the structure
7 using concrete inserts, beam clamps, ceiling plates, wall brackets, or floor stands. Fasten ceiling plates and
8 wall brackets securely to the structure and test to demonstrate the adequacy of the fastening.

9
10 Coordinate hanger and support installation to properly group piping of all trades.

11
12 Where piping can be conveniently grouped to allow the use of trapeze type supports, use standard structural
13 shapes or continuous insert channels for the supporting steel. Where continuous insert channels are used,
14 pipe supporting devices made specifically for use with the channels may be substituted for the specified
15 supporting devices provided that similar types are used and all data is submitted for prior approval.

16
17 Size and install hangers and supports, except for riser clamps, for installation on the exterior of piping
18 insulation. Where a vapor barrier is not required, hangers may be installed either on the exterior of pipe
19 insulation or directly on piping.

20
21 Perform welding in accordance with standards of the American Welding Society.

22
23 **HANGER AND SUPPORT SPACING**

24 Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

25
26 Place a hanger within 12 inches of each horizontal elbow, valve, strainer, or similar piping specialty item.

27
28 Use hangers with 1-1/2 inch minimum vertical adjustment.

29
30 Where several pipes can be installed in parallel and at the same elevation, provide multiple or trapeze
31 hangers.

32
33 Support riser piping independently of connected horizontal piping.

34
35 Adjust hangers to obtain the slope specified in the piping section of these specifications.

36
37 Space hangers for pipe as follows:

38 Pipe Material	38 Pipe Size	38 Max. Horiz. Spacing	38 Max. Vert. Spacing
39 Copper	39 1/2" through 3/4"	39 5'-0"	39 10'-0"
40 Copper	40 1" through 1-1/4"	40 6'-0"	40 10'-0"
41 Copper	41 1-1/2" through 2-1/2"	41 8'-0"	41 10'-0"
42 Steel	42 1/2" through 1-1/4"	42 7'-0"	42 15'-0"
43 Steel	43 1-1/2" through 6"	43 10'-0"	43 15'-0"
44 Plastic	44 Drain & Vent	44 5'-0"	44 15'-0"

45
46 **RISER CLAMPS**

47 Support vertical piping with clamps secured to the piping and resting on the building structure or secured to
48 the building structure below at each floor.

49
50 **CONCRETE INSERTS**

51 Select size based on the manufacturer's stated load capacity and weight of material that will be supported.
52 Use inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
53 Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inch size. Where
54 concrete slabs form finished ceiling, provide inserts that are flush with the slab surface.

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ANCHORS

Install where indicated on the drawings and details. Where not specifically indicated, install anchors at ends of principal pipe runs and at intermediate points in pipe runs between expansion loops. Make provisions for preset of anchors as required to accommodate both expansion and contraction of piping.

END OF SECTION

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SECTION 22 07 00
PLUMBING INSULATION

PART 1 - GENERAL

SCOPE

This section includes insulation specifications for plumbing piping and equipment. Included are the following topics:

PART 1 - GENERAL

- Scope
- Related Work
- Reference
- Reference Standards
- Quality Assurance
- Description
- Definitions
- Shop Drawings
- Operation and Maintenance Data

PART 2 - PRODUCTS

- Materials
- Insulation & Jackets
- Insulation Inserts and Pipe Shields
- Accessories

PART 3 - EXECUTION

- Installation
- Piping, Valve and Fitting Insulation

RELATED WORK

- Section 22 05 00 - Common Work Results for Plumbing
- Section 22 11 00 - Facility Water Distribution
- Section 22 30 00 - Plumbing Equipment

REFERENCE

Applicable provisions of Division 1 govern work under this section.

REFERENCE STANDARDS

- ASTM B209 Aluminum and Aluminum Alloy Sheet and Plate
- 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 C302 Density of Preformed Pipe Insulation
- ASTM C449 Mineral Fiber Hydraulic Setting Thermal Insulation Cement
- ASTM C518 Heat Flux and Thermal Transmission Properties
- ASTM C547 Mineral Fiber Preformed Pipe Insulation
- ASTM C553 Mineral Fiber Blanket and Felt Insulation
- ASTM C612 Mineral Fiber Block and Board Thermal Insulation
- ASTM C921 Properties of Jacketing Materials for Thermal Insulation
- ASTM C1136 Flexible Low Permeance Vapor Retarders for Thermal Insulation
- 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

1 **QUALITY ASSURANCE**

2 Substitution of Materials: Refer to Division 1 - Basic Requirements.

3

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

6

7 **DESCRIPTION**

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

- 10 • Pipe Insulation

11

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

16

17 **DEFINITIONS**

18 Concealed: shafts, furred spaces, space above finished ceilings, utility tunnels and crawl spaces. All other
19 areas, including walk-through tunnels, shall be considered as exposed.

20

21 **SHOP DRAWINGS**

22 Submit a schedule of all insulating materials to be used on the project, including adhesives, fastening
23 methods, fitting materials along with material safety data sheets and intended use of each material. Include
24 manufacturer's technical data sheets indicating density, thermal characteristics, jacket type, and
25 manufacturer's installation instructions.

26

27 **OPERATION AND MAINTENANCE DATA**

28 All operations and maintenance data shall comply with the submission and content requirements specified
29 under Division 1 - Basic Requirements.

30

31

32 **PART 2 - PRODUCTS**

33

34 **MATERIALS**

35 Materials or accessories containing asbestos will not be accepted.

36

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

39 Insulation which is not located in an air plenum may have a flame spread rating not over 25 and a
40 smoke developed rating no higher than 150.

41

42 **INSULATION AND JACKETS**

43 Manufacturers: Armstrong, Certainteed Manson, Childers, Dow, Extol, Halstead, H.B. Fuller, Imcoa,
44 Knauf, Owens-Corning, Pittsburgh Corning, Rubatex, Johns-Mansville, or approved equal.

45

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

48

49 **RIGID FIBERGLASS INSULATION:**

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

52

1 White kraft reinforced foil vapor barrier all service jacket, factory applied to insulation with a self-sealing
2 pressure sensitive adhesive lap, maximum permeance of .02 perms and minimum beach puncture resistance
3 of 50 units.

4
5 **SEMI-RIGID FIBERGLASS INSULATION:**

6 Minimum nominal density of 3 lbs. per cu. ft., thermal conductivity of not more than 0.28 at 75 degrees F,
7 minimum compressive strength of 125 PSF at 10% deformation, rated for service to 450 degrees F.
8 Insulation fibers perpendicular to jacket and scored for wrapping cylindrical surfaces.

9
10 White kraft reinforced foil vapor barrier all service jacket, factory applied to insulation with a maximum
11 permeance of .02 perms and minimum beach puncture resistance of 50 units.

12
13 **FIREPROOFING INSULATION:**

14 Mineral fiber with nominal density of 8 lbs. per cu. ft., flame spread index of 15, fuel contribution index of
15 0, and smoke developed index of 0, thermal conductivity of not more than 0.23 at 75 degrees F.

16
17 Jacket material shall be the same as jacket for adjacent insulation.

18
19 **METAL JACKETS:**

20 .016 inch thick aluminum or .010 inch thick stainless steel with safety edge.

21
22 **INSULATION INSERTS AND PIPE SHIELDS**

23 Manufacturers: B-Line, Pipe Shields, Value Engineered Products

24
25 Construct inserts with calcium silicate, minimum 140 psi compressive strength. Piping 12" and larger,
26 supplement with high density 600 psi structural calcium silicate insert. Provide galvanized steel shield.
27 Insert and shield to be minimum 180 degree coverage on bottom of supported piping and full 360 degree
28 coverage on clamped piping. On roller mounted piping and piping designed to slide on support, provide
29 additional load distribution steel plate.

30
31 Where contractor proposes shop/site fabricated inserts and shields, submit schedule of materials,
32 thicknesses, gauges and lengths for each pipe size to demonstrate equivalency to pre-engineered pre-
33 manufactured product described above. On low temperature systems, extruded polystyrene may be
34 substituted for calcium silicate provided insert and shield length and gauge are increased to compensate for
35 lower insulation compressive strength.

36
37 Precompressed 20# density molded fiberglass blocks, Hamfab or equal, of same thickness as adjacent
38 insulation may be substituted for calcium silicate inserts with one 1" x 6" block for piping through 2-1/2"
39 and three 1" x 6" blocks for piping through 4". Submit shield schedule to demonstrate equivalency to pre-
40 engineered/pre-manufactured product described above.

41
42 Wood blocks will not be accepted.

43
44 **ACCESSORIES**

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

47
48 Adhesives, sealants, and protective finishes shall be as recommended by insulation manufacturer for
49 applications specified.

50
51 Insulation bands to be 3/4 inch wide, constructed of aluminum or stainless steel. Minimum thickness to be
52 .015 inch for aluminum and .010 inch for stainless steel.

53
54 Tack fasteners to be stainless steel ring grooved shank tacks.

- 1
2 Staples to be clinch style.
3
4 Insulating cement to be ANSI/ASTM C195, hydraulic setting mineral wool.
5
6 Finishing cement to be ASTM C449.
7
8 Fibrous glass or canvas fabric reinforcing shall have a minimum untreated weight of 6 oz./sq. yd.
9
10 Bedding compounds to be non-shrinking and permanently flexible.
11
12 Vapor barrier coatings to be non-flammable, fire resistant, polymeric resin.
13
14 Fungicidal water base coating (Foster 40-20 or equal) to be compatible with vapor barrier coating.
15
16

17 **PART 3 - EXECUTION**

18 **INSTALLATION**

- 19 Install insulation, jackets and accessories in accordance with manufacturers instructions and under ambient
20 temperatures and conditions recommended by manufacturer. Surfaces to be insulated must be clean and
21 dry.
22
23
24 Do not insulate systems or equipment which are specified to be pressure tested or inspected, until testing,
25 inspection and any necessary repairs have been successfully completed.
26
27 Install insulation with smooth and even surfaces. Poorly fitted joints or use of filler in voids will not be
28 accepted. Cover and seal exposed fiberglass insulation when insulation is terminated, no raw fiberglass
29 insulation is allowed. Provide neat and coated terminations at all nameplates, uninsulated fittings, or at
30 other locations where insulation terminates. Install with longitudinal joints facing wall or ceiling.
31
32 Install fabric reinforcing without wrinkles. Overlap seams a minimum of 2 inches.
33
34 Use full-length material (as delivered from manufacturer) wherever possible. Scrap piecing of insulation or
35 pieces cut undersize and stretched to fit will not be accepted.
36
37 Insulation shall be continuous through sleeves and openings. Vapor barriers shall be maintained continuous
38 through all penetrations.
39
40 Provide a complete vapor barrier for insulation on the following systems:
41 • Cold water
42

43 **PIPING, VALVE AND FITTING INSULATION**

44 **GENERAL:**

- 45 Install insulation with butt joints and longitudinal seams closed tightly. Provide minimum 2" lap on jacket
46 seams and 2" tape on butt joints, firmly cemented with lap adhesive. Additionally secure with staples along
47 seams and butt joints. Coat staples with vapor barrier mastic on systems requiring vapor barrier.
48
49 Water supply piping insulation shall be continuous throughout the building and installed adjacent to and
50 within building walls to a point directly behind the fixture that is being supplied.
51
52 Install insulation continuous through pipe hangers and supports with hangers and supports on the exterior
53 of insulation. Where a vapor barrier is not required, hangers and supports may be attached directly to piping
54 with insulation completely covering hanger or support and jacket sealed at support rod penetration. Where

1 riser clamps are required to be attached directly to piping requiring vapor barrier, extend insulation and
2 vapor barrier jacketing/coating around riser clamp.

3

4 **INSULATION INSERTS AND PIPE SHIELDS:**

5 Provide insulation inserts and pipe shields at all hanger and support locations. Inserts may be omitted on
6 3/4" and smaller copper piping provided 12" long 22 gauge pipe shields are used.

7

8 **FITTINGS AND VALVES:**

9 Fittings, valves, unions, flanges, couplings and specialties may be insulated with factory molded or built up
10 insulation of the same thickness as adjoining insulation. Cover insulation with fabric reinforcing and mastic
11 or where temperatures do not exceed 150 degrees, PVC fitting covers. Secure PVC fitting covers with tack
12 fasteners and 1-1/2" band of mastic over ends, throat, seams or penetrations. On systems requiring vapor
13 barrier, use vapor barrier mastic.

14

15 **PIPE INSULATION SCHEDULE:**

16 Provide insulation on new and existing remodeled piping as indicated in the following schedule:

17

18

19 Service	20 Insulation	21 Insulation Thickness by Pipe Size				
		22 1" and	23 1-1/4"	24 2-1/2"	25 5" to 6"	26 8" and
	27 Types	28 smaller	29 to 2"	to 4"		larger
Hot Water Supply	Rigid Fiberglass	1.5"	1.5"	1.5"	1.5"	1.5"
Hot Water Circulating	Rigid Fiberglass	1"	1"	1.5"		
Cold Water	Rigid Fiberglass	0.5"	0.5"	1"	1"	1"

27

28

29

END OF SECTION

1 **SECTION 22 11 00**
2 **FACILITY WATER DISTRIBUTION**

3
4
5 **PART 1 - GENERAL**

6
7 **SCOPE**

8 This section contains specifications for plumbing pipe and pipe fittings for this project. Included are the
9 following topics:

10 **PART 1 - GENERAL**

- 11 Scope
- 12 Related Work
- 13 Reference
- 14 Reference Standards
- 15 Shop Drawings
- 16 Quality Assurance
- 17 Delivery, Storage and Handling
- 18 Design Criteria

19 **PART 2 - PRODUCTS**

- 20 Domestic Water
- 21 Dielectric Unions and Flanges
- 22 Unions and Flanges
- 23 Mechanical Grooved Pipe Connections

24 **PART 3 - EXECUTION**

- 25 General
- 26 Preparation
- 27 Erection
- 28 Copper Pipe Joints
- 29 Threaded Pipe Joints
- 30 Mechanical Grooved Pipe Connections
- 31 Domestic Water
- 32 Dielectric Unions and Flanges
- 33 Unions and Flanges
- 34 Piping System Leak Tests

35
36 **RELATED WORK**

- 37 22 05 15 - Piping Specialties
- 38 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment

39
40 **REFERENCE**

41 Applicable provisions of Division 1 govern work under this section.

42
43 **REFERENCE STANDARDS**

- 44 ANSI B16.3 Malleable Iron Threaded Fittings
- 45 ANSI B16.4 Cast Iron Threaded Fittings
- 46 ANSI B16.5 Pipe Flanges and Flanged Fittings
- 47 ANSI B16.22 Wrought Copper and Wrought Copper Alloy Solder Joint Pressure Fittings
- 48 ANSI B16.29 Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV
- 49 ASTM A53 Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless
- 50 ASTM A105 Forgings, Carbon Steel, for Piping Components
- 51 ASTM A126 Gray Cast Iron Castings for Valves, Flanges, and Pipe Fittings
- 52 ASTM A234 Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated
53 Temperatures
- 54 ASTM B32 Solder Metal

1	ASTM B88	Seamless Copper Water Tube
2	ASTM B280	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
3	ASTM B813	Liquid and Paste Fluxes for Soldering Applications of Copper and Copper Alloy Tube
4	AWS A5.8	Brazing Filler Metal
5	AWWA C104	Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water
6	AWWA C105	Polyethylene Encasement for Ductile Iron Piping for Water
7	AWWA C110	Ductile Iron and Gray Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids
8	AWWA C111	Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings
9	AWWA C151	Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water or
10		Other Liquids
11	AWWA C153	Ductile Iron Compact Fittings, 3 In. Through 48 In., for Water and Other Liquids
12	AWWA C600	Installation of Ductile Iron Water Mains and Their Appurtenances
13	AWWA C651	Disinfecting Water Mains

14

15 **SHOP DRAWINGS**

16 Schedule from the contractor indicating the ASTM, AWWA or CISPI specification number of the pipe
17 being proposed along with its type and grade if known at the time of submittal, and sufficient information
18 to indicate the type and rating of fittings for each service.

19

20 Statement from manufacturer on his letterhead that pipe furnished meets the ASTM, AWWA or CISPI
21 specification contained in this section.

22

23 **QUALITY ASSURANCE**

24 Substitution of Materials: Refer to Division 1 - Basic Requirements.

25

26 Order all copper, cast iron and steel with each length marked with the name or trademark of the
27 manufacturer and type of pipe; with each shipping unit marked with the purchase order number, metal or
28 alloy designation, temper, size, and name of supplier.

29

30 Any installed material not meeting the specification requirements must be replaced with material that meets
31 these specifications without additional cost to the Owner.

32

33 **DELIVERY, STORAGE AND HANDLING**

34 Promptly inspect shipments to insure that the material is undamaged and complies with specifications.

35

36 Cover pipe to prevent corrosion or deterioration while allowing sufficient ventilation to avoid
37 condensation. Do not store materials directly on grade. Protect pipe, tube, and fitting ends so they are not
38 damaged. Where end caps are provided or specified, take precautions so the caps remain in place. Protect
39 fittings, flanges, and unions by storage inside or by durable, waterproof, above ground packaging.

40

41 Storage and protection methods must allow inspection to verify products.

42

43 **DESIGN CRITERIA**

44 Use only new material, free of defects, rust and scale, and meeting the latest revision of ASTM, AWWA or
45 CISPI specifications as listed in this specification.

46

47 Construct all piping for the highest pressures and temperatures in the respective system.

48

49 Non-metallic piping will be acceptable only for the services indicated. It will not be acceptable in
50 ventilation plenum spaces, including plenum ceilings.

51

52 Where weld fittings or mechanical grooved fittings are used, use only long radius elbows having a
53 centerline radius of 1.5 pipe diameters.

54

1 Where ASTM A53 type F pipe is specified, grade A type E or S, or grade B type E or S may be substituted
2 at Contractor's option. Where the grade or type is not specified, Contractor may choose from those
3 commercially available.

4
5 Where ASTM B88, type L H (drawn) temper copper tubing is specified, ASTM B88, type K H (drawn)
6 temper copper tubing may be substituted at Contractor's option.
7

8 9 **PART 2 - PRODUCTS**

10 11 **DOMESTIC WATER**

12 **ABOVE GROUND:**

13 Type L copper water tube, H (drawn) temper, ASTM B88; wrought copper pressure fittings, ANSI B16.22;
14 lead free (<.2%) solder, ASTM B32; flux, ASTM B813; copper phosphorous brazing alloy, AWS A5.8
15 BCuP. Copper mechanical grooved fittings and couplings on roll grooved pipe may be used in lieu of
16 soldered fittings. Mechanically formed brazed tee connections may be used in lieu of specified tee fittings
17 for branch takeoffs up to one-half (1/2) the diameter of the main.
18

19 Galvanized steel, Schedule 40, Grade A, ASTM A53; with cast iron threaded fittings, Class 125, ANSI
20 B16.4; forged steel threaded fittings, ANSI 16.11; mechanical cut groove couplings and fittings; galvanize
21 coat all fittings, ASTM A123.
22

23 **DIELECTRIC UNIONS AND FLANGES**

24 Manufacturers: Watts Regulator Company, Lochinvar, Wilkins or EPCO Sales, Inc.
25

26 Dielectric unions 2" and smaller; dielectric flanges 2" and larger; with iron female pipe thread to copper
27 solder joint or brass female pipe thread end connections, non-asbestos gaskets, having a pressure rating of
28 not less than 175 psig at 180 degrees.
29

30 **UNIONS AND FLANGES**

31 Unions, flanges and gasket materials to have a pressure rating of not less than 150 psig at 180 degrees.
32 Gasket material for flanges and flanged fittings shall be teflon type. Treated paper gaskets are not
33 acceptable.
34

35 **2" AND SMALLER STEEL:**

36 ASTM A197/ANSI B16.3 malleable iron unions with brass seats. Use black malleable iron on black steel
37 piping and galvanized malleable iron on galvanized steel piping.
38

39 **2" AND SMALLER COPPER:**

40 ANSI B16.18 cast bronze union coupling or ANSI B15.24 Class 150 cast bronze flanges.
41

42 **2-1/2" AND LARGER STEEL:**

43 ASTM A181 or A105, grade 1 hot forged steel flanges of threaded, welding neck, or slip-on pattern on
44 black steel and threaded only on galvanized steel. Use raised face flanges ANSI B16.5 for mating with
45 other raised face flanges or equipment with flat ring or full face gaskets. Use ANSI B16.1 flat face flanges
46 with full face teflon gaskets for mating with other flat face flanges on equipment. Gaskets shall be teflon
47 type.
48

49 **2-1/2" AND LARGER COPPER:**

50 ANSI B15.24 Class 150 cast bronze flanges with full face teflon gaskets.
51
52

1 **MECHANICAL GROOVED PIPE CONNECTIONS**

2 Manufacturers: Victaulic, Gruvlok or Gustin-Bacon.

3
4 Mechanical grooved pipe couplings and fittings, ASTM F1476, may be used with cut groove galvanized
5 steel pipe, cut groove ductile iron pipe or roll groove copper pipe where noted. Mechanical grooved
6 components and assemblies to be rated for minimum 250 psi working pressure.

7
8 All mechanical grooved pipe material including gaskets, couplings, fittings and flange adapters to be from
9 the same manufacturer.

10
11 Couplings to be malleable iron, ASTM A47, or ductile iron ASTM A536 with painted finish. Reducing
12 couplings are not acceptable.

13
14 Fittings used on galvanized steel pipe to be malleable iron, ASTM A47, or ductile iron A536, with
15 galvanized finish, ASTM A153. Fittings used on ductile iron pipe to be cement mortar lined ductile iron
16 with coal tar coating, ASTM A536; conforming to requirements of AWWA C110/C153 and AWWA C606.
17 Fittings used on copper pipe to be copper.

18
19 Gaskets to be EPDM, ASTM D2000. Gaskets for hot water systems and dry pipe systems to be flush seal
20 design. Heat treated carbon steel oval neck track bolts and nuts, ASTM A183, with zinc electroplated finish
21 ASTM B633.

22
23 Flange adapters to be ductile iron, ASTM A536; except at lug type butterfly valves where standard
24 threaded flanges shall be used.

25
26 Credit for the inherent flexibility of mechanical grooved pipe connections when used for expansion joints
27 or flexible connectors may be allowed upon specific application by the Contractor. Three flexible
28 couplings at first three connection points both upstream and downstream of pumps may be used in lieu of
29 flexible connectors. Request for expansion joints shall be made in writing and shall include service,
30 location, line size, proposed application and supporting calculations for the intended service.

31
32
33 **PART 3 - EXECUTION**

34
35 **GENERAL**

36 Install pipe and fittings in accordance with reference standards, manufacturers recommendations and
37 recognized industry practices.

38
39 **PREPARATION**

40 Cut pipe ends square. Ream ends of piping to remove burrs. Clean scale and dirt from interior and exterior
41 of each section of pipe and fitting prior to assembly.

42
43 **ERECTION**

44 Install all piping parallel to building walls and ceilings and at heights which do not obstruct any portion of a
45 window, doorway, stairway, or passageway. Where interferences develop in the field, offset or reroute
46 piping as required to clear such interferences. Coordinate locations of plumbing piping with piping,
47 ductwork, conduit and equipment of other trades to allow sufficient clearances. In all cases, consult
48 drawings for exact location of pipe spaces, ceiling heights, door and window openings, or other
49 architectural details before installing piping.

50
51 Maintain piping in clean condition internally during construction.

52
53 Provide clearance for installation of insulation, access to valves and piping specialties.

1 Provide anchors, expansion joints, swing joints and/or expansion loops so that piping may expand and
2 contract without damage to itself, equipment, or building.

3
4 Do not route piping through transformer vaults or above transformers, panelboards, or switchboards,
5 including the required service space for this equipment, unless the piping is serving this equipment

6
7 Install all valves and piping specialties, including items furnished by others, as specified and/or detailed.
8 Provide access to valves and specialties for maintenance. Make connections to all equipment, fixtures and
9 systems installed by others where same requires the piping services indicated in this section.

10 11 **COPPER PIPE JOINTS**

12 Remove all slivers and burrs remaining from the cutting operation by reaming and filing both pipe surfaces.
13 Clean fitting and tube with metal brush, emery cloth or sandpaper. Remove residue from the cleaning
14 operation, apply flux and assemble joint to socket stop. Apply flame to fitting until solder melts when
15 placed at joint. Remove flame and feed solder into joint until full penetration of cup and ring of solder
16 appears. Wipe excess solder and flux from joint.

17 18 **THREADED PIPE JOINTS**

19 Use a thread lubricant or teflon tape when making joints; no hard setting pipe thread cement or caulking
20 will be allowed.

21 22 **MECHANICAL GROOVED PIPE CONNECTIONS**

23 Use pipe factory grooved in accordance with the coupling manufacturer's specifications or field grooved
24 pipe in accordance with the same specifications using specially designed tools specially designed for the
25 application. Lubricate pipe and coupling gasket, align pipe, and secure joint in accordance with the
26 coupling manufacturer's specifications.

27 28 **DOMESTIC WATER**

29 Maintain piping system in clean condition during installation. Remove dirt and debris from assembly of
30 piping as work progresses. Cap open pipe ends where left unattended or subject to contamination.

31
32 Install interior water piping with drain valves where indicated and at low points of system to allow
33 complete drainage. Install shutoff valves where indicated and at the base of risers to allow isolation of
34 portions of system for repair. Do not install water piping within exterior walls.

35
36 Prior to use, isolate and fill system with potable water. Allow to stand 24 hours. Flush each outlet
37 proceeding from the service entrance to the furthest outlet for minimum of 1 minute and until water appears
38 clear. Fill system with a solution of water and chlorine containing at least 50 parts per million of chlorine
39 and allow to stand for 24 hours. Alternately a solution containing at least 200 parts per million of chlorine
40 may be used and allowed to stand for 3 hours. Flush system with potable water until chlorine concentration
41 is no higher than source water level.

42
43 Wait 24 hours after final flushing. Take samples of water for lab testing. The number and location of
44 samples shall be representative of the system size and configuration and are subject to approval by
45 Engineer. Test shall show the absence of coliform bacteria. If test fails, repeat disinfection and testing
46 procedures until no coliform bacteria are detected. Submit test report indicating date and time of test along
47 with test results.

48 49 **DIELECTRIC UNIONS AND FLANGES**

50 Install dielectric unions or flanges at each point where a copper-to-steel pipe connection is required in
51 domestic water systems.

1 **UNIONS AND FLANGES**

2 Install a union or flange at each connection to each piece of equipment and at other items which may
3 require removal for maintenance, repair, or replacement. Where a valve is located at a piece of equipment,
4 locate the flange or union connection on the equipment side of the valve. Concealed unions or flanges are
5 not acceptable.

6
7 **PIPING SYSTEM LEAK TESTS**

8 Isolate or remove components from system which are not rated for test pressure. Test piping in sections or
9 entire system as required by sequence of construction. Do not insulate or conceal pipe until it has been
10 successfully tested.

11
12 If required for the additional pressure load under test, provide temporary restraints at fittings or expansion
13 joints. Backfill underground water mains prior to testing with the exception of thrust restrained valves
14 which may be exposed to isolate potential leaks.

15
16 For hydrostatic tests, use clean water and remove all air from the piping being tested by means of air vents
17 or loosening of flanges/unions. Measure and record test pressure at the high point in the system.

18
19 Inspect system for leaks. Where leaks occur, repair the area with new materials and repeat the test; caulking
20 will not be acceptable.

21
22 Entire test must be witnessed by the Owners Project Representative. All pressure tests are to be
23 documented on forms to be provided to the contractor.

24

<u>System</u>	<u>Test Medium</u>	<u>Initial Test</u>		<u>Final Test</u>	
		<u>Pressure</u>	<u>Duration</u>	<u>Pressure</u>	<u>Duration</u>
Above Ground Domestic Water	Water	N/A	N/A	100 psig	8 hrs.

25

26

27

28

END OF SECTION

1 **PIPING SYSTEM TEST REPORT**

2
3 **Date Submitted:** _____

4
5 **Project Name:** _____

6
7 **Location:** _____ **Project No:** _____

8
9 **Contractor:** _____

10
11 Plumbing Fire Sprinkler

12 Test Medium: Air Water Other _____

13
14 Test performed per specification section No. _____

15
16 Specified Test Duration _____ Hours Specified Test Pressure _____ PSIG

17
18 System Identification: _____

19 Describe Location: _____

20 _____

21	
22 Test Date: _____	
23 Start Test Time: _____	Initial Pressure: _____ PSIG
24	
25 Stop Test Time: _____	Final Pressure: _____ PSIG
26	

27 Tested By: _____ Witnessed By: _____

28 Title: _____ Title: _____

29 Signed: _____ Signed: _____

30 Date: _____ Date: _____

31 Comments: _____

32 _____

33 _____

34 _____

35 _____

36 _____

37 _____

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SECTION 22 13 06
SANITARY WASTE AND VENT PIPING

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7
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9

PART 1 - GENERAL

10
11

SCOPE

12 This section contains specifications for plumbing pipe and pipe fittings for this project. Included are the
13 following topics:

14
15

PART 1 - GENERAL

- 16 Scope
- 17 Related Work
- 18 Reference
- 19 Reference Standards
- 20 Shop Drawings
- 21 Quality Assurance
- 22 Delivery, Storage and Handling
- 23 Design Criteria

24
25

PART 2 - PRODUCTS

- 26 Sanitary Waste and Vent
- 27 Dielectric Unions and Flanges
- 28 Unions and Flanges
- 29 Mechanical Grooved Pipe Connections

30
31

PART 3 - EXECUTION

- 32 General
- 33 Preparation
- 34 Erection
- 35 Copper Pipe Joints
- 36 Threaded Pipe Joints
- 37 Mechanical Hubless Pipe Connections
- 38 Mechanically Formed Tee Fittings
- 39 Sanitary Waste and Vent
- 40 Piping System Leak Tests

41
42

RELATED WORK

- 43 22 05 29 – Hangers and Supports for Plumbing Piping and Equipment
- 44 22 05 15 – Piping Specialties

45
46

REFERENCE

47 Applicable provisions of Division 1 govern work under this section.

48
49

REFERENCE STANDARDS

- 50 ANSI B16.3 Malleable Iron Threaded Fittings
- 51 ANSI B16.4 Cast Iron Threaded Fittings
- 52 ANSI B16.5 Pipe Flanges and Flanged Fittings
- 53 ANSI B16.22 Wrought Copper and Wrought Alloy Solder Joint Pressure Fittings
- 54 ANSI B16.29 Wrought Copper and Wrought Alloy Solder Joint Drainage Fittings – DWV
- 55 ASTM A53 Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless
- 56 ASTM A74 Cast Iron Soil Pipe and Fittings
- 57 ASTM A105 Forgings, Carbon Steel, for Piping Components
- 58 ASTM A126 Gray Cast Iron Castings for Valves, Flanges, and Pipe Fittings
- 59 ASTM A234 Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and
60 Elevated Temperatures
- 61 ASTM A888 Hubless Cast Iron Soil Piping and Fittings for Sanitary and Storm Drain, Waste,
62 and Vent Piping Applications
- 63 ASTM B32 Solder Metal

1	ASTM B306	Copper Drainage Tube (DWV)
2	ASTM B813	Liquid and Paste Fluxes for Soldering Applications of Copper and Copper Alloy
3		Tube
4	ASTM C564	Standard Specification for Heavy Duty Shielded Couplings Joining Hubless
5		Cast Iron Soil Pipe and Fittings
6	ASTM C1540	Standard Specifications for Heavy Duty Shielded Couplings Joining Hubless
7		Cast Iron Soil Pipe and Fittings
8	ASTM D1785	Poly Vinyl Chloride (PVC) Plastic Pipe (SDR Series)
9	ASTM D2466	Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40
10	ASTM D2564	Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings
11	ASTM D2665	Poly Vinyl Chloride (PVC) Plastic Drain, Waste and Vent Pipe and Fittings
12	ASTM D2729	Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings
13	ASTM D2855	Making Solvent Cemented Joints with Poly Vinyl Chloride (PVC) Pipe and
14		Fittings
15	ASTM D3034	Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings
16	ASTM D3139	Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
17	ASTM D3212	Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals
18	ASTM D3222	Unmodified Poly Vinylidene Fluoride (PVDF) Molding Extrusion and Coating
19		Materials
20	ASTM D3311	Drain, Waste and Vent (DWV) Plastic Fitting Patterns
21	AWS A5.8	Brazing Filler Material
22	CISPI 301	Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste
23		and Vent Piping Applications
24	CISPI 310	Couplings For Use in Connection With Hubless Cast Iron Soil Pipe and Fittings
25		for Sanitary and Storm Drain, Waste and Vent Piping Applications.

26

27 **SHOP DRAWINGS**

28 Schedule from the contractor indicating the ASTM or CISPI specification number of the pipe being
 29 proposed along with its type and grade if known at the time of submittal, and sufficient information to
 30 indicate the type and rating of fittings for each service.

31

32 Statement from manufacturer on his letterhead that pipe furnished meets the ASTM or CISPI specification
 33 contained in this section.

34

35 **QUALITY ASSURANCE**

36 Substitution of Materials: Refer to Division 1 – Basic Requirements.

37

38 Order all copper, cast iron, steel, PVC and polyethylene pipe with each length marked with the name or
 39 trademark of the manufacturer and type of pipe; with each shipping unit marked with the purchase order
 40 number, metal or alloy designation, temper, size, and name of supplier.

41

42 Any installed material not meeting the specification requirements must be replaced with material that meets
 43 these specifications without additional cost to the State.

44

45 **DELIVERY, STORAGE AND HANDLING**

46 Promptly inspect shipments to insure that the material is undamaged and complies with specifications.

47

48 Cover pipe to prevent corrosion or deterioration while allowing sufficient ventilation to avoid
 49 condensation. Do not store materials directly on grade. Protect pipe, tube and fitting ends so they are not
 50 damaged. Where end caps are provided or specified, take precautions so the caps remain in place. Protect
 51 fittings, flanges, unions by storage inside or by durable, waterproof, above ground packaging.

52

53 Offsite storage agreements will not relieve the contractor from using proper storage techniques.

54

55 Storage and protection methods must allow inspection to verify products.

56

1 **DESIGN CRITERIA**

2 Use only new material, free of defects, rust and scale, and meeting the latest revision of ASTM, or CISPI
3 specifications as listed in this specification.

4
5 Construct all piping for the highest pressures and temperatures in the respective system.

6
7 Non-metallic piping will be acceptable only for the services indicated. It will not be acceptable in
8 ventilation plenum spaces, including plenum ceilings.

9
10 Where weld fittings or mechanical grooved fittings are used, use only long radius elbows having a
11 centerline radius of 1.5 pipe diameters.

12
13 Where ASTM A53 type F pipe is specified, grade A type E or S, or grade B type E or S may be substituted
14 at Contractor's option. Where the grade or type is not specified, Contractor may choose from those
15 commercially available.

16
17 Where ASTM B88 type L H (drawn) temper copper tubing is specified, ASTM B88, type K H (drawn)
18 temper copper tubing may be substituted at Contractor's option.

19
20
21 **PART 2 - PRODUCTS**

22
23 **SANITARY WASTE AND VENT**

24 **INTERIOR ABOVE GROUND**

25 Hubless cast iron soil pipe and fittings, ASTM A888; with no hub couplings, CISPI 310, ASTM A74. Pipe
26 and fittings shall be marked with the collective trademark of the Cast Iron Pipe Institute or receive prior
27 approval of the Engineer.

28
29 Type M copper water tube, H (drawn) temper, ASTM B88; with cast copper drainage fittings (DMV),
30 ANSI B16.23; wrought copper drainage fittings (DMV), ANSI B16.29; lead free(<.2%) solder, ASTM
31 B32; flux, ASTM B813; copper phosphorus brazing alloy, AWS A5.8 BCuP. Mechanically formed brazed
32 tee connections may be used in lieu of specified tee fittings for vent branch takeoffs up to one-half (1/2) the
33 diameter of the main.

34
35 PVC plastic pipe, Schedule 40, Class 12454-B (PVC 1120), ASTM D1785; PVC plastic drain, waste and
36 vent pipe fittings, ASTM D2665; socket fitting patterns, ASTM D3311; primer, ASTM F656; solvent
37 cement, ASTM D2564.

38
39 Galvanized steel pipe, Schedule 40, Type F, Grade A, ASTM A53; with cast iron threaded drainage
40 fittings, ASTM B16.12.

41
42 **INTERIOR BELOW**

43 Cast iron soil piping and fittings, hub and spigot, service weight, ASTM A74, with neoprene rubber
44 compression gaskets, ASTM C564, CISPI 301 and CISPI HSN 85. Pipe and fittings shall be marked with
45 the collective trademark of the Cast Iron Pipe Institute.

46
47 PVC Plastic pipe, Schedule 40, Class 12454-B (PVC 1120), ASTM D1785; PVC plastic drain, waste and
48 vent pipe and fittings, ASTM D2665; socket fittings patterns, ASTM D3311; primer, ASTM F656; solvent
49 cement, ASTM D2564.

50
51
52 **PART 3 - EXECUTION**

53
54 **GENERAL**

55 Install pipe and fittings in accordance with reference standards, manufacturer's recommendations, and
56 recognized industry practices.

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PREPARATION

Cut pipe ends square. Ream ends of piping to remove burrs. Clean scale and dirt from the interior and exterior of each section of pipe and fitting prior to assembly.

ERECTION

Install all piping parallel to building walls and ceilings and at heights which do not obstruct any portion of a window, doorway, stairway or passageway. Where interferences develop in the field, offset or reroute piping as required to clear such interferences. Coordinate locations of plumbing piping with piping, ductwork, conduit, and equipment of other trades and existing piping to allow sufficient clearances. In all cases, consult drawings for exact location of pipe spaces, ceilings heights, door and window openings, or other details before installing piping.

Where copper or steel piping is embedded in masonry or concrete, provide protective sleeve covering of elastomeric pipe insulation.

Install underground warning tape 6"-12" below finished grade above all exterior, below ground piping. Where existing tape is encountered, repair and replace.

Maintain in clean condition internally during construction.

Provide clearance for installation of insulation, access to valves and piping specialties.

Provide anchors, expansion joints, swing joints and/or expansion loops so that piping may expand and contract without damage to itself, equipment, or building.

Do not route piping through transformer vaults or above transformers, panelboards, or switchboards, including the required service space for this equipment, unless the piping is serving this equipment.

Install all valves and piping specialties, including items furnished by others, as specified and/or detailed. Provide access to valves and specialties for maintenance. Make connections to all equipment, fixtures, and systems installed by others where same requires piping services indicated in this section.

COPPER PIPE JOINTS

Remove all slivers and burrs remaining from the cutting operation by reaming and filing both pipe surfaces. Clean fitting and tube with metal brush, emery cloth or sandpaper. Remove residue from the cleaning operation, apply flux and assemble joint to socket stop. Apply flame to fitting until solder melts when placed at joint. Remove flame and feed solder into joint until full penetration of cup and ring of solder appears. Wipe excess solder and flux from joint.

THREADED PIPE JOINTS

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

SOLVENT WELDED PIPE JOINTS

Install in accordance with ASTM D2855 "Making Solvent Cemented Joints With PVC Pipe and Fittings". Saw cut piping square and smooth. Tube cutters may be used if they are fitted with wheels designed for use with PVC/CPVC pipe that do not leave a raised bead on pipe exterior. Support and restrain pipe during cutting to prevent nicks and scratches. Bevel ends 10-15 degrees and deburr interior. Remove any, dust, debris, moisture, grease and other superfluous materials from the pipe interior and exterior. Check dry fit of pipe and fittings. Reject materials which are out of round or do not fit within close tolerance. Use heavy body solvent cement for large diameter fittings.

Maintain pipe, fittings, primer and cement between 40 and 100 degrees during application and curing. Apply primer and solvent using separate daubers (3" and smaller piping only) or clean natural bristle brushes about 1/2 the size of the pipe diameter. Apply primer to the fitting socket and pipe surface with a

1 scrubbing motion. Check for penetration and reapply as needed to dissolve the surface to a depth of 4-5
2 thousandths. Apply solvent cement to the fitting socket and pipe in an amount greater than needed to fill
3 any gap. While both surfaces are wet, insert pipe into socket fitting with a quarter turn to the bottom of the
4 socket. Solvent cement application and insertion must be completed in less than 1 minute. Minimum of 2
5 installers is required on piping 4" and larger. Hold joint for 30 seconds or until set. Reference
6 manufacturer's recommendations for ignition set time before handling and for full curing time before
7 pressure testing. Cold weather solvent/cement may be utilized only under unusual circumstances and when
8 specifically approved by the Owner's Project Representative.
9

10 **MECHANICAL HUBLESS PIPE CONNECTIONS**

11 Place the gasket on the end of one pipe or pipe fitting and clamp the assembly on the other end of the pipe
12 of fitting. Firmly seat the pipe or pipe fitting ends against the integrally molded shoulder inside the
13 neoprene gasket. Slide the clamp assembly into position over the gasket. Tighten fasteners to
14 manufacturer's recommended torque.
15

16 **MECHANICALLY FORMED TEE FITTINGS**

17 Form mechanically extracted collars in a continuous operation, consisting of drilling a pilot hole and
18 drawing out the tube surface to form a collar having a height of not less than three times the thickness of
19 the tube wall. Use an adjustable collaring device. Notch and dimple the branch tube. Braze the joint with
20 neutral flame oxy-acetylene torch, applying heat properly so that pipe and tee do not distort; remove
21 distorted connections.
22

23 **SANITARY WASTE AND VENT**

24 Verify invert elevations and building elevations prior to installation. Install exterior piping pitched to drain
25 at indicated elevations and slope. Install interior piping pitched to drain at minimum slope of 1/4" per foot
26 where possible and in no case less than 1/8" per foot for piping 3" and larger.
27

28 Flush piping inlets (floor drains, hub drains, mop basins, fixtures, etc.) with high flow of water at
29 completion of project to demonstrate full flow capacity. Remove blockages and make necessary repairs
30 where flow is found to be impaired.
31

32 **PIPING SYSTEM LEAK TESTS**

33 Isolate or remove components from system which are not rated for test pressure. Perform final testing for
34 medical and lab gas with all system components in place. Test piping in sections or entire system as
35 required by sequence of construction. Do not insulate or conceal piping until it has been successfully
36 tested.
37

38 If required for the additional pressure load under test, provide temporary restraints at fittings or expansion
39 joints. Backfill underground water mains prior to testing with the exception of thrust restrained valves
40 which may be exposed to isolate potential leaks.
41

42 For hydrostatic tests, use clean water and remove all air from the piping being tests by means of air vents or
43 loosening of flange/unions. Measure and record test-pressure at the high point in the system.
44

45 For air or nitrogen tests, gradually increase the pressure to not more than one half of the test pressure; then
46 increase the pressure in steps of approximately one-tenth of the test pressure until the required test pressure
47 is reached. Examine all joints and connections with a soap bubble solution or equivalent method. System
48 will not be approved until it can be demonstrated that there is no measureable loss of test pressure during
49 the test period.
50

51 Inspect system for leaks. Where leaks occur, repair the area with new materials and repeat the test;
52 caulking will not be acceptable.
53
54

1 Entire test shall be witnessed by the owners representative. All pressure tests are to be documented on
2 forms to be provided to the contractor
3

<u>System</u>	<u>Test Medium</u>	<u>Initial Test</u>		<u>Final Test</u>	
		<u>Pressure</u>	<u>Duration</u>	<u>Pressure</u>	<u>Duration</u>
Sanitary Waste and Vent	Water	N/A	N/A	10' water	2 hrs.

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END OF SECTION

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**SECTION 22 30 00
PLUMBING EQUIPMENT**

PART 1 - GENERAL

SCOPE

This section includes specifications for water heaters, water softeners, pumps and other equipment used for plumbing applications. Included are the following topics:

PART 1 - GENERAL

- Scope
- Related Documents
- Reference
- Quality Assurance
- Shop Drawings
- Operation and Maintenance Data

PART 2 - PRODUCTS

- Gas Fired Water Heater
- Alternate Gas Fired Water Heater
- In-Line Close Coupled Centrifugal Pumps
- Expansion Tanks

PART 3 - EXECUTION

- Installation
- Training

RELATED DOCUMENTS

- Section 22 05 23 - General-Duty Valves for Plumbing Piping
- Section 22 07 00 - Plumbing Insulation

REFERENCE

Applicable provisions of Division 1 shall govern work under this section.

QUALITY ASSURANCE

Substitution of Materials: Refer to Division 1 - Basic Requirements.

Plumbing products requiring approval by the State of Wisconsin Dept. of Commerce must be approved or have pending approval at the time of shop drawing submission.

SHOP DRAWINGS

Include data concerning dimensions, capacities, materials of construction, ratings, certifications, weights, pump curves with net positive suction head requirements, manufacturer's installation requirements, manufacturer's performance limitations, and appropriate identification.

OPERATION AND MAINTENANCE DATA

All operations and maintenance data shall comply with the submission and content requirements specified under Division 1 - Basic Requirements.

PART 2 - PRODUCTS

GAS FIRED WATER HEATER

Equal to Rheem Model GHE100ES-200.

Manufacturers: A.O. Smith, Bock and Bradford White are considered equal.

1
2 High efficiency gas fired condensing water heater having a gas input of 199,000 BTU/hr and a recovery
3 rate of 229 GPH at a 100° F temperature rise when tested and certified at 97% thermal efficiency. Water
4 heater shall have a storage capacity of 100 gallons. Water heater shall have CSA seal off certification and
5 supplied with a factory installed CSA ASME rated temperature and pressure relief valve, and meet
6 SCAQMD rule 1146.2. Water heater shall be certified for Schedule IV venting with power vent and
7 powered direct vent options. Water heater shall be covered by three year limited tank warranty against tank
8 leaks. Include condensate neutralizer, Rheem part no. SP12151
9

10 **Alternate Gas Fired Water Heater**

11 Equal to Rheem Model GHE100ES-200(A).

12
13 Water heater shall be ASME constructed in accordance with the requirements of the ASME boiler and
14 pressure vessel code section IV part HLW.
15

16
17 **IN-LINE CLOSE COUPLED CENTRIFUGAL PUMPS**

18 Equal to B&G model NBF-85/LW, three speed, 260 watts, single phase, 115 volts, 3GPM @ 6' HD for
19 building circulator..
20

21 Manufacturer: Bell and Gossett, Gould, Grundfos, Taco.
22

23 Type: Horizontal single stage close coupled oil lubricated in-line pumps, 125 psig maximum working
24 pressure at operating temperature of 225°F. continuous. The manufacturer shall certify all pump ratings.
25 All pumps to operate without excessive noise or vibration.
26

27 Casing: Bronze or stainless steel; sweat suction and discharge connection.
28

29 Impeller: Brass, bronze or thermoplastic, keyed to the shaft, single suction enclosed type, hydraulically and
30 dynamically balanced.
31

32 Bearings: Double-sintered carbon.
33

34 Shaft: Ceramic.
35

36 Seal: Mechanical type, carbon rotating against a stationary ceramic seat, 225°F maximum continuous
37 operating temperature.
38

39 Motor: Provide pump with open drip proof motor with built-in thermal overload protection sized for non-
40 overloading over the entire pump curve. Furnish each pump and motor with a nameplate giving the
41 manufacturer's name, serial number of pump, capacity in GPM and head in feet at design condition,
42 horsepower, voltage, frequency, speed and full load current.
43

44 **EXPANSION TANKS**

45 Equal to Amtrol model no. AX-15.
46

47 Manufacturer: Amtrol, Bell and Gossett, Wessels.
48

49 Vertical steel precharged hydro-pneumatic expansion tank, 125 psi ASME labeled construction, complete
50 with replaceable flexible butyl rubber bladder, system connection fitting, Schrader type air charge fitting,
51 steel base ring stand, factory prime and enamel painted exterior finish, ASME relief valve. Materials
52 exposed to water to be NSF or FDA approved for potable water service.
53
54

1
2
3 **PART 3 - EXECUTION**

4 **INSTALLATION**

5 Install plumbing equipment where indicated in accordance with manufacturer's recommendations.
6 Coordinate equipment location with piping, ductwork, conduit and equipment of other trades to allow
7 sufficient clearances. Locate equipment and arrange plumbing piping to provide access space for servicing
8 all components.

9 Adjust and level water heater equipment.

10
11 Connect equipment to water and drain piping using unions or flanges and isolation valves.

12
13 Size temperature and relief valves per CSA ratings. Pipe temperature and pressure relief valves to floor
14 drain or floor as indicated.

15
16 Startup and test equipment adjusting operating and safety controls for proper operation.

17
18 Lubricate pumps before startup. Adjust pumps for rated flow.

19
20 Adjust expansion tank precharge to scheduled minimum operating pressure prior to connecting to system.

21
22 **TRAINING**

23 Provide training to designated owner personnel. Refer to Section 22 05 00
24
25

26 **END OF SECTION**

1 **SECTION 22 42 00**
2 **COMMERCIAL PLUMBING FIXTURES**

3
4
5 **PART 1 - GENERAL**

6
7 **SCOPE**

8 This section includes specifications for plumbing fixtures, faucets and trim. Included are the following topics:

9 **PART 1 - GENERAL**

10 Scope

11 Related Work

12 Reference

13 Quality Assurance

14 Design Criteria

15 **PART 2 - PRODUCTS**

16 Plumbing Fixtures:

17 Water Closet WC-1

18 Water Closet WC-2

19 Lavatory L-1

20 Lavatory L-2

21 Lavatory L-3

22 Alternate Lavatory L-3

23 Shower SH-1

24 Kitchen Sink KS-1

25 Alternate Kitchen Sink KS-1

26 Dishwasher DW-1

27 Alternate Dishwasher DW-1

28 **PART 3 - EXECUTION**

29 Installation

30
31 **RELATED WORK**

32 Section 22 11 00 – Facility Water Distribution

33 Section 22 05 29 – Hangers and Supports for Plumbing Piping and Equipment

34
35 **REFERENCE**

36 Applicable provisions of Division 1 govern work under this section.

37
38 **QUALITY ASSURANCE**

39 Substitution of Materials: Refer to Division 1 – Basic Requirements.

40
41 Plumbing products requiring approval by the State of Wisconsin Dept. of Commerce must be approved or have
42 pending approval at the time of shop drawing submittal.

43
44 **DESIGN CRITERIA**

45 ANSI A112.6.1M-88 – Supports for Off-the Floor Plumbing Fixtures for Public Use.

46 ANSI A112.19.2M-82 – Vitreous China Plumbing Fixtures.

47 ANSI A112.19.5-79(R1990) – Trim for Water Closet Bowls, Tanks and Urinals

48 ANSI A112.18.1-94-Finished Rough Brass Plumbing Fixture Fittings

49
50 **PART 2 - PRODUCTS**

51
52 **PLUMBING FIXTURES**

53 Manufacturers: Fixture descriptions establish fixture type, quality, materials, features and size. Products of the
54 following manufacturers determined as equal by the Architect/Engineer will be accepted.

- 55
 - Water Closets – American Standard, Kohler, Zurn
 - Water Closet Seats – Bemis, Beneke, Centoco, Olsonite Sperzel.

- 1 • Lavatories – American Standard, Kohler, Zurn
- 2 • Faucets – Chicago Faucet, Kohler, Speakman, Symmons, Sloan, Zurn.
- 3 • Stops and Supplies – Chicago Faucet Co., T&S Brass, McGuire (Heavy Duty Type Only)
- 4 • Traps – Kohler, McGuire, Dearborn, Engineered Brass Co. (17 Gauge Min.)
- 5 • Carrier and Supports – Josam, Smith, Wade, Watts Drainage, Zurn.
- 6 • Shower Heads – Chicago, Symmons, Sloan

7
8 Water Closet WC-1

9 Floor set, tank type, white vitreous siphon jet water closet with elongated bowl, 2-5/2” passageway, 1.28
10 gallon flush, white open front seat, less cover, tank cover locks, and insuliner.

11
12 Fixture: Kohler “Wellworth” K-3998-UT/-R2

13
14 Supply/Stop: McGuire BV2165, BV2165CC or BV175 as required with braided stainless closet riser.

15
16 Seat: Bemis 1055SSC self-sustaining concealed check hinge.

17
18 Water Closet WC-2

19 Floor set, tank type, white vitreous siphon jet water closet with elongated bowl, 2-5/2” passageway, 1.28
20 gallon flush, white open front seat, less cover, tank cover locks, and insuliner.

21
22 Fixture: Kohler “Highline” K3999-UT/-R2

23
24 Supply/Stop: McGuire BV2165, BV2165CC or BV175 as required with braided stainless closet riser.

25
26 Seat: 1055SSC self-sustaining concealed check hinge.

27
28 Lavatory L-1

29 Existing fixture to remain, remove and replace faucet with Chicago Faucet Fitting No. 802-VE 2805-665
30 self-closing metering faucet with push button handles and vandal proof Econo-flo spray outlet, 0.5 GPM.

31
32 Supplies/Stops: Use existing supplies & stops.

33
34 Lavatory L-2

35 Same as L-1, except use Chicago Faucet fitting No. 404-VE-2805-665 self-closing meter faucet with push
36 button handles and vandal proof Econo-flo spray outlet, 0.5 GPM.

37
38 Lavatory L-3

39 Use same faucet as L-2.

40
41 **Alternate Lavatory L-3**

42 Use same faucet as L-2. Remove lavatory from wall and re-install so rim of lavatory is 34” above floor.

43
44 Shower SH-1

45 Existing shower head to be removed and replaced with Chicago Faucet Fitting No. 621-CP, vandal resistant
46 mounting institutional shower head, 2.0 GPM flow rate

47
48 Kitchen Sink KS-1

49 Custom built 18 gauge, type 304 stainless steel counter top with integral double sink bowls, eight (8) 1-1/2
50 inch diameter stainless steel legs, four (4) inch high backsplash (rear and sides), four (4) faucet holes @ 4
51 inch centers, faucet with 4 inch wrist blade handles and gooseneck swing spout, with 2.2 GPM aerator.
52 Include pre san fitting for the dishwasher connection.

53
54 Faucet: Chicago Faucet No. 201-AGN8AE-317VPCCP.

1 Trap: 1-1/2 inch cast brass P-trap.

2
3 Drains: Right compartment- Elkay LK-35 w/ strainer basket and rubber stoppers. Left compartment-
4 Garbage disposer cone to fit existing disposer.

5
6 Supplies/Stops: McGuire quarter turn loose key stops with braided stainless risers

7
8 **Alternate Kitchen Sink KS-1**

9 Unit shall be 16 gauge, type 304 stainless steel.

10
11 Dishwasher DW-1

12 Equal to Bosch model SHP7PT55UC.

13
14 Manufacturers: General Electric, Whirlpool, and Frigidaire are considered equal.

15
16 The dishwasher shall be front opening, under counter type with stainless steel front and stainless steel tub, flush
17 handle with 16 place setting capacity and touch panel controls.

18
19 The dishwasher shall be front opening, under counter type of operations, with the following features-

- 20 • 30 racks per hour
- 21 • Hot water sanitation
- 22 • 3/4 HP wash motor
- 23 • Delime notification/cycle
- 24 • Service diagnostics
- 25 • Fresh water rinse-1.2 gallons per rack
- 26 • 16 gauge stainless steel tank, door and top panel
- 27 • Microcomputer, top mounted controls with digital cycle/temperature display
- 28 • Revolving upper /lower anti clogging rinse arms
- 29 • Removable stainless steel scrap screen
- 30 • Corrosion resistant pump, auto pump drain
- 31 • 17 inch door opening/ labyrinth- type door seal
- 32 • Two dish racks-one peg and one combination type
- 33 • Include power cord kit and water pressure regulator valve.

34
35 Unit shall be wired for 120 volt, 60 cycle, single phase electrical service.

36
37 Unit shall be listed by Underwriters Laboratories,INC, and NSF International.

38
39 **Alternate Dishwasher DW-1**

40 Equal to Hobart Model No. LXi.

41
42 Manufacturers: Sub-Zero and Market Forge are considered equal.

43
44
45 **PART 3 - EXECUTION**

46
47 **INSTALLATION**

48 Verify the existing water closet rough-in dimensions before ordering new units.

49
50 Install all plumbing fixtures in accordance with manufacturer's instructions. Set level and plumb. Secure in place to
51 counters, floors and walls providing solid bearing and secure mounting. Bolt fixture carriers to floor and wall.
52 Secure rough-in fixture piping to prevent movement exposed piping.

53
54 Install each fixture with trap easily removable for servicing and cleaning. Install fixture stops in readily accessible
55 location for servicing.

- 1
- 2 Install barrier free fixtures in compliance with IBC 1108 and 3408, COMM 69 and Federal ADA Accessibility
- 3 guidelines. Install barrier free lavatory traps parallel and adjacent to wall and supplies and stops elevated to avoid
- 4 contact by wheelchair users.
- 5
- 6 Each fixture shall have a stop valve installation to control the fixture. Stop valves shall be heavy duty type with
- 7 brass stems and screwed or sweat inlet connections. Compression type inlets are not acceptable.
- 8
- 9 Cover pipe penetrations with escutcheons. Exposed traps, stops, piping and escutcheons to be chrome plated brass,
- 10 same items in concealed locations may be of rough brass finish.
- 11
- 12 Seal openings between walls, floors and fixtures with mildew-resistant silicone sealant same color as fixture.
- 13
- 14 Test fixtures to demonstrate proper operation. Replace malfunctioning units or components. Adjust valves for
- 15 intended water flow rate to fixtures without splashing, noise or overflow. See metering faucets for ten(10) second
- 16 run time.
- 17
- 18 Protect fixtures during construction. At completion clean plumbing fixtures and trim using manufacturer's
- 19 recommended cleaning methods and materials.
- 20
- 21
- 22

END OF SECTION