B I D A D D E N D U M 0 2

The attention of bidders submitting proposals for the subject project noted above is called to the following Addendum to the Contract Forms and Specifications.

The items set forth herein, whether of omission, addition, substitution or clarification, are to be included in and form a part of the proposal submitted.

THE NUMBER OF THIS ADDENDUM MUST BE ENTERED IN THE SPACE PROVIDED ON THE BID PROPOSAL FORM.

This Addendum consists of the following information:

Part 1 Division 00, Bidding and Contract Requirements

1. REPLACE specification section 004100 Proposal Form with the one included in this addendum.

2. ADD specification section 012100 Allowances.

Part 3 Technical Changes, Mechanical, Electrical and Plumbing

1. REPLACE specification section 230110 Scope of Work with the one included in this addendum.

2. REPLACE specification section 230470 Testing, Start-Up and Adjustments with the one included in this addendum.

3. ADD the following Plumbing specification sections:

    a) 220100 General Conditions
    b) 220125 Scope of Work
    c) 220130 Water Supply System
    d) 220160 Sanitary and Storm Draining Systems
    e) 220190 New Gas Connections and Associated Work
    f) 220300 Plumbing Fixtures and Equipment
    g) 220320 Domestic Hot Water Gas-Fired Heating Equipment
    h) 220420 Supports, Sleeves & Plates
    i) 220430 Insulation
    j) 220470 Tests and Adjustments
    k) 220480 Tags, Charts and Identification

l) 220490 Guarantee

Part 6 Drawing Changes, Mechanical, Electrical and Plumbing

1. ADD the following Plumbing sheets:

   a) P101 – Legend, Notes, and Boiler Room Plan (Removals)
   b) P201 – Boiler Room Plan and Details (New Work)

2. REPLACE the following Mechanical sheets:

   a) H001 – Legend, Notes and Abbreviations
   b) H101 – Boiler Room Plan (Removals)
   c) H201 – Boiler Room Plan (New Work)
   d) H301 – Schedules & Details
   e) H401 – Details

Part 7 Clarifications

1. The elevation of the chimney from the floor of the boiler room to the top of the chimney is roughly 60'.

2. The existing 48" round flue cannot be tied into. See additional information provided in this addendum for further flue installation details.

3. A 36" diameter x 60" deep fiberglass basin with a 40" steel cover compatible with the specified pumps is acceptable in lieu of a concrete basin.

Part 8 New Issues – List of Included Documents

Bid Addendum 2	2 pages
004100 Proposal Form	8 pages
012100 Allowances	1 page
230110 Scope of Work	2 pages
230470 Testing, Start-Up and Adjustments	2 pages
Plumbing Specifications	27 pages
Plumbing Drawings	2 pages
Mechanical Drawings	5 pages

End of Addendum

SECTION 004100 - PROPOSAL FORM

PROJECT: Nyack Union Free School District
Old Nyack High School Boiler Replacement Project

DATED: _____

To: Nyack UFSD District
Office 13A
Dickinson Ave.
Nyack, NY 10960

The Undersigned, in compliance with the Invitation and Instructions to Bidders, agrees that if this bid is accepted as hereinafter provided, he/she will provide all labor, materials, supplies, tools, plant and equipment necessary to perform all work required for the construction of the aforementioned project in accordance with documents as prepared by KG+D, Architects, P.C.; 285 Main Street, Mount Kisco, NY., Telephone: 914-666-5900 for the class of work at the aforementioned project as listed below:

_____
(#1 – PLUMBING, #2 – MECHANICAL, #3 - ELECTRICAL)

(Each Bidder shall indicate in line above, class of work the Proposal is being submitted for.)

for the following LUMP SUM COST as applicable to the particular contract:

_____

_____Dollars ($_____)

Further, the undersigned:

- agrees to execute alternates selected for the sums (additive or deductive) set forth in the attached schedule of Alternate Proposals.
- agrees to the stated percentages for extra work if ordered on a Time and Material basis in accordance with Article 7 of the Conditions to cover all overhead and profit allowance.
- Takes notice of the time constraints set forth in Section 011000 and agrees to the terms of the Contract and to the Actual Damages that will be enforced should the time constraints not be kept.

It is understood that the Owner reserves the right to accept or reject any and all bids that the Owner deems to be in his best interest.

Upon notification of acceptance of this proposal, the undersigned agrees to execute a contract in the form as stated within these contract documents for the amount stated.

Prices quoted shall be guaranteed for forty-five (45) days after date of proposal.

If written Notice to Proceed, Letter of Intent or Contract is received within forty-five (45) calendar days after the opening of bids, the undersigned agrees to execute said contract and furnish to the Owner within ten (10) days after receipt of said notice of award, the executed Contract, together

with the Performance Bond, Labor and Material Payment Bonds and Insurance Certificates required herein.

The Undersigned agrees that the Bid Security payable to Owner accompanying this proposal is left in escrow with the Owner; that its' amount is the measure of liquidated damages which the Owner will sustain by the failure of the Undersigned to execute and deliver the above named Bonds and Contract; and that if the undersigned defaults in furnishing said bonds or in executing and delivering said Contract within ten (10) days of written notification of award of the Contract to him/her, then said Security shall be payable to the Owner for its' own account; but if this proposal is not accepted within said forty five (45) days of the time set for submission of Bids, or if the Undersigned executes and delivers said bonds and Contract, the Bid Security shall be returned to the Undersigned.

The following Addenda have been received. The noted modifications to the Bid Documents have been considered and all costs are included in the Bid Sum.

Addendum	Date	Acknowledgment

The Undersigned has included with this Bid attachments noted:

1. Attachment #1: Schedule of Allowances

By submission of this Proposal, the undersigned acknowledges that they have read the milestone and schedule requirements, Section 011000, and agrees to provide sufficient staff and organization as well as to select subcontractors, suppliers and vendors to comply with the requirements for submittals, delivery dates, work periods and completion dates as specified.

The Undersigned hereby certifies that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.

The Undersigned has attached the following documents to this bid:

a. Certificate of Registration with the NYSDOL as required by NY Labor Law Section 220-i

NON-COLLUSIVE AFFIDAVIT

Every bid or proposal made to a political subdivision of the State or any public department, agency or official thereof or to a fire district or any agency or official thereof, for work or services performed or to be performed or goods sold to or to be sold, shall contain the following statement subscribed by the bidder and affirmed by such bidder as true under the penalties of perjury and is made pursuant to Section 103d of the General Municipal Law of the State of New York as amended by Laws of 1966.

NON-COLLUSIVE BIDDING CERTIFICATION

a. By submission of this bid each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its' own organization, under penalty of perjury, that to the best of his knowledge and belief:
   1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;
   2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to the opening, directly or indirectly, to any other bidder or to any competitor; and
   3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

b. A bid shall not be considered for award nor shall any award be made if (a)1, 2 and 3 above, have not been complied with; provided, however, that if any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore.
   Where (a)1, 2 and 3 above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of purchasing unit of the political subdivision, public department, agency or official thereof to which bid is made, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

Further, by submission of this Proposal

- each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the state finance law."
- the Undersigned acknowledges that they have visited the site, informed themselves of the existing conditions, and have included in the Proposal a sum to cover the costs of all items in the contracts.

Respectfully submitted,

_____
Contractor

By_____ Title_____

Business Name:_____

Address:_____

Telephone Number:_____

Attest:_____Title_____

SEAL IF CORPORATION

CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT

As a result of the Iran Divestment Act of 2012 (the "Act"), Chapter 1 of the 2012 Laws of New York, a new provision has been added to State Finance Law (SFL) § 165-a and New York General Municipal Law § 103-g, both effective April 12, 2012. Under the Act, the Commissioner of the Office of General Services (OGS) will be developing a list of "persons" who are engaged in "investment activities in Iran" (both are defined terms in the law) (the "Prohibited Entities List"). Pursuant to SFL § 165-a(3)(b), the initial list is expected to be issued no later than 120 days after the Act's effective date at which time it will be posted on the OGS website.

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, each Bidder/Contractor, any person signing on behalf of any Bidder/Contractor and any assignee or subcontractor and, in the case of a joint bid, each party thereto, certifies, under penalty of perjury, that once the Prohibited Entities List is posted on the OGS website, that to the best of its knowledge and belief, that each Bidder/Contractor and any subcontractor or assignee is not identified on the Prohibited Entities List created pursuant to SFL § 165-a(3)(b).

Additionally, Bidder/Contractor is advised that once the Prohibited Entities List is posted on the OGS Website, any Bidder/Contractor seeking to renew or extend a Contract or assume the responsibility of a Contract awarded in response to this solicitation must certify at the time the Contract is renewed, extended or assigned that it is not included on the Prohibited Entities List.

During the term of the Contract, should the School District receive information that a Bidder/Contractor is in violation of the above-referenced certification, the School District will offer the person or entity an opportunity to respond. If the person or entity fails to demonstrate that he/she/it has ceased engagement in the investment which is in violation of the Act within 90 days after the determination of such violation, then the School District shall take such action as may be appropriate including, but not limited to, imposing sanctions, seeking compliance, recovering damages or declaring the Bidder/Contractor in default. The School District reserves the right to reject any bid or request for assignment for a Bidder/Contractor that appears on the Prohibited Entities List prior to the award of a contract and to pursue a responsibility review with respect to any Bidder/Contractor that is awarded a contract and subsequently appears on the Prohibited Entities List.

I,_____, being duly sworn, deposes and

says that he/she is the_____of the

_____Corporation and that neither the Bidder/ Contractor nor any proposed subcontractor is identified on the Prohibited Entities List.

_____
SIGNED

SWORN to before me this_____day of_____201___

Notary Public: _____

OR

DECLARATION OF BIDDER'S INABILITY TO PROVIDE CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT

Bidders shall complete this form if they cannot certify that the bidder /contractor or any proposed subcontractor is not identified on the Prohibited Entities List. The District reserves the right to undertake any investigation into the information provided herein or to request additional information from the bidder.

Name of the Bidder: _____

Address of Bidder _____

Has bidder been involved in investment activities in Iran? _____

Describe the type of activities including but not limited to the amounts and the nature of the investments (e.g. banking, energy, real estate):

_____

If so, when did the first investment activity occur? _____

Have the investment activities ended? _____

If so, what was the date of the last investment activity? _____

If not, have the investment activities increased or expanded since April 12, 2012?

_____

Has the bidder adopted, publicized, or implemented a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran?

_____

If so, provide the date of the adoption of the plan by the bidder and proof of the adopted resolution, if any and a copy of the formal plan. _____

In detail, state the reasons why the bidder cannot provide the Certification of Compliance with the Iran Divestment Act below (additional pages may be attached):

_____

_____

I,_____being duly sworn, deposes and says that he/she is the

_____of the_____Corporation and the foregoing is true and accurate.

_____
SIGNED

SWORN to before me this_____day of_____201___

Notary Public: _____

ATTACHMENT #1 - SCHEDULE OF ALLOWANCES

In accordance with the terms and conditions of the Contract and the Proposal Form, Section 01 21 00 “Allowances”, the Drawings and the specific technical sections as applicable, the undersigned agrees that the following allowances are included in the Base Bid.

Mechanical Contract Allowance #1: Provide an allowance of $10,000 for General Construction work related to renovations to the flue and chimney in areas of the building above the boiler room.

End of Schedule of Allowances

End of Proposal Form

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise the Owner of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
B. At the Owner's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
C. Purchase products and systems selected by the Design Professional from the designated supplier.

1.3 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.
B. The Contractor shall include the dollar value of each scheduled allowance number as a separate line item in the Schedule of Values and identify each allowance with Section number 012100.
C. The Owner shall provide the Contractor with the Notice to Proceed, and request the Contractor to sign an Allowance Allocation form, prior to proceeding with the Work of an allowance.
D. Changes in the Work for payment of a contingency allowance.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCE

Mechanical Contract Allowance #1: Provide an allowance of $10,000 for General Construction work related to renovations to the flue and chimney in areas of the building above the boiler room.

END OF SECTION 012200

SECTION 230110 - SCOPE OF WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 SCOPE OF WORK

A. The work under this section includes all labor, materials, equipment, tools, transportation, and the performance of all work necessary and required for the furnishing and installation complete of all work as shown on the Contract Documents, including but not necessarily limited to the following:

1. Hot water heating boilers with gas burners.

2. All required piping, valves and related specialties.

3. Base mounted centrifugal pumps.

4. Variable frequency drives.

5. Sheetmetal ductwork and related accessories.

6. Duct and pipe insulation.

7. Rigging of equipment.

8. Furnish all combination motor starter/disconnects for equipment (with the exception of starters and electric items already mounted on equipment or equipment not requiring same). Fan motor starter/disconnects shall have contacts for ATC connection and a terminal block connection for Fire Alarm fan shutdown. Starters per manufacturers recommendations. Underwriters inspection and certificate required. Coordinate with Electrical Contractor.

9. Air and Water Balancing.

10. Automatic temperature controls with complete wiring (regardless of voltage).

11. Testing, adjusting and start-up of equipment.

12. Painting and identification of all equipment and piping.

13. Firestopping per NFPA requirements (UL approved systems).

14. Operating and maintenance instructions.

15. As-Built Drawings - Refer to Division 1.

16. Cutting and Patching - Refer to Division 1.

17. Excavation and Backfill - Refer to Division 2.

B. Coordination Drawings (if applicable): Attention is directed to Division 1 for coordination drawing requirements for this project. These drawings are critical to the proper execution of the work and failure to honor these requirements may become the basis for denial of any and all claims for either or both “time” and “money”.

1.2 REMOVALS

A. Removals should be coordinated with other trades affected.

B. Removal of any piece of equipment or terminal device shall include removal of connecting ductwork and piping back to existing mains that remain. Cap each branch air/water-tight. Controls and control components shall also be removed. Do not leave components (controllers, pneumatics, etc.) that have no function. Provide control wiring, ductwork, piping, etc. as necessary to maintain continuity of service for equipment or terminal devices to remain.

C. Piping which penetrates the construction may be cut and capped provided capping is done beneath the finished surfaces so that construction over it can be achieved.

D. Soot Removal: In connection with the dismantling of boilers, Contractor shall gather together with a vacuum-cleaning machine all accumulations of soot. He shall remove all soot from the base of the chimney.

E. All removals shall be removed from the site.

1.3 ALTERATION WORK

A. All equipment, piping, control components, etc. to be removed, shall be disposed of or salvaged as directed by the Owner. They shall not be removed from the premises without the Owner’s approval.

B. All piping to be removed shall be properly plugged or capped so that upon completion of all new work, all abandoned piping shall be concealed in finished areas.

C. No dead ends shall be left on any piping upon completion of job. The existing system shall be left in perfect working order upon completion of new work.

D. Location and sizes of existing piping, ductwork, equipment, etc. are approximate. Exact sizes and locations of all existing work shall be verified on the job.

1.4 TEMPORARY BOILER

A. The contractor is responsible to have all three boilers operating by the start of the heating season, September 15th. If the contractor does not complete this work on time, it is the responsibility of the contractor to rent out and provide the building with heat through a temporary boiler at no cost to the owner. Owner is responsible to pay for the cost of the fuel. Temporary Boiler shall be a minimum of 3,000 MBH.

END OF SECTION 230110

SECTION 230470 - TESTING, START-UP AND ADJUSTMENTS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section.

1.1 TESTING, START-UP AND ADJUSTMENTS

A. Furnish all materials, supplies, labor and power required for testing. Make preliminary tests and prove work satisfactory. Notify Architect and all authorities having jurisdiction in ample time to be present for final testing of all piping. Test before insulating or concealing any piping. Repair defects disclosed by tests, or if required by Architect, replace defective work with new work without additional cost to Owner. Make tests in stages if so ordered by Architect to facilitate work of others. Use of wicking in tightening leaking joints not permitted.

B. HVAC Contractor is responsible for work of other trades disturbed or damaged by tests and/or repair and replacement of his work, and shall cause work so disturbed or damaged to be restored to its original condition at his own expense.

C. Unless otherwise specified, all piping systems shall be hydrostatically tested to 150 p.s.i.g. or twice the working pressure. Tests shall be of four (4) hour duration during which time piping shall show no leaks and during time no sealing of leaks will be permitted. Compressed air test is acceptable.

D. Isolate new and existing piping with valves or caps for new piping tests.

E. HVAC Contractor shall balance out system and submit test reports showing operating data to include the following:

1. C.F.M. of all air handling equipment.
2. C.F.M. at each air outlet.
3. G.P.M. for equipment.
4. R.P.M. for each fan and fan motor.
5. Motor power consumption.
6. Air temperature readings before and after coils.
7. Water temperature readings in and out of coils and through equipment.
8. Pressure gauge readings before and out of all pertinent equipment.

F. If the performance of the systems does not conform to the design parameters the Contractor shall return to the site until the systems perform as designed.

G. HVAC Contractor shall furnish services of qualified personnel, thoroughly familiar with job, to operate and make all adjustments so that system and control equipment shall operate as intended. This shall include adjustment/replacement of sheaves/impellers to achieve design performance. Adjustments shall be made including balancing of water and air systems in cooperation with qualified representatives of mechanical equipment manufacturers and temperature control manufacturer. This shall include any required adjustment/replacement of sheaves, belts, impellers, etc. to achieve design performance. Architect/Engineer is to be notified when this balancing is to be performed.

H. When all work is in an acceptable operating condition, furnish operating and maintenance manuals as specified in General Requirements.

I. All HVAC equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces.

J. Contractor shall include in his Bid, adjustment of air quantity below scheduled C.F.M. for air systems deemed “noisy” by Owner subsequent to initial balancing.

K. The Contractor shall be required to rectify of replace at his own expense, any equipment not complying with the foregoing requirements.

L. Final inspection and approval shall be made only after proper completion of all of above requirements.

END OF SECTION 230470

SECTION 220100 - GENERAL CONDITIONS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 GENERAL CONDITIONS

A. Before submitting a proposal, Bidders shall examine all Drawings related to this work and shall become fully informed as to the extent and character of the work required and its relation to the other work in the building.

B. Before commencing work, the Contractor will examine all conditions of the project upon which his work is in any way dependent for perfect workmanship according to the intent of this Specification. No "waiver of responsibility" for incomplete, inadequate or defective adjoining work will be considered unless notice has been filed by this Contractor and acceded to by the Owner's representative in writing before the Contractor begins any part of the work.

C. The Contractor will pay for all licenses, permits and inspection fees required by civil authorities having jurisdiction. Comply with all laws, ordinances, regulations, fire underwriters requirements applicable to work herein specified without additional expense to the Owner. (Also, local building code requirements.).

D. It is specifically intended that anything (whether material or labor) which is usually furnished as a part of such equipment as is hereinafter called for (and which is necessary for the completion and proper operation) shall be furnished as part of this Contract without additional cost the Owner, whether or not shown in detail on the Drawings or described in the Specifications.

E. When Drawings and Specifications conflict or there is a question as to the proper intent of this Contract, the Contractor shall assume the more expensive method in his pricing. All questions shall be directed to the Architect/Engineer in writing only and only up to ten (10) days prior to bidding.

F. The Drawings indicate the general runs of the piping, ductwork, etc. systems and the location of equipment and apparatus, but is shall be understood that the right is reserved by the Architect/Engineer to change the location of piping work, ductwork, equipment and apparatus to a reasonable extent as building conditions may dictate, prior to their installation without extra cost to the Owner.

G. Small scale drilling through walls and floors which may contain asbestos shall be performed by a person with a “restricted asbestos handler allied trades certificate” and shall have a copy of it in his possession at all times while working on the project.

H. Any changes from the Drawings and Specifications and any interpretation thereof shall have the prior approval of the Architect/Engineer. The Contractor shall submit in writing, at the time of signing the Contract, any items of necessary labor and materials, which, in his opinion, are lacking in requirements of the Drawings and Specifications to insure a complete job in all respects. No consideration will be granted to alleged misunderstanding of materials to be furnished, work to be done, or conditions to be complied with, it being understood that the tender of a proposal carries with it the agreement to all items and conditions referred to herein, or indicated on the accompanying Drawings.

END OF SECTION 220100

SECTION 220125 - SCOPE OF WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 SCOPE OF WORK

A. The work under this section includes all labor, materials, equipment, tools, transportation, cutting and patching, excavation and backfill and the performance of all work necessary and required for the furnishing and installation complete of all Plumbing and Drainage work as shown on Contract Drawings, as specified herein and as otherwise required by job conditions or reasonably implied, including but not necessarily limited to the following:

1. Provide complete new and altered sanitary and vent piping from all new plumbing fixtures connecting to existing sanitary and vent system. See front end spec for bedding requirements. Before beginning work field investigate and confirm point of connection for invert and exact location.

2. Provide complete new and altered hot and cold water piping to all new plumbing fixtures, equipment, etc. as indicated.

3. Provide new and altered gas service and piping and removal of existing as indicated.

4. Provide all new plumbing fixtures where indicated, complete including traps, stops, drains, strainers, tailpieces, faucets, escutcheons, etc.

5. Provide complete new piping and final connections to equipment furnished under other Divisions.

6. Provide all demolition, removal disconnecting, capping, sealing of all existing plumbing piping, apparatus, equipment, fixtures, specialties, accessories, etc. which are not included or incorporated in the new layout.

7. Provide all required temporary connections to maintain all plumbing services without interruption.

8. Pipe insulation.

9. Tests and adjustments.

10. This Contractor shall obtain all permits, bonds, approvals, etc. at no additional cost to the Owner.

11. This Contractor shall provide all required sprinkler hydraulic calculations and corresponding drawings per all authorities having jurisdiction. Any deviation from Contract Documents will require calculations and drawings to be stamped and signed by a New York State Licensed Engineer.

12. This Contractor shall provide shop drawings for all plumbing fixtures, piping, valves, insulation, equipment, etc.

13. Furnish minimum 18” x 18” access doors for all valves, cleanouts, etc. in all inaccessible walls, ceilings, etc. Installation by General Contractor.

14. Cutting and Patching: See Front End Specifications for Trade Responsibilities.

15. Excavation and Backfill: See Front End Specifications for Trade Responsibilities.

16. Fire stopping per FM/UL and NFPA. Refer to Division 1.

17. Contractors shall take water samples at all water outlets and test for lead at a certified laboratory in accordance with NYSED and NYSDOH guidelines. This shall be at no cost to the owner.

B. Coordination Drawings (if applicable): Attention is directed to Division 1 for coordination drawing requirements for this project. These drawings are critical to the proper execution of the work and failure to honor these requirements may become the basis for denial of any and all claims for either or both “time” and “money”.

1.2 ALTERATION WORK

A. All equipment, piping, plumbing, fixtures, etc. to be removed, shall be disposed of or salvaged as directed by the Owner. They shall not be removed from the premises without Owners approval.

B. All piping to be removed shall be properly plugged or capped so that upon completion of all new work, all abandoned piping shall be concealed in finished areas.

C. No dead ends shall be left on any piping upon completion of job.

D. The existing systems shall be left in perfect working order upon completion of all new work.

E. Location and sizes of existing piping are approximate. Exact sizes and locations of all existing piping shall be verified on the job.

F. All removals shall be removed from the site.

END OF SECTION 220125

SECTION 220130 - WATER SUPPLY SYSTEM

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

A. Furnish and install a complete cold-water distribution system to supply water to all new fixtures, water consuming equipment, and valved outlets for the use of other trades and connect to existing piping.

B. The water supply system shall be complete with all pipe, fittings, valves, mains, risers, branches, shock absorbers, air chambers, hangers, anchors, expansion loops, connections to existing piping, covering, tests, etc. all as shown on the Drawings, as hereinafter specified.

C. Furnish and install a complete hot water distribution system to supply water to all new fixtures and equipment requiring heated water.

PART 2 - PRODUCTS

2.1 PIPING, FITTINGS AND MATERIALS

A. All components of water supply system shall confirm to all “No Lead” requirements including NSF/ANSI-372.

B. The domestic water systems shall be of the following material and shall be in accordance with the latest ASTM and ASME Standards.

C. Domestic water piping within the buildings shall be seamless drawn or extruded tubing type "L" copper. Both shall be of Chase, Anaconda, Revere, and approved equal, hard temper ASTM B88 with solder joint sweat end fittings. Fittings for use with copper tubing shall be cast brass of Muellers "Streamlin" pattern or approved equal.

D. Joints for copper tubing shall be made with 95-5 (lead and antimony free) solder. Flanges where required shall be cast brass. Provide dielectric adapters between ferrous and non-ferrous pipe joints.

2.2 VALVES

A. All shut-off valves 2” and smaller shall be ball valves equal to Apollo 70 Series or Milwaukee BA100 Series Valve. Bronze body with chrome plated trim

B. This Contractor shall furnish all valves as indicated on the Drawings, or as may be required for the proper control of the pipe lines installed under this Specification, so that any fixture, line or piece of apparatus may be cut out for repair without interference or interruption of the service to the rest of the Facility.

C. All domestic water valves shall have a minimum working pressure of 125 psig, steam rated unless otherwise noted on the Drawings or specified herein. All valves shall be of one manufacture as manufactured by Milwaukee Valve or Hammond.

D. All gate valves within the buildings shall be wedge gauge valves with painted iron wheel handles, shall have gland followers in stuffing boxes, and shall be so constructed that they may be repacked while open and under pressure. All valves shall have the name of the manufacturer and working pressure cast or stamped thereon.

E. All gate valves shall be all bronze with sweat or screwed joint ends as required by the piping system in which they are installed.

F. Globe valves shall be of all bronze with composition disc, threaded or sweat joint ends as required by piping system in which they are installed.

G. Check valves shall be all bronze swing check type with threaded or sweat joint ends. Check valves 4 inch and larger shall be iron body bronze mountings and shall be provided with screwed or flanged joint ends as required by piping system in which they are installed.

H. Drain valves, at risers and at low points, shall be 3/4 inch heavy cast brass with composition washers with male thread for hose connections.

2.3 SHOCK ABSORBERS

A. Shock absorbers shall be similar and equal to J.R. Smith 5000 series or Zurn Z1700 series with stainless steel pressurized shell sized in accordance with P.D.I. Bulletin WH-201.

B. Provide shock absorbers on all fixtures and equipment having quick closing valves whether or not indicated on the Drawings.

C. Provide access doors where shock absorbers are concealed.

2.4 VACUUM BREAKERS

A. Provide vacuum breakers on water supply piping to each fixture and equipment with submerged inlets, and on faucets and outlets, within the facility to which hose can be, or is attached forming a submerged inlet.

B. Set vacuum breakers in exposed readily accessible locations at least four inches above floor rim level of fixture, or high point of equipment.

C. Vacuum breakers shall be chrome-plated brass. "Watts" or other approved.

D. Vacuum breakers under constant pressure shall be of the continuous pressure type No. 9 "Watts" or Wilkins BFP-8CH or approved equal.

2.5 EXPANSION JOINTS, ANCHORS AND GUIDES

A. The entire piping installation shall be installed with adequate provision for expansion. No rigid connections will be permitted. Refer to Drawings for locations of expansion joints and related guides and anchors. The joints, guides and anchors shall be as manufactured by Flexonics Products, Metraflex or Flex-weld.

B. Branches shall be of sufficient length and have three elbow swings to allow for pipe expansion.

C. Any breaks in the piping within the guarantee period due to improper provision for expansion must be replaced at the expense of this Contractor, and the conditions corrected to prevent future recurrence.

D. Any damages to surrounding areas and equipment due to this failure shall also be repaired and paid for at the expense of this Contractor.

E. Joints to have 150 psi rating, ANSI-B16.5 with liner and cover.

2.6 STERILIZATION

A. The entire domestic water piping system shall be thoroughly sterilized with chlorine before acceptance for domestic operation.

B. The amount of chlorine applied shall be such as to provide a dosage of not less than 50 parts per million for 24 hours or 200 p.p.m. for one hour. The chlorinating material shall be either liquid chlorine or sodium hypochlorite solution and shall be introduced into the system and drawn to all points of the system. If possible to do so, the lines shall be thoroughly flushed before introduction of the chlorinating material. After a contact period of not less than 24 hours, the system shall be flushed with clean water until the residual content is not greater than 0.2 parts per million. All valves in the lines being sterilized shall be opened and closed several times during the contact period.

C. Sterilization and tests for purity of water in the entire piping system shall be performed by the Contractor through an approved independent testing laboratory and a certificate shall be furnished to the Architect certifying the quality of purity.

D. Per ANSI/AWWA Standard C651-05.

PART 3 - EXECUTION

3.1 INSTALLATION

A. It is the intent that each part of the plumbing system shall be complete in all details and water lines provided with all control valves as indicated on Drawings, or as may be required for the proper control of the pipe lines under this Specification so that any fixture, line or piece of apparatus may be cut out for repair without interference or interruption of the service to the rest of the facility.

B. This Contractor shall examine carefully the Architectural Drawings in detail and familiarize himself with all conditions relative to the installation of piping, particularly where same is concealed behind furring or in hung ceilings.

C. In no case shall this Contractor permit his pipes to be exposed beyond finished walls or ceilings unless specifically shown on Drawings. He shall consult with the Contractors of other trades in the building and install his piping in such a way as to least interfere with the installation of other trades.

D. The water piping shall all be installed so as to drain to a valve provided by this Contractor and branches shall not be trapped but shall have continuous pitch. Where necessary to raise or lower mains, the same shall be provided with a drip and shall be properly valved.

E. Piping shall be installed, whether indicated or not, so as to rise and/or drop to clear any and all conduits, lighting fixtures, ductwork and heating mains to maintain the desired clear heights. This Contractor shall consult with the Contractors of other trades and facilitate the erection of the equipment and piping.

F. Run piping straight and as direct as possible, in general forming right angles with or parallel to walls or other piping. Risers shall be erected plumb and true.

G. After cutting, all pipes shall be reamed out to full bore and before erection the inside of all pipes shall be thoroughly cleaned.

H. No piping or work shall be concealed or covered until all required tests have been satisfactorily completed and work has been approved by the Architect.

I. All materials shall be new and installed in a first class manner.

J. In erecting pipe, friction wrenches and vises shall be used exclusively, and any pipe cut, dented or otherwise damaged shall be replaced by this Contractor.

K. All ferrous to non-ferrous pipe connections shall be made with approved dielectric pipe or flange unions isolating joints to prevent any electrolytic action between dissimilar materials.

L. Any piece of pipe 6 inches in length or less shall be considered a nipple. All nipples with unthreaded portion 1-1/2 inch and less shall be of weight corresponding to fitting connected. Only shoulder nipples shall be used, close nipples will not be accepted.

M. Revised water service shall be in accordance with the local water supply department requirements. All water lines are to be protected from freezing. Install new piping for water service below frost line and provide concrete separations when crossing other utilities. Provide concrete thrust mass at changes of pipe direction conforming to authorities having jurisdiction.

END OF SECTION 220130

SECTION 220160 - SANITARY AND STORM DRAINAGE SYSTEMS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

A. The work under this section includes all labor, materials, equipment and appliances necessary and required to completely install all drainage systems as required by the Drawings; code and as specified herein, including but not limited to the following:

1. Complete sanitary drainage and venting systems including connections to the existing sanitary drainage and venting systems.

2. Piping and final connections for equipment furnished under other Divisions.

3. Alterations and removals to existing sanitary and vent systems.

4. Tests.

PART 2 - PRODUCTS

2.1 PIPING AND FITTING MATERIALS

A. All indoor underground waste and vent piping shall be service weight cast iron with fittings of bell and spigot type. Each length shall have the size, weight per foot and the manufacturer's name clearly cast or stamped thereon. Fittings and traps shall be similarly marked and of corresponding weights.

B. All aboveground waste and vent piping and fittings 3" and larger shall be service weight and fittings of bell and spigot type as specified in paragraph above. Above ground waste and vent piping 2" and smaller shall be galvanized steel, fittings on waste piping shall be galvanized cast iron, recessed drainage pattern, fitting on vent piping shall be galvanized cast iron, beaded pattern, screwed joints shall be made up to be perfectly tight without the use of lead or filler of any kind, except oil or graphite. Nipples for galvanized pipe shall be shoulder type. No close nipples shall be permitted.

C. Joints shall be made with compression gaskets conforming to the NYS Plumbing Code See 2.1, E. for aboveground joint options where permitted.

D. All galvanized pipe and fittings shall be galvanized with prime western spelter by hot drip process.

E. The Contractor has the option of using the following types of joints with hubbless cast iron pipe only if approved by the governing agencies. These joints shall be used throughout the project. No mixing of joints shall be permitted.

1. Neoprene gasketed joints similar to Ty-Seal (for above and underground application).

2. Hubbless cast iron pipe with neoprene gaskets and stainless steel clamps (by Clamp-All or equal) above ground only. All in accordance with Cast Iron Soil and Pipe Institute Standard 301 latest edition. Hangers and supports shall be in accordance with manufacturer's recommendations.

3. Copper DWV system with 50-50 tin antimony solder, DWV with solvent welded or screwed joints meeting CS-270-65.

F. Pump Discharge Piping

1. Piping: Galvanized steel pipe, Schedule 40 with marker’s name rolled into each length.

2. Fittings

a. Threaded: Galvanized malleable iron with flat band steam pattern. Cast iron drainage pattern for waste piping.

b. Mechanical Joints: Victaulic couplings style 07 for grooved piping only, with gasket.

c. Bolted flange with gasket.

3. Joints: Teflon tape for threaded, Victaulic couplings for gasket for mechanical joint.

4. Application: Schedule 40 steel for sewage ejector and sump pump discharge.

2.2 CLEANOUTS

A. Provide easily accessible cleanouts where indicated at base of vertical stacks at ends of horizontal drainage lines and at intervals not exceeding 50 ft.; at each change of direction; on handholes of running traps, and where necessary to make entire drainage system accessible for rodding. Provide at least 18" clearance to permit access to cleanout plugs.

B. Cleanouts for cast iron pipe shall consist of tarpped extra heavy cast iron ferrule caulked into cast iron fittings and extra heavy brass tapered screw plug with solid hexagonal unit. Cleanouts for wrought iron pipe shall consist of extra heavy brass screw plug in drainage fitting.

C. Cleanouts turning out through walls and up through floors shall be made by long sweep ells or "Y" and 1/8 bends with plugs and face or deck plates to conform to Architectural finish in the room. Where no definite finish is indicated on the Architectural and/or Mechanical Drawings, wall plates shall be chrome plated cast brass and floor plates shall be nickel bronze.

D. Cleanouts shall be full size at the pipe up to 6" inclusive. On larger size piping 6" size plugs shall be used.

E. Cleanout fittings in vertical stacks shall consist of tapped tees capable of receiving a rough brass raised head cleanout plug, J.R. Smith S-4730, Zurn Z1445-A-BP or approved equal.

F. All cleanout plugs shall be brass lubricated with graphite before installation.

G. Cleanouts occurring in cast iron soil pipe above floor at change of direction of pipe run and at ends of horizontal runs shall be J.R. Smith S-4425, Zurn Z1441-A-BP or approved equal with cast iron ferrule for caulk connection and fitted with a straight threaded tapered bronze plug with raised hex head.

H. Cleanout deck plates for finished areas shall be similar and equal to J.R. Smith 4020 series, Zurn ZB1400-X or approved equal with cast iron ferrule, scoriated cutoff sections, brass cleanout plus collar with brass bolts for waterproofed slabs. In tile floor areas the cleanout deck plates shall be recessed to tile.

2.3 FLASHING

A. Provide flashing extending at least 10" beyond edge of all floor drains and vents through roof and all floor sleeves in floors with waterproofing or vapor barriers. Flashing shall be held securely in by clamping devices.

B. All floor drains shall be provided with flashing rings and 24" square 6 lb. sheet flashing, properly flashed into flashing ring of the drain.

2.4 SANITARY DRAINAGE

A. A complete system of drainage shall be provided as shown on the Drawings. The system shall include all drains, leaders, branches, house drains with all pipe fittings, hangers, anchors, etc. to make a complete sanitary drainage system. The systems shall extend through house drains and terminate as indicated on the Drawings.

B. Piping shall be sizes as indicated on the Drawings. The sanitary drains shall have a pitch of 1/8" per ft. minimum unless otherwise noted. Branch connections to stacks and house drains shall pitch a minimum of 1/8" per ft.

2.5 PIPING AND FITTINGS

A. Provide piping of one of the following materials, of weight/class indicated. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPING

A. The size of waste and vent piping shall be as determined by the State codes, rules and regulations for plumbing and drainage, except where specifically noted to be larger by the Specifications or Drawings and all fixed rules of installation, as set forth in the codes, rules and regulations, shall be followed as part of the Specifications.

B. This Contractor shall carefully examine the Architectural plans in detail and familiarize himself with all conditions relative to the installation of piping, particularly where same is concealed behind furring or in hung ceilings.

C. In no case shall this Contractor permit his pipes to be exposed beyond finished plaster lines unless specifically shown on Drawings. He shall consult with the Contractors of other trades in the building and install his piping in such a way as to least interfere with the installation of other trades.

D. Piping shall be installed, whether indicated or not, so to rise and/or drop to clear any and all conduits, lighting fixtures, ductwork and heating mains to maintain the desired cleat heights. This Contractor shall consult with the Contractors of other trades and facilitate the erection of the equipment and piping.

E. Run piping straight and as direct as possible in general forming right angles with or parallel to walls or other piping. Risers and stacks shall be erected plumb and true. After cutting, all pipes shall be reamed out to full bore and before erection the inside of all pipes shall be thoroughly cleaned.

F. No piping or work shall be concealed or covered until all required tests have been satisfactorily completed and work had been approved by the Architect and all other authorities having jurisdiction.

G. Branch connections shall be made with "Wye" and long "Tee-Wye" fittings, short 1/4 bends, common offsets and double hubs will not be permitted. Short "Tee-Wye" fittings are to be used in vertical piping only. All fittings shall conform to code requirements.

H. Cleanouts shall be provided at foot of all stacks, at changes of directions, at the ends of branch runs where shown and as required by code, and shall be terminated as described under cleanouts.

I. The house drains must be run at a minimum grade of 1/8" per ft. downward in the direction of flow. Wherever possible, a 1/4" per ft. pitch shall be maintained. Branch connections to stacks from fixtures shall pitch 1/4" per ft. where possible. Attention is again called to the necessity of maintaining the ceiling heights established.

J. Furnish and install complete systems of vent pipes from the various plumbing fixtures and other equipment to which drainage connections are made. Vent pipes shall be connected to the discharge of each trap and shall be carried to a point above the ultimate overflow level of the fixture before connecting with any other vent pipe; in general, this will be approximately 3'-6" above the finished floor. Branches shall be arranged to pitch back to fixtures.

K. The individual vent pipes shall be collected together in branch vent lines and connected to existing vent connections through roof.

L. Any existing vents through roof, damaged, or if flashing on roof comes loose while connecting new vent to them shall be repaired and reflashed to the roof as required to maintain waterproofing the satisfaction of the Architect.

END OF SECTION 220160

SECTION 220190 - NEW GAS CONNECTIONS AND ASSOCIATED WORK

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

A. Furnish and install a gas piping system to boilers and hot water heater on Drawings.

B. All new piping shall be schedule 40 steel, standard weight threaded malleable iron fittings for sizes 2-1/2” and smaller. For sizes 3” and larger joints shall be welded.

C. All work in this section shall comply with NFPA-54.

PART 2 - PRODUCTS

A. Provide all additionally required regulators as per manufacturer’s recommendations. Coordinate with other contractors.

PART 3 - EXECUTION

3.1 TESTING

A. Gas piping shall be tested with air using an air pump and mercury gauge. Tests shall be made by the Contractor with his equipment when directed by the Owner/Inspector/Construction Manager. Testing shall be done with 100 psig pressure (low pressure side) for a period of one hour, and follow Utility Company procedures and all Plumbing Code requirements. Certify and submit written test results to Architect/Engineer. Indicate that system is functioning properly, and has been installed in accordance with NFPA, and all applicable codes.

B. Encase gas piping with minimum 12” of concrete where covered by paved areas and roadways.

C. Contactor is responsible for maintaining gas pressure in existing gas piping to remain in accordance with utility company requirements, whether valving off pilot lights, using bottled gas, etc. Utility fees and re-testing existing piping as required is Contractors responsibility.

END OF SECTION 220190

SECTION 220300 - PLUMBING FIXTURES AND EQUIPMENT

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

A. The work under this section shall consist of furnishing all labor, materials, equipment and appliances necessary and required to completely do all plumbing fixture work, as required by the Drawings and as specified herein, including but not limited to the following: plumbing fixtures, traps, fittings, trimmings, brackets, plates, anchor, chair carriers and supports.

B. Just before the Owner's taking over the work in the building, this Contractor shall thoroughly clean all fixtures furnished and set under this Contract, leaving every fixture in perfect condition and ready for use.

C. Submit shop drawings and roughing sheets for all equipment for checking and approval.

PART 2 - PRODUCTS

2.1 PLUMBING FIXTURES AND EQUIPMENT

A. All fixtures shall be free from imperfections, true as to line angles, curves and color, smooth, watertight, complete in every respect and practically noiseless in operation, Fixtures specified are given as the typical standard required as manufactured by American Standard and they or other similar approved fixtures as made by Kohler or Eljer Companies shall be furnished, set and connected in good substantial, neat workmanlike manner.

B. The letter designations hereinafter correspond with the schedule on the Drawings.

1. Mixing Valve:
Mixing valve shall be domestic hot water Lawler ITT model no. 66-125, 60 gpm, 10 psi pressure drop. Master water mixing control valve shall be of the thermostatic type with liquid filled motor. It shall have bronze body construction with corrosion resistant components. Valve construction shall employ sliding piston control mechanism. Piston and liner shall be of stainless steel material. Valve shall come equipped with removable union and stop and check inlets with stainless steel strainers. Temperature adjustment shall be tamper resistant. Valve shall provide protection against hot or cold supply line failure and thermostat failure. Mixing Valve to be ASSE 1017 certified.

2. Sump Pump SP-1
   Furnish and install where shown on Drawings, Type VB1-1/2, Fig.1 Duplex Vertical Submerged, sump pump as manufactured by Federal Pump Corp. having a capacity of 15 gpm against a total dynamic head of 25 feet. Pump to have 1-1/2" I.P.S. discharge and to be constructed for free standing application. Shaft shall be stainless steel with bronze non-clog impeller. Motor to be 1/3 hp, 1750 rpm, 1 phase, 60 hz, 120 volts, drip-proof enclosure with drip canopy. Provide built-in thermal overload protection for single phase motors. Provide concrete pit suitable for this installation.

3. Domestic Hot Water Circulator Pumps CP-1 and CP-2
   Furnish and install domestic water circulator as indicated on Drawings between heater and storage tank. Grundfos model no. UP-43-75-BF, 22 gpm @ 15 ft. of head, 1/6 hp, stainless steel impeller, aluminum housing, bronze pump volute.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All fixtures shown on Drawings shall be set, connected and tested by the Contractor. He shall also make all water; soil, waste, vent and other service connections to fixtures as shown on Drawings or as directed and shall set, furnish, connect and test all necessary fittings.

B. All pipes at fixtures passing into walls, floors or partitions shall be provided with heavy cast brass escutcheons and security (tamperproof) set screws finished to match the pipe. No "waiving" of this section will be permitted.

C. All fittings escutcheons, faucets, traps, exposed piping etc. shall be brass, chrome plated over nickel plate with polished finish. Any visible hanger nuts shall be security (tamperproof) type and shall likewise be chrome plated over nickel plate.

D. This Contractor shall be responsible for protecting all plumbing fixtures including in these Specifications against injury from the building materials, tools and equipment. Any fixtures damaged during the construction period shall be replaced new. After all fixtures are set, this Contractor shall carefully grout all around fixtures.

END OF SECTION 220300

SECTION 220320 - DOMESTIC HOT WATER GAS-FIRED HEATING EQUIPMENT

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

A. The work under this section shall consist of furnishing all labor, materials, equipment and appliances necessary and required to completely provide domestic hot water heater, as required by the Drawings and as specified herein, including but not limited to the following: equipment, fittings, trimmings, brackets, controls, carriers and supports.

B. Submit shop drawings for approval, which shall include dimension Drawings, catalog cuts, performance ratings and construction schedules.

PART 2 - PRODUCTS

2.1 GAS-FIRED HEATER

A. Water heaters shall be PVI-Conquest condensing type, or equal. Water heater(s) shall be gas-fired, equipped to burn natural gas and design certified by the American Gas Association (Canadian Gas Association) under Volume III tests for commercial heaters for delivery of 180 ^{0} F water, shall be approved by the National Sanitation Foundation and exceed requirements of ASHRAE 90.1. Heaters shall have an input rating of 700,000 and a recovery rating of 815 g.p.h. (based on 95% thermal efficiency obtained in an independent laboratory test) at a temperature rise of 100 ^{0} F with a storage capacity of 130 gallons. Maximum working pressure of 160 psi. Tank shall have ASME rating.

B. Water heater shall be equipped with an integrated control system consisting of a 180 ^{0} F adjustable thermostat with upper and lower sensing bulbs, which average the water temperatures at the top and bottom of the tank for maximum water temperature control. Heater shall be provided with a manual reset gas shutoff device, a gas pressure regulator set for the type of gas supplied, coated steel burners, an approved draft diverter, anodes for cathodic protection, flue damper and IID system. ASME rated pressure and temperature relief valve shall be furnished and installed by the factory. The heater shall be insulated with foam insulation or equal.

C. The outer jacket shall have a baked enamel finish over a bonderized undercoating. All internal surfaces of the heater exposed to water shall be glass-lined with an alkaline borosilicate, nickelous oxide composition that has been fused to steel by firing at a temperature range of 1400 degrees F to 1600 degrees F. Heater tank shall have a five (5) year limited warranty against corrosion as outlined in the written warranty. Heater shall include a fully illustrated instruction manual.

D. Provide operating thermostat, adjustable, submersed bulb, ASME pressure and temperature relief valve, temperature limiting device and a drain valve shall be factory installed.

E. Furnish and install domestic hot water circulators per Drawings and Specifications.

F. Gas-flue material and installation per manufacturer's recommendations.

G. Provide induced draft fan on flue as recommended by manufacturer.

H. Provide bladder type expansion tank sized per manufacturer. Expansion tank shall comply with NSF 61, NSF 372, and stamped with a 'U' symbol and Form U-1 furnished denoting compliance with paragraph U-69 for Construction for Unfired Pressure Vessels Section VII ASME

PART 3 - EXECUTION

3.1 INSTALLATION

A. All equipment shown on Drawings shall be set, connected and tested by the Contractor. He shall also make all water and other service connections to fixtures as shown on Drawings or as directed and shall set, furnish, connect and test all necessary fittings.

B. This Contractor shall be responsible for protecting all equipment included in these Specifications against injury from the building materials, tools and equipment. Any equipment damaged during the construction period shall be replaced new.

END OF SECTION 220320

SECTION 220420 - SUPPORTS, SLEEVES AND PLATES

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

A. This Contractor shall furnish and install all plates, hangers and supports for his equipment including piping, headers, fans expansion tank, ductwork, etc.

B. All ductwork, piping and equipment shall be hung or supported from structural members only.

PART 2 - PRODUCTS

2.1 PIPING, DUCTWORK AND EQUIPMENT

A. All piping shall be supported from building structure in a neat and workmanlike manner wherever possible, parallel runs of horizontal piping shall be grouped together on trapeze hangers. Vertical risers shall be supported at each floor line with steel pipe clamps. Use of wire perforated metal to support pipes will not be permitted. Hanging pipes from other pipes will not be permitted.

B. Necessary structural members, hangers and supports of approved design to keep piping in proper alignment and prevent transmission of injurious thrusts and vibrations shall be furnished and installed. In all cases where hangers, brackets, etc., are supported from concrete construction, care shall be taken not to weaken concrete or penetrate waterproofing.

C. All hangers and supports shall be capable of screw adjustment after piping is erected. Hangers supporting piping expanding into loops, bends and offsets shall be secured to the building structure in such a manner that horizontal adjustment perpendicular to the run of piping supported may be made to accommodate displacement due to expansion. All such hangers shall be finally adjusted, both in the vertical and horizontal direction, when the supported piping is hot.

D. Pipe hangers shall be as manufactured by Grinnell, whose catalog numbers are given herein, or equivalent Carpenter and Paterson, or F&S Mfg. Co.

E. Piping shall be supported as follows unless otherwise indicated on the Drawings:

1. Heating piping shall be 1-1/2 " and smaller Fig. #260 adjustable clevis hanger. 2" and larger Fig. #174 one-rod swivel roll hanger.

2. Two-rod hangers shall be used for piping close to the ceiling slab or where conditions prohibit use of other hanger types.

3. Anchors for hanger rods shall be Phillips "Red Head" self-drilling type. Anchors shall be placed only in vertical surfaces.

4. Spacing of pipe supports shall not exceed 8 feet for pipes up to 1-1/2" and 10 feet on all other piping.

5. Hangers shall pass around insulation and a 16 gauge steel protective cradle; 12" long shall be inserted between hangers and insulation. Insulation under cradle shall be high density calcium silicate or approved equal to prevent crushing.

6. All piping shall be supported to allow free movement where expanding or contracting. Pipe shall be anchored as required or directed.

7. All lateral runs of piping shall be securely supported on hangers, rolls, brackets, etc. and in manner to allow for proper expansion and elimination of vibration.

8. 2" and smaller pipe, where run on walls, shall be supported on wrought iron "J" hook brackets with anchor bolts.

9. All horizontal pipes, where run overhead or on walls, shall be supported as follows unless otherwise indicated:

   a. On adjustable steel clevis type hangers suspended on hanger rods, pipe sizes up to and including 4".

F. Space limitations in hung ceilings spaces and conditions in other locations may require use of other type of hangers than those specified above. Suitable and approved pipe hangers shall be provided for such job conditions.

G. All supports shall be fastened to structural members or additional steel supports furnished by this Contractor.

H. Hanger rods shall be steel, threaded with nuts and lock nuts sizes in accordance with the following schedule:

Pipe Size	Rod Size
3/4" to 2" inclusive	3/8"
2-1/2" and 3' inclusive	1/2"
4" and 5" inclusive	5/8"
6"	3/4"
8" to 12" inclusive	7/8"

I. Hangers for copper tubing shall be tacked up with formed lead sheet on which tubing or pipe shall be placed.

J. Where pipes pass through masonry, concrete walls, foundations, or floors, this Contractor shall set sleeves as are necessary for passage of pipes. These sleeves shall be of sufficient size to permit insulation where required to be provided around pipe passing through. This Contractor shall be responsible for exact location of these sleeves.

K. Sleeves shall not be used in any portion of building where use of same would impair strength of construction features of the building. Inserts for supporting lateral pipes and equipment shall be placed and secured to form work, and all sleeves inserts locations shall be thoroughly checked with Architect so as not to conflict with other trades.

L. Where pipes pass through floor or walls, they shall be provided with chromium plated escutcheons.

M. Anchor horizontal piping where indicated and wherever necessary to localize expansion or prevent undue strain on branches. Anchors: Heavy forged construction entirely separate from supports.

N. Anchor vertical piping wherever indicated and wherever necessary to prevent undue strain on offsets and branches. Anchors, unless otherwise noted: Heavy steel clamps securely bolted and welded to pipes. Extension ends shall bear on building construction.

O. Ducts shall be hung with 1" x 1/8" metal straps. When width of duct is less than 48", hangers shall be fastened to side of ducts. Auxiliary steel supports that may be required for all mechanical equipment shall be furnished and installed by this Contractor. All operating equipment including fans, piping, etc. shall be supported so as to produce minimum amount of noise transmission.

P. Refer to "General Conditions" as well.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect equipment space locations before beginning installation. Verify that the space is correct for entry and access. Do not proceed with installation of the equipment until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's instructions and recommendations for installation of equipment, accessories and components.

B. All heating, ventilating and air conditioning equipment shall be carefully designed, constructed and installed so as to prevent any objectionable noise or vibration reaching any part of the building outside of the mechanical equipment room. Care shall also be taken to prevent transmission of noise or odor through ductwork into other spaces. The Contractor shall be required to rectify or replace at his own expense, any equipment not complying with the foregoing requirements.

3.3 CLEANING

A. Clean interior and exterior surfaces promptly after installation of equipment and components. Take care to avoid damage to protective coatings and finishes. Remove excess sealants, lubrication, dirt and other foreign substances.

END OF SECTION 220420

SECTION 220430 - INSULATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 DESCRIPTION OF WORK

A. The work under this section shall consist of furnishing all labor, materials, equipment and appliances necessary and required to completely do all insulation work as required by the Drawings and as specified herein including but not limited to the following: Insulation, covering, bands, tie wire.

PART 2 - PRODUCTS

2.1 INSULATION

A. The materials as specified have been selected from the catalogs of Johns-Manville Sales Corporation and are representative of the quality, design and finish desired. Insulation as manufactured by Owens-Corning Fiberglass Corp. Gustin Bacon Co., or other approved manufacturer may be submitted for approval provided the product meets fully in all respects (such as density, moisture absorption, alkalinity, thermal-conductivity, jackets) to the materials as delineated below.

B. All insulation shall be UL rated non-combustible type classified flame spread-25, smoke-developed-50.

2.2 PIPING, FITTINGS AND VALVES

A. All insulation thickness shall be in accordance with the latest edition of the New York State Energy Conservation Construction Code.

B. Minimum pipe insulation shall be:

1. Hot water piping up to 1-1/4” – 1” insulation. Piping 1-1/2” and larger – 1-1/2” insulation.

2. Cold water piping up to 1-1/2” – 1/2” insulation. Piping 1-1/2” and larger – 1” insulation.

C. Domestic cold, hot water, hot water return, indirect waste, storm, and piping aboveground. All piping shall be insulated with sectional glass fiber insulation, Owens-Corning 2 piece ASJ/SSL. Joints between sections shall be sealed with factory supplied 3 inch wide sealing strips. Sealing by means of Owens Corning self-sealing lap will also be acceptable. Install (anti-sweat) vapor barriers on all cold water piping.

D. Domestic hot and cold water valves and fittings - Fittings, valves, etc. shall be insulated with 1 inch (1 lb. per cubic foot density) flexible blanket insulation compressed to 1/2 its thickness, and cover with PVC fittings equal to Zeston 2000 series seal with Zeston Perma-Weld Solvent welding adhesive or Zeston Z-Tape.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All insulation on pipes running through walls, floors, partitions and beams shall be continuous through sleeves and openings.

B. Insulation shall be installed only after all tests of the piping system have been completed.

C. All insulation shall fit snugly.

D. All surfaces shall be clean and dry when insulation is applied.

E. Longitudinal joints shall be on least conspicuous side off the pipe.

F. Valves shall be insulated up to the packing unit.

G. As specified hereinbefore, all horizontal runs of piping will be supported on adjustable clevis or group trapeze type hangers. Pipe hangers will be installed outside of the insulation. Where hangers occur, prefabricated insulation protective saddles shall be "Insul-Shield-Multi-Purpose-Saddle" as manufactured by Insul-Coustic Corp. or approved equal.

H. Hot and cold water branch piping extending through slab or knockout panels to serve equipment shall be insulated to a point 4 inch above the top of sleeve provided for pipe.

I. The use of staples shall not be permitted.

J. It is the intent of this Specification that all vapor barriers be continuous throughout. Reinstate existing piping at point of new pipe connections.

END OF SECTION 220430

SECTION 220470 - TESTS AND ADJUSTMENTS

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 TESTS AND ADJUSTMENTS

A. The Contractor shall, at his own expense, during the progress of the work or upon its completion as ordered make such tests as are specified or as required by and in the presence of the Architects, Building Inspectors, etc. At least 48 hours notice shall be given in advance of all tests.

B. The Contractors shall provide all apparatus, temporary work or other requirements necessary for all tests. He shall take all due precautions to prevent damage to the building, its contents or the work of the other Contractors, that may be incurred by all tests. This Contractors shall also be responsible for the work of other Contractors that may be damaged or disturbed by the tests or the repair or replacement of his work, and he shall without extra charges, restore to its original condition, any work of other Contractors to do the work of restoration.

C. Tests on the various systems may be conducted in sections as the work progresses or when the systems are completed.

D. No caulking of pipe joints to remedy leaks will be permitted except where joints are made with lead and oakum.

E. Each section of the sanitary, storm and vent piping tested shall have all openings tightly closed with screw plugs, or equal device. The drainage and vent systems shall be filled with water and proven tight under a 10’-0” head for a minimum of four (4) hours. Water level must remain constant through test without adding water.

F. Upon final completion of the sanitary systems and when all fixtures and appurtenances have been set and the systems are in complete working order, all traps in the systems shall be filled with water and a thick penetrating smoke shall be introduced into the entire system.

G. As smoke appears at the stack openings on the roof, such openings on the roof shall be tightly closed and a pressure equivalent to 1-1/2 inch of water shall be maintained during the test. Oils of peppermint shall be added at the smoke making machines so that any leakage is readily discernible.

H. Before any covering is applied to the domestic water piping systems, the entire domestic water piping systems shall be hydrostatically tested for eight (8) hours to a hydraulic pressure of 125 psig.

I. At the completion of the test, Contractor shall furnish the Owner with one (1) copy of test certificates as issued by the insurance company.

J. Adjustments: Tests and adjustments shall be repeated as often as necessary until the systems are tight and are to the entire satisfaction of the Plumbing Inspector, Engineers and any other authorities having jurisdiction.

1. Contractor is to thoroughly instruct the building custodian in the proper care and operation of the entire system. Contractor shall prepare for use by custodian, detailed brochures of instructions in non-technical terms, describing the maintenance and operation of all fixtures, apparatus, valves, controls etc. furnished by him.

2. Should any part of the work performed under this Contract fail to function because of cracked piping, obstructions, debris in piping, leaks in piping or any other cause, this Contractor shall disconnect, clean and reconstruct the work at his own expense and pay for any damages to adjoining work.

3. Water flow is to be balanced and adjusted to all flush valves, faucets, etc.

4. All parts of the plumbing system are to be thoroughly flushed until cleared of all grease and sediment and all dirt pockets cleaned. Repeat as often as necessary, open all cleanouts and reset in graphite.

5. All new motors shall be oiled as required.

6. All new valves are to have stuffing boxes packed and adjusted.

END OF SECTION 220470

SECTION 220480 - TAGS, CHARTS AND IDENTIFICATION

PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section. Submit shop drawings for checking and approval.

1.1 TAGS, CHARTS AND IDENTIFICATION

A. Every valve installed under this Contract shall be tagged or labeled as follows: Tag shall be etched brass securely fastened to valve handwheels with heavy brass "S" hooks, soldered closed. At lock shield and similar type valves, tags for same shall be securely wired to valve body.

B. Charts shall be provided for each piping system, as approved and shall consist of schematic diagrams of piping layouts showing and identifying each valve and piece of equipment etc., and its use. Upon completion one (1) copy of diagrams and valve charts suitably framed under glass, shall be furnished and mounted where directed. One (1) copy of diagrams and valve charts shall be delivered to Owner.

C. This Contractor shall provide on all piping, semi-rigid, wrap around plastic identification markers equal to Seton Snap-Around and/or Seton Strap-On pipe markers.

D. Each marker background is to be appropriately color coded with a clearly printed legend to identify the contents of the pipe. Directions of flow arrows are to be included on each marker.

E. Identification of all piping shall be adjacent to each valve, at each pipe passage through wall, floor and ceiling construction and at each branch and riser take-off.

F. Identification shall be on all horizontal pipe runs, marked every 15 ft. as well as at each inlet outlet of equipment at changes in direction.

END OF SECTION 220480

SECTION 220490 - GUARANTEE

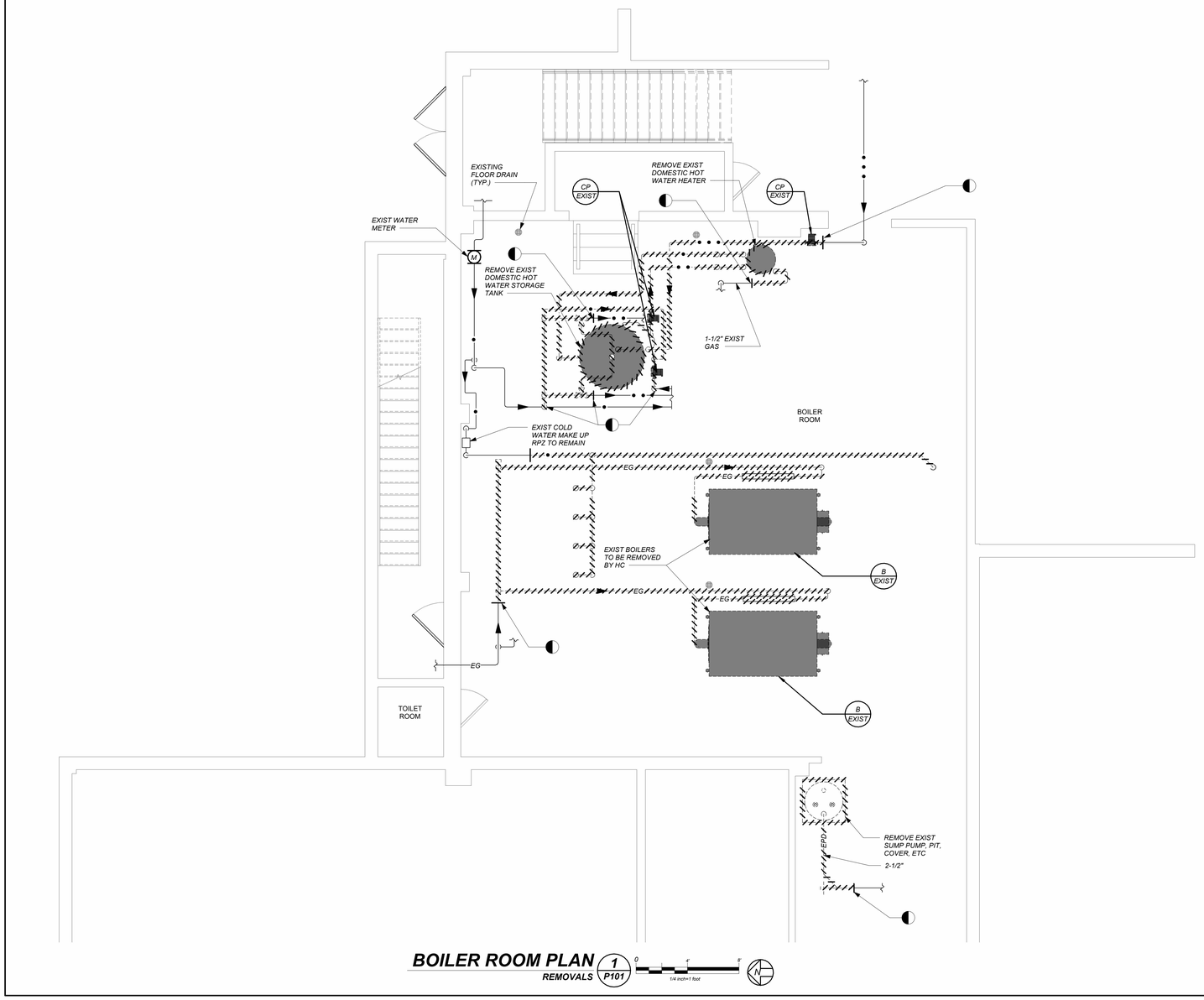
PART 1 - GENERAL

Applicable Provisions of the Conditions of the Contract and Division 1 General Requirements govern the work in this section.

1.1 GUARANTEE

A. The Contractor shall remove, replace and/or repair at his own expense and at the convenience of the Owner, any defects in workmanship, materials, ratings, capacities and/or characteristics occurring in the work within one (1) year or within such longer period as may be provided in the Drawings and/or Section of the Specifications, which guarantee period shall commence with the final acceptance of the entire Contract in accordance with provisions stated in the General Conditions, and the Contractor shall pay for all damage to the system resulting from defects in the work and all expenses necessary to remove, replace and/or repair and any other work which may be damaged in removing, replacing and/or repairing the work.

END OF SECTION 220490



BOILER ROOM PLAN REMOVALS

1 / P101

0 4' 8'

1/4 inch=1 foot

N

LEGEND

	EXISTING PIPING, FIXTURES, ETC. TO REMAIN
	NEW PIPING, FIXTURES, ETC.
	COLD WATER PIPING
	HOT WATER PIPING
	HOT RETURN WATER PIPING
ESAN	EXISTING SANITARY PIPING
EUSAN	EXISTING SANITARY PIPING (UNDERGROUND)
SAN	SANITARY PIPING
USAN	SANITARY PIPING (UNDERGROUND)
EG	EXISTING GAS PIPING
G	GAS PIPING
EPD	EXISTING PUMP DISCHARGE PIPING
PD	PUMP DISCHARGE PIPING
	FLOW DIRECTION WITHIN PIPE
	CLEANOUT
	CLEANOUT DECK PLATE
	GATE VALVE
	COMBINATION BALANCING & SHUT-OFF VALVE
	OS & Y VALVE
	CHECK VALVE
	GAS SHUT OFF COCK
	PIPE CONNS. (BOTTOM; TOP 45 OR 90; PIPE UP)
P.C.	PLUMBING CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HVAC CONTRACTOR
FD	FLOOR DRAIN
	POINT OF DISCONNECTION
	POINT OF CONNECTION, NEW TO EXISTING
CP	DOMESTIC HOT WATER CIRCULATOR PUMP IDENTIFICATION
CP EXIST	EXISTING DOMESTIC HOT WATER CIRCULATOR PUMP IDENTIFICATION
1 / P101	PART PLAN, DETAIL, SECTION NUMBER DRAWING NUMBER SECTION IDENTIFICATION

REMOVAL NOTES

1. REMOVE ALL PLUMBING FIXTURES, EQUIPMENT, SPECIALTIES, DRAINS, CONTROLS, HANGERS, BASES, SUPPORTS, PIPING, VALVES, TUBING AND PLUMBING ACCESSORIES THAT ARE NOT INCORPORATED IN THE NEW LAYOUT.
2. WHERE REMOVAL IS INDICATED OR IMPLIED OR NOT INCORPORATED IN THE NEW LAYOUT, THE ITEM ITSELF IS TO BE REMOVED COMPLETELY TOGETHER WITH ALL CONNECTING PIPING, SPECIALTIES, SUPPORTS, CONTROLS, ETC. CONNECTING PIPING IS TO BE REMOVED BACK TO MAINS WHERE THE ARE TO BE CAPPED OR DISCONNECTED. THIS INCLUDES ALL GAS, SANITARY, VENT, WATER, ACID WASTE AND PUMP DISCHARGE PIPING. REFER TO DIVISION I OF SPECIFICATION FOR CUTTING AND PATCHING REQUIREMENTS.
3. WHERE EXISTING PIPING ENTERS INACCESSIBLE TRENCHES, TUNNELS, SHAFTS, WALLS AND CEILINGS INSIDE THE EXISTING BUILDING, IT SHALL BE CUT BACK AT LEAST 2" INTO SUCH INACCESSIBLE SPACES AND SHALL BE SUITABLY CAPPED AND SEALED BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL EXERCISE NORMAL CAUTION TO PREVENT UNNECESSARY CUTTING AND DAMAGE TO THE EXISTING BUILDING. ANY EXCESSIVE DAMAGE AS DETERMINED BY THE OWNER SHALL BE REPAIRED AND PAID FOR BY THE CONTRACTOR CAUSING THE DAMAGE.
5. ALL DEMOLISHED EQUIPMENT ETC. EXCEPT THOSE ITEMS SPECIFICALLY REQUESTED BY THE OWNER SHALL BECOME THE CONTRACTORS PROPERTY. SHALL BE REMOVED FROM THE PREMISES, AND DISPOSED OF LEGALLY.

BEFORE FABRICATION THIS CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND CONDITIONS ON JOB AND COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER CONTRACTORS.

OLD NYACK HIGH SCHOOL BOILER REPLACEMENT

OLD NYACK HIGH SCHOOL

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CONSULTING ENGINEERS
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1 / P101

KEY PLAN

Professional Seal

NYSED Project Control No.
50-03-04-03-0-003-019

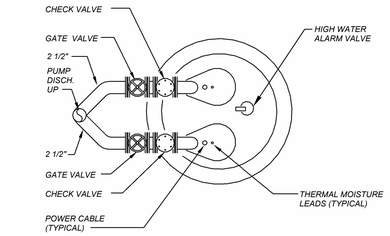
Design Phase
ISSUE FOR BID

No.	Date	Issue
3	05/07/2025	ADDENDUM 1
2	04/18/2025	ISSUE FOR BID
1	09/12/2024	CONSTRUCTION DOCUMENTS

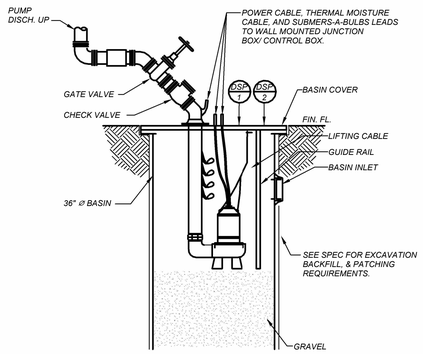
Sheet Title
LEGEND, NOTES, AND BOILER ROOM PLAN (REMOVALS)

Job No.	Date
2024-1035	06/19/20
Scale: AS NOTED	Drawn / Checked: Author Checker

Sheet Number
P101

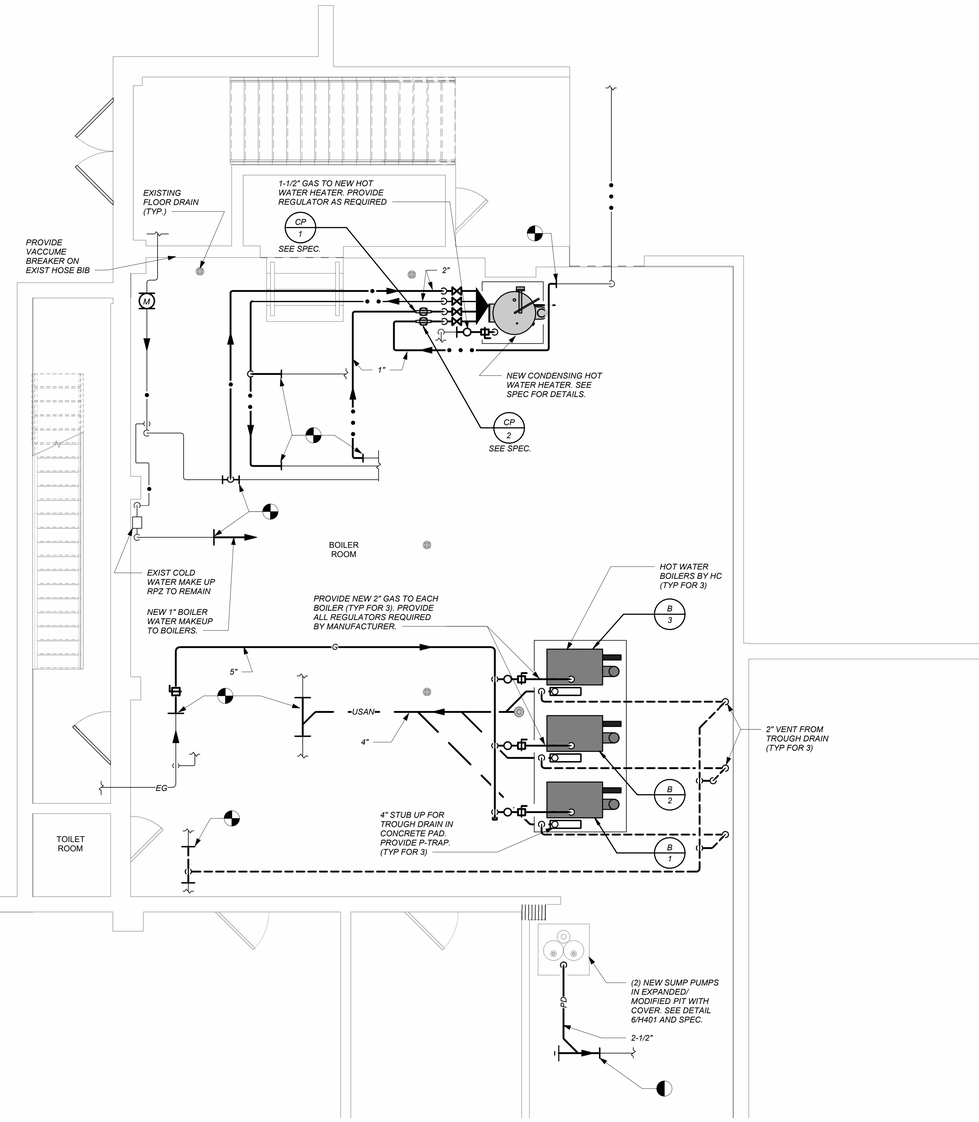


PLAN



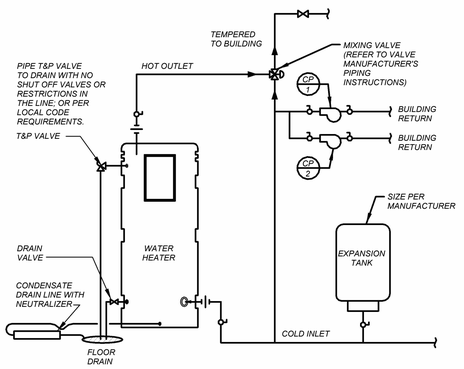
ELEVATION

DUPLEX SUMP PUMP DETAIL 4/P201 No Scale

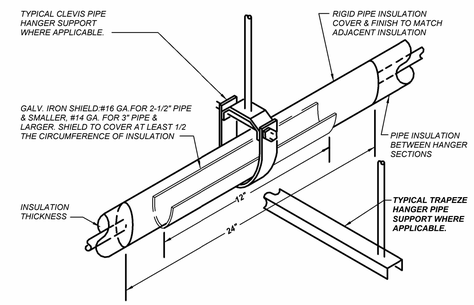


BOILER ROOM PLAN NEW WORK 1/P201

0 2" 4" 8" 1/4 inch=1 foot N



CONDENSING HOT WATER HEATER 2/P201 No Scale



INSULATED PIPE HANGER DETAIL PLUMBING 3/P201 No Scale

BEFORE FABRICATION THIS CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND CONDITIONS ON JOB AND COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER CONTRACTORS.

OLD NYACK HIGH SCHOOL BOILER REPLACEMENT

OLD NYACK HIGH SCHOOL

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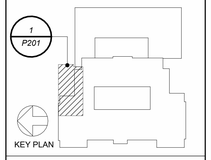

Professional Seal

NYSED Project Control No.
50-03-04-03-0-003-019

Design Phase
ISSUE FOR BID

No.	Date	Issue
3	05/07/2025	ADDENDUM 1
2	04/18/2025	ISSUE FOR BID
1	09/12/2024	CONSTRUCTION DOCUMENTS

Sheet Title
BOILER ROOM PLAN AND DETAILS (NEW WORK)

Job No.	Date
2024-1035	06/19/20
Scale: AS NOTED	Drawn / Checked: Author Checker

Sheet Number
P201

ABBREVIATIONS

AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
ATC	AUTOMATIC TEMPERATURE CONTROL TRADE CONTRACTOR
ATC	AUTOMATIC TEMPERATURE CONTROL SYSTEM
BMS	BUILDING MANAGEMENT SYSTEM (ATC)
BR	BOTTOM WALL REGISTER
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CR	CEILING REGISTER
CO	CLEAN OUT (DOOR)
CV	MOTORIZED CONTROL VALVE
EC	ELECTRICAL CONTRACTOR
EMS	ENERGY MANAGEMENT SYSTEM (ATC)
FC	FLEXIBLE CONNECTION
FD	FIRE DAMPER
FSC	FULL SIZE CONNECTION
FSD	FIRE/SMOKE DAMPER
GC	GENERAL TRADES CONTRACTOR
HVAC	HEATING, VENTILATING, AIR CONDITIONING CONTRACTOR
MFR	MANUFACTURER
MD	MOTORIZED DAMPER
OAI/FAI	OUTSIDE (FRESH) AIR INTAKE
PFRE	PRE-FINISHED SHEET METAL ENCLOSURE
PL	PLUMBING CONTRACTOR
SMRE	SHEET METAL RISER ENCLOSURE (PRE-FINISHED)
TD	TRANSFER DUCT
TR	TOP WALL REGISTER
WMG	1/2" SQ. WIRE MESH GRILLE
VIF	VERIFY IN FIELD
VFD	VARIABLE FREQUENCY DRIVE

GENERAL NOTES

1. BEFORE SUBMITTING A PROPOSAL, BIDDERS SHALL EXAMINE ALL CONDITIONS RELATED TO THIS WORK AND SHALL BECOME FULLY INFORMED AS TO THE EXTENT AND CHARACTER OF THE WORK REQUIRED AND ITS RELATION TO THE OTHER WORK IN THE BUILDING.
2. BEFORE COMMENCING WORK, THE CONTRACTOR WILL EXAMINE ALL CONDITIONS OF THE PROJECT UPON WHICH HIS WORK IS IN ANY WAY DEPENDENT FOR PERFECT WORKMANSHIP ACCORDING TO THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. NO "WAIVER OF RESPONSIBILITY" FOR INCOMPLETE, INADEQUATE OR DEFECTIVE ADJOINING WORK WILL BE CONSIDERED UNLESS NOTICE HAS BEEN FILED BY THIS CONTRACTOR AND ACCEDED TO BY THE OWNER'S REPRESENTATIVE IN WRITING BEFORE THE CONTRACTOR BEGINS ANY PART OF THE WORK.
3. THE CONTRACTOR WILL PAY FOR ALL LICENSES, PERMITS AND INSPECTION FEES REQUIRED BY CIVIL AUTHORITIES HAVING JURISDICTION. COMPLY WITH ALL LAWS, ORDINANCES, REGULATIONS, AND FIRE UNDERWRITER'S REQUIREMENTS APPLICABLE TO WORK HEREIN SPECIFIED WITHOUT ADDITIONAL EXPENSE TO THE OWNER.
4. SMALL SCALE DRILLING THROUGH WALLS AND FLOORS OR CUTTING OF PIPING INSULATION WHICH MAY CONTAIN ASBESTOS SHALL BE PERFORMED BY A PERSON WITH A "RESTRICTED ASBESTOS HANDLER ALLIED TRADES CERTIFICATE" AND SHALL HAVE A COPY OF IT IN HIS POSSESSION AT ALL TIMES WHILE WORKING OF THE PROJECT. THIS SHALL ALSO APPLY TO REMOVAL OF PIPING, DUCTWORK OR EQUIPMENT INSULATION.
5. IT IS SPECIFICALLY INTENDED THAT ANYTHING (WHETHER MATERIAL OR LABOR), WHICH IS USUALLY FURNISHED AS A PART OF SUCH EQUIPMENT, AS IS HEREINAFTER CALLED FOR (AND WHICH IS NECESSARY FOR THE COMPLETION AND PROPER OPERATION) SHALL BE FURNISHED AS PART OF THIS CONTRACT WITHOUT ADDITIONAL COST THE OWNER, WHETHER OR NOT SHOWN IN DETAIL OR DESCRIBED IN THE SPECIFICATIONS.
6. WHEN DRAWINGS AND SPECIFICATIONS CONFLICT OR THERE IS A QUESTION AS TO THE PROPER INTENT OF THIS CONTRACT, THE CONTRACTOR SHALL ASSUME THE GREATER QUANTITY, THE HIGHER QUALITY AND/OR THE MORE EXPENSIVE METHOD IN HIS PRICING. ALL QUESTIONS SHALL BE DIRECTED TO THE ARCHITECT/ENGINEER IN WRITING ONLY AND ONLY UP TO TEN (10) DAYS PRIOR TO BIDDING.
7. THE DRAWINGS INDICATE THE GENERAL RUNS OF THE PIPING, DUCTWORK, ETC. SYSTEMS AND THE LOCATION OF EQUIPMENT AND APPARATUS, HOWEVER IT SHALL BE UNDERSTOOD THAT THE RIGHT IS RESERVED BY THE ARCHITECT/ENGINEER TO CHANGE THE LOCATION OF PIPING, DUCTWORK, EQUIPMENT AND APPARATUS TO A REASONABLE EXTENT AS BUILDING CONDITIONS MAY DICTATE, PRIOR TO THEIR INSTALLATION WITHOUT EXTRA COST TO THE OWNER.
8. ALL DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS. THE CONTRACTOR SHALL ACCOUNT FOR ANY LINING IN SIZING OF SHEET METAL.
9. ALL COMPONENTS SUPPLIED BY THIS CONTRACTOR SHALL BE UL LISTED AND/OR ETL LABELED AND SHALL CONFORM TO ASHRAE STANDARD 15.
10. ANY CHANGES FROM THE DRAWINGS AND SPECIFICATIONS AND ANY INTERPRETATION THEREOF SHALL HAVE THE PRIOR APPROVAL OF THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL SUBMIT IN WRITING, AT THE TIME OF SIGNING THE CONTRACT, ANY ITEMS OF NECESSARY LABOR AND MATERIALS, WHICH, IN HIS OPINION, ARE LACKING IN REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS TO INSURE A COMPLETE JOB IN ALL RESPECTS. NO CONSIDERATION WILL BE GRANTED TO ALLEGED MISUNDERSTANDING OF MATERIALS TO BE FURNISHED, WORK TO BE DONE, OR CONDITIONS TO BE COMPLIED WITH, IT BEING UNDERSTOOD THAT THE TENDER OF A PROPOSAL CARRIES WITH IT THE AGREEMENT TO ALL ITEMS AND CONDITIONS REFERRED TO HEREIN, OR INDICATED ON THE ACCOMPANYING DRAWINGS.
11. FURNISH ALL COMBINATION MOTOR STARTER/DISCONNECTS FOR EQUIPMENT (WITH THE EXCEPTION OF STARTERS AND ELECTRIC ITEMS ALREADY MOUNTED ON EQUIPMENT OR EQUIPMENT NOT REQUIRING SAME). FAN MOTOR STARTER/DISCONNECTS SHALL HAVE CONTACTS FOR ATC CONNECTION AND A TERMINAL BLOCK CONNECTION FOR FIRE ALARM FAN SHUTDOWN. STARTERS PER MANUFACTURERS RECOMMENDATIONS, UNDERWRITERS INSPECTION AND CERTIFICATE REQUIRED. COORDINATE WITH ELECTRICAL CONTRACTOR.
12. THIS CONTRACTOR SHALL COORDINATE WITH OTHER TRADES PROVIDING ELECTRIC, GAS, WATER, ETC. CONNECTIONS TO SYSTEMS OR EQUIPMENT THAT ARE PART OF THIS CONTRACT. PROVIDE EQUIPMENT CUTS AND EXACT LOCATIONS, INCLUDING ORIENTATION, OF ALL SYSTEMS AND EQUIPMENT REQUIRING SUCH CONNECTIONS. THIS SHALL BE DONE WELL IN ADVANCE OF THOSE TRADES INSTALLING THEIR CONNECTION WORK.
13. COORDINATION DRAWINGS (IF APPLICABLE): ATTENTION IS DIRECTED TO DIVISION 1 FOR COORDINATION DRAWING REQUIREMENTS FOR THIS PROJECT. THESE DRAWINGS ARE CRITICAL TO THE PROPER EXECUTION OF THE WORK AND FAILURE TO HONOR THESE REQUIREMENTS MAY BECOME THE BASIS FOR DENIAL OF ANY AND ALL CLAIMS FOR EITHER OR BOTH "TIME" AND "MONEY".
14. LOCATION AND SIZES OF EXISTING PIPING, DUCTWORK, EQUIPMENT, ETC. ARE APPROXIMATE. EXACT SIZES AND LOCATIONS OF ALL EXISTING WORK SHALL BE VERIFIED ON THE JOB.
15. BEFORE FABRICATION THIS CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND CONDITIONS ON JOB AND COORDINATE HIS WORK WITH THE WORK OF ALL OTHER CONTRACTORS.
16. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER PRIOR TO SUBMISSION OF BID TO DETERMINE WHAT WORK MUST BE PERFORMED AFTER NORMAL BUSINESS HOURS. UNLESS OTHERWISE DIRECTED ANY NOISY WORK (CHOPPING, CORE DRILLING, HAMMERING, ETC.) AND BUILDING POWER INTERRUPTIONS SHALL BE PERFORMED OUTSIDE OF NORMAL BUSINESS HOURS. CONFIRM NORMAL BUSINESS HOURS WITH BUILDING OWNER. NO ADDITIONAL COST WILL BE CHARGED TO OWNER FOR WORK PERFORMED OUTSIDE NORMAL BUSINESS HOURS.
17. REFER TO ARCHITECT'S REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL CEILING MOUNTED ITEMS.
18. OPENINGS AROUND PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS. ALL SLEEVES MUST HAVE BUSHINGS. SEALANT SHALL BE 3 HOUR FIRE BARRIER #CP-25 (NO LESS THAN 3" THICK BACKED UP WITH MINERAL WOOL).
19. PREPARE 'AS-BUILT' DRAWINGS THAT REFLECT ACTUAL CONSTRUCTION AND SHOW DEVIATIONS FROM DESIGN DRAWINGS.

LEGEND

- EXISTING DUCTWORK, EQUIPMENT, ETC. TO REMAIN
- EXISTING DUCTWORK, EQUIPMENT, ETC. TO BE REMOVED
- POINT OF CHANGE IN DUCT SIZE — NEW DUCTWORK — 1" THERMAL ACOUSTIC LINING-DUCT SIZES ON PLANS ARE CLEAR INSIDE DIMENSIONS
- THERMAL ACOUSTIC LINING — NEW DUCTWORK — FLEXIBLE CONNECTION; POINT OF CHANGE IN DUCT SIZE
- FLEXIBLE CONNECTION — NEW DUCTWORK — POINT OF CHANGE IN DUCT SIZE
- SQUARE DUCT TURN WITH TURNING VANES
- HWS — HOT WATER HEATING SUPPLY PIPING
- HWR — HOT WATER HEATING RETURN PIPING
- EHWS — EXISTING HOT WATER HEATING SUPPLY PIPING
- EHWR — EXISTING HOT WATER HEATING RETURN PIPING
- EFOS — EXISTING FUEL OIL SUPPLY PIPING
- EFOR — EXISTING FUEL OIL RETURN PIPING
- FLOW DIRECTION WITHIN PIPE
- GATE VALVE (HORIZONTAL/VERTICAL)
- COMBINATION BALANCING & SHUT-OFF VALVE (CIRCUIT SETTER)
- 2 - WAY CONTROL VALVE
- 3 - WAY CONTROL VALVE
- CHECK VALVES
- GAS SHUT OFF COCK
- PIPE CONNS. (BOTTOM; TOP 45 OR 90; PIPE UP)
- AV — AUTOMATIC AIR VENT IDENTIFICATION
- THERMOMETER
- PRESSURE GAUGE (WITH SHUT-OFF COCK)
- B — BOILER IDENTIFICATION
- EX — EXPANSION TANK IDENTIFICATION
- HWP — HOT WATER PUMP IDENTIFICATION
- DC — DOMESTIC HOT WATER CIRCULATOR PUMP IDENTIFICATION
- EXDCP — EXISTING DOMESTIC HOT WATER CIRCULATOR PUMP IDENTIFICATION
- EXB — EXISTING BOILER IDENTIFICATION
- EXEX — EXISTING EXPANSION TANK IDENTIFICATION
- EXHWP — EXISTING HOT WATER PUMP IDENTIFICATION
- POINT OF DISCONNECTION
- POINT OF CONNECTION, NEW TO EXISTING
- SECTION/DETAIL/ELEVATION/PART PLAN NUMBER
- DRAWING NUMBER
- SECTION/ELEVATION IDENTIFICATION

GENERAL REMOVAL NOTES

1. THE SCOPE OF REMOVAL SHOWN ON "REMOVALS" DRAWINGS IS DIAGRAMMATIC ONLY AND INDICATES THE INTENT OF THE WORK TO BE PERFORMED AND NOT THE COMPLETE SCOPE OF DEMOLITION AND/OR REMOVAL WORK. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO REMOVE ANY RELATED MECHANICAL DEVICES EVEN IF NOT SPECIFICALLY INDICATED TO BE REMOVED ON THESE DRAWINGS IN ORDER TO ACCOMMODATE NEW WORK.
2. DEVICES SHOWN CROSS HATCHED ON DRAWINGS ARE ITEMS TO BE REMOVED. ANY DEVICES REMOVED SHALL INCLUDE (BUT SHALL NOT BE LIMITED TO) THE REMOVAL OF ALL ASSOCIATED PIPING, CONTROLS, ETC. THAT ARE NOT INCORPORATED IN THE NEW LAYOUT, UNTIL SUCH REMOVAL IS COMPLETE. THIS CONTRACTOR SHALL PERFORM ALL WORK REQUIRED TO INSURE CONTINUITY OF SERVICE TO EXISTING REMAINING EQUIPMENT. NO EXTRAS RELATING TO THE SCOPE OF WORK DESCRIBED WILL BE ALLOWED.
3. EQUIPMENT, PIPING, ETC., REQUIRED TO RECONNECT SHALL BE INSTALLED CONCEALED WITHIN THE NEW SUSPENDED CEILINGS, PARTITIONS AND/OR WALLS, FLOORS, NO SURFACE MOUNTED OR EXPOSED EQUIPMENT, PIPING, ETC., SHALL BE PERMITTED, UNLESS SPECIFICALLY INDICATED.
4. ALL ITEMS TO BE REMOVED SHALL BE REVIEWED WITH THE OWNER PRIOR TO REMOVAL. OWNER SHALL HAVE FIRST SALVAGE RIGHTS. ITEMS THE OWNER WISHES TO KEEP SHALL BE REMOVED WITH CARE AND STORED AS DIRECTED BY OWNER. ITEMS THE OWNER DOES NOT WISH TO KEEP SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.
5. REMOVE OR RELOCATE ALL DEVICES LOCATED ON THE EXTERIOR OF THE BUILDING OR ON THE INTERIOR OF EXTERIOR WALLS AS REQUIRED TO ACCOMMODATE A NEW BUILDING ADDITION OR TO ALLOW THE ADDITION OF DOORWAYS INTO THE NEW ADDITION.
6. REMOVALS SHALL BE COORDINATED WITH OTHER TRADES AFFECTED.
7. REMOVAL OF ANY PIECE OF EQUIPMENT OR TERMINAL DEVICE SHALL INCLUDE REMOVAL OF CONNECTING DUCTWORK AND PIPING BACK TO EXISTING MAINS THAT REMAIN. CAP EACH BRANCH AIR/WATER-TIGHT. CONTROLS AND CONTROL COMPONENTS SHALL ALSO BE REMOVED. DO NOT LEAVE COMPONENTS (CONTROLLERS, PNEUMATICS, ETC.) THAT HAVE NO FUNCTION. PROVIDE CONTROL WIRING, DUCTWORK, PIPING, ETC. AS NECESSARY TO MAINTAIN CONTINUITY OF SERVICE FOR EQUIPMENT OR TERMINAL DEVICES TO REMAIN.
8. ALL PIPING TO BE REMOVED SHALL BE PROPERLY PLUGGED OR CAPPED BENEATH FINISHED SURFACES, SO THAT UPON COMPLETION OF ALL NEW WORK, ALL ABANDONED PIPING SHALL BE CONCEALED IN FINISHED AREAS.
9. NO DEAD ENDS SHALL BE LEFT ON ANY PIPING UPON COMPLETION OF JOB. BRANCHES SHALL BE CUT AND CAPPED AT MAINS. THE EXISTING SYSTEM SHALL BE LEFT IN PERFECT WORKING ORDER UPON COMPLETION OF NEW WORK.
10. CHIMNEY INSPECTION AND SOOT REMOVAL: ON PROJECTS INCLUDING BOILER REMOVAL OR REPLACEMENT, CONTRACTOR SHALL GATHER TOGETHER WITH A VACUUM-CLEANING MACHINE ALL ACCUMULATIONS OF SOOT. HE SHALL REMOVE ALL SOOT FROM THE BASE OF THE CHIMNEY. THE CHIMNEY SHALL BE INSPECTED AND ANY DEFICIENCIES NOTED IN A WRITTEN REPORT.

BEFORE FABRICATION THIS CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND CONDITIONS ON JOB AND COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER CONTRACTORS.

OLD NYACK HIGH SCHOOL BOILER REPLACEMENT

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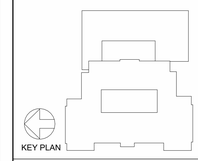


Professional Seal

NYSED Project Control No.
50-03-04-03-0-003-019

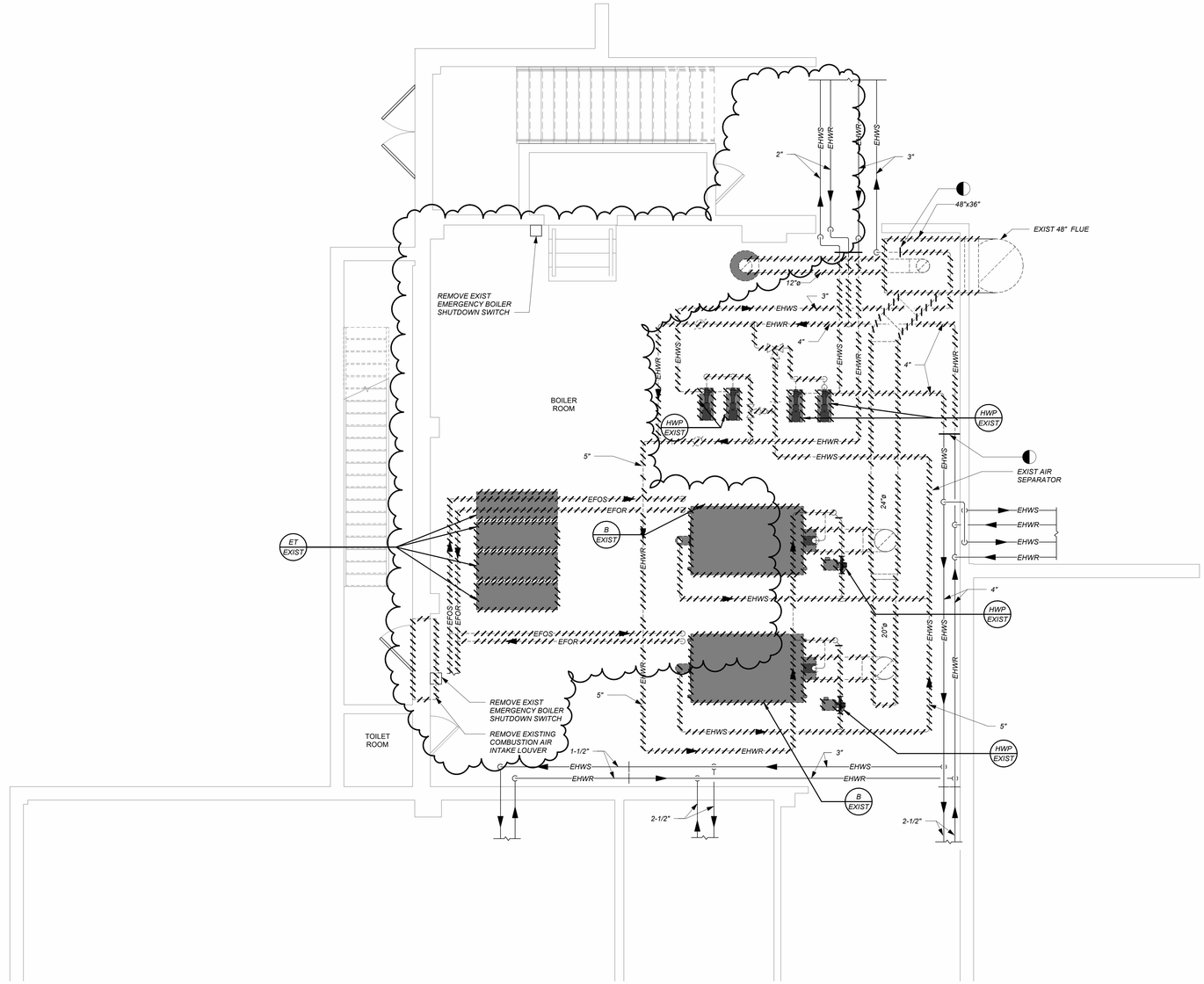
Design Phase
ISSUE FOR BID

No.	Date	Issue
3	05/07/2025	ADDENDUM 1
2	04/18/2025	ISSUE FOR BID
1	09/12/2024	CONSTRUCTION DOCUMENTS

Sheet Title
LEGEND, NOTES, & ABBREVIATIONS

Job No. 2024-1035	Date 04/18/2025
Scale AS NOTED	Drawn / Checked BGA / BGA

Sheet Number
H001



BOILER ROOM PLAN
REMOVALS (1 / H101)

0 4' 8'
1/4 inch=1 foot

N

NOTE:

BEFORE COMMENCEMENT OF ANY REMOVAL WORK, THIS CONTRACTOR SHALL TEST HOT WATER FLOW AT EXISTING PUMPS AND ALL HOT WATER MAINS AND PRIMARY BRANCHES THAT ARE TO REMAIN. UPON THE CONCLUSION OF THE NEW WORK, ALL WATER FLOWS SHALL BE RETURNED TO THESE CONDITIONS.

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1 / H101
KEY PLAN

Professional Seal

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BOILER ROOM PLAN (REMOVALS)

Job No.	Date
2024-1035	04/18/2025
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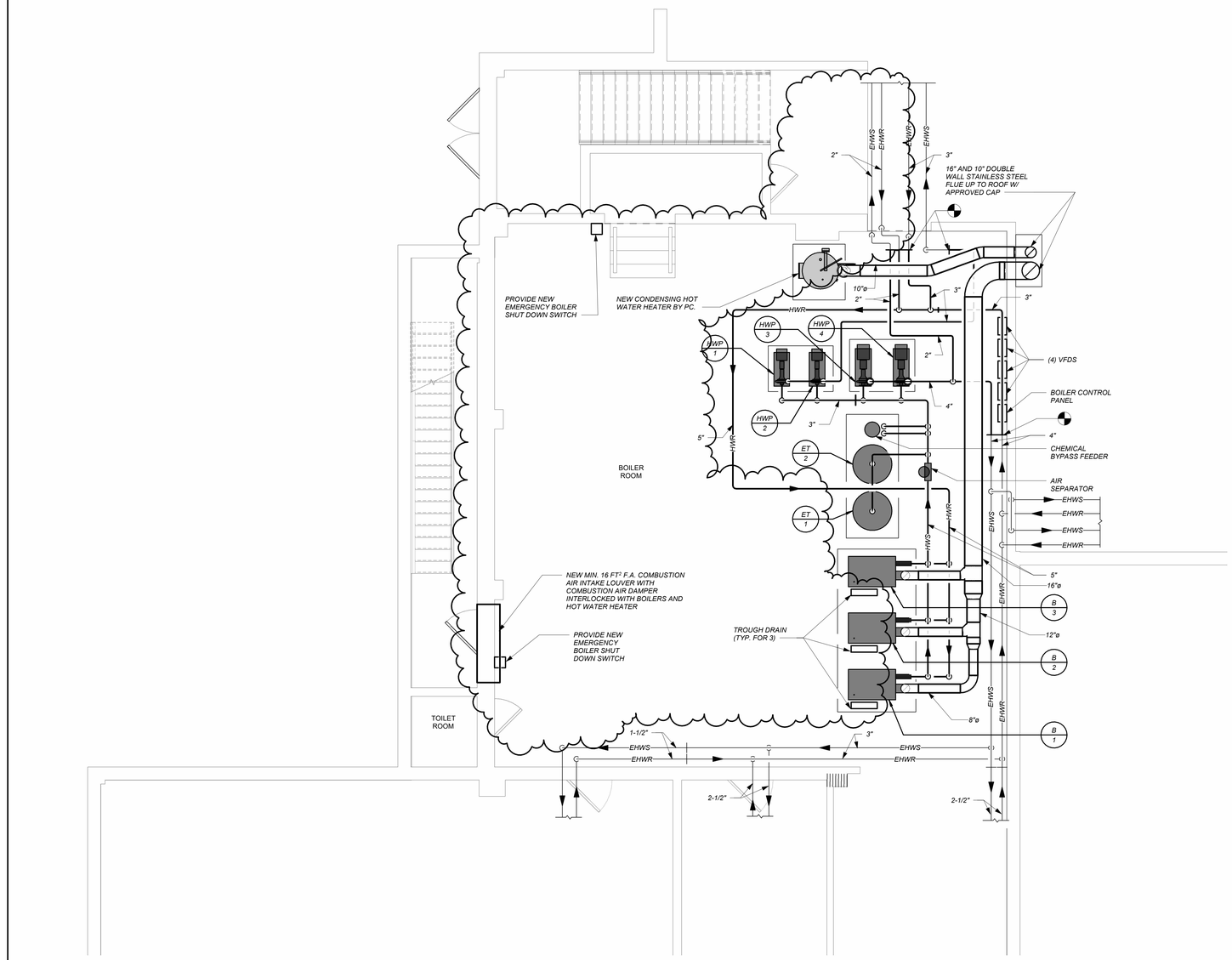
H101



BOILER ROOM PLAN
NEW WORK — 1 / H201

0 1' 4' — 1/4 inch=1 foot

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1 / H201
KEY PLAN

Professional Seal

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Sheet Title
BOILER ROOM PLAN (NEW WORK)

Job No.	Date
2024-1035	04/18/2025
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AS NOTED	BGA / BGA

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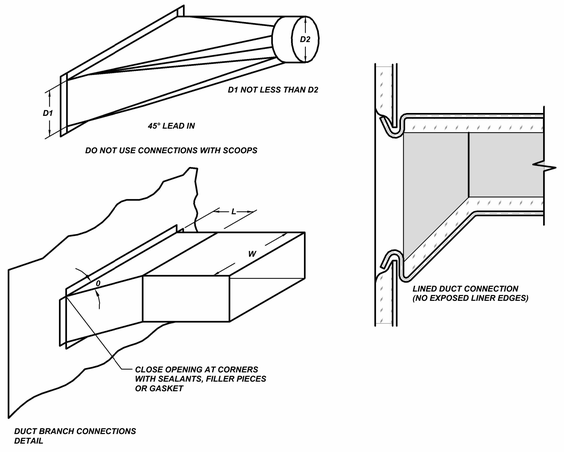
H201

SCHEDULE OF BOILERS

BOILER DATA			BURNER DATA					WATER DATA						ELECTRICAL			PHYSICAL DATA		
MARK	LOCATION	MODEL No (1)	INPUT (CFH)	OUTPUT (MBH)	FUEL	AHRI EFFICIENCY	MIN-MAX GAS PRESSURE	OPERATING PRESSURE	RELIEF VALVE PRESSURE	RATED PRESSURE	WATER TEMP LWT	WATER TEMP EWT	MIN / MAX FLOW	SERVICE	FLA	BURNER MOTOR HP	LxWxH(IN)	WEIGHT (LBS)	REMARKS
B-1, B-2, B-3	BOILER ROOM	BMK-2000	2000	1900	NATURAL GAS	94.6%	4 - 14 IN W.C.	25 PSIG	50 PSIG	160 PSIG	180 F	160 F	25/350 GPM	120/1/60	16	1.6 HP	58 x 28 x 78	1760	REFER TO (2)(3)(4)

NOTES
(1) AS MANUFACTURED BY "AERCO".
(2) INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
(3) PROVIDE BOILER SEQUENCER W/ HW RESET, BOILER SEQUENCING VALVE AND CONTROLLER, SINGLE RETURN INLET CONNECTION, CHECK VALVE ON EACH INLET CONNECTION, AND CONDENSATE NEUTRALIZER FOR EACH BOILER AND COMMON FLUE DRAINS.
(4) VENTLESS GAS TRAIN, MIN TURNDOWN: 15:1, MAX NOX: 9 PPM, 3% O2 CORRECTION, NATIVE BACNET BMS COMMUNICATION, BOILER STAGING POINT TO NOT EXCEED 40%.



DUCT BRANCH CONNECTIONS DETAIL

DUCT BRANCH CONNECTIONS DETAIL 3/H301 No Scale

SCHEDULE OF HOT WATER PUMPS

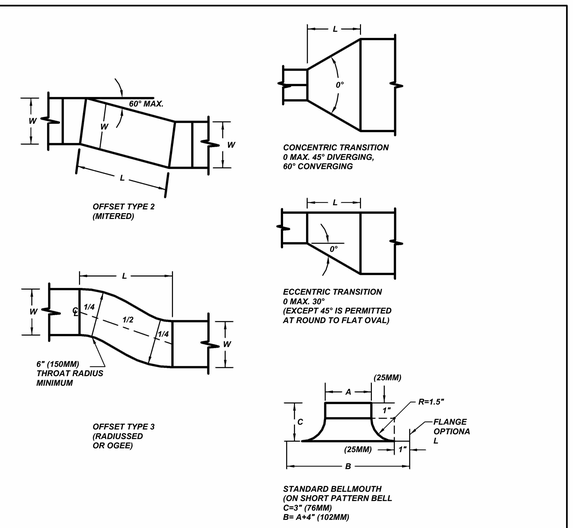
MARK	LOCATION	SERVICE	MODEL No (1)	GPM	HEAD FT H20	RPM	MOTOR HP	ELECTRIC SERVICE	REMARKS
HWP-1	BOILER ROOM	1949 ADDITION	E-1510 1.5BC	125	78	1800	5	208/3/60	REFER TO (2)(3)
HWP-2	BOILER ROOM	1949 ADDITION	E-1510 1.5BC	125	78	1800	5	208/3/60	REFER TO (2)(3)(4)
HWP-3	BOILER ROOM	ORIGINAL BUILDING	E-1510 2.5BB	215	83	1800	10	208/3/60	REFER TO (2)(3)
HWP-4	BOILER ROOM	ORIGINAL BUILDING	E-1510 2.5BB	215	83	1800	10	208/3/60	REFER TO (2)(3)(4)

NOTES
(1) AS MANUFACTURED BY "BELL & GOSSETT".
(2) INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
(3) PROVIDE VFD.
(4) STANDBY SERVICE WITH LEAD/LAG OPERATION.

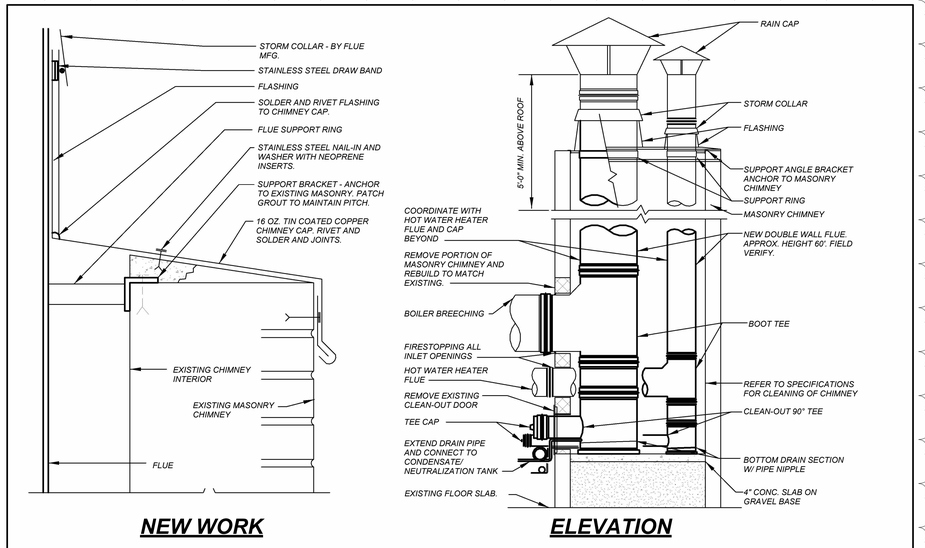
SCHEDULE OF EXPANSION TANKS

MARK	LOCATION	SERVICE	MODEL No (1)	TANK VOLUME GALS.	ACCEPTANCE VOLUME GALS	REMARKS
ET-1	BOILER ROOM	BMK-2000	B1000	264	264	REFER TO (2)(3)
ET-2	BOILER ROOM	BMK-2000	B1000	264	264	REFER TO (2)(3)

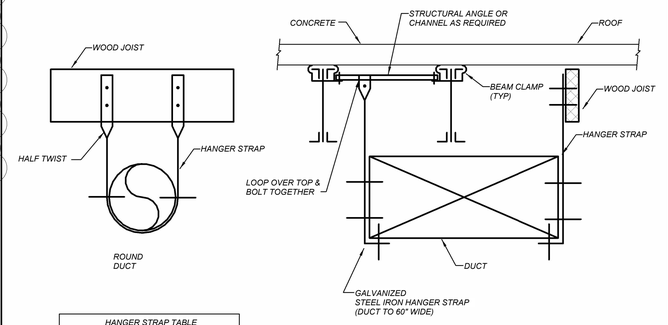
NOTES
(1) AS MANUFACTURED BY "BELL & GOSSETT".
(2) INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
(3) ASME RATED, VERTICAL FLOOR MOUNTING



DUCT OFFSETS AND TRANSITIONS DETAIL 1/H301 No Scale



CHIMNEY / FLUE LINING DETAIL 4/H301 No Scale



HANGER STRAP TABLE	
DUCT SIZE	METAL GAUGE
UPTO 2 SQFT.	20 GA. GALV.
UPTO 4 SQFT.	16 GA. GALV.
UPTO 6 SQFT	12 GA. GALV.
UPTO 8 SQFT.	1/16" GALV.
OVER 8 SQFT.	SEE SMACNA GUIDELINE

HANGER SPACING SHALL BE THE LESSER OF 10 Ft. OR TWO TIMES LENGTH OF DUCT SECTION

DUCT SUPPORT DETAIL 2/H301 No Scale

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SCHEDULES & DETAILS

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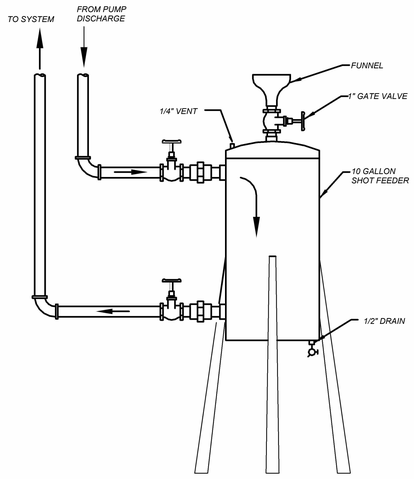
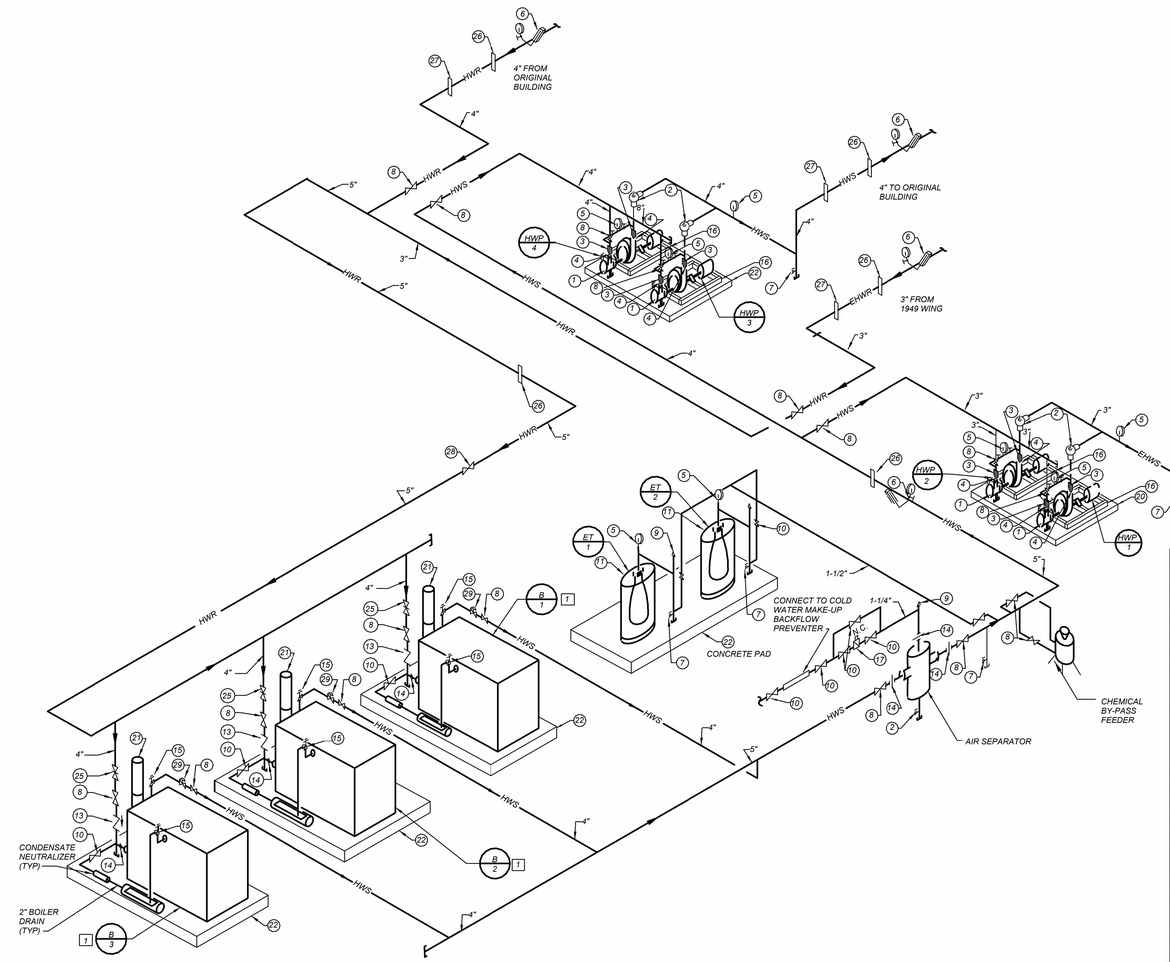


MANUAL CHEMICAL BY-PASS & FEEDER DETAIL 5 / H401 — No Scale



LIST OF APPURTENANCES

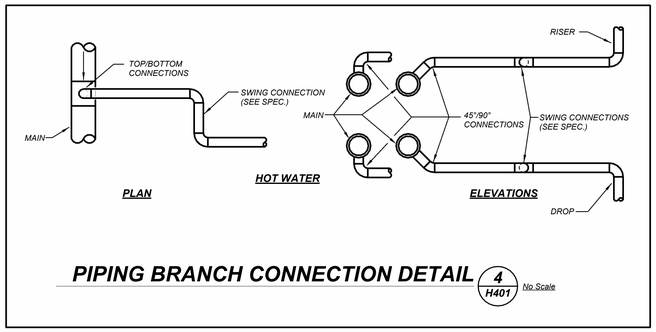
MARK	DESCRIPTION
1	SUCTION DIFFUSER
2	TRIPLE DUTY VALVE (SOFT SEAT)
3	FLEXIBLE CONNECTION
4	CONCENTRIC REDUCER
5	PRESSURE GAUGE (W/SHUT-OFF COCK)
6	PRESSURE GAUGE (WITH SHUT-OFF COCK) & THERMOMETER
7	DRAIN VALVE WITH HOSE END CONNECTION
8	GATE VALVE (WITH CHAIN OPERATOR FOR UNREACHABLE LOCATIONS)
9	AUTOMATIC AIR VENT
10	BALL VALVE
11	PRESSURIZED EXPANSION TANK
12	CONDENSATE DRAIN
13	CHECK VALVE
14	UNION CONNECTION
15	PRESS./TEMP. RELIEF VALVE
16	GROUT PUMP BASE INTO PAD
17	BRONZE BODY MAKE-UP WATER PRESSURE REGULATOR W/ BUILT IN CHECK VALVE
18	CONDENSATE RECEIVER
19	MANUAL GAS COCK
20	EXISTING HOUSE KEEPING CONCRETE PAD
21	FLUE OUTLET
22	HOUSEKEEPING PAD
23	BOILER DRAIN
24	GAS PRESSURE REGULATOR
25	BALANCING VALVE
26	HEADER TEMPERATURE SENSOR
27	DIFFERENTIAL PRESSURE SENSOR (VFD)
28	BUTTERFLY VALVE
29	AUTOMATIC ISOLATION VALVE
30	MANUAL ISOLATION VALVE

KEYED NOTES (NEW WORK)

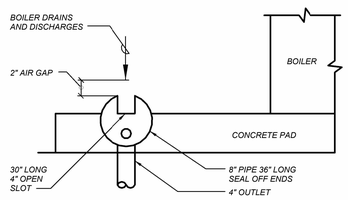
1 PROVIDE (3) NEW CONDENSING HOT WATER BOILERS. COMPLY WITH MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS AND OBTAIN ALL APPROVALS. SEE SPECIFICATIONS.

2 PROVIDE DUAL LOW WATER CUTOUTS FOR EACH BOILER.

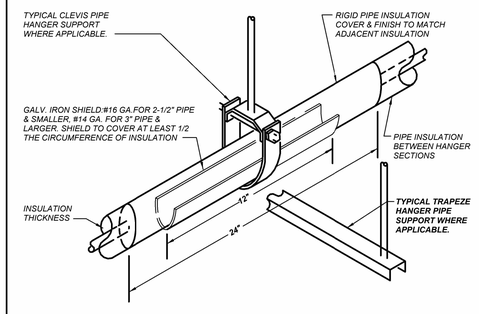
BOILER SCHEMATIC HEATING PIPING DIAGRAM 1 / H401 — No Scale



PIPING BRANCH CONNECTION DETAIL 4 / H401 — No Scale



TROUGH DRAIN DETAIL 3 / H401 — No Scale



INSULATED PIPE HANGER DETAIL 2 / H401 — No Scale

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