UNIVERSITY of NEW ORLEANS

INVITATION TO BID
YEARLY SERVICE CONTRACT:

CLEAN AGENT FIRE SUPPRESSION SYSTEMS
INSPECTION AND MAINTENANCE

Sealed Bid **#BTB 2809**

Bid Date: **June 28, 2024**

Bid Time: 2:00 p.m.

Deliver to Administration Annex Building – Room 1004G

Mandatory Pre-Bid Conference:

Date: **June 13, 2024**

10:00 a.m. at the

Administration Building – Room 112

THE UNIVERSITY of NEW ORLEANS

YSC5265

UNIVERSITY of NEW ORLEANS

INVITATION TO BID
YEARLY SERVICE CONTRACT:

CLEAN AGENT FIRE SUPPRESSION SYSTEMS
INSPECTION AND MAINTENANCE

PREPARED BY

UNIVERSITY OF NEW ORLEANS

PURCHASING OFFICE
Administration Annex Building – Room 1004G

LAKEFRONT - NEW ORLEANS - LOUISIANA – 70148

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PURCHASING REPRESENTATIVE: Troy Bacino, Assistant Director for Purchasing

(504)280-6172 FAX (504)280-6297 E-mail tabacino@uno.edu

UNIVERSITY REPRESENTATIVE: Ron O'Rourke
(504) 280-7189 E-mail: rjorourke@uno.edu

Date: May 21, 2024

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INSTRUCTIONS TO BIDDERS

ARTICLE 1

YEARLY SERVICE CONTRACT TITLE AND BID OPENING DATE & TIME

1.1 Yearly Service Contract Title **CLEAN AGENT FIRE SUPPRESSION SYSTEMS INSPECTION AND MAINTENANCE**

Bid Opening Date & Time: **June 28, 2024 at 2:00 p.m**.

Location of Bid Opening:

University of New Orleans
Purchasing Office
Administration Annex, Room 1004G
New Orleans, Louisiana 70148

ARTICLE 2

BIDDER'S REPRESENTATION

2.1 Each Bidder by making his bid represents that:

2.1.1 He has read and understands the Bidding Documents and his bid is made in accordance therewith.

2.1.2 He has visited the site and has familiarized himself with the local conditions under which the work is to be performed.

The Bidder is advised to carefully consider all University physical features and activities and occupancies by faculty, staff and students, and to plan activities so as not to disrupt the normal operations and activities of the University except as expressly permitted by the University in writing. The Bidder shall be especially aware of existing electric, gas, water, telephone and/or other utilities and facilities which may be in the way of or adjacent to the Work, and shall take appropriate action to protect these utilities during the Work.

Every effort has been made to accurately show all pertinent surface and subsurface features accurately. For self-assurance, the Bidder may examine available drawings and documents related to University premises.

Such examinations may be made only in the offices of the University Facility Services as part of the Mandatory Pre-Bid Conference.

2.1.3 His bid is based solely upon the materials, systems and equipment described in the Bidding Documents as advertised and as modified by addenda.

2.1.4 His bid is not based on any verbal instructions contrary to the Bidding Documents and addenda.

2.2 The Bidder must be fully qualified under any State or local licensing law for Contractors in effect at the time and at the location of the work before submitting his bid. The Contractor

shall be responsible for determining that all of his Sub-bidders or prospective Subcontractors are duly licensed in accordance with law.

ARTICLE 3

BIDDING DOCUMENTS

3.1 Copies

3.1.1 Complete Bidding Documents may be obtained from the University of New Orleans Purchasing Office.

The Bidding Documents consist of the Instructions to Bidders, the Bid Form, The Technical Specifications, the Drawings (if any) and all Addenda issued prior to bid opening.

These INSTRUCTIONS TO BIDDERS, including amendments and additions thereto, apply to each and every heading of the TECHNICAL SPECIFICATIONS with the same force as though repeated in full under each heading.

3.1.2 Complete sets of Bidding Documents shall be used in preparing bids; neither the University nor the Consultant assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.1.3 The University and/or its Consultant in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining bids on the work and do not confer a license or grant for any other use.

3.2 Inquiries and Interpretation or Correction of Bidding Documents

3.2.1 All inquiries regarding these specifications shall be asked at the Pre-Bid conference or sent to the University Representative with a copy to the Purchasing Representative, each as identified on the Title Page of this Specification. Inquiries must be received at least seven (7) days prior to bid opening.

3.2.2 Any interpretation, correction or change of the Bidding Documents will be made by addendum. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes.

3.2.3 It shall be the Bidder's responsibility to make inquiry as to addenda issued. All issued addenda should be acknowledged on the Bid Form and shall become part of the Contract. Neither the University nor its Consultant(s) will be responsible for any explanation or interpretations of the Documents not covered by written, issued addenda.

The Bidder should acknowledge all issued addenda in the space provided on the Bid Form. Failure to acknowledge addenda may render the proposal informal and may cause its rejection.

3.3 Substitutions

3.3.1 Any materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

3.3.2 No substitution will be considered unless written request for approval has been submitted by the Contractor and has been received by the University Representative prior to beginning work.

Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including model numbers, drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included.

It shall be the responsibility of the Contractor to include in his request all changes required to the work if the proposed substitute is used. Approval, if granted, is given contingent upon Contractor being responsible for any costs which may be necessary to modify the space or facilities needed to accommodate the materials and equipment approved.

3.3.3 If the University approves a proposed substitution, such approval will be set forth in writing. Contractor shall not rely upon approvals made in any other manner.

3.4 Addenda

3.4.1 Addenda will be mailed, delivered, electronically (email) sent or faxed to all Contractors in attendance at the mandatory Pre-Bid Conference or to all bidders if no mandatory Pre-Bid Conference is scheduled.

3.4.2 Copies of addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

3.4.3 Addenda shall not be issued within a period of three (3) working days prior to the time set for the opening of bids, excluding Saturdays, Sundays, and any other legal holidays; however, if the necessity arises to issue an addendum modifying plans and specifications within the three (3) working day period prior to the time for the opening of bids, then the opening of bids shall be extended exactly one week, without the requirement of re-advertising.

3.4.4 Each Bidder shall ascertain from the University of New Orleans Purchasing Office prior to submitting his bid that he has received all addenda issued, and he should acknowledge their receipt on the Bid Form.

ARTICLE 4

BIDDING PROCEDURE

4.1 Form and Style of Bids

4.1.1 Bids shall be submitted on the forms provided by the University.

4.1.2 All blanks on the Bid Form shall be filled in by typewriter or manually in ink.

4.1.3 Where so indicated by the makeup of the Bid Form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the written words shall govern.

4.1.4 Any interlineation, alteration or erasure must be initialed by the signer of the bid or his authorized representative.

4.1.5 Bidder should make no additional stipulations on the Bid Form nor qualify his bid in any other manner.

4.1.6 The bid shall include the legal name of Bidder and the bid shall be signed by the person or persons legally authorized to bind the Bidder to a Contract. A bid submitted by an agency shall have a current Power of Attorney attached certifying agent's authority to bind Bidder.

In accordance with R.S. 39:1594(C)(4), the person signing the bid must be: 1) A current corporate officer, partnership member or other individual specifically authorized to submit bids as evidenced in appropriate records on file with the secretary of State; or 2) An individual authorized to bind the vendor, and bid is accompanied by a corporate resolution, certification as to the corporate principal, or other documents indicating authority which are acceptable to the University.
By signing this bid, the bidder certifies compliance with the above.

4.2 Submission of Bids

4.2.1 Bids shall be sealed in an envelope with the Bidding Documents and will be received until the time specified and at the place specified in these Bidding Documents. It shall be the specific responsibility of the Bidder to deliver his sealed bid to the University of New Orleans Purchasing Office at the appointed place and prior to the announced time for the opening of bids. Late delivery of a bid for any reason, including late delivery by United States Mail, or express delivery, shall disqualify the bid. The bid envelope shall be identified on the outside with the name of the project, and the address of the Bidder.

4.2.2 Bids shall be deposited at the designated location prior to the time on the date for receipt of bids indicated in these Bidding Documents, or any extension thereof made by addendum. Bids received after the time and date for receipt of bids will be returned unopened.

4.2.3 Bidder shall assume full responsibility for timely delivery at location designated for receipt of bids.

4.2.4 Oral, telephonic, telegraphic, electronic (email), or faxed bids are invalid and shall not receive consideration. The University shall not consider notations written on outside of bid envelope which have the effect of amending the bid. Written modifications enclosed in the bid envelope, and signed or initialed by the Contractor or his representative, shall be accepted.

4.3 Modification or Withdrawal of Bid

4.3.1 A bid may not be modified, withdrawn, or canceled by the Bidder for a period of thirty (30) calendar days for the period following the time and bid date designated for the receipt of bids, and Bidder so agrees in submitting his bid, except in accordance with R.S. 39:1594,F. which states, "Patent errors in bids or errors in bids supported by clear and convincing evidence may be corrected, or bids may be withdrawn, if such correction or withdrawal does not prejudice other bidders, and such actions may be taken only to the extent permitted under regulations."

4.3.2 Prior to the time and date designated for receipt of bids, bids submitted early may be modified or withdrawn only by notice to the University of New Orleans Purchasing Office at the place and prior to the time designated for receipt of bids.

4.3.3 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids provided that they are then fully in conformance with these Instructions to Bidders.

ARTICLE 5

CONSIDERATION OF BIDS

5.1 Opening of Bids

5.1.1 The properly identified Bids received on time will be opened publicly and will be read aloud, and tabulation will be made available to Bidders.

5.2 Rejection of Bids

5.2.1 The University shall have the right to reject any or all bids and in particular to reject a bid not accompanied by any data required by the Bidding Documents or a bid in any way incomplete or irregular.

5.3 Acceptance of Bid

5.3.1 The Bid will be awarded on the basis of the lowest total cost as determined by the University.

ARTICLE 6

FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

6.1 Form to be Used

6.1.1 Form of the Contract to be used shall be furnished by the University of New Orleans Purchasing Office, in the form of a duly executed Purchase Order.

6.2 Discriminatory Practices

6.2.1 Discriminatory Practices: Both the University and the bidder shall abide by the requirements of Title VII of the Civil Rights Act of 1964, and shall not discriminate against employees or applicants due to race, color, religion, sex, handicap or national origin. Furthermore, both parties shall take affirmative action to provide for positive posture in employing and upgrading persons without regard to race, color, religion, sex, handicap, or national origin, and shall take affirmative action as provided in the Vietnam Era Veteran's Readjustment Act of 1974. Both parties shall abide by the requirements of Title VI of the Civil Rights Act of 1964 and the Vocational Rehabilitation Act of 1974 to insure that services are delivered without discrimination due to race, color national origin or handicap. Both parties shall comply with the requirements of the Americans with Disabilities Act of 1990 which bans discrimination in employment or in delivery of services on the basis of sexual orientation.

6.3 Payments

6.3.1 Contractor will be paid after each job is satisfactorily completed and upon recommendation of the University Representative.

6.3.2 Payment for services shall be made to the Contractor once a month after receipt by the University of an invoice (or invoices) by which the Bidder certifies, and the University agrees, that all the invoiced work was performed in accordance with the specifications.

6.3.3 All invoices should be submitted to the University's Office of Accounts Payable AND clearly indicate the Purchase Order Number assigned by the UNO Purchasing office. Invoices must be accompanied by a service ticket(s) or reference the service ticket(s) if the ticket(s) was already submitted to Facility Services. The service ticket must reference who requested the work, why the work was needed, and what work was performed. Lump sum invoices will not be processed. All work must be itemized and include a breakdown per the unit pricing and material markup, if applicable, per the bid.

6.4 Time

6.4.1 Contract Time: One (1) calendar year starting July 1st with the option to renew for four (4) consecutive twelve (12) month periods if mutually agreeable.

6.4.2 Escalation Clause

Prior to any renewal term, the contractor may request a price increase for that renewal term based on documented increase costs. The price increase may not be greater than the Consumer Price Index (All Urban Consumers, Current Series) average increase for the prior 12 months. The University reserves the right to approve or disapprove the price increase.

6.5 Termination

6.5.1 Termination for Cause

The University may terminate any contract entered into as a result of this ITB for cause based upon the failure of the Contractor to comply with the terms and/or conditions of the Contract; provided that the University shall give the Contractor written notice specifying the Contractor's failure. If within Ten (10) days after receipt of such notice, the Contractor shall not have either corrected such failure and thereafter proceeded diligently to complete such correction, then the University may, at its option, place the Contractor in default and the Contract shall terminate on the date specified in such notice. The Contractor may exercise any rights available to it under Louisiana law to terminate for cause upon the failure of the University to comply with the terms and conditions of the Contract; provided that the Contractor shall give the University written notice specifying the University's failure.

6.5.2 Termination for Convenience

The University may terminate the Contract at any time by giving thirty (30) days written notice to the Contractor. The Contractor shall be entitled to payment for work performed (monthly charges to be prorated), to the extent work has been performed satisfactorily.

6.5.3 Implementation of Termination

The Contractor shall terminate all work under the Contract to the extent and on the date specified in the Notice of Termination or reduction of work and until

such date shall, continue to perform all work required in the specification (and be compensated for such work.

In the event of termination or reduction in the scope of work by the University, the University shall pay the Contractor for all work satisfactorily performed up to the effective date of termination or reduction in the scope of work, in accordance with the prices included in Contractor's bid less all partial payments made on account prior to the effective date of termination or reduction in the scope of work.

Upon termination as above, the Contract Administrator shall make final determination of the amount due the Contractor for work performed.

6.5.4 Termination by the Contractor

If, for any reason, the Contractor desires to terminate the Contract, he may do so upon giving written notice of sixty (60) days to the University. In the event of termination by the Contractor, the Contractor shall be governed by the terms and conditions, and shall perform all work required by the specifications until the termination date.

6.6 Subcontractors

6.6.1 All subcontractors must be identified and approved in writing in advance by the University. Contractor shall promptly pay all laborers, materialmen, subcontractors and suppliers for work performed pursuant to this contract.

ARTICLE 7

PRE-BID CONFERENCE

7.1 A **Mandatory** Pre-Bid Conference shall be held at the project site. Provisions for the site inspection are included as part of the **Mandatory Pre-Bid Conference to be held at Facility Services, Administration Building – Room 112. at 10:00 A.M. on June 13, 2024** . The Pre-Bid Conference shall also provide opportunity for a review of the Bidding Documents. The purpose of the Pre-Bid Conference is to familiarize Bidders with the requirements of the Project and the intent of the Bidding Documents, and to receive comments and information from interested Bidders.

7.2 Any revision of the Bidding Documents made as a result of the Pre-Bid Conference shall not be valid unless included in an addendum issued in accordance with Paragraph 3.4.1 of the Instructions to Bidders.

ARTICLE 8

QUALIFICATIONS

8.1 The Contractor shall be licensed by the Louisiana State Licensing Board for Contractors under Electrical, Telecommunications/Low Voltage; Specialty: Fire Protection Consultant.

ARTICLE 9

INSURANCE

9.1 The Contractor, prior to commencing work, shall provide at his expense, proof of insurance coverage with insurance companies licensed in the State of Louisiana. Insurance shall be placed with insurers with an A.M. Best's rating of no less than A-:VI.

9.2 Insurance requirements are set forth in "Exhibit A" of these documents.

EXHIBIT A

INSURANCE AND INDEMNIFICATION

Before commencing work, the other party (vendor/contractor and or subcontractor) shall obtain at its own cost and expense the following insurance in insurance companies authorized in the State, with an A.M. Best rating of A-:VI or better and shall provide evidence of such insurance to the University of New Orleans. The policies or certificates thereof, shall provide that thirty days prior to cancellation notices of same shall be given to the University of New Orleans by registered mail, return receipt requested, for all of the following stated insurance policies. All notices shall name the contractor and identify the agreement or contract number.

A. Worker's Compensation - Statutory - in compliance with the Compensation law of the State. Exception: Employers Liability is to be $1,000,000 when work is to be over water and involves maritime exposure. (A.M. Best's rating requirement mentioned above is waived of workers compensation coverage only.)

B. Commercial General Liability Insurance with a minimum limit of liability per occurrence of $1,000,000 for bodily injury and property damage. This insurance shall show on the certificate of insurance which of the following coverages is not included in the policy, if any:

1. Premises - Operations
2. Broad Form Contractual Liability
3. Products and Completed Operations
4. Use of Contractors and Subcontractors
5. Personal Injury
6. Broad Form Property Damage

C. Automobile Liability Insurance with a minimum limit of liability per occurrence of $1,000,000 for bodily injury and property damage unless otherwise indicated in the contract specifications. This insurance shall include for bodily injury and property damage the following coverages:

1. Owned automobiles
2. Hired automobiles
3. Non-owned automobiles

Note: If the vendor/contractor does not own an automobile and an automobile is utilized in the execution of the contract, then only hired and non-owned coverage is acceptable. If an automobile is not utilized in the execution of the contract, then automobile coverage is not required.

Location of operation shall be "All Locations".

D. Other Party's Professional Liability. The other party shall provide such insurance. (Minimum limits of $1,000,000). Required in the "Special Conditions" of the contract specification.

E. If at any time any of the policies shall become unsatisfactory to the University of New Orleans as to form or substance, or if a company issuing any such policy shall become unsatisfactory to the University of New Orleans, the other party shall obtain a new policy, submit the same to the University of New Orleans for approval and submit a certificate of insurance as required. Upon failure of the other party to furnish, deliver and maintain such insurance as above provided, this contract at the election of the University of New Orleans may be forthwith declared suspended, discontinued or terminated. Failure of the other party to take out and/or maintain any required insurance, shall not relieve the other party from any liability under the contract, nor shall the insurance requirements be construed to conflict with the obligations of the other party concerning indemnification.

F. All policies and certificates of insurance of the other party shall reflect the following:

1. The other party's insurer will have no right of recovery or subrogation against the University of New Orleans, it being the intention of the parties that the insurance policies so affected shall protect both parties and the primary coverage for any and all losses covered by the described insurance.

2. The University of New Orleans shall be named as an "additional insured" as regards negligence by the contractor. (ISO Form CG 20 10 11 85).

3. The insurance companies issuing the policy or policies shall have no recourse against the University of New Orleans for payment of any premiums or for assessments under any form of policy.

G. The following Indemnification Agreement shall be, and is hereby, a provision of the contract:

The other party agrees to protect, defend, indemnify, save and hold harmless the University of New Orleans, its officers, agents, servants and employees, including volunteers, from and against any and all claims, demands, expense and liability arising out of injury or death to any person or the damage, loss of destruction of any property which may occur or in any way grow out of any act or omission of the other party, its agents, servants, and employees, or any and all costs, expense and/or attorney fees incurred by the other party as a result of any claim, demands, and/or causes of action except of those
claims, demands, and/or causes of action arising out of negligence of the University of New Orleans, its agents, representatives, and/or employees. The other party agrees to investigate, handle, respond to, provide defense for and defend any such claims, demand, or suit at its sole expense and agrees to bear all other costs and expenses related thereto, even if it (claims, etc.) is groundless, false or fraudulent.

H. Any and all deductibles in the below described insurance policies shall be assumed by and be for the amount of, and at the sole risk of the other party.

I. The insurance companies issuing the policy or policies shall have no recourse against the University of New Orleans for payment of any premiums or for assessments under any form of policy.

J. All property losses shall be made payable to and adjusted with the University of New Orleans.

K. Neither the acceptance of the completed work nor payment therefor shall release the contractor/subcontractor from his obligations from the insurance requirements or indemnification agreement.

L. Additional insurance may be required on an individual basis for extra hazardous contracts and specific service agreements. If such additional insurance is required for a specific contract, that requirement will be described in the "Special Conditions" of the contract specifications.

M. If any of the Property and Casualty insurance requirements (Exhibit A of B) are not complied with at their renewal dates, payments to the contractor/subcontractor may be withheld until those requirements have been met, or at the option of the University of New Orleans, the University of New Orleans may pay the Renewal Premium and withhold such payments from any monies due the contractor/subcontractor.

EXHIBIT A

INSURANCE AND INDEMNIFICATION

INSURANCE REQUIREMENTS FOR CONTRACTORS

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the contractor, his agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the contractor's bid.

A. MINIMUM SCOPE OF INSURANCE

Coverage shall be at least as broad as:

1. Insurance Services Office form number GL 0002 (Ed. 1/73) covering Comprehensive General Liability and Insurance Services Office form number GL 0404 covering Broad Form Comprehensive General Liability; or Insurance Services Office Commercial General Liability coverage ("occurrence" form CG 0001). **"Claims Made" form is unacceptable. The "occurrence form" shall not have a "sunset clause".**

2. Insurance Services Office form number CA 0001 (Ed. 1/78) covering Automobile Liability and endorsement CA 0025 or CA 0001 12 90. The policy shall provide coverage for owned, hired, and non-owned coverage. If an automobile is to be utilized in the execution of this contract, and the vendor/contractor does not own a vehicle, then proof of hired and non-owned coverage is sufficient.

3. Worker's Compensation insurance as required by the Labor Code of the State of Louisiana, including Employers Liability insurance.

B. MINIMUM LIMITS OF INSURANCE

Contractor shall maintain limits no less than:

1. Commercial General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage.

2. Automobile Liability: $1,000,000 combined single limit per accident, for bodily injury and property damage.

3. Workers Compensation and Employers Liability: Workers' Compensation limits as required by the Labor Code of the State of Louisiana and Employers Liability coverage. Exception: Employers liability limit is to be $1,000,000 when work is to be over water and involves maritime exposure.

C. DEDUCTIBLES AND SELF-INSURED RETENTIONS

Any deductibles or self-insured retentions must be declared to and approved by the University of New Orleans. At the option of the University of New Orleans, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the University of New Orleans, its officers, officials, employees and volunteers; or the contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

D. OTHER INSURANCE PROVISIONS

The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverages

   a. The University of New Orleans, its officers, officials, employees, Boards and Commissions and volunteers are to be added as "additional insureds" as respects liability arising out of activities performed by or on behalf of the contractor; products and completed operations of the contractor, premises owned, occupied or used by the contractor. The coverage shall contain no

      special limitations on the scope of protection afforded to the University of New Orleans, its officers, officials, employees or volunteers. It is understood that the business auto policy under "Who is an Insured" automatically provides liability coverage in favor of the State of Louisiana.

   b. Any failure to comply with reporting provisions of the policy shall not affect coverage provided to the University of New Orleans, its officers, officials, employees, Boards and Commissions or volunteers.

   c. The contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

2. Workers' Compensation and Employers Liability Coverage

   The insurer shall agree to waive all rights of subrogation against the University of New Orleans, its officers, officials, employees and volunteers for losses arising from work performed by the contractor for the University of New Orleans.

3. All Coverages

   Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, or reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the University of New Orleans.

E. ACCEPTABILITY OF INSURERS

Insurance is to be placed with insurers with a Best's rating of no less than A-:VI. This requirement will be waived for worker' compensation coverage only.

F. VERIFICATION OF COVERAGE

Contractor shall furnish the University of New Orleans with certificates of insurance affecting coverage required by this clause. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates are to be received and approved by the University of New Orleans before work commences. The University of New Orleans reserves the right to require complete, certified copies of all required insurance policies, at any time.

G. SUBCONTRACTORS

Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

INDEMNIFICATION AGREEMENT

The _____ agrees to protect, defend, indemnify, save, and hold harmless the
{Contractor/Subcontractor/Lessee/Supplier}

State of Louisiana, all State Departments, Agencies, Boards and Commissions, its officers, agents, servants and

employees, including volunteers, from and against any and all claims, demands, expenses and liability arising out of

injury or death to any person or the damage, loss or destruction of any property which may occur or in any way

grow out of any act or omission of _____ , its agents, servants, and
{Contractor/Subcontractor/Lessee/Supplier}

employees, or any and all costs, expenses and/or attorney fees incurred by

_____ as a result of any claims, demands, and/or causes of action except
{Contractor/Subcontractor/Lessee/Supplier}

those claims, demands, and/or causes of action arising out of the negligence of the State of Louisiana, all State

Departments, Agencies, Boards, Commissions, its agents, representatives, and/or employees.

_____ agrees to investigate, handle, respond to, provide defense for and
{Contractor/Subcontractor/Lessee/Supplier}

defend any such claims, demands, or suits at its sole expense and agrees to bear all other costs and expenses

related thereto, even if they (claims, etc.) are groundless, false or fraudulent.

Accepted by _____
Company Name

_____
Signature

_____
Title

Date Accepted _____

Is Certificate of Insurance Attached? _____Yes _____No

Contract No. _____ for _____
State Agency Number and Name

PURPOSE OF CONTRACT:_____

_____

_____

_____

TECHNICAL SPECIFICATIONS

UNIVERSITY of NEW ORLEANS

_____

YSC5265

TECHNICAL SPECIFICATIONS

UNIVERSITY of NEW ORLEANS

_____

YSC5265

BID FORM

BID DATE: JUNE 28, 2024

TO: The University of New Orleans
Purchasing Office
Administration Annex Building, Room 1004G
2000 Lakeshore Drive
New Orleans, Louisiana 70148-0001

PROPOSAL FOR: **CLEAN AGENT SUPPRESSION SYSTEMS INSPECTION & MAINTENANCE YEARLY CONTRACT**

Sealed Bid Number BTB 2809

THE BIDDER: _____

_____

_____

acknowledges receipt of the following

ADDENDA: No.____ Dated:_____ No.___ Dated:_____

No.____ Dated:_____ No.___ Dated:_____

THE BIDDER: hereby declares and represents that he; a) has carefully examined the Bidding Documents, b) has a clear understanding of the Bidding Documents, c) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, d) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services under this contract, all in accordance with the Bidding Documents as prepared by the University Purchasing Office and Facility Services.

REJECTION OF BIDS: The Bidder understands that the University reserves the right to reject any or all bids for just cause.

WITHDRAWAL OF BIDS: The Bidder agrees that this bid shall be good and may not be withdrawn for a period of thirty (30) calendar days after the scheduled closing time for receiving bids except in accordance with the provisions of R.S. 39:1594,F. This bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

BID Item "A": $_____/year

_____

(Bid in Words)

COMPUTER CENTER	$_____/year
ENGINEERING BUILDING	$_____/year
HAZARDOUS STORAGE	$_____/year
TOTAL	$_____/year

Bid Item "B"-Unit Prices:

Straight Time:	$_____/hour
Overtime Rate:	$_____/hour
Holiday Rate:	$_____/hour

Holiday rate should be the same as overtime rate

Material: _____% less list price

It is **mandatory** that contractors bid Items "A" and "B". The University will accept only those bids where all Bid Items ("A" and "B") are properly addressed.

NAME OF BIDDER: _____

BY: _____
(signature)

_____
(typed or printed)

TITLE: _____

ADDRESS: _____

_____

DATED: _____

TELEPHONE NO: (____) _____

FAX NO: (____) _____

Award Model
Clean Agent Suppression Systems
Yearly Service Contract
YSC5265

Bid Item "A"	85%
Campus Building Listing	
Bid Item "B"	15%

Unit Prices Percentage Breakdown for Item "B"

Straight Time	5%
Overtime Rate	4%
Holiday Rate	2%
Material Cost	4%

TECHNICAL SPECIFICATIONS

UNIVERSITY of NEW ORLEANS

_____

YSC5265

SECTION 01000

GENERAL CONDITIONS

The general conditions of these Specifications, including amendments and additions thereto, apply to each and every heading included in these Specifications with the same force as though repeated in full under each heading respectively.

1.01 SCOPE

This contract provides for the inspection, maintenance and repair to the clean agent fire suppression systems in the Computer Center, Hazardous Storage Building and Engineering Building. Inspections are semi-annual and will be coordinated through the University Representative.

Bid Item "A": All work described in these documents.

Bid Item "B": Unit prices for labor (straight, overtime, and holiday), material mark up to cover those items of work, and system elements not covered by the work called for in Item "A". (For the work that may be due to factors over and above what is covered as specified herein as per Bid Item "A".)

Contract Time: Will be for one (1) calendar year with the option if to renew for four (4) consecutive twelve (12)-month periods if mutually agreeable.

Provide the labor, equipment and supervision necessary and reasonably incidental to this task, all in accordance with these Specifications.

Bid Evaluation: Determination of the Low Bidder shall be on the basis of bid amount and all required documents shall be enclosed at the time of the bid opening.

1.02 MANDATORY SITE INVESTIGATION

It is requested that prospective bidders visit the site to make measurements, review existing conditions, and if required, review the Building Plans on file in the Facility Services Office if the prospect warrants same. A thorough understanding of the project per these Technical Specifications and/or accompanying drawings is imperative. Opportunity for the site visit and inspection is provided under Article 7 of the "INFORMATION FOR BIDDERS.

1.03 REVIEW OF DOCUMENTS

The Contractor shall carefully study and compare the field conditions, Drawings and Specifications and shall at once report to the University Representative errors, inconsistencies or omissions discovered.

1.04 PROJECT MEETINGS

If called by the University Representative, a Pre-Service Conference between the Contractor, his on-site representative and the University Representative will be held in order to clarify and direct University policy and specific items of concern as pertain to the Contract. Progress meetings will be scheduled at the discretion of the University Representative.

1.05 COORDINATION

Coordinate service schedule with the University Representative so as not to interfere with the ongoing operation of the University. If for any reason, shut down of utilities is required on this project, it is imperative that the University Representative be consulted.

1.06 SUPERVISION

The Contractor shall provide consistent, capable supervision at all times during the work. Site Manager or company representative shall be available during normal working hours of 8:00 am to 5:00 pm and be NICET level IV certified.

1.07 SUBSTITUTIONS

Substitutions to specified materials require approval of the University Representative (see Instructions to Bidders: Article 3.3).

1.08 SUBMITTALS

Submit all required shop drawings, brochures and samples for review by the University Representative prior to ordering and/or installing materials. Equipment or material ordered and/or installed without review by the University Representative is subject to rejection.

Shop Drawings: Submit one (1) sepia and two (2) blue line prints. The sepia and one (1) print will be returned.

Brochures, Cut Sheets, and Technical Data: Submit four (4) copies. Two (2) will be returned.

Samples: Submit one (1) each to be retained by the University.

1.09 CLEANUP

Daily, as it accumulates, remove from the work site, all rubbish, debris and unsalvageable material resulting from the work. Do not permit trash to accumulate. Do not use individual building dumpsters for trash disposal.

1.10 OUALITY ASSURANCE

Use new materials of quality acceptable to the University Representative and meeting all applicable regulations as pertains to this project. Remove and replace all material delivered to site which, in the opinion of the Representative, does not meet specifications and quality.

The University expects quality workmanship and only those who are qualified to perform the tasks in their respective trades are acceptable. The term qualified above is understood to mean "Journeymen" skilled in their respective trades. Correct, at no expense to the University, any work performed which, in the opinion of the University Representative, is found unacceptable or not according to code. Corrections or incomplete work must be rectified within twenty-four (24) hours of notification

1.11 TRAFFIC CONTROL

Coordinate the schedule of delivery vehicles which will interfere with normal campus traffic. When deliveries are made from the street curb, provide sufficient properly attired and equipped flagmen to safely control and maintain the flow of traffic. It is the policy of the University of New Orleans to provide full access to all disabled individuals in all areas possible. Because of this commitment,

contractors, vendors or servicing agencies are cautioned to ensure that their staff is made aware of this commitment. When parking on the campus of this University, it shall be the responsibility of the contractor, vendor or servicing agency to ensure that no sidewalks or access ways are blocked at any time. If temporary blocking is required, the Contractor, shall assume the responsibility for the safe transit of all disabled persons.

1.12 PROTECTION

Protect adjacent buildings and building elements from damage during site work. Protect the site, including trees, shrubs, vegetation and lawn areas; where damage does occur, restore to original condition replacing damaged vegetation and lawn with equal size and species. Store construction materials with care; distribute the weight to not endanger the building structure.

1.13 SAFETY

Provide sufficient signs continuous barricades to identify the work site and restrict entry. Where necessary, equip barricades with warning lights for night use. Provide measures necessary to ensure and maintain security at the work site; protect from theft, vandalism, personal injury, and property damage. Erect and maintain temporary enclosures and barriers to prevent unauthorized access to the site. Provide fire protection equipment during the construction period, including not less that two (2) ten (10) pound capacity multipurpose A-B-C dry chemical extinguishers (10A:40BC). Where indicated on the Drawings, provide a temporary fence to isolate the construction site and restrict unauthorized entry. Use chain link fence material, 6'-0 minimum height, on steel or wood posts spaced a 6'-0 maximum and embedded 2'-6 minimum below existing grade; include personnel and/or equipment access gates. Coordinate fence installation with underground utilities - see 1.11; before installation, confirm fence location and layout with the University Representative.

1.14 WARRANTY

Warranty all workmanship and material for a period of one year from date of acceptance. During this period, the University will notify the Contractor of any discrepancy for prompt correction at no expense to the University. At the discretion and initiation of the University Representative, a one-year warranty review meeting with the Contractor will be held to review warranty items which remain incomplete.

1.15 TEMPORARY UTILITIES

The Contractor may use reasonable amounts of the utility services available to the site at no charge from the University. The University will not provide utility service beyond that existing. Coordinate tie-in and disconnect to the existing utilities with the University Representative. Locate temporary facilities so as not to interfere with the University's use of the Project site and/or surrounding areas. Relocate non-complying facilities at no expense to the University.

1.16 TEMPORARY SANITARY FACILITIES

Existing facilities in the building may be used by construction personnel during work on this project.

END

SECTION 15050 – GENERAL MECHANICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

A. The work to be done under this heading includes the furnishing of labor, materials, equipment, and service necessary for and reasonably incidental to the proper completion of all mechanical work as shown on the drawings and herein specified.

B. Visit and examine the job site, and with all authorities concerned in order to become familiar with all existing conditions pertinent to the work to be performed thereon. No additional compensation will be allowed for failure to be so informed. Pay all costs and fees for utility connections.

C. Materials and equipment shall be new, except where otherwise indicated, of the best quality, with same brand of manufacturer for all similar material.

D. All work shall be performed in a neat and workmanlike manner, and in accordance with all codes, standards, and requirements of the industry.

E. In general, provide the installation of piping, fittings, equipment, etc.

F. Regardless of titles and subdivisions herein employed, consider these specifications as one complete document with General Section applying to all other sections. All bidders are cautioned to read entire specifications and to thoroughly familiarize themselves with all requirements thereof.

G. Check all specifications and all drawings and bring to attention any conflicts or variations as shown as noted.

H. Specifications and accompanying drawings apply to all contracts or sub-contracts entered into for supplying material or labor for construction of work specified herein and shown on drawings.

I. Protect Owner and his agents including Construction Manager, Architect and/or Engineer from any and all damages and expense arising from fulfillment of contract and at completion of work repair all damages done.

J. For any points which are not clear, or for items and/or details which the Contractor feels are in need of clarification, consult the Architect before submission of a proposal.

K. The drawings and the specifications are complementary and what is shown and/or called for on one shall be furnished and installed the same as if shown and/or called for in the other.

L. In case of discrepancies and/or ambiguities in the drawings and/or in the specifications, the Architect shall be consulted prior to submission of a proposal. Failure to do so on the part of the successful bidder shall be construed as explicit agreement on his part to abide by the Architect's decision in such matters.

M. The word "provide" as used in these Specifications and on the Drawings shall be termed to mean "furnish and install".

N. Contractor shall include in base bid the connection of all sewer, and water piping to mains as shown on the drawings. Contractor shall include all material and all costs for complete installation, including meter fees and connection fees.

O. If the Contractor notices during the bidding any items of the contract documents which will violate any applicable code, these items shall be brought to the attention of the Architect before the bid date. Failure to bring these items to the attention of the Architect shall be construed as explicit agreement that the Contractor has included in his bid price any and all modifications necessary to complete the project in accordance with all applicable codes.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. All exposed piping and other equipment requiring painting will be painted under PAINTING SECTION. Leave all these surfaces clean of oil, dirt, plaster, etc., ready for painting section's work.

B. Power wiring for all equipment shall be done under ELECTRICAL SECTION.

C. Piping penetrations through fire rated partitions/floors shall be fire sealed in accordance with the UL fire resistance directory. See Sealant Specification for materials. The integrity of the fire rating, as indicated on the architectural drawings, shall be maintained.

1.4 QUALITY ASSURANCE

A. The Contractor bidding on this portion of the work must be fully experienced in installations of equal size, complexity, and quality, and must be licensed to

perform such work as required by the Louisiana State Legislature, R.S.37:2152-2163.

B. In bidding he acknowledges that he fully understands the scope of work and design, and has the ability for the contract price to assemble and install the equipment, piping and ductwork shown or specified, so as to mold same into a satisfactory workable system and arrangement.

C. Contractor shall recognize that a fault or error in his work remains his responsibility regardless of whether such difficulty was discovered after the work had progressed, and shall make corrections at no cost to the Owner.

D. Adequate and competent constant supervision shall be provided by Contractor to assure that work is done in accordance with good standard practice and workmanship and with intent of drawings and specifications. Contractor shall recognize that amount of information and detail could be provided to contract documents is limitless and could extend into every minute detail and sequence of operations, to a point where only workmen would be required, without drawing on ability, experience and ingenuity of the Contractor.

E. All work shall be installed in strict accordance, with all existing local and state codes and ordinances, with National Board of Fire Underwriters

F. This Contractor shall secure all permits and inspections and shall pay all fees and taxes and shall provide Owner with certificates of approval from agencies having jurisdiction over various phases of work.

G. Contractor shall maintain and service all equipment until time of acceptance by Owner.

1.5 SUBMITTALS

A. Shop Drawings and Submittal Data required:

1. Submit to the Architect for review, complete descriptive information and dimensional data on all items of equipment, materials and accessories, including duct, equipment and sprinkler layouts. Piecemeal submissions shall not be approved. Written approval thereof must be obtained before ordering or installation. The following shall be submitted:

   Gas Piping
   Valves and Fittings
   Valve Box and Covers
   Insulation
   Pipe Layout Drawings

2. Shop drawings and submittal data shall be considered to be instruments of service only and submitted for the sole purpose of convenience to the Contractor to assist him in the performance of the contract. The Architect's review of the shop drawings and submittal data shall not supersede these specifications, the accompanying drawings, or the contract terms, unless specifically covered by a properly executed change order, and then only to the extent specifically and explicitly stipulated therein.

3. Submit in accordance with requirements of Architectural Sections, Division 1.

B. After completion of project Contractor shall turn over to the Architect complete operating and maintenance instructions including listing of supply and repair items and locations of places to purchase same. Comply with requirements of Division 1 Sections.

C. Substitutions:

1. All material, equipment, methods, and accessories entering into the work under this section of contract are subject to approval or disapproval of the Owner. Approval of any manufacturer, material, or product shall not constitute a waiver of Owner's right to demand full compliance with contract requirements, including shape, size, quality and performance.

2. Equality of materials is that established by opinion of Owner. Decision of Owner is final.

3. Whenever a material or article of equipment is specified by use of a proprietary name, or by naming the manufacturer or vendor, any material or article which will perform adequately the duties imposed by the design will be considered for substitution, providing it is of equal substance, and function, meets specifications, and is aesthetically acceptable to the Owner. Refer to Division 1 Sections for approval procedures.

4. Literature, technical data, etc., includes complete data and samples if necessary, with submissions for substitutions. Burden of proof that material offered for substitution is equal, or superior, in construction and efficiency to that named, rests on Contractor, and unless proof is satisfactory to Architect, substitution will not be approved.

D. See Specifications for "As-Built" requirements.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

Take necessary precautions to protect all material, equipment, apparatus and work from damage. Failure to do so to the satisfaction of the Architect will be sufficient cause for the rejection of the material, equipment or work in question. Contractor

is responsible for the safety and good condition of the materials installed until final acceptance by the Owner.

1.7 JOB CONDITIONS

A. Accompanying drawings, including plans, details, diagrams, notes, etc., are shown to limit and explain structural conditions, construction requirements, sizes, capacities and method of installation and erection. Structural and other conditions may require certain modifications and adjustments from conditions shown. Such deviations are permissible; however, specific sizes capacities and requirements affecting the satisfactory performance and operation of the installation shall remain unchanged. Make allowance for normal job conditions and interferences.

B. Whenever it becomes necessary to shift ducts or pipes or to change shape of ducts, such changes shall be referred to Architect for approval.

C. Ask for details whenever uncertain about method of installation. Lack of details not requested shall not excuse improper installation and correction shall be responsibility of Contractor.

D. Schedule and perform all mechanical work to avoid delays to the Contractor and other trades.

E. In addition to the basic work covered under this contract, the Contractor shall plan and schedule the work to permit continuous operation of essential services of existing facilities. Planning shall also include scheduling necessary interruptions of service on water lines, drain lines, etc., to existing building at times when such interruptions will cause minimum interference with existing routine and services. All such interruptions shall be made only after consultation with the Owner. This is extremely important since included in the work is a relocation and rerouting of and connecting to existing facilities, piping, etc. No additional compensation will be allowed for failure to be so informed.

F. It is essential that all adjacent areas of the school be kept in operation at all times, except when specific permission is given to contrary. Before any lines or equipment are shut down for disconnecting, tie-ins, or rearranging of services, make arrangements with Architect to do this work at night, or Sunday, or at special time of day or year with length of shutdown agreed upon before work is begun. Contractor to bear any overtime or work costs in the connection.

G. All piping, cleanouts and covers, and other mechanical items in way of construction or remodeling, shall be rerouted, relocated or otherwise adjusted to work out with such construction or changes shown or specified in any or all of various sections of specifications. Unknown piping that is encountered will

be referred immediately to Architect for method of disposition before continuation of work.

H. The Contractor shall review the architectural drawings to become familiar with the phasing of construction required for this project.

1.8 GUARANTEE AND SERVICE

A. Guarantee all equipment, materials, and workmanship for a period of one (1) year following date of acceptance.

B. During the period of guarantee any defects in equipment, materials, or workmanship shall be promptly corrected without cost to the Owner.

C. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Any deficiencies in equipment capacity specified shall be promptly corrected.

D. Guarantee does not include maintenance items.

PART 2 - PRODUCTS

2.1 TOOLS AND SCAFFOLDING

Furnish all tools, equipment, scaffolding and other facilities required to properly and expeditiously perform the work.

2.2 SLEEVES AND THIMBLES

A. Pipe sleeves - wrought iron or cast iron of sufficient size for piping and installation to be installed in floors, walls below grade, and grade beams where piping passes through.

B. Thimbles above grade - heavy galvanized steel of proper size to allow freedom of piping and insulation, set in floor or roof slab as work progresses, also to be installed in wall and partitions where piping passes through.

C. Thimbles below grade - same as pipe sleeves above.

D. Sleeves through floors extend 1/4" above finished floor. Caulk around and seal all piping in chases and piping passing through floor slab.

E. Provide sleeve seals and shields for all pipe penetrations of ground floor slab.

F. Provide fire-stopping in all pipe penetrations of rated floors and walls, see Architectural Specifications for Requirements.

2.3 BUCKS, GROUNDS AND CHASES

A. Be responsible for proper location and sizes or for any errors or omission in placing same.

B. Failure to inform the General Contractor promptly of such requirements shall not relieve the Mechanical installer of the responsibility for providing a complete mechanical system.

2.4 HANGERS

A. Horizontal piping above grade without hubs shall be rigidly supported. Distance between pipe supports:

1. 1/2" pipe	6'-0" maximum
2. 3/4" pipe	7'-0" maximum
3. 1" pipe	8'-0" maximum
4. 1 1/4" pipe	9'-0" maximum
5. 1 1/2" pipe and over	10'-0" maximum

B. Hangers shall be similar to "Split Ring" type.

C. Metal strap or wire will not be acceptable.

D. For two or more systems of piping run parallel and with same grade trapeze hangers may be used.

E. Use #22 gauge galvanized sheet steel saddles between the pipe covering and each pipe hanger on all insulated lines. Saddles shall extend along pipe runs and at least half way up piping on each side.

2.5 PAINTING AND IDENTIFICATION

A. Equipment, including pumps, motors, and similar factory fabricated and assembled units shall be furnished with factory applied protective prime coat paint of finished baked enamel. Equipment surfaces damaged during course of construction or shipment shall be refinished by the Mechanical Contractor.

B. Uncoated black ferrous piping and fittings shall be cleaned under this section and painted with one coat of enamel paint under PAINTING SECTION. Color of piping shall be selected by Architect. Hangers and supports shall be coated by dipping or brush painting with one coat of asphalt varnish. Steel frame equipment supports shall be cleaned and painted with one coat of aluminum paint.

C. Detached motor controllers, disconnects, etc., shall be identified with metal or plastic plates with etched letters to completely identify service of electrical equipment.

D. Major control and sectionalizing valves shall be identified by means of etched brass plates bracketed to valve handle. Contractor shall prepare schedule of such identifying plates for Architect's approval.

PART 3 - EXECUTION

3.1 EXCAVATION, TRENCHING AND BACKFILL

A. The Contractor shall perform all excavation of every description and of whatever substances encountered to the depths indicated on the drawings. During excavation material suitable for backfill shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All material not suitable for backfilling shall be removed completely from job site. Such shoring shall be done as hereinafter specified.

B. Trenches shall be of necessary width for the proper laying of the pipe and the banks shall be as nearly vertical as practicable. The bottom of the trenches shall be accurately graded to provide uniform bearing and support. Bottom of trenches shall have 6" layer of compacted limestone aggregate. Care shall be taken to provide uniform bearing and support.

C. Bell holes and depressions for joints shall be dug after compaction and grading in order that the pipe will be supported along its entire length. Whenever wet or otherwise unstable soil that is incapable of receiving the bottom preparation and support piping, as determined by the Engineer, is encountered, such soil shall be removed to the depth required and the trench backfilled to the proper grade with river sand.

D. All shoring required to perform and protect the excavation, and as required for the safety of employees, shall be installed. The sides of the trenches, four (4') feet or less shall be protected as required. For trenches more than four (4') feet in depth, the sides shall be secured by the use of continuous sheet piling and shall be not less than two (2") inches in thickness.

E. The trenches shall not be backfilled until all required pressure tests are performed and until the certificates of inspection from the proper authorities are obtained by the Contractor. The trenches shall be carefully backfilled with the excavated materials approved for backfilling consisting of earth, loam, sandy clay, sand and gravel, or other approved materials free from large clods of earth or stone, deposited in six (6") inch layers and thoroughly and carefully rammed until the pipe has a cover of not less than two (2') feet. The remainder

of the backfill material shall then be thrown into the trench in one (1') foot layers and tamped. Any trench improperly backfilled, or where settlement occurs, shall be reopened to the depth required for proper compaction, then refilled and compacted, with the surface restored to the required grade and compaction, mounded over, and smoothed off. Sidewalks, drives and streets broken up by this work shall be repaired and returned to original condition.

3.2 FLASHING AND COUNTERFLASHING

All pipes and ducts that pass through roof and walls shall run so as not to interfere with the structural system and to permit proper application of base and counterflashing.

3.3 CLEANING, STERILIZING AND PIPING

A. When all work has been finally tested, Contractor shall clean all pipes and exposed work.

B. All pipes shall be free from all obstructions.

C. All plated and other finished products shall be thoroughly cleaned and polished.

D. All piping shall be installed so that it may expand and contract freely without damages to equipment, other work, or injury to piping system. All necessary swing joints, expansion joints, or offsets to protect piping, etc., shall be installed whether indicated or not. Piping shall be graded to allow for system drainage.

E. All piping shall be installed and sized as indicated on plans and be of equivalent materials to piping as hereinafter specified.

F. All piping Shall be installed with runs arranged parallels or perpendicular to walls and ceilings with symmetrical and equal spacings between parallel pipes. Offsets shall be made using factory fittings, bending of piping shall not be accepted.

G. Notify Engineer a minimum 72 hours prior to enclosing piping in concealed spaces so that piping may be inspected.

3.4 TESTING AND INSTRUCTION

A. Piping shall be tested to pressure hereinafter specified. Where pressures are not mentioned, it shall be understood that testing to 1-1/2 times service conditions, before insulation is applied, will be acceptable. All tests shall be held for a minimum of 24 hours before inspection.

B. Furnish all necessary gauges, pumps, test plugs, and temporary connections and shall test sections of the building as work progresses.

C. All new gas piping shall be tested to 50 PSI for a period of four hours.

D. All tests shall be made in the presence of the Architect or his representative. Where pipes or connections in new piping are found to leak, they shall be made tight and the tests repeated.

3.5 CUTTING AND PATCHING

Cooperate to the fullest extent with all other trades to reduce to a minimum the amount of cutting and patching of other work necessary for this installation. Do not cut or patch the work of other trades but arrange to provide cutting templates in time, or otherwise pay the respective other contractors for changing theirs, to accommodate this work. No cutting into any structural units likely to impair the strength shall be done without the approval of the Architect.

3.6 CLEAN UP

Remove debris, surplus and waste materials, oil, grease or stains resulting from the work performed and leave the premises in a broom clean condition AT THE END OF EACH WORKING DAY. All debris, surplus and waste material shall be removed completely from the job site.

3.7 WELDING

A. Codes and Standards

1. American Society of Mechanical Engineers (ASME) B31.1
2. ASME Boiler and Pressure Vessel Code – Section V and IX
3. American Welding Society (AWS) D10

B. Qualifications for Welding Work: The fabricator and/or installer shall qualify each welder or welding operator for the welding processes to be used during production and field welding. The performance qualification shall be in accordance with a qualified Welding Procedure Specification (WPS). The WPS shall be governed by the essential variables listed in ASME Section IX and AWS D10.9 as may be applicable for the welding processes for which the welder is being qualified. Provide certification that the welders performing work on this project are qualified in accordance with the WPS, as well as the parameters used in the qualification.

C. Welds shall be in accordance with ASME and AWS standards as qualified under ASME Section IX. Owner shall employ a testing agency to perform a visual inspection of 5% of the welds in accordance with ASME Section V. The following visual examination indications shall be deemed unacceptable and shall be corrected at Contractor's expense:

1. Cracks on external surfaces
2. Surface undercut greater than 1/32 inch deep
3. Weld reinforcement greater than specified in ASME Table 127.4.2
4. Lack of fusion on surface
5. Incomplete penetration

Future inspections for failed welds shall be tested at Contractor's expense.

END OF SECTION 15050

SECTION 15330 - FIRE-SUPPRESSION STANDPIPES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipes, fittings, and specialties.
2. Fire-protection valves.
3. Hose connections.
4. Fire-department connections.
5. Alarm devices.
6. Pressure gages.

B. Related Sections:

1. Division 15 Section "Wet-Pipe Sprinkler Systems" for wet-pipe sprinkler piping.
2. Division 15 Section "Dry-Pipe Sprinkler Systems" for dry-pipe sprinkler piping.
3. Division 15 Section "Electric-Drive, Centrifugal Fire Pumps " for fire pumps, pressure-maintenance pumps, and fire-pump controllers.
4. Division 16 Section "Digital, Addressable Fire-Alarm System" for alarm devices not specified in this Section.

1.2 SYSTEM DESCRIPTIONS

A. Automatic Wet-Type, Class I Standpipe System: Includes NPS 2-1/2 (DN 65) hose connections. Has open water-supply valve with pressure maintained and is capable of supplying water demand.

B. Automatic Wet-Type, Class II Standpipe System: Includes NPS 1-1/2 (DN 40) hose stations. Has open water-supply valve with pressure maintained and is capable of supplying water demand.

C. Automatic Wet-Type, Class III Standpipe System: Includes NPS 1-1/2 (DN 40) hose stations and NPS 2-1/2 (DN 65) hose connections. Has open water-supply valve with pressure maintained and is capable of supplying water demand.

D. Manual Dry-Type, Class I Standpipe System: Includes NPS 2-1/2 (DN 65) hose connections. Does not have permanent water supply. Piping is dry. Water must be pumped into standpipes to satisfy demand.

1.3 PERFORMANCE REQUIREMENTS

A. Fire-Suppression Standpipe System Component: Listed for 175-psig (1200-kPa) minimum working pressure.

B. Delegated Design: Design fire-suppression standpipes, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

1. Available fire-hydrant flow test records indicate the following conditions:

a. Date:
b. Time:
c. Performed by:
d. Location of Residual Fire Hydrant R:
e. Location of Flow Fire Hydrant F:
f. Static Pressure at Residual Fire Hydrant R:
g. Measured Flow at Flow Fire Hydrant F:
h. Residual Pressure at Residual Fire Hydrant R:

C. Fire-suppression standpipe design shall be approved by authorities having jurisdiction.

1. Minimum residual pressure at each hose-connection outlet is as follows:

a. NPS 1-1/2 (DN 40) Hose Connections: **65 psig (450 kPa)**
b. NPS 2-1/2 (DN 65) Hose Connections: **100 psig (690 kPa)**

2. Maximum residual pressure at required flow at each hose-connection outlet is as follows unless otherwise indicated:

a. NPS 1-1/2 (DN 40) Hose Connections: **100 psig (690 kPa)**
b. NPS 2-1/2 (DN 65) Hose Connections: **175 psig (1200 kPa)**

D. Seismic Performance: Fire-suppression standpipes shall withstand the effects of earthquake motions determined according to NFPA 13

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For fire-suppression standpipes. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

C. Delegated-Design Submittal: For standpipe systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

D. Qualification Data: For qualified Installer.

E. Approved Standpipe Drawings: Working plans, prepared according to NFPA 14, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.

F. Welding certificates.

G. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 14. Include "Contractor's Material and Test Certificate for Aboveground Piping" and "Contractor's Material and Test Certificate for Underground Piping."

H. Field quality-control reports.

I. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing fire-suppression standpipes and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.

B. Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. NFPA Standards: Fire-suppression standpipe equipment, specialties, accessories, installation, and testing shall comply with NFPA 14, "Installation of Standpipe and Hose Systems."

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

2.2 STEEL PIPE AND FITTINGS

A. Standard Weight, Galvanized and Black Steel Pipe: ASTM A 53/A 53M,. Pipe ends may be factory or field formed to match joining method.

B. Schedule 30, Galvanized and Black Steel Pipe: ASTM A 135; ASTM A 795/A 795M, SME B36.10M, wrought steel; with wall thickness not less than Schedule 30 and not more than Schedule 40. Pipe ends may be factory or field formed to match joining method.

C. Thinwall Galvanized and Black Steel Pipe: ASTM A 135 or ASTM A 795/A 795M, threadable, with wall thickness less than Schedule 30 and equal to or greater than Schedule 10. Pipe ends may be factory or field formed to match joining method.

D. Standard-Weight, Galvanized and Black Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, seamless steel pipe with threaded ends.

E. Galvanized and Uncoated, Steel Couplings: ASTM A 865, threaded.

F. Galvanized and Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

G. Malleable- or Ductile-Iron Unions: UL 860.

H. Cast-Iron Flanges: ASME B16.1, Class 125.

I. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.

J. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.

K. Grooved-Joint, Steel-Pipe Appurtenances:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Anvil International, Inc.
    b. Corcoran Piping System Co.
    c. National Fittings, Inc.
    d. Shurjoint Piping Products.
    e. Tyco Fire & Building Products LP.
    f. Victaulic Company.

2. Pressure Rating: **175 psig (1200 kPa)** minimum.
3. Galvanized and Uncoated, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.

4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face**, 1/8 inch (3.2 mm)** thick or ASME B16.21, nonmetallic and asbestos free.

1. Class 125, Cast-Iron Flat-Face Flanges: Full-face gaskets.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.4 LISTED FIRE-PROTECTION VALVES

A. General Requirements:

1. Valves shall be UL listed or FM approved.
2. Minimum Pressure Rating: 175 psig (1200 kPa).

B. Check Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. AFAC Inc.
    b. American Cast Iron Pipe Company; Waterous Company Subsidiary.
    c. Anvil International, Inc.
    d. Clow Valve Company; a division of McWane, Inc.
    e. Crane Co.; Crane Valve Group; Crane Valves.
    f. Crane Co.; Crane Valve Group; Jenkins Valves.
    g. Crane Co.; Crane Valve Group; Stockham Division.
    h. Fire-End & Croker Corporation.
    i. Fire Protection Products, Inc.
    j. Fivalco Inc.
    k. Globe Fire Sprinkler Corporation.
    l. Groeniger & Company.
    m. Kennedy Valve; a division of McWane, Inc.
    n. Matco-Norca.
    o. Metraflex, Inc.
    p. Milwaukee Valve Company.

q. Mueller Co.; Water Products Division.
r. NIBCO INC.
s. Potter Roemer.
t. Reliable Automatic Sprinkler Co., Inc.
u. Shurjoint Piping Products.
v. Tyco Fire & Building Products LP.
w. United Brass Works, Inc.
x. Venus Fire Protection Ltd.
y. Victaulic Company.
z. Viking Corporation.
aa. Watts Water Technologies, Inc.

2. Standard: UL 312.
3. Pressure Rating: 250 psig (1725 kPa) minimum.
4. Type: Swing check.
5. Body Material: Cast iron.
6. End Connections: Flanged or grooved.

C. Bronze OS&Y Gate Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Crane Co.; Crane Valve Group; Stockham Division.
c. Milwaukee Valve Company.
d. NIBCO INC.
e. United Brass Works, Inc.

2. Standard: UL 262.
3. Pressure Rating: 175 psig (1200 kPa).
4. Body Material: Bronze.
5. End Connections: Threaded.

D. Iron OS&Y Gate Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. American Cast Iron Pipe Company; Waterous Company Subsidiary.
b. American Valve, Inc.

c. Clow Valve Company; a division of McWane, Inc.
d. Crane Co.; Crane Valve Group; Crane Valves.
e. Crane Co.; Crane Valve Group; Jenkins Valves.
f. Crane Co.; Crane Valve Group; Stockham Division.
g. Hammond Valve.
h. Milwaukee Valve Company.
i. Mueller Co.; Water Products Division.
j. NIBCO INC.
k. Shurjoint Piping Products.
l. Tyco Fire & Building Products LP.
m. United Brass Works, Inc.
n. Watts Water Technologies, Inc.

2. Standard: UL 262.
3. Pressure Rating: 250 psig (1725 kPa) minimum.
4. Body Material: Cast or ductile iron.
5. End Connections: Flanged or grooved.

E. Indicating-Type Butterfly Valves:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Anvil International, Inc.
b. Fivalco Inc.
c. Global Safety Products, Inc.
d. Kennedy Valve; a division of McWane, Inc.
e. Milwaukee Valve Company.
f. NIBCO INC.
g. Shurjoint Piping Products.
h. Tyco Fire & Building Products LP.
i. Victaulic Company.

2. Standard: UL 1091.
3. Pressure Rating: 175 psig (1200 kPa) minimum.
4. Valves NPS 2 (DN 50) and Smaller:

a. Valve Type: Ball or butterfly.
b. Body Material: Bronze.
c. End Connections: Threaded.

5. Valves NPS 2-1/2 (DN 65) and Larger:

a. Valve Type: Butterfly.
b. Body Material: Cast or ductile iron.
c. End Connections: Flanged, grooved, or wafer.

6. Valve Operation: Integral electrical, 115-V ac, prewired, single-circuit, supervisory switch; electrical, 115-V ac, prewired, two-circuit, supervisory switch; visual indicating device.

2.5 HOSE CONNECTIONS

A. Adjustable-Valve Hose Connections:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. AFAC Inc.
      b. Elkhart Brass Mfg. Company, Inc.
      c. Fire-End & Croker Corporation.
      d. Fire Protection Products, Inc.
      e. GMR International Equipment Corporation.
      f. Guardian Fire Equipment, Inc.
      g. Potter Roemer.
      h. Tyco Fire & Building Products LP.
      i. Wilson & Cousins Inc.
      j. Zurn Plumbing Products Group; Wilkins Water Control Products Division.
   2. Standard: UL 668 hose valve, with integral UL 1468 reducing or restricting pressure-control device, for connecting fire hose.
   3. Pressure Rating: 300 psig (2070 kPa) minimum.
   4. Material: Brass or bronze.
   5. Size: NPS 1-1/2 or NPS 2-1/2 (DN 40 or DN 65), as indicated.
   6. Inlet: Female pipe threads.
   7. Outlet: Male hose threads with lugged cap, gasket, and chain. Include hose valve threads according to NFPA 1963 and matching local fire-department threads.
   8. Pattern: Angle or gate.
   9. Pressure-Control Device Type: Pressure reducing
   10. Design Outlet Pressure Setting: 150 **psig (kPa)**.
   11. Finish: Polished chrome plated or Rough brass or bronze

B. Nonadjustable-Valve Hose Connections:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. AFAC Inc.
      b. Elkhart Brass Mfg. Company, Inc.

c. Fire-End & Croker Corporation.
d. Fire Protection Products, Inc.
e. GMR International Equipment Corporation.
f. Guardian Fire Equipment, Inc.
g. Kennedy Valve; a division of McWane, Inc.
h. Mueller Co.; Water Products Division.
i. NIBCO INC.
j. Potter Roemer.
k. Tyco Fire & Building Products LP.
l. Wilson & Cousins Inc.

2. Standard: UL 668 hose valve for connecting fire hose.
3. Pressure Rating: 300 psig (2070 kPa) minimum.
4. Material: Brass or bronze.
5. Size: NPS 1-1/2 or NPS 2-1/2 (DN 40 or DN 65), as indicated.
6. Inlet: Female pipe threads.
7. Outlet: Male hose threads with lugged cap, gasket, and chain. Include hose valve threads according to NFPA 1963 and matching local fire-department threads.
8. Pattern: Angle or gate.
9. Finish: [**Polished chrome plated**] [**Rough brass or bronze**] [**Rough chrome plated**].

2.6 FIRE-DEPARTMENT CONNECTIONS

A. Flush-Type, Fire-Department Connection:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. AFAC Inc.
b. Elkhart Brass Mfg. Company, Inc.
c. GMR International Equipment Corporation.
d. Guardian Fire Equipment, Inc.
e. Potter Roemer.

2. Standard: UL 405.
3. Type: Flush, for wall mounting.
4. Pressure Rating: 175 psig (1200 kPa) minimum.
5. Body Material: Corrosion-resistant metal.
6. Inlets: Brass with threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, brass lugged swivel connections, and check devices or clappers.
7. Caps: Brass, lugged type, with gasket and chain.
8. Escutcheon Plate: Rectangular, brass, wall type.
9. Outlet: With pipe threads.

2.7 ALARM DEVICES

A. Alarm-device types shall match piping and equipment connections.

B. Water-Flow Indicators:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

      a. ADT Security Services, Inc.
      b. McDonnell & Miller; ITT Industries.
      c. Potter Electric Signal Company.
      d. System Sensor; a Honeywell company.
      e. Viking Corporation.
      f. Watts Industries (Canada) Inc.

   2. Standard: UL 346.
   3. Water-Flow Detector: Electrically supervised.
   4. Components: Two single-pole, double-throw circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.
   5. Type: Paddle operated.
   6. Pressure Rating: 250 psig (1725 kPa).
   7. Design Installation: Horizontal or vertical.

C. Valve Supervisory Switches:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

      a. Fire-Lite Alarms, Inc.; a Honeywell company.
      b. Kennedy Valve; a division of McWane, Inc.
      c. Potter Electric Signal Company.
      d. System Sensor; a Honeywell company.

   2. Standard: UL 346.
   3. Type: Electrically supervised.
   4. Components: Single-pole, double-throw switch with normally closed contacts.
   5. Design: Signals that controlled valve is in other than fully open position.

2.8 AAPRESSURE GAGES

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. AMETEK; U.S. Gauge Division.

b. Ashcroft Inc.
c. Brecco Corporation.
d. WIKA Instrument Corporation.

B. Standard: UL 393.

C. Dial Size: 3-1/2- to 4-1/2-inch (90- to 115-mm) diameter.

D. Pressure Gage Range: **0 to 250 psig (0 to 1725 kPa) minimum**

E. Water System Piping Gage: Include "WATER" or "AIR/WATER" label on dial face.

F. Air System Piping Gage: Include retard feature and "AIR" or "AIR/WATER" label on dial face.

2.9 ESCUTCHEONS

A. General: Manufactured ceiling, floor, and wall escutcheons and floor plates.

B. One-Piece, Cast-Brass Escutcheons: Polished chrome-plated finish with set-screws.

C. One-Piece, Deep-Pattern Escutcheons: Deep-drawn, box-shaped brass with chrome-plated finish.

D. One-Piece, Stamped-Steel Escutcheons: Chrome-plated finish with spring clips.

E. Split-Casting, Cast-Brass Escutcheons: Polished chrome-plated finish with concealed hinge and set-screw.

F. Split-Plate, Stamped-Steel Escutcheons: Chrome-plated finish with concealed hinge,

G. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

H. Split-Casting Floor Plates: Cast brass with concealed hinge.

2.10 SLEEVES

A. Cast-Iron Wall-Pipe Sleeves: Cast or fabricated of cast iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Galvanized-Steel-Sheet Sleeves: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.

C. Molded-PE Sleeves: Reusable, PE, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

D. Molded-PVC Sleeves: Permanent, with nailing flange for attaching to wooden forms.

E. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

F. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, standard weight, zinc coated, plain ends.

G. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with set-screws.

2.11 SLEEVE SEALS

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Metraflex, Inc.
d. Pipeline Seal and Insulator, Inc.

B. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.

1. Sealing Elements: EPDM-rubber or NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Carbon steel or Stainless steel.
3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating Stainless steel of length required to secure pressure plates to sealing elements.

2.12 GROUT

A. Standard: ASTM C 1107, Grade B, post hardening and volume adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink, and recommended for interior and exterior applications.

C. Design Mix: 5000-psi (34-MPa), 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SERVICE-ENTRANCE PIPING

A. Connect fire-suppression standpipe piping to water-service piping at service entrance into building. Comply with requirements for exterior piping in Division 21 Section "Facility Fire-Suppression Water-Service Piping."

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories at connection to fire-suppression water-service piping.

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water service.

3.2 WATER-SUPPLY CONNECTIONS

A. Connect fire-suppression standpipe piping to building's interior water-distribution piping. Comply with requirements for interior piping in Division 22 Section "Domestic Water Piping."

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories at connection to water-distribution piping

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water supply.

3.3 PIPING INSTALLATION

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

B. Piping Standard: Comply with requirements in NFPA 14 for installation of fire-suppression standpipe piping.

C. Install seismic restraints on piping. Comply with requirements in NFPA 13 for seismic-restraint device materials and installation.

D. Install listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

E. Install drain valves on standpipes. Extend drain piping to outside of building.

F. Install automatic (ball drip) drain valves to drain piping between fire-department connections and check valves. Drain to floor drain or outside building.

G. Install alarm devices in piping systems.

H. Install hangers and supports for standpipe system piping according to NFPA 14. Comply with requirements in NFPA 13 for hanger materials.

I. Install pressure gages on riser or feed main and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 (DN 8) and with soft-metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

J. Drain dry-type standpipe system piping.

K. Pressurize and check dry-type standpipe system piping.

L. Fill wet-type standpipe system piping with water.

M. Install electric heating cables and pipe insulation on wet-type, fire-suppression standpipe piping in areas subject to freezing. Comply with requirements for heating cables in Division 21 Section "Heat Tracing for Fire-Suppression Piping" and for piping insulation in Division 21 Section "Fire-Suppression Systems Insulation."

3.4 JOINT CONSTRUCTION

A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.

B. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller.

C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 (DN 65) and larger end connections.

D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

F. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.

G. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.

2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

H. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.

I. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.

J. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.

1. Shop weld pipe joints where welded piping is indicated. Do not use welded joints for galvanized-steel pipe.

K. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.5 VALVE AND SPECIALTIES INSTALLATION

A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 14 and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

3.6 HOSE-CONNECTION INSTALLATION

A. Install hose connections adjacent to standpipes.

B. Install freestanding hose connections for access and minimum passage restriction.

C. Install NPS 1-1/2 (DN 40) hose-connection valves with flow-restricting device.

D. Install NPS 2-1/2 (DN 65) hose connections with quick-disconnect NPS 2-1/2 by NPS 1-1/2 (DN 65 by DN 40) reducer adapter and flow-restricting device.

E. Install wall-mounted-type hose connections in cabinets. Include pipe escutcheons, with finish matching valves, inside cabinet where water-supply piping penetrates cabinet. Install valves at angle required for connection of fire hose. Comply with requirements for cabinets in Division 10 Section "Fire Extinguisher Cabinets."

3.7 FIRE-DEPARTMENT CONNECTION INSTALLATION

A. Install wall-type, fire-department connections.

B. Install automatic (ball drip) drain valve at each check valve for fire-department connection.

3.8 ESCUTCHEON INSTALLATION

A. Install escutcheons for penetrations of walls, ceilings, and floors.

B. Escutcheons for New Piping:

1. Piping with Fitting or Sleeve Protruding from Wall: One piece, deep pattern.
2. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One piece, cast brass with polished chrome-plated finish
3. Bare Piping at Ceiling Penetrations in Finished Spaces: One piece, cast brass with polished chrome-plated finish.
4. Bare Piping in Unfinished Service Spaces: One piece, cast brass with polished chrome-plated finish; cast brass with rough-brass finish; stamped steel with set-screw or spring clips.
5. Bare Piping in Equipment Rooms: One piece, cast brass; stamped steel with spring clips.
6. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece floor plate.

3.9 SLEEVE INSTALLATION

A. General Requirements: Install sleeves for pipes and tubes passing through penetrations in floors, partitions, roofs, and walls.

B. Sleeves are not required for core-drilled holes.

C. Permanent sleeves are not required for holes formed by removable PE sleeves.

D. Cut sleeves to length for mounting flush with both surfaces unless otherwise indicated.

E. Install sleeves in new partitions, slabs, and walls as they are built.

F. For interior wall penetrations, seal annular space between sleeve and pipe or pipe insulation using joint sealants appropriate for size, depth, and location of joint. Comply with requirements for joint sealants in Division 07 Section "Joint Sealants."

G. For exterior wall penetrations above grade, seal annular space between sleeve and pipe using joint sealants appropriate for size, depth, and location of joint. Comply with requirements for joint sealants in Division 07 Section "Joint Sealants."

H. Seal space outside of sleeves in concrete slabs and walls with grout.

I. Install sleeves that are large enough to provide [**1/4-inch (6.4-mm)**] annular clear space between sleeve and pipe or pipe insulation unless otherwise indicated.

J. Install sleeve materials according to the following applications:

1. Sleeves for Piping Passing through Concrete Floor Slabs: Galvanized-steel pipe
2. Sleeves for Piping Passing through Concrete Floor Slabs of Mechanical Equipment Areas or Other Wet Areas: Galvanized-steel pipe

    a. Extend sleeves [**2 inches (50 mm)**] above finished floor level.
    b. For pipes penetrating floors with membrane waterproofing, extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to [**2 inches (50 mm)**] above finished floor level. Comply with requirements for flashing in Division 07 Section "Sheet Metal Flashing and Trim."

3. Sleeves for Piping Passing through Gypsum-Board Partitions:

    a. Galvanized-steel-pipe sleeves for pipes smaller than NPS 6 (DN 150).
    b. Galvanized-steel-sheet sleeves for pipes NPS 6 (DN 150) and larger.
    c. Exception: Sleeves are not required for water-supply tubes and waste pipes for individual plumbing fixtures if escutcheons will cover openings.

4. Sleeves for Piping Passing through Concrete Roof Slabs: **Galvanized-steel pipe**
5. Sleeves for Piping Passing through Exterior Concrete Walls:

    a. **Galvanized-steel-pipe** sleeves for pipes smaller than NPS 6 (DN 150).
    b. **Cast-iron wall pipe** sleeves for pipes NPS 6 (DN 150) and larger.
    c. Install sleeves that are large enough to provide **1-inch (25-mm)** annular clear space between sleeve and pipe or pipe insulation when sleeve seals are used.

6. Sleeves for Piping Passing through Interior Concrete Walls:

    a. **Galvanized-steel-pipe** sleeves for pipes smaller than NPS 6 (DN 150).
    b. **Galvanized-steel-sheet** sleeves for pipes NPS 6 (DN 150) and larger.

K. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestop materials and installations in Division 07 Section "Penetration Firestopping."

3.10 SLEEVE SEAL INSTALLATION

A. Install sleeve seals in sleeves in exterior concrete walls at water-service piping entries into building.

B. Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble sleeve seal components and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.11 IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 14.

B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.12 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Flush, test, and inspect standpipe systems according to NFPA 14, "System Acceptance" Chapter.
4. Energize circuits to electrical equipment and devices.
5. Coordinate with fire-alarm tests. Operate as required.
6. Coordinate with fire-pump tests. Operate as required.
7. Verify that equipment hose threads are same as local fire-department equipment.

C. Fire-suppression standpipe system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.13 PIPING SCHEDULE

A. Piping between Fire-Department Connections and Check Valves: Galvanized, standard-weight steel pipe with threaded ends; cast-iron threaded fittings; and threaded; grooved ends; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

B. Wet-type, fire-suppression standpipe piping, **NPS 4 (DN 100) and smaller range**, shall be **one of** the following:

1. **Standard-weight or Schedule 30**, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.
2. **Standard-weight Schedule 30 or thinwall**, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
3. **Standard-weight or Schedule 30**, black-steel pipe with grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
4. **Standard-weight or Schedule 30**, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
5. **Standard-weight or Schedule 30**, black-steel pipe with plain ends; steel welding fittings; and welded joints.
6. Thinwall black-steel pipe with roll-grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
7. Thinwall black-steel pipe with plain ends; welding fittings; and welded joints.

C. Wet-type, fire-suppression standpipe piping, [**NPS 5 and NPS 6 (DN 125 and DN 150)**] shall be **one of** the following:

1. **Standard-weight or Schedule 30**, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.
2. **Standard-weight Schedule 30 or thinwall**, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
3. **Standard-weight or Schedule 30**, black-steel pipe with grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
4. **Standard-weight or Schedule 30**, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
5. **Standard-weight or Schedule 30**, black-steel pipe with plain ends; steel welding fittings; and welded joints.
6. Thinwall black-steel pipe with roll-grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
7. Thinwall black-steel pipe with plain ends; welding fittings; and welded joints.

D. Dry-type, fire-suppression standpipe piping, shall be[**one of**] the following:

1. **Standard-weight or Schedule 30**, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.

2. **Standard-weight or Schedule 30**, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.

END OF SECTION 15330

SECTION 15500 - FIRE SUPPRESSION SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. Work under this Section shall include all labor, material, equipment, transportation, services and facilities necessary to complete the interior Fire Protection System for the building as shown on drawings and as specified herein without exception.

B. Applicable provisions of SECTION 01000 and SECTION 15050 shall apply to this Section as if written in full herein.

C. The work shall include but is not necessarily limited to the following:

Wet pipe sprinkler system for the building, in accordance with latest revisions of NFPA fire codes.

Work under this section shall include all labor, materials, engineering, transportation, insurance, taxes and permits required for the complete installation of a wet pipe automatic fire protection system. All work to be in accordance with the requirements of the authority having jurisdiction.

D. Painting, unless otherwise specified is not included under this Section.

1.2 CODES AND STANDARDS

A. Final systems design, materials, workmanship and testing shall conform to the following Codes and Standards, when same have jurisdiction.

N.F.P.A. 13, 17A, 101, 24, 33, 92B, 72, 174, 96 and all applicable Codes.

Property Insurance Association of Louisiana.

State of Louisiana Fire Marshal.

1.3 QUALIFICATIONS OF FIRE PROTECTION CONTRACTOR

Contractor must be licensed in the State of Louisiana to perform sprinkler work, and must be regularly engaged in making such installation.

1.4 SHOP DRAWINGS AND DATA SHEETS

A. Contractor to provide Architect with shop drawings and calculations including flow and hydrant tests for University's approval prior to commencement of work. Work is not to be started until: 1) shop drawings have been corrected to conform to University's approval, 2) copies of corrected drawings shall be submitted to the Architect and State Fire Marshal, and 3) drawings have been returned from the State Fire Marshal with review comments. Contractor shall submit University's stamped approved drawings to the State Fire Marshal for his review. This Contractor shall pay for all review fees required by the State Fire Marshal.

B. The Contractor shall provide written verification as part of the State Fire Marshal submittal package stating that the proposed location of the fire department connection, the outlet diameters, fitting type and thread type comply with the requirements of the local fire department.

1.5 AS-BUILT DRAWINGS

A. Contractor shall maintain a set of drawings showing exact locations and sizes of all piping, valves and related items, which shall be corrected daily and shown every change from original contract drawings and specifications.

B. On completion of the work, Contractor shall provide a set of reproducible transparencies corrected to show all changes noted on "As-Build" Drawings, together with two (2) sets of Blue Prints, to the Architect for delivery to the University. The corrected transparencies shall bear the approval of the Underwriters, and Property Insurance Association of Louisiana.

1.6 CUTTING AND PATCHING

A. Contractor to provide all opening for proper installation of the work specified, in foundations, walls, floors, ceilings, partitions, stairways, etc., and do all patching and repairing required, except where otherwise noted on drawings.

B. Cutting structural members for the passageway of sprinkler piping or for pipe hanger fastenings will NOT be permitted.

C. Holes through walls, floors, and ceilings shall be large enough to accommodate pipe expansion. Suitable plates shall be provided at each hole to insure the effectiveness of the floor or wall as a fire stop.

1.7 INTERFERENCE

The Sprinkler Contractor shall coordinate with other trades so that interference between piping, conduit, ductwork, equipment, apparatus, architectural and structural work will be avoided. In case of interference developing, the Architect or his authorized representative shall decide which equipment, piping, ductwork, etc., must be relocated, regardless of which was first installed.

1.8 TAXES

Contractor shall include all taxes required.

1.9 PERMITS, FEES AND INSPECTION

This Contractor shall obtain and pay for all permits and shall pay all fees required in connection with this work, not covered by permits obtained by General Contractor.

1.10 CERTIFICATE OF APPROVAL

Upon completion of all work, this Contractor shall furnish the University a certificate of approval from such authorities as may have jurisdiction.

1.11 CLEANING UP

This Contractor shall at all times during construction keep the premises free from waste materials, or rubbish caused by his employees or work and at completion shall remove all surplus materials leaving the building in a clean swept condition.

PART 2 - PRODUCTS AND INSTALLATION

2.1 WATER CONNECTION

Existing.

2.2 MAIN CONTROL VALVE

Existing.

2.3 MAIN DRAIN

Existing.

2.4 PIPE AND FITTINGS

A. All interior pipe shall be ASTM A135 Schedule 40 black steel pipe with malleable iron screw fittings or cut grove fittings similar to Victaulic, Grinnell, or equal, as required. Fittings shall be ASME B16.3 Class 300 standard pattern with threads according to ASME B1.20.1. Provide all required pipe supports under building and above ground in accordance with National Fire Codes.

B. All piping shall be manufactured in the United States of America.

C. Underground piping shall be class 150, cement lined and exterior coated, ductile iron water pipe with mechanical joints.

D. All piping and fittings shall be rated for the hydraulic pressure encountered throughout the system.

2.5 SPRINKLERS

A. Sprinkler heads in unfinished ceiling areas to be brass upright.

B. Sprinkler heads in finished areas shall be concealed type heads with white cover.

C. All heads in acoustical tile areas shall be centered in the tile, both ways.

D. Contractor shall include, in his bid, any and all heads required to meet all applicable sections of NFPA 13, weather indicated on the drawings or not.

E. It is the intent of this section that the contractor provide a complete and operational system that shall meet all codes and that all costs shall be included in this bid price.

F. All heads to be quick response type.

G. Provide (10) ten additional brass upright and (10) ten additional concealed heads to be installed as directed by the Engineer. Include approximately 25 feet of piping and necessary fittings for each head.

2.6 SPRINKLER SYSTEMS

A. Wet pipe sprinkler systems shall be provided to all areas of the building. These systems shall be designed for a Light Hazard Occupancy, except as defined below.

B. All equipment rooms, storage rooms, mechanical rooms and electrical rooms shall be provided with a sprinkler system designed for ordinary hazard group 1 occupancy.

2.7 VALVES

A. All valves used in the fire protection system shall be UL listed and FM approved with 175 psig non shock minimum working pressure rating.

B. Gate valves, 2 inches and smaller shall be UL 262 cast bronze, threaded ends, solid wedge, outside screw and yoke, rising stem.

C. Gate valves 2-1/2" and larger shall be 262, iron body bronze mounted, taper wedge, outside screw and yoke, rising stem.

D. Swing check valves, 2-1/2" and larger shall be UL 312, cast-iron body and bolted cap with bronze or cast iron disc with bronze disc ring.

2.8 GENERAL CONSTRUCTION WORK

Provide all openings for proper installation of work specified, in walls, ceilings, and floors and do all patching of same as required.

2.9 ENGINEERING

Prior to installation of any work, this Contractor is to prepare installation and fabrication drawings and have same approved by the insurance authority having jurisdiction and University's representative.

2.10 INSURANCE

This Contractor is to furnish certificates of insurance prior to commencing work.

2.11 PERMITS

This Contractor is to pay for all permits required for this portion of the work.

2.12 HYDROSTATIC TEST

This Contractor is to hydrostatically test the new interior system to 200 PSI for a period of two (2) hours in accordance with NFPA 13, and show evidence that he has had an authorized representative of the University present for the test.

2.13 WARRANTY

This Contractor is to warrant all material and workmanship, free from defects, for a period of one

(1) year from date of acceptance of installation.

2.14 WATER FLOW SWITCH

Existing.

2.15 CODE COMPLIANCE

A. The Contractor shall flush all piping as required by NFPA – 13. Flow rates for flushing shall be as required by these codes.

B. All signage shall be provided in accordance with NFPA – 13 and 24.

C. All test certificates in NFPA 13 and 24 shall be completed by Contractor and submitted as part of review process.

D. Contractor shall review reflected ceiling, mechanical, fire protection and electrical plans and include all heads as required by NFPA-13 for complete sprinkler coverage including coverage around obstructions such as ductwork, piping and ceiling features.

End of Section 15500

SECTION 15550 - CLEAN AGENT FIRE SUPPRESSION SYSTEM

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Alarm operation description.
B. Trouble operation description.
C. Control and supervisory systems.
D. Fire suppression agent.
E. Agent storage and distribution components.
F. Signs and identification.
G. Pipe fittings, wire, and conduit.

1.02 DESCRIPTION

A. Each room to be protected shall be considered a single zone for fire suppression protection.
B. The quantity of the agent shall be that necessary to maintain seven percent minimum concentration for at least ten minutes. Such factors as unclosable openings (if any), "rundown" time for fans, time required for dampers to close, and all other features of the facility that could
affect concentration shall be considered.
C. The design discharge time shall be one minute.
D. Design and operation of the system shall comply at a minimum with the appropriate requirements of NFPA 2001 and the requirements of the nationally recognized testing authorities for which listings or approvals have been obtained.
E. Fire Protection System: Total flooding of hazard area with fire extinguishing agent, to extinguishing fire.
F. Locate extinguishing agent supply and back-up supply in each hazard area.
G. System is fixed installation with equipment designed and installed to provide fire-extinguishing capability for the area as indicated.

1.03 MEASUREMENT AND PAYMENT

A. General: Clean agent fire suppression system will not be measured separately for payment but will be paid for as part of the Contract lump-sum price for Mechanical Work.

1.04 REFERENCES

A. Louisiana State Fire Marshal (LSFM):

B. American Society of Mechanical Engineers (ASME):

1. ASME B16.3 Malleable Iron Threaded Fittings

2. ASME B16.18 Cast Copper Alloy Solder Joint Pressure Fittings

3. ASME B16.22 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

4. ASME B31.1 Power Piping

5. ASME B40.1 Gages – Pressure Indicating Dial Type – Elastic Element

6. ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 –
Rules for Construction of Pressure Vessels.

7. ASME Boiler and Pressure Vessel Code, Section IX – Welding and Brazing Qualifications.

C. American Society for Testing and Materials (ASTM):

1. ASTM A53 Standard Specification for Pipe, Steel, Black and Hot-
Dipped, Zinc Coated, Welded and Seamless

2. ASTM A106 Standard Specification for Seamless Carbon Steel Pipe for
High-Temperature Service

3. ASTM A135 Standard Specification for Electric-Resistance-Welded Steel
Pipe

4. ASTM A234/A234M Standard Specification for Pipe Fittings of Wrought Carbon
Steel and Alloy Steel for Moderate and Elevated Temperatures

5. ASTM B32 Standard Specification for Solder Metal

6. ASTM B88 Standard Specification for Seamless Copper Water Tube
(ASTM B88M – Standard Specifications for Seamless Copper Water Tube (Metric).

D. American Welding Society (AWS):

1. AWS A5.8 Specifications for Filler Metal for Brazing and Braze Welding

2. AWS D1.1 Structural Welding Code - Steel

E. National Electrical Manufacturers Association (NEMA):

1. NEMA ICS 6 Industrial Control and Systems: Enclosures

F. National Fire Protection Association (NFPA):

1. NFPA 70 National Electrical Code

2. NFPA 72 National Fire Alarm Code

3. NFPA 75 Electronic Computer Rooms

4. NFPA 2001 Clean Agent Fire Extinguishing Systems

G. Underwriters Laboratories Inc. (UL):

1. UL 393 Indicating Pressure Gages for Fire-Protection Service

2. UL 404 Gages, Indicating Pressure, for Compressed Gas Service

1.06 SUBMITTALS

A. Shop Drawings and Data:

1. All drawings and calculations shall be prepared in accordance with NFPA 2001.

2. Drawings shall indicate locations, installation details, and operation details of all equipment and piping, control diagram, wiring diagram and sequence of operation associated with the fire suppression system.

3. Piping plan view and detail drawings shall be drawn to scale and isometrics dimensioned to show the entire storage and distribution system, the nozzle and detector location, and layout of annunciator final graphics. The detector and nozzle locations shall be coordinated with lighting fixtures, diffusers, ductwork, and other equipment installed in the protected room. Indicate manual pull station, control panel, and accessory locations and details.

4. Electrical drawings shall indicate the complete sequence of operations of the system, termination diagrams and locations of interfaces with other systems.

5. Calculations shall be submitted demonstrating that the proposed system can provide the design concentration within the design discharge time.

6. Calculations shall be submitted showing required battery capacity, verify system pressure, nozzle flow rate, orifice code numbers, piping pressure losses, component flow data and pipe sizes.

B. Louisiana State Fire Marshal: Shop Drawings of the clean agent fire suppression system shall
be submitted to the Engineer for submission to the State Fire Marshal for approval. Shop Drawings require approval of the State Fire Marshal before any installation work may begin.

C. Certificates of Compliance: Submit such certified test reports for materials and equipment to
demonstrate compliance with specification requirements.

D. Product Data: Material and equipment information shall include manufacturer's catalog cuts and
technical data for each of the following components or devices used in the system:

1. Smoke sensors;

2. Manual discharge switches (pull stations);

3. Control panel;

4. Release devices;

5. Alarm devices;

6. Storage containers;

7. Mounting brackets;

8. Nozzles;

9. Abort stations; and

10. Contact monitor modules.

E. Operation and Maintenance Data: Submit operation and maintenance data for the equipment
and system. Include recommended spare parts list.

F. Certified Test Reports: Submit certified test reports that indicate successful completion of all tests performed as required by Article 3.04 herein.

G. Manufacturer: Certify that system meets or exceeds specified requirements and NFPA 2001.

1.07 QUALITY ASSURANCE

A. Qualifications of the System Designer and Installer:
1. The system installer or subcontractor for this work shall possess a valid Louisiana Contractor's License. The fire suppression system shall be designed by an experienced and qualified individual or firm regularly engaged in the design of clean agent fire extinguishing systems.
2. The installer shall maintain a 24-hour, seven-day-a-week telephone number for emergencies. Factory-trained personnel shall be kept on call for emergency service at all times.

B. Identification of Materials and Equipment: Materials and equipment shall be clearly marked or stamped with the manufacturer's name, nameplate data or stamp, rating, and conformance with corresponding standard number, as applicable.

C. Perform work in accordance with NFPA 70 and NFPA 72, applicable UL standards and requirements of applicable codes and ordinance.

D. Indicate manufacturer’s name and pressure rating on valve body. Indicate manufacturer, type
and size, part number, orifice code or orifice diameter on discharge nozzles. Markings shall be standard and visible after installation.

E. Certified Tests and Listings: Fire protection material and equipment shall be approved or listed by a nationally recognized testing laboratory of fire protection equipment for this application.

F. Components of the system, as listed in Article 1.06.E herein, shall be the products of one manufacturer.

G. Equipment shall be new and shall be of the most current design available from the manufacturer.
H. Welding Materials and Procedures: Conform to ASME Section IX.

1.08 DESIGN REQUIREMENTS

A. Provide sufficient amount of fire extinguishing agent liquid to convert into fire extinguishing agent vapor. Consider the following when computing volume:
   1. Volume of hazard area.
   2. Specific volume of fire extinguishing agent vapor.
   3. Additional quantities of fire extinguishing agent required to compensate for openings, pipe losses, and nitrogen dilution.
   4. Forced ventilation, fan coast-down time, and damper actuation time.
   5. Other special conditions affecting extinguishing efficiency.
B. Interface system with building fire alarm system.
C. Manufacturer Qualification: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.

1.09 REGULATORY REQUIREMENTS

A. Conform to applicable code for system design, fabrication, and installation.
B. Conform to NFPA 70 and NFPA 72 code for electrical wiring and wiring devices.
C. Provide certification of inspection approval of fire protection system by authority having jurisdiction.
D. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories
   Inc., and acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.10 DELIVERY, STORAGE, AND PROTECTION

A. Accept materials and components on site in shipping containers. Inspect for damage.
B. Delivery and store equipment in shipping containers with labeling in place. Deliver fire extinguishing agent in approved containers.

1.11 MAINTENANCE SERVICE

A. Conduct inspections 6 months and 12 months from date of Substantial Completion to verify proper operation of system and to check agent container weight and pressure. Include a thorough check of controls, detection and alarm systems.
B. Submit documents, certifying satisfactory system conditions. Include manufacturer's certificate of acceptance of Inspector's qualifications.

1.12 SITE CONDITIONS

C. Inspect surfaces and structures where the system components will be anchored or fastened before the work of this Section begins. Determine that surfaces and structures are capable of supporting the system components and their weight.
D. Coordinate the installation of the system with the station alarm and detection system and other systems and components, pipes, and conduits, so as to avoid conflicts of space and installation.

PART 2 – PRODUCTS

2.01 ALARM OPERATION DESCRIPTION

A. Alarm Phase I: One hundred percent smoke density at any sensor shall trigger or activate equipment functions as follows:
   1. Annunciate the device status and its location at the system control panel;
   2. Cause a pre-alarm audio-visual (horn) to slow modulate within the protected zone;
   3. Send an alarm signal via dry contact closure to the station fire alarm control panel and
   4. Record the event in the system control panel's nonvolatile RAM memory buffer for post event recall and analysis.
   5. Shut down air conditioning system and close dampers.
B. Alarm Phase II: One hundred percent smoke density at any second sensor within the same protected area shall trigger or activate equipment functions as follows:
   1. Annunciate the device status and its location at the system control panel;
   2. Cause a pre-discharge audio/visual alarm (horn) to fast modulate within the protected zone;
   3. Send a pre-discharge signal via dry contact closure to the station fire alarm control panel;

4. Record the event in the system control panel's nonvolatile RAM memory buffer for post event recall and analysis; and

5. Activate a thirty-second time delay.

C. Alarm Phase III: Agent Discharge:

1. After the 30-second time delay has expired the initiator shall be activated to release the fire-extinguishing agent.

2. Upon discharge, warning horn/lights shall activate continuously at all entrances to the protected area.

3. Record the event in the system control panel's nonvolatile RAM memory buffer for post event recall and analysis.

D. Manual Station Operation:

1. Requirements: The system shall be capable of being actuated by manual discharge switches for the protected area. Operation of a manual discharge switch shall cause alarm devices and shutdown functions to operate immediately. Manual stations used to release agents shall require two separate and distinct operations. The manual discharge switch shall override the time delay and abort capabilities of the system. Manual discharge switches shall be provided in the protected area at all of the exits. Each manual station shall be addressable and activation of these devices shall provide custom information at the station fire alarm control panel.

2. Pull Stations: Surface housing fitted with double action control fitted with "push-in" tab and "pull-down" lever that locks in position after releasing spring-loaded contact, for mounting on electrical outlet box.

3. Labeling: Locate engraved label adjacent to each manual pull station indicating area protected, and that actuation will cause discharge of fire extinguishing agent.

2.02 TROUBLE OPERATION DESCRIPTION

A. Trouble Conditions: The system fire detection system shall provide the following sequence of operation for any trouble condition:

1. Display a custom message identifying the device in trouble.

2. Record the event in the system control panel's nonvolatile RAM memory buffer for post event recall and analysis.

3. Send a trouble signal via dry contact closure to the existing fire alarm control panel.

2.03 MATERIALS AND EQUIPMENT

A. General Requirements:

1. Equipment and accessories furnished hereunder shall be standard components of a specified manufacturer. Catalog numbers and model designations shall indicate design, quality, and type of material as well as required operating characteristics.

2. Field fabricated equipment not supplied by the manufacturer will not be acceptable unless first approved by the Engineer.

3. Locks for all cabinets shall be keyed alike.

B. Control and Supervisory Systems:

1. System Control Panel: (Red in color)

a. The system control panel shall be red in color, and shall process all input signals, sequence the levels of alarms, and provide outputs to the extinguishing agent storage containers. Auxiliary outputs and dry contacts shall be available to shut down fans, activate dampers, contact other agencies, or annunciate to remote devices. The system shall have standby batteries and charger for continuous operation of detection, alarm, actuation and supervision function to provide a minimum of 24 hours of emergency power. The system control panel shall provide for either a Style "D" or a Style "B" (allowing T-Tapping) as defined in NFPA 72, type wiring and shall utilize initiating devices connected in parallel to provide automatic battery switch-over upon failure of primary power supply.

b. The system control panel shall utilize parallel agent release modules as a method of discharging the agent. The operation of a discharge signal shall immediately cause the appropriate agent release modules to activate and release agent. The initiator circuit shall be a parallel Style "D" circuit. Any system utilizing series initiators, series solenoids or mechanically activated solenoids is unacceptable. All initiator wiring shall be fully supervised.

2. Central Control Module (CCM): This module shall control, supervise, and continuously monitor the entire system through the use of an industrial grade 16-bit micro controller. This module shall include a backlit liquid crystal display (LCD) with up to 40 alphanumeric characters that provide individual custom messages associated with every addressable device in the system. The CCM shall include touch membrane switches for each of the following:

a. Location: Display a 40 character custom message associated with the individually addressable devices reporting to the CCM or a manufacturer-specified message for

devices (i.e. door holders, air conditioning units) supervised and controlled by the CCM.

b. Next Trouble: Displays the chronological sequence of individual addressable devices in trouble reporting to the CCM or a manufacturer-specified message for devices supervised and controlled by the CCM.

c. Next Alarm: Displays the chronological sequence of individual addressable devices in alarm reporting to the CCM.

d. History Buffer: The CCM shall contain a 256-event nonvolatile history buffer. This history shall be retrieved by downloading the information through an internal RS232 port, and USB port to a personal computer and printer without having to purchase additional software.

e. Field Programming: This system shall be fully field programmable and shall not require factory assistance for reconfiguration of any kind.

f. Expansion Capability: To allow for future expansions, the central control module shall be capable of connecting a minimum of 1016 individual addresses.

g. Approved as alarm and releasing device, with solid-state internal circuitry enclosed in NEMA ICS 6, Type 1 cabinet.

h. Provide supervision to NFPA 72, Class A of following circuits for wire break or ground faults:

1) Zone detection loops.

2) Remote manual discharge stations.

3) Suppression system solenoid valves.

4) Power supply and circuit wiring and fuse.

5) Battery interconnecting wires and fuse.

6) Alarm in abort mode.

i. Equip panel with following standard feature:

1) Visual and audible annunciation of trouble or alarm signals.

2) Panel reset switch.

3) Trouble alarm silence switch with ring back feature.

4) Single Zone Detection: Cross zone (optional).

5) Battery test meter and switch.

6) Manual discharge switch.

7) Deadman abort switch.

8) Programmable timers for pre-discharge and discharge, 0-60 second cycle.

9) Isolated relay contactors for external alarm or equipment and ventilation shutdown.

10) Relay contactors for general trouble signal.

11) Relay contactor activated by detector zone board in alarm or trouble mode.

3. Operating Sequence:

a. Actuation of one detector in either zone circuit:

1) Illuminate zone indicator.

2) Energize alarm bell.

3) Shut down air-conditioning system and close dampers.

4) Signal building fire alarm system via dry contact.

b. Actuation of second detector on second zone circuit:

1) Illuminate zone indicator.

2) Energize alarm horn.

3) Shut down power to protected equipment

4) Actuate time delay for up to 30 seconds.

5) Release extinguishing agent into protected area.

6) If abort switch is engaged, delay release.

7) Upon abort switch disengagement release extinguishing agent unless system cleared and reset.

8) Signal building fire alarm system via day contact closure.

c. Discharge of Extinguishing Agent:

1) Sounds alarm bells and horns.

2) Operates strobes.

d. Temperature Detection:

1) Lower Temperature: Illuminate indicator and energize bell.

2) Higher Temperature: Shut down power to protected equipment.

4. Manual Discharge Station: Manual discharge stations shall have a dual action release configuration to prevent accidental system discharge. The legend on the front of the station shall read "Agent-Release". These stations shall be located at both emergency fire exits. A contact monitor module will be included with each station to give it a specific address (location) through the CCM.

5. System Abort Switch: The switch shall be a momentary deadman-type, that when depressed, interrupts the automatic sequence of the control system and prevents agent discharge. Each switch shall be permanently labeled "System Abort". These stations

shall be located at both emergency fire exits. A contact monitor module shall be included with each switch to give it a specific address (location) through the CCM.

6. Verified Detection Sensors:

a. The photoelectric sensors shall be spaced and located, in accordance with the manufacturer's specifications and with the guidelines of NFPA 72. In no case shall detector coverage be greater than 250 square feet per detector.

b. The system control panel shall provide the command and interrogation signals that confirm an alarm by comparing (with consecutive multiple passes of the "interrogation window") sensor information with stored data on fire conditions. The analog/addressable photoelectric sensor shall provide true linear analog data to the CCM in order for the CCM to differentiate between higher and lower values of smoke density and to establish a working range of sensitivity levels unique to the particular environment. All adjustments needed for sensor sensitivity to meet ambient conditions must have a minimum of 12 levels of adjustment.

c. The system shall have the capacity to automatically conduct a weekly functional test of each sensor, that is accomplished by means of a test LED fitted within each sensor. When automatically activated by the control panel this test LED shall produce an infrared signal level directly equivalent to that reflected by a given percentage of smoke entering the chamber. Any sensor not responding to its preset limits shall be automatically readjusted to a programmed level of sensitivity.

7. Alarm Signal Outputs:

a. Outputs shall be provided from the system control panel for interface with station fire alarm control panel.

b. Audible/visual alarm horn/strobes: The alarms shall operate on 24-volt polarized DC power and allow for supervision. The alarm unit shall have a minimum sound level of 97 decibels at 10 feet. All strobes including both in the protected room and outside room, shall be capable of 100 candelas.

C. Fire Suppression Agent:

1. The agent shall be heptafluoropropane, HFC-227ea. The physical and chemical properties shall conform with the requirements of NFPA 2001.

2. The agent shall be stored in containers, super-pressurized with nitrogen to a maximum total pressure level at 70 degrees F of 360 psig. Higher-pressure agents will not be acceptable.

3. The agent shall have the following characteristics:

a. Ozone depletion potential of zero;

b. Atmospheric lifetime less than 50 years; and

c. 4-hour LC50 > 788,696 ppm

D. Agent Storage and Distribution Components:

1. Agent Storage Containers:

a. Standard model and size for ease or replacement and addition. Design, fabricate, certify, and stamp cylinders in accordance with ASME Section VIII.

b. The supply area of agent shall be central storage by design. The storage vessels shall be capable of being refilled in the field and checked for liquid level without the aid of scales or other special tools.

c. The supply shall be located as indicated, so that proper hydraulic agent distribution is achieved. Agent storage containers shall be floor mounted and shall include bracket assemblies designed to withstand 1000 pounds thrust for 10 seconds. Floor space is limited, therefore, alternatives requiring more floor space will not be considered.

d. The storage containers shall be actuated by means of an electronic initiator. Each container shall be actuated individually. Master/slave solenoid configurations will not be considered.

e. Identification: Permanent plate, specifying agent, tare and gross weight, pound of fire extinguishing agent, and pressurization level, installed so plate is visible and readable.

f. Cylinder valves: Heavy duty forged brass, incorporating safety release pressure operated manual control, solenoid discharge valve, and pressure gage. Provide solenoid pilot valves for each cylinder or bank of cylinders.

g. Manifold: Provide for systems with more than one cylinder with rack to secure each cylinder and check valves between each cylinder discharge and monifold.

h. The container and valve shall be capable of releasing the agent as fast as possible and shall in no case exceed 10 seconds.

i. A nameplate indicating the manufacturer's name and part number, agent fill weight, and total charged weight shall be permanently bonded to each container.

j. Safety Release: Equip cylinder with frangible disk safety device.

2. Actuator: Release of the agent shall be accomplished by an electrical signal from the system control panel in conjunction with a specifically designed agent release module. Systems that employ more than one cylinder shall have all electric initiators connected in parallel.

3. Low Pressure Switch:

a. The agent storage container shall be equipped with a low-pressure switch to indicate a loss of container pressure. A decrease in pressure from 360 psi to 275/272 psi will cause the normally closed contact to open, thereby indicating a trouble condition.

b. Low pressure switch shall be monitored by the system control panel and shall provide a specific indication of cylinder low pressure.

4. Liquid Level Indicator: Tanks holding in excess of 60 pounds of agent shall contain a liquid level indicator to monitor vessel contents, in addition to the low-pressure switch.

5. Discharge Nozzles:

a. Nozzles shall distribute the agent throughout the protected area. Single nozzle shall not discharge more than 250 pounds of agent.

b. The nozzles shall utilize a 180 or 360-degree pattern and shall be designed to direct the discharge of agent parallel to the ceiling, thus minimizing the possibility of disturbance to objects within the room.

c. Construction: One-piece chrome plated brass or aluminum nozzle with textured finish with female pipe thread integral on body. Direct discharge parallel to ceiling.

d. Identification: Permanently mark nozzles to show equivalent single orifices diameter.

2.04 SIGNS AND IDENTIFICATION

A. Provide signs and identification in conformance with NFPA 2001.

B. Provide signs and identification to each valve required to be identified.

C. Provide engraved nameplates for all manual discharge stations and abort switch locations to indicate their function. All alarm devices shall have similar identification plates.

D. Each entrance door shall include a caution placard indicating that the area is being protected by a clean agent fire suppression system.

2.05 PIPE, FITTINGS, WIRE, AND CONDUIT

A. Pipe and Pipe Fittings:

1. Pipe and pipefittings shall conform with the requirements of NFPA 2001. Provide pipe with no burst pressure less than 600 psig operating pressure.

2. The method of joining pipe shall conform with applicable requirements of NFPA 2001.

3. Hangers and bracketing shall conform with seismic zone 4 requirements.

B. Wire and Conduit:

1. Wire: No. 14 awg copper wire conforming with the requirements of Section 16050 with insulation rating of 300 volts and temperature rating of 105 degrees C. Provide power limited fire protective signaling cables conforming with the NEC.

a. Unavoidable splices shall be crimp-connected. Wire nuts are not acceptable.

2. Conduit: EMT conduit, fittings, and accessories conforming with the requirements of Section 16050.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Installation Standards: Comply with applicable requirements of NFPA 2001.

B. System Installation Requirements: The fire suppression system shall be installed by the manufacturer or its authorized representative as indicated and in accordance with the approved Shop Drawings and the manufacturer's installation instructions and recommendations.

C. Electrical Wiring:

1. Wiring shall be installed in EMT conduit, except that steel flexible conduit may be used for short runs where necessary for movement of devices.

2. Wiring shall be installed to conform with the requirements of the NEC for Class 1 Signal Systems, except as otherwise permitted for limited energy circuits, as specified in NFPA 72.

D. Securely support piping (in accordance with ASME B31.1) with allowance for fire extinguishing agent thrust forces, and thermal expansion and contraction.

E. Use grooved mechanical couplings and fasteners only in accessible locations. Roll groove piping only.

F. Install unions downstream of valves and at equipment or apparatus connections.

G. Identify in accordance with NFPA 2001 requirements. Place directional arrows and system labels wherever piping changes direction and minimum 20 feet (6 m) on straight runs.

H. Secure cylinders. (Where manifolded, mount and support by rack. For each system provide same size cylinders containing equal amounts of liquid).

I. In rooms with suspended ceiling tiles, clip or retain tiles within 4-foot (1.2 m) radius of the nozzles to prevent lifting during discharge.

J. Install wiring in accordance with Section 16050.

K. Make final connections between equipment and system wiring under direct supervision of factory trained representative of manufacturer.

L. Install engraved plastic instruction plate, detailing emergency procedures, at control panel and at each manual discharge and abort switch location. At control panel identify control logic units, contacts, and major circuits with permanent nameplates.

M. At hazard area walls pack space between pipe, pipe sleeve or surface penetration with mineral fiber with elastomer calk to depth 1/2 inch (13 mm). Provide escutcheons where exposed piping passes through walls, floors, and ceilings. Seal pipe penetrations of fire separations.

N. Locate discharge nozzle approximately 6 inches (150 mm) above or below ceiling and 6 inches (150 mm) below raised floors. Avoid interference with other piping and equipment.

O. Locate remote manual releases at one or more doors to protect area where indicated. Locate deadman abort switch adjacent.

P. Locate strobe units at all points of entrance to protected area.

Q. Locate abort station at all points of exit from protected area.

R. Ream pipe and tube ends. Remove burrs. (Bevel plain end ferrous pipe.) Remove scale and dirt on inside and outside before assembly. Blow out pipe before nozzles or discharge devices are installed.

S. Route piping in orderly manner, concealed, plumb and parallel to building structure, and maintain gradient. Install piping to conserve building space, and not interfere with use of space and other work.

3.02 PAINTING

A. Except where indicated otherwise, piping systems shall not be painted.

3.03 IDENTIFICATION

A. Apply or install signs and identification in accordance with the requirements of this Section.

3.04 TESTS

A. System Tests: Tests shall demonstrate that the operation and installation requirements of this specification have been met. Submit certified copies of tests as specified in Article 1.06.G herein.

B. Functional Tests: Tests shall demonstrate that the entire control system functions as designed. All circuits shall be tested including automatic discharge, manual discharge, and equipment shutdown and alarm devices. In addition, supervision of each circuit shall be tested.

C. Design Review Test: Take field measurements of the room, and field calculate the amount of clean agent required to reach the design criteria, and match against the contents of the clean agent storage containers.

D. Pressurization Test: Conduct a door fan test to determine the overall containment capacity of the clean agent protected area, and equivalent leakage area of the room. The calibrated fan unit shall be used to pressurize or depressurize the area with all air conditioning shutdown and dampers closed, and monitor airflow versus pressure data. The results shall be used to calculate a pass or non-pass conclusion. A manufacturer-approved testing unit and program shall be used for this test.

E. Piping Test Review: Make a field verification of the piping network and match against the flow calculations. All significant variations will require recalculation of the piping system.

1. A distribution piping and valve, prior to nozzle installation pressurization test shall be conducted that requires 150 psi to be held for 10 minutes with no more than 10 percent pressure drop. Inspect joints using soap water solution or halide torch or lamp, replace and retest.

2. A "puff" test using dry nitrogen shall be conducted. Caps shall be placed over all discharge nozzles and adequate pressure shall be supplied to demonstrate that all of the caps will blow off indicating that the pipes are free of obstructions.

3. Upon completion of installation provide final checkout inspection by factory-trained representative of manufacturer to ascertain proper system operation. Leave system in a fully commissioned and automatic readiness state with circuitry energized and supervised.

4. Submit original copies of tests, indicating that factory trained technical representatives of the manufacturer have inspected and tested systems and are satisfied with methods of installation, connections and operations.

3.05 TRAINING AND INSPECTIONS

A. Training Requirements: Provide complete system operation training of at least four hours.

B. Fire Suppression System Inspections:

1. Provide two inspections of the system during the one-year warranty period. The first inspection shall be six months after system acceptance and the second after 12 months. Inspections shall include the determination of agent container weight and pressure and that the mechanical systems are in proper working order.

2. Inspections shall also include a complete checkout of the control and alarm system and test, if possible that all interlocking systems are functioning properly.

3. Documents certifying satisfactory system conditions shall be submitted upon completion of each inspection.

END OF SECTION – 15550

CLEAN AGENT
SUPPRESSION SYSTEMS

BUILDING SCHEDULE

YSC 5265

CLEAN AGENT
SUPPRESSION SYSTEMS

Computer Center	**FM 200**	**CRC 101D**
Engineering	**Novec 1230**	**ENG 131**
Hazardous Storage	**PyroChem Dry**	**HSR101 Area A**

THE UNIVERSITY *of*
NEW ORLEANS

Lake Pontchartrain

Founders Road
Levee Road
Lakeshore Drive
Harwood Drive
Milneburg Road
Alumni Drive
Alumni Drive
St. Anthony
Leon C. Simon Blvd.
Elysian Fields Ave.
Ben Franklin High School
THE BEACH AT UNO

1. Administration Bldg.
1A. Administration Annex
2. Amphitheater
3. Bicentennial Education Ctr.
4. The Commons
5. Biology Bldg.
6. Bus Stop
7. Central Utilities Plant
8. Chemistry-Sciences Annex
10. Computer Center
11. Earl K. Long Library & Privateer Enrollment Ctr.
12. Engineering Bldg.
13. Facility Services
14. Fine Arts Bldg.
15. Geology & Psychology Bldg.
16. Homer L. Hitt Alumni Ctr.
17. Human Performance Ctr./ The Athletic Center
18. International Center
19. Kirschman Hall
20. Lafitte Village
21. Liberal Arts Bldg.
22. Mathematics Bldg.
23. Milneburg Hall
24. Newman Ctr.
25. North Central Plant
26. Oliver St. Pé Ctr (TRAC)
27. Performing Arts Ctr.
28A. Pontchartrain Hall North
28B. Pontchartrain Hall South
29. Privateer Place
30. Recreation & Fitness Ctr.
31. School of Hotel, Restaurant & Tourism Admin. Bldg.
32. Science Bldg.
33. The Cove
34. University Ctr.

A. UNO Lakefront Arena
B. Utilities
C. Maestri Field
D. Tennis Center
E. The NET Charter High School
F. Beach Volleyball Facility

The Beach at UNO

35. Advanced Technology Center
36. Center for Energy Research Management
37. Lindy C. Boggs Conf. Center
38. Navy Info Tech Center