

PLUMBING AND DRAINAGE

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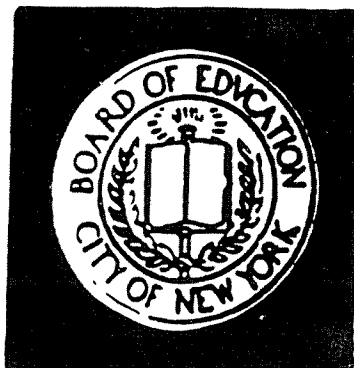
INCLUDING

HEAVY KITCHEN EQUIPMENT

STANDARD SPECIFICATIONS

TWENTY FOURTH EDITION

1988



**BOARD OF EDUCATION
CITY OF NEW YORK**

**DIVISION OF SCHOOL BUILDINGS
28-11 QUEENS PLAZA NORTH
LONG ISLAND CITY NEW YORK 11101**

PLUMBING AND DRAINAGE
INCLUDING HEAVY KITCHEN EQUIPMENT
STANDARD SPECIFICATION
TWENTY-FOURTH EDITION
1988

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SECTION 15A-1

GENERAL CONDITIONS

15A-1.01 Numbering of Paragraphs

The number of paragraphs is not intended to be consecutive.

15A-1.02 Information

- A. All information relating to this contract shall be obtained at the Office of the Executive Director.
- B. No verbal answer will be given to any inquiries in regard to the meaning of the drawings and specifications, nor will any verbal instructions be given previous to the award of the contract. No verbal statement regarding the contract by any person previous to the award of the contract will be authoritative. Any explanation desired by bidders must be requested in writing. If reply is made it will be communicated to all Contractors who have indicated their intention to bid on the work.
- C. Should any errors, omissions, inconsistencies or obscurity in wording appear or occur on the drawings or in the specifications, or should there be any discrepancies between drawings and specifications, the Contractor shall, before submitting his bid, apply to the Executive Director, in writing, for an interpretation and determination of the intent of the drawings and specifications. Any interpretation made by the Executive Director previous to the receipt of bids shall be a part of the contract.

15A-1.03 Contract

The attention of bidders is expressly called to the contract form which will form a part of this contract, a copy of which may be examined at the Plan Room, 29-11 Queens Plaza North, Long Island City, New York, 11101.

15A-1.04 Scope and Interpretation

- A. It is the intention that these specifications and the drawings accompanying same shall provide for the furnishing, setting and connection of sanitary fixtures, Heavy Kitchen Equipment, Cabinets, Cabinet Assemblies, Etc., pumps, heaters, tanks, etc.; the installation of drainage, water supply, and gas supply systems, and the performing of all work pertaining or incidental thereto, including all labor, materials, equipment and

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appliances to complete the work shown on the drawings and called for in this specification. The complete systems and the work shall be so installed as to give proper and continuous service under all conditions, and shall be in accordance with the requirements of all public authorities having jurisdiction and to the complete satisfaction of the Board of Education. Any work shown on the drawings and not particularly described in the specifications, or vice versa, or any work which may be deemed necessary to complete the contract shall be furnished by the Contractor as part of his contract.

- B. For purposes of clearness and legibility, plumbing drawings are essentially diagrammatic and, although size and location of equipment are drawn to scale wherever possible, contractor shall make use of all contract documents.
- C. The drawings indicate size, connection points and routes of pipe. It is not intended, however, that all offsets, rises and drops are shown. Install piping as required to fit structure, avoid obstructions, and retain clearances, headroom, openings and passageways.
- D. It is intended that all fixtures shown and described on the drawings shall be connected with waste, vent and water supply piping in accordance with the requirements of the Administrative Code and Standard Details, despite the omission of indication of such piping on the plans; provided that the plans do not specifically indicate that such piping shall not be installed. Any questions involving the installation of such piping shall be referred to the Executive Director for resolution.
- E. Fixtures, piping and other plumbing items which are shown and described on the drawings and are not specifically labeled "Future" or "N.I.C." shall be furnished and installed by the contractor. Related work which is necessary for the proper installation of such items shall be performed by the contractor.
- F. During the course of the work should any ambiguities or discrepancies be found on the drawings or in the specifications, or should there be found any discrepancies between the drawings and the specifications, to which the Contractor has failed to call attention before submitting his bid, then the Executive Director will interpret the intent of the drawings and specifications, and the Contractor hereby agrees to abide to the Executive Director's interpretation and agrees to carry out the work in accordance with the decision of the Executive Director. It is expressly stipulated that neither the drawings nor the

15A-1.04 Scope and Interpretation - (Cont.)

specifications shall take precedence one over the other, and it is further stipulated that the Executive Director may interpret or construe the drawings and specifications so as to secure in all cases the most substantial and complete performance of the work as is most consistent with the needs and requirements of the work, and of that question the Executive Director shall be the sole judge.

15A-1.05 Examination of Site

- A. The Contractor shall be held to have examined the site and premises and to have compared it with the drawings and specifications, and to have satisfied himself to the conditions existing at the site, as relating to the actual condition of the site at the time of estimating upon the work, the storage and handling of materials, and all other matters as may be incidental to the work under the contract, before the delivery of his proposal, and no allowance will subsequently be made to the Contractor by reason of any error on his part, due to his neglect to comply with the requirements of this clause.
- B. Any diagram, chart, plan or description of borings or other sub-soil data which may be submitted with the drawings shall not, because of the well understood difficulties under which such borings and sub-soil exploration are made, be held to be final and conclusive. The Board of Education shall not be responsible for any difference between the indications shown on the diagram, chart, plan or description or borings or any other sub-soil data and the actual sub-surface condition or sub-surface materials that are disclosed by excavation whatsoever the same may be. No damages or additional compensation shall be claimed or paid to the Contractor for any difference in the character of the materials to be excavated whatsoever the same may be, or on account of the nature or amount of work in excavating, or for any pumping that may be required.

15A-1.06 Insurance

See Instructions to Bidders.

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15A-1.07 Safety

A. Laws, Codes, Provisions; Comply with:

1. Chapter 615, Laws of 1922, Workmen's Compensation Law and all acts amendatory thereof.
2. Industrial Code - Rule 21 and 23, State of New York Department of Labor.
3. Article 29, Contract Form.
4. OSHA of 1970 and the Construction Safety Act of 1969 as amended.

B. First Aid: Provide, at site, kit of articles and medications for supplying first-aid treatment to anyone injured in connection with the work. Make kit available for use by other Contractors working on site.

C. Reports of Accident and Claims:

1. Submit promptly, on printed forms supplied by Executive Director, reports of all accidents arising out of performance of contract work.
2. Furnish full details, including statements of witnesses, if any.
3. Report immediately, by telephone or messenger, to the Executive Director and his job representative, all accidents resulting in death, serious injury or serious property damage. Follow-up with written report, as in (1) and (2) above.
4. If any claim is made against Contractor or any sub-contractor as the result of any accident, the Contractor shall submit the facts in written report, giving full details of claim.

15A-1.08 Compensation and Labor Laws

The Contractor shall comply with the provisions of Chapter 615 of the Laws of 1922, known as the Workmen's Compensation Law, and acts amendatory thereof; also with the provision of the N.Y. State Labor Law; each as respectively provided for in the Contract.

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General Conditions

15A-1.08 Compensation and Labor Laws - (Cont.)

A copy of wage rates, certified by the Comptroller within ninety (90) days of date of bid opening, is made a part of this specification by attachment.

The Contractor and every subcontractor shall post in a prominent and accessible place on the site of the work, a legible statement of wage rates specified to be paid for the various classes of mechanics, workmen, or laborers of the work.

15A-1.09 Patented or Particular Articles or Materials

- A. Whenever any article or class of material is specified by the trade names or the names of not more than two particular patentees, manufacturers or dealers, or by reference to the catalogs of not more than two such manufacturers or dealers, it shall be taken as intending to mean the article or class of material specified or any other equal thereto in quality, finish and durability, and equally as serviceable for the purpose for which it is intended, as may be judged and determined by the Executive Director.
- B. Should the Contractor submit and the Executive Director approve, under the provisions of the preceding paragraph any article or class of material other than that herein specified as equal in quality, finish and durability and equally as serviceable for the purpose for which it is intended, then the Contractor shall repair, at his own expense, any defects which may develop in the article or class of material substituted at any time within one year after the completion and acceptance of the entire work called for in this contract and these specifications.
- C. Should the Contractor submit any article or class of material other than the one herein specified, as being equal in all respects to and equally as serviceable for the purpose for which it is intended, he shall produce satisfactory evidence that a complete installation of the type of article or material, that he proposes to use, now is or has been in successful operation in or near the City of New York for a period of at least one year.
- D. Any substitutions proposed by the Contractor shall be submitted by him to the Executive Director's Approval Committee within two weeks after the award of the contract. A complete set of shop drawings, photographs and specifications clearly showing and describing the article or materials shall accompany the request for permission to make the substitution. If permission is given the payment for such article or material will not be made unless and until such article or material, as a whole has been in

Section 15A-1
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15A-1.09 Patented or Particular Articles or Materials - (Cont.)

operation or in use in the building and has proved entirely satisfactory to the Executive Director. In case that the substituted article or material proves unsatisfactory after its installation and is therefore rejected, it shall not be removed from its location in the building or on the premises, until other suitable and satisfactory article or material is installed immediately upon the removal of the rejected article or material.

- E. No extension of time will be allowed for the time required for the consideration of any article or material thus substituted by the Contractor; neither will any extension of time be allowed or any responsibility be assumed by the Board of Education when a Contractor submits a request for changes in articles or materials or form of construction from that shown or specified, whether such request be granted or denied.
- F. The equipment shall be the latest model of the current year in design, material and workmanship and shall be the model specified in the Equipment Schedule. If the model specified in the Equipment Schedule has been superseded by a later model, the later model may submitted for approval.
- G. Nothing in these specifications shall be interpreted or taken to violate the provisions of Chapter 13, paragraph 348 of the New York City Charter, which provides that:

"Except for repairs, no patented pavement shall be laid, and no patented article shall be advertised for, contracted for or purchased, except under such circumstances that there can be fair and reasonable opportunity for competition, the conditions to secure which shall be prescribed by the Board of Estimate unless the Board of Estimate by a three-fourths vote shall find that it is to the interest of the City in a particular case to purchase and shall authorize the purchase of patented article as to which, competition cannot be secured."

- H. Whenever specifications identify materials by reference to the names of products of more than one manufacturer and whenever specifications give optional methods or materials, the choice shall be made by the contractor. No change in contract price shall be involved in any decision by the contractor in using any of these optional materials and methods.

15A-1.10 Ordinances, Permits, Fees, Etc.

- A. All necessary permits including equipment use permits required from the municipal or other public authorities shall be secured by and at the cost and expense of the Contractor who shall give

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all notices required by law, municipal ordinances, or the rules and regulations of the various Municipal Bureaus or Departments, and also as a part of the contract, and, without extra charge or compensation, shall comply with all State laws and all municipal Ordinances or Regulations that may be applicable to this work, together with all orders of the Department of Buildings, Department of Health, Department of Environmental Protection, Bureau of Electric Controls, Fire Department, etc., which shall be issued (in compliance with ordinances or regulations existing at the time bids are presented) by any or all of said Departments as applying to the work of the contract.

Note: When excavation work is done by the General Construction Contractor for the Plumbing and Drainage Contractor for the installation of sewers, watermains, gas piping or other piping in the streets the Plumbing and Drainage Contractor shall obtain and pay for all permits required by the Municipal Bureau or Department having jurisdiction.

Whenever in these specifications the name of a city official, bureau or department is mentioned, it is intended to mean the official, bureau or department having jurisdiction under the New York City Charter and the Code of Ordinances.

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- B. Attention is called to certain provisions of the Building Code regarding support of walls adjoining excavations, sidewalk sheds, scaffolding, roofs of adjoining buildings, floors to be filled in or covered, protection of floor openings, overloading, which provisions shall be complied with.
 - C. Should it be necessary to open the sidewalks or the street pavements in the performance of this contract, this Contractor shall pay costs designated by the Borough President or other Municipal Agencies involved to supervise the work of excavating, filling, opening and relaying pavements, etc., at such rate as is required by said Municipal Agencies. Where the pavement has been opened or removed in the performance of this contract, same shall be restored, relaid and replaced by this Contractor and kept in good condition and up to grade for two years, or as required by the Bureau of Highways.
 - D. Torch Burning Operation
 - 1. Any Contractor who stores or uses oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Rules and Regulations of the Division of Fire Prevention of the Fire Department of the City of New York, latest F.P. Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.

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15A-1.10 Ordinances, Permits, Fees, Etc. - (Cont.)

2. Each Contractor shall apply for and obtain permits for the use and storage of such equipment on school premises. Each person operating such equipment shall have on his person a certificate of fitness issued by the Fire Department.
3. The cost of permits, certificates, fire watches, apparatus, etc., shall be borne by the Contractor, at no additional cost to the Board of Education.

15A-1.11 Warranty Money

- A. A sum of money equal to one percent (1%) of the contract price shall be deposited by the Contractor with the Executive Director in cash or certified check upon a state or national bank and trust company or a check of such bank and trust company signed by a duly authorized officer thereof and drawn to the order of the Comptroller; or obligations of the City of New York, which the Comptroller may approve as of equal value with the sum so required, for period of not less than one calendar year from the date as defined in Article 70 of the Contract.

In lieu of the above, the Contractor may make such security payment to the Board by authorizing the Executive Director in writing to deduct the amount from the final payment which shall be deemed the deposit required above. This deposited sum of money will be held as security for the performance by the Contractor of any and all work of his contract that may be found within the stated period, to have been improperly performed or to be incomplete and for replacing and making good of any work or material that is found to be defective or that has unduly deteriorated during the stated period; all as judged and determined by the Executive Director.

- B. If any such work as aforesaid is discovered within the stated period, then the Contractor shall, within three days after notice from the Executive Director, commence to remove all defective and deteriorated work and material and replace it with work and material in accordance with the requirements of the specification and complete all uncompleted work as required by the specification and finish this work within a reasonable time.
- C. In the event of the failure of the Contractor to begin the aforesaid work within the three days and to complete the work within a reasonable time thereafter, then the Executive Director will cause such work to be done by other parties and deduct the cost thereof from the deposited percentage.

15A-1.11 Warranty money

- D. The deposited percentage or any balance thereof that may be left after payment has been made for making good defective or deteriorated work or completing uncompleted work of the contract that has been done by other parties, will be paid to the Contractor after the expiration of the stated period of one calendar year upon the certificate of the Executive Director which will state the amount of the balance due to the Contractor.

15A-1.12 Disconnecting Utility and Public Services

- A. Prior to the time the Board of Education sends the Contractor the written notice to commence work, the Board of Education shall give notice to the Bureau of Electric Controls and appropriate City of New York Agencies to have the steam, gas and electricity to the building to be demolished, disconnected by the utility companies owning the services. Certifications from the utilities that the services have been terminated shall accompany the notice to commence work.
- B. The Contractor shall seal or plug all storm or sanitary or other connections to the sewers leading from the structure to be demolished. He shall disconnect all water services and shall make the necessary arrangements with the Bureau of Water Supply to destroy or plug the tap in the city water main. The Contractor shall obtain all permits necessary to do such work prior to the commencement of demolition. All such work shall be done in full accordance with the Rules and Regulation of and to the satisfaction of the Department of the City of New York having jurisdiction thereof.
- C. The Contractor shall maintain and preserve all utilities, other than those covered by Paragraphs A and B above, traversing the premises. He shall maintain in a safe condition all street openings made by him, and shall backfill and tamp them.
- D. All expenses arising from or in connection with the performance of the provisions of Paragraphs B and C above shall be borne by the Contractor.

15A-1.13 Checking of Grades and Lines

Levels shall be taken from the legally established grades as shown on the survey. In order to provide for possible changes in the street lines and grades as between those shown by the plans and the date when curb is set, or sidewalk laid, or fence on street fronts erected, the Contractor, just prior to the beginning of such work, or any part thereof, shall consult the records of the Topographical Bureau of the Borough in which the building is located. Should it transpire that any changes in grades or lines have been made or are

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15A-1.13 Checking of Grades and Lines - (Cont.)

contemplated, the Contractor shall immediately notify the Executive Director, in writing, that he may make the necessary adjustment in the drawings. Failure on the part of the Contractor to comply with this requirement will place upon him the responsibility and expense of making any changes in curbs, sidewalks, fences or other work that may be necessary, to comply with the changes conditions.

15A-1.14 Protection of Materials and Work

- A. All openings left in floors and roofs for the passage of lines of soil, drain, waste, vent and supply pipes shall be covered and protected. All set traps shall be sealed with kerosene oil or molasses. Due precautions shall be taken against freezing during cold weather. All pipes shall be protected with suitable coverings, as soon as set. All open ends of pipes shall be closed by a proper fitting, to prevent obstruction and damage. The use of waterclosets and other plumbing fixtures during the progress of the work is strictly prohibited.
- B. In existing buildings where alterations are required, all fixtures, pipes, fittings, etc., which have been removed and reset, altered or repaired shall be protected as specified for new work. All unused connections shall be properly capped and where fittings occur they shall be provided with extra-heavy brass screw plugs.
- C. All motors and appurtenances shall be covered and protected during the progress of the work to prevent damage to same.
- D. All plumbing fixtures, and all fixtures, apparatus, etc., in connection with the heavy kitchen equipment and all exterior drinking fountains, etc., shall be protected during the progress of the work. Immediately after the installation of metal fixtures, appliances, utensils, coverings, etc., in kitchen, all parts of such work shall be protected against rust or discoloration by a coating of suitable anti-rust compound and also protected against damage by covering and enclosing same with suitable building paper and crating. When the building is practically complete and ready for use the fixtures, etc., shall be uncovered and all metal work cleaned and polished and the entire installation put in perfect working order.

15A-1.15 Axis Lines and Levels

The General Construction Contractor shall provide and maintain legible axis lines and level markings for the use of his sub-contractors and other contractors. There will be two axis lines for each rectangle or wing of the building plan. These axis lines shall be provided soon after excavation work commences. They shall

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15A-1.15 Axis Lines and Levels - (Cont.)

be provided on the forms for each floor before concrete is poured; they shall again be provided after the concrete is poured, and shall be maintained until partitions are commenced. Level markings shall be provided on at least 80% of the columns above each floor. They shall be placed four (4) feet above the finished floor level. The G.C. Contractor shall be responsible for the accuracy of axis lines and level markings. He shall provide proper surveying equipment and personnel to establish them.

15A-1.16 Guarantees

- A. The Contractor agrees to and hereby does guarantee, that all work of this Contract is free from all defects, and is as specified, and that should any defects, which cannot be proven to have been caused by improper use, develop within the space of one year from the date of completion of the work, as certified by the Executive Director in his certificate for final payment, such defects shall be made good by the Contractor, free of cost to the Board of Education.
- B. The pumps for water, sewage and air (either for pressure or vacuum) sewage ejectors, safety and relief valves, pressure reducing valves, specialties, hermetically sealed units for refrigerators, appliances, appurtenances, etc., necessary for the proper operation of the above named apparatus or equipment shall be included in the guarantee and shall have a five-year warranty on all parts.
- C. All hermetically or semi-hermetically sealed compressor units for refrigerators, freezers, ice cream cabinets, dessert cabinets, cold pans, water coolers, or any other equipment mechanically refrigerated, shall have a five-year warranty. This warranty, shall consist of replacing the hermetically or semi-hermetically sealed compressor unit if it shall become defective within five (5) years from date of acceptance. It shall be replaced free of charge, by the manufacturer, to the Board of Education exclusive of transportation and labor charges.
- D. All warranties shall be delivered to the Executive Director, prior to final acceptance and payment for equipment. All apparatus, specialties, etc., as a whole shall be erected under the direction and supervision of the manufacturers thereof.

15A-1.17 Drawings and Specifications

The drawings included in this contract are listed in the AMENDMENTS, grouped as follows:

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General Conditions

15A-1.17 Drawings and Specifications - (Cont.)

- A. Informative data, such as survey, borings, etc., issued to illustrate existing conditions. These are for information only and the Board does not guarantee that information thereon is correct. Boring data is subject to the limitations of Paragraph .05 this section.
- B. Project Drawings (sometimes referred to as the working set).
- C. Standard Details - These contain details of certain work required by the specifications and drawings.
- D. Full Size Details and supplementary drawings as may be issued by the Executive Director in accordance with the contract, after the contract is awarded, in order to further illustrate the work required by the contract.
- E. Whenever the words "Drawings" or "Plans" are used in the specifications, they shall be taken to include all of the drawings listed above. The word "details" shall mean any details appearing on any drawing listed above.
- F. The drawings issued to prospective bidders will comprise informative and project drawings (A) and (B). Standard Details (C) will not be issued to intending bidders but will be on file for examination in the Plan Room, 28-11 Queens Plaza North, Long Island City, New York 11101.

Upon award of the contract, the Executive Director will issue to the Contractor:

- 6 sets of specifications
(in addition to the one signed contract set)
- 6 printed sets of drawings (one set on cloth) of informative data (A) and project drawings (B)
(in addition to the one signed contract set)
- 3 printed sets of standard details (C)
- 1 printed set of full size detail (D) when and as issued.

The Contractor shall also be given one set of specifications and one set of contract drawings of each of the other trades.

- H. All drawings and specifications issued to the Contractor are the property of the Board of Education. They shall at all times be subject to the control of the Executive Director and at the completion of the contract shall be returned upon request. Specifications and drawings, including the signed set and those issued or purchased, shall be used in connection with this contract and they shall not be used for any other purpose without written authorization from the Executive Director.

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- I. Specifications (if a supply is available) and prints of further drawings required by the Contractor may be purchased by the Contractor at the rates set forth in the Instructions to Bidders.
- J. The drawings and specifications shall be carefully examined by the Contractor for the purpose of ascertaining whether or not they have the necessary scale drawings and details for all work shown, indicated or called for. Failure to apply at the proper time for details of any work so indicated shall not release the Contractor from furnishing said work, or from responsibility for the loss of time, or from constructing same in accordance with details.
- K. As-Built Drawings
 1. The Contractor shall, at his own cost and expense, secure from the Division of School Buildings transparencies of the Contract Drawings.
 2. The Contractor shall furnish "As-Built Drawings" that consist of all field changes involving construction materials, equipment and other items that are made or installed differently than indicated or called for in the Contract Drawings and Specifications. These drawings will also include changes that were required or approved by the Executive Director.
 3. As-Built Drawings are to be updated and reviewed monthly with the Bureau of Constructions' field representatives.
 4. At the completion of the Contract, the finished endorsed As-Built Drawings shall be delivered to the Executive Director prior to application for final payment. "As-Built Drawings" are not required for modernization or alteration work.

15A-1.18 Checking

Figures and dimensions on all drawings shall be checked by the Contractor, who shall note any discrepancies and shall lay before the Executive Director such as require attention. He will be held responsible for any errors not discovered before the work has been executed, but he shall not alter specifications, drawings or figures, nor make alterations in or additions to the quantity, character or arrangement of the materials or work whether same shall involve additional expense or not, unless same shall first be agreed upon in writing, as provided for by the contract; this provision however, shall not abridge in any way the Executive Director's rights as to the interpretation of the specifications, drawings and figures thereon.

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15A-1.19 Shop Drawings

- A. The Contractor shall promptly prepare and submit all shop drawings required by the specifications, contract and contract drawings, also all incidental shop drawings required for the proper performance of the work. The shop drawings shall illustrate fully the requirements of the specifications and the contract drawings, and shall accurately show quantities, kind of materials, method of assembly and all data required for fabrication, erection and installation. The relationship to adjoining work, whether furnished under other subdivisions of this contract or by other contractors, shall be properly shown.
- B. Shop drawings shall be identified by numbers, title, and sheet, and shall be bound in sets. The submission of shop drawings shall be accompanied by letter, in duplicate, from Contractor, giving the titles and numbers of the drawings. There printed material, bulletins, illustrations, and other data are submitted for approval, they shall conform to the requirements for shop drawings.
- C. The Contractor shall furnish four (4) sets of shop drawings with a letter of transmittal to the Bureau of Construction for a project designed by the Division of School Buildings; he shall furnish six (6) sets of shop drawings with a letter of transmittal to the Private Engineer for a project designed by the Private Engineer. Two (2) sets of approved shop drawings will be returned to the Contractor. Should the Contractor require more sets of the approved shop drawings for his own use, or if copies of such drawings be required by other City Agencies having jurisdiction over the work, or if copies are required by other Contractors whose work is related thereto, such additional copies shall be furnished by the Contractor at his own expense. When motor data, etc., requiring approval by the Bureau of Electrical Controls are submitted for approval, five (5) sets of such data shall be submitted.
- D. If the shop drawings are disapproved for failure to comply with contract requirements, or for other corrections, one (1) copy will be mailed to the Contractor with the corrections noted. The Contractor shall promptly make such corrections and changes, and again submit the number of sets as stated in (C), for final approval. No claim for delays, caused by the disapproval of drawings submitted, will be allowed if such disapproval is based on non-compliance with, or any deviation from, the contract requirements.
- E. The submission of shop drawings (in either the original submission or resubmitted with corrections) constitute evidence that the Contractor has checked all information thereon, and that he accepts and is willing to perform the work as shown, in

15A-1.19 Shop Drawings

a workmanlike manner and in accordance with the best standard practice. No claim for extra shall be based on work shown on a shop drawing, unless such claim is so noted on the Contractor's transmittal letter accompanying the shop drawings.

F. The approval of shop drawings will be general and shall not in any way relieve the Contractor from responsibility for the proper fitting, finishing quantities, and erection of the work in strict accordance with the contract requirements, nor does it relieve him from the responsibility of furnishing materials and workmanship not indicated on approved shop drawings but required for the completion of his work.

G. No work requiring submission of shop drawings shall be commenced until shop drawings are approved by the Executive Director.

15A-1.20 Gauges

Wherever thickness of metals are designated on the drawings or in the specifications by gauge number, and the type of gauge, or thickness in decimals of an inch, is not stated, the following gauges shall apply:

| Material | Gauge |
|--|---------------------------------|
| Aluminum Sheet..... | Brown & Sharpe or American Wire |
| Wire Aluminum, Brass and Copper..... | Brown & Sharpe or American Wire |
| Sheet Brass and Copper.. | Brown & Sharpe or American Wire |
| Brazed Brass and Copper Tubing..... | Brown & Sharpe or American Wire |
| Seamless Brass and Copper Tubing..... | Birmingham Wire (Stubs Iron) |
| Seamless Steel Tubing... | Birmingham Wire (Stubs Iron) |
| Stainless Steel Sheets.. | U.S. Standard |
| Stainless Steel Seamless Tubing..... | Stubs Iron |
| Monel Metal Tubing..... | Birmingham Wire (Stubs Iron) |
| Monel Metal Sheets..... | U.S. Standard |
| Sheet Steel and Iron.... | U.S. Standard |
| Steel Wire..... | American Steel and Wire |
| Zinc..... | Zinc |

15A-1.21 Samples

A. The Contractor shall furnish for approval all samples as hereinafter specified; also in all cases where material and quantity are not definitely specified, samples or specimens

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15A-1.21 Samples - (Cont.)

shall be submitted to the Executive Director for approval. Neither experimental nor untried types of construction, materials, devices, apparatus, etc., will be accepted. The work shall be in accordance with approved samples.

- B. To insure prompt consideration of samples, a letter, mailed on the date of shipment, shall contain a list of samples that have been forwarded together with the brand and the name of the manufacturer of the materials. This letter must not be sent in the same package with the samples. Any sample received in advance of such letter will be held two weeks; if at the expiration of that period no identifying letter has been received, the package will be given no consideration and will be discarded.
- C. All samples must be carefully packed so as to insure their delivery in good condition. Each sample must have a label showing the material represented, the name of the contractor, the name of the manufacturer of the material, and the name or number of the school and its location for which the sample is intended.
- D. The approval of samples is for quality, color and finish generally and does not modify the requirements of the specification or drawings as to dimensions or design.
- E. Samples shall be submitted in duplicate, one for the Executive Director's Office files and one for forwarding to the building. Should the Contractor desire an approved sample for his own files and additional sample shall be submitted; this sample shall be removed by the Contractor from the the office of the Executive Director within ten days after delivery.
- F. The approval of samples will be general and does not modify the requirements of the contract nor relieve the Contractor of any responsibility therewith. Approval will be limited to certain qualities (such as color only, finish only, construction only, etc.) wherever applicable and all other features shall be in accordance with specification requirements.

15A-1.22 Materials, Labor, Tools, Etc.

- A. See Contract Form in regard to labor, tools, scaffolding, etc.
- B. All materials and equipment shall be new and as specified.

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15A-1.22 Materials, Labor, etc. - (Cont.)

- C. The workmanship and materials of all items shall be of the best quality and shall at all times be subject to the inspection, direction and supervision of the Executive Director, who shall be afforded facilities for inspecting all parts of the work and who may reject all workmanship and materials which do not conform with the intent of the drawings and specifications. All such condemned work or materials shall be removed forthwith and immediately replaced with proper and acceptable work and materials. Failure to exercise such power, however, shall not be construed or held by the Contractor as an admission on the part of the Executive Director that the work, or any part thereof, has been faithfully performed in case the fact shall be otherwise.
- D. All materials and equipment, where applicable, shall also be approved by: Board of Standards and Appeals; Material and Equipment Acceptance Division of the Department of Buildings; all other authorities involved.

15A-1.23 Re-examination and Covering up of Work

Re-examination of questioned Work may be ordered by the Executive Director, and if so ordered, such part of the Work must be uncovered by the Contractor. If such part of the Work be found in accordance with the Contract Documents, the Executive Director shall pay the cost of re-examination and replacement. If such part of the Work be found not in accordance with the Contract Documents, the Contractor shall pay such cost and also the cost of restoring the work of any other contractor damaged or removed. If any part of the Work of the Contractor or of any other contractor be covered up by the Contractor without approval or consent of the Executive Director, such Work must, upon request of the Executive Director, be uncovered and restored to the satisfaction of the Executive Director at the expense of the Contractor.

15A-1.24 Time for Beginning and Completing Work

- A. The starting date of this contract shall be three days from the date of the notice by the Secretary of the Board of Education to the Contractor that the Comptroller has attached his certificate of the appropriation of funds to the contract, and the period fixed for the completion of work, stated in Amendment No. 1, shall begin to run from said commencement date.
- B. For completion of the contract and consequent release of responsibility and final payment approval, the work "completion" shall mean full and exact compliance and conformity with the provisions and requirements, expressed or implied, in this specification and the drawings accompanying and forming part of

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15A-1.24 Time for Beginning and Completing Work - (Cont.)

the same, including all amendments, revisions, corrections or additions, duly authorized. "Substantial completion" (re liquidated damages) shall be as defined in the contract. Liquidated damages required under Article 17 of the contract, for each day's delay, shall be in the amount per day as stated in the following schedule:

| Liquidated Damages | | Amount of Contract | |
|--------------------|-------------------------------|--------------------|------------------|
| \$ 5.00 | per day on contracts up to \$ | 2,500 | inclusive |
| 8.00 | ditto | from 2,500.01 to | 5,000.00 incl. |
| 11.00 | " | 5,000.01 | " 9,000.00 " |
| 15.00 | " | 9,000.01 | " 13,000.00 " |
| 20.00 | " | 13,000.01 | " 18,000.00 " |
| 25.00 | " | 18,000.01 | " 23,000.00 " |
| 30.00 | " | 23,000.01 | " 30,000.00 " |
| 38.00 | " | 30,000.01 | " 40,000.00 " |
| 45.00 | " | 40,000.01 | " 80,000.00 " |
| 68.00 | " | 80,000.01 | " 120,000.00 " |
| 85.00 | " | 120,000.01 | " 160,000.00 " |
| 98.00 | " | 160,000.01 | " 220,000.00 " |
| 113.00 | " | 220,000.01 | " 280,000.00 " |
| 128.00 | " | 280,000.01 | " 340,000.00 " |
| 143.00 | " | 340,000.01 | " 420,000.00 " |
| 158.00 | " | 420,000.01 | " 500,000.00 " |
| 185.00 | " | 500,000.01 | " 750,000.00 " |
| 210.00 | " | 750,000.01 | " 1,000,000.00 " |
| 260.00 | " | 1,000,000.01 | " 1,500,000.00 " |
| 310.00 | " | 1,500,000.01 | " 2,000,000.00 " |

- C. It is required that the Contractor for General Construction shall have the gymnasium completed sixty (60) consecutive calendar days before the contract expiration date, so that it will be available for the storage of furniture. The Board may then occupy same under the conditions of Article 7 and Article 70 of the Contract. Minor work in the gymnasium may be performed during furniture storage.

It is important that the Contractor for Plumbing and Drainage shall complete all his work in the gymnasium so as not to interfere with the completion of the General Construction work.

15A.1.25 Job Progress Chart

As soon as practicable after the award of the Contract, the General Construction Contractor shall furnish for approval a Job Process Chart indicating graphically the times the various parts of the work of all Contracts will be commenced and completed. Chart shall be similar to chart on display in the office of the Executive Director and shall consist generally of chart in reproducible form and showing:

| Primary & Intermediate | High School | Contract |
|------------------------|-------------|-----------------------|
| Approximately 60 Items | -- 70 Items | General Construction |
| Approximately 30 Items | -- 40 Items | Plumbing & Drainage |
| Approximately 30 Items | -- 40 Items | Heating & Ventilating |
| Approximately 30 Items | -- 40 Items | Electrical |

Contractors for Plumbing and Drainage, Heating and Ventilating, for Electric Work and Lighting Fixtures, are required to furnish data and to cooperate in formulating the Chart. After approval of the Chart by the Executive Director it shall be the duty of the Contractor and all other contractors to consult such Progress Chart and to arrange their work in such manner it will be installed within the time limits indicated on the Chart. The Chart thereafter may be modified only with permission of the Executive Director. In the event of substantial delay, excusable under the Contract; for which extension of time has or will be granted, the General Construction Contractor shall review and revise the Chart as required by the situation with the cooperation of the Contractors for Plumbing and Drainage; Heating and Ventilating; Electric Work and Lighting Fixtures.

INSTRUCTIONS - RE: COORDINATED JOB PROGRESS CHART

- Step 1. Each prime contractor prepares preliminary and tentative job progress schedule indicating the start and finish of the various items of his work. List items in proposed chronological order, numbered consecutively, using a suffix to identify each contract:

- General Construction 1G, 2G, 3G: etc.
- Heating and Ventilating 1H, 2H, 3H: etc.
- Plumbing and Drainage 1P, 2P, 3P: etc.
- Electric Work & Lighting Fixtures 1E, 2E, 3E: etc.

Subdivide the items whenever required in order to coincide exactly with the proposed sequence and timing of operations in the field.

Each contractor shall arrange schedule of items to suit requirements of this particular project.

- Step 2. General Contractor prepares composite job progress chart on reproducible blank forms furnished by the Executive Director. Chart shall indicate graphically, and chronologically arranged, the times the various parts of the work of all contracts shall be commenced and completed.

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15A-1.25 Job Progress Chart - (Cont.)

- Step 3. General Contractor meets with the Mechanical Contractors, discusses the schedule of items, makes adjustments and coordinates the requirements of all contracts.
- Step 4. General Contractor prepares the master "Coordinated Job Progress Chart" which must then be signed and dated by each prime contractor or his official representative, and finally by the Executive Director.
- Step 5. In the event of substantial delay, excusable under the contract for which extension of time has or will be granted, the General Contractor reviews and revises the chart as required by the situation. Mechanical contractors cooperate as in Step 3. Upon the agreement of all contractors, revised chart is signed and dated by each prime contractor or his representative, and finally by the Executive Director.

15A-1.26 Composite Drawings

- A. Contractor for Heating and Ventilating shall be responsible for coordinating the installation work of all the mechanical contractors (H.&V., Plumbing & Drainage, and Electric Work) by means of composite drawings, as specified herein. This contractor shall include in his bid an item of cost for his part in coordinating his work with the other trades herein specified, and shall indicate this cost as a separate item on the "Schedule of Items and Costs." Composite drawings shall be completed and submitted to the Executive Director for distribution in time so as not to delay the installation of any floor slab in which the placing of mechanical equipment (sleeves, inserts, conduits, etc.) is involved.
- B. The composite drawings shall be constituted in the following manner: H.&V. Contractor shall prepare a set of sepia transparencies drawn to the scale of $3/8" = 1'-0"$, indicating thereon all duct work, steam and return piping, and sprinkler work, plus structural and architectural background details. He shall deliver this set of sepias to the Contractor for Plumbing and Drainage, who will draw his work to scale on the sepias. All piping, water, gas, vents, and drains are to be shown on the transparencies. The object is to remove possible interferences with the separate work of each Contractor. No preference of advantage shall be given to any Contractor in considering resolution of conflicts. Then the H.&V. Contractor shall deliver the set of sepias to the Contractor for Electric Work, who will superimpose his work on the drawings. At the completion of this phase, the H.&V. Contractor shall hold a coordination meeting with the two other mechanical contractors

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to eliminate any interferences among the trades that the drawings indicate and to avoid any conflicts in installing the work. Prior notice of the coordination meeting shall be given to the Executive Director so that his representative will be present to assist in the resolution of conflicts.

If the Contractors are unable to reach agreement on a matter of interference among the mechanical trades, the matter shall be submitted to the Executive Director for his binding decision. Should any problems of coordination require architectural or structural changes of design, this change shall be submitted to the Executive Director for approval. After the set of sepia's has been coordinated and all necessary changes have been made, each mechanical Contractor shall sign the drawings, attesting to his agreement that all work is clear.

C. When the composite drawings have been completed and signed by all mechanical Contractors, the H.&V. Contractor shall submit nine (9) copies to the Executive Director for distribution. Distribution shall be made as follows:

- Board of Education 3 copies
- Electrical Contractor 2 copies
- Plumbing and Drainage Contractor 2 copies
- General Construction Contractor 2 copies

D. Receipt and Distribution of the composite drawings by the Executive Director does not relieve the contractor of his responsibility to furnish and install completely the various systems and their accessories as specified and as required by the contract drawings.

Note: Composite Drawings are not required for alteration and modernization work.

15A-1.27 Schedule of Items and Costs

Immediately following the awarding of contracts, the Executive Director will forward to the Contractor printed forms in which the various items entering into the work are set forth and for the other information required by the Executive Director. These forms shall be set up as a "Schedule of Items and Costs" and filled in by the Contractor with the costs and percentages charged against each of such items, and returned to the Executive Director for his approval three weeks prior to the date the contractor makes application for his first payment. No payment will be made until it is proven that the costs charged against each item are reasonably correct. The cost and percentage of each item, shown on the schedule, approved by the Executive Director shall be final and conclusive upon the contractor.

15A-1.28 Progress Payments

- A. As provided by the contract, payments will be made in installments as the work progresses.
- B. For the purpose of making payments the percentages of the Contract Price for items of work shall be assumed to represent the full value of the items permanently in place and include therein payments for all work incidental thereto or required for their performance otherwise provided for in "Schedule of Items and Costs." All items of work not specifically listed in the schedule but required for the performance of the contract shall be construed as incidental and paid for without other provision for payment than provided. Should a question arise as to the value of any subdivision of the work included within any item, or what work is paid for by any percentage of the contract price, the Executive Director shall decide same. The percentages of the contract price shall be computed to the nearest full dollar as indicated on the estimate sheet.
- C. The Contractor shall make application in writing to the Executive Director for progress or final payments on forms furnished him, submitting thereon an accurate estimate in detail showing the value of the work completed in each stated item, and moneys earned in the payment itself. Five signed copies of the payment application must be submitted. All applications for payments, except for final payment, shall be submitted by the Contractor not earlier than the 15th nor later than the 19th day of the month, otherwise applications will be disregarded until the following monthly period.

15A-1.29 Time Statement

The Contractor shall file with Executive Director at the end of each month a detailed statement of time lost, if any, with the cause thereof, during the current month; otherwise no extension or allowance of time on contract will be considered.

15A-1.30 Working During School Sessions

- A. If through fault or delay on the part of the Contractor it becomes necessary, in the opinion of the Executive Director, to carry out any portion of the work after the building is occupied, it must be as such times and in such manner as not to disturb or interfere with the school sessions. See also Par. .38 of this section.
- B. The yard, pupils' toilets, playrooms, passageways, stairways and exits shall be kept clear and unobstructed at all times.

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- A. Inasmuch as the completion of the building within the prescribed limit of time is dependent very largely upon the close and active co-operation of all those engaged therein it is therefore expressly understood and agreed that the Contractor shall lay out and install his work at such time or times and in such a manner as not to delay or interfere with the carrying forward of the work of the contractors for General Construction, Heating and Ventilating, and Electric Work.
- B. In the event of any dispute arising as to possible or alleged interference between the various contractors which may retard the progress of the work, the same shall be adjusted by the Executive Director, whose decision as to the party or parties at fault, and as to the manner in which the matter may be adjusted, shall be binding and conclusive on all parties.

15A-1.32 Job Meetings

- A. The Contractor or his Superintendent and (in the opinion of the Executive Director) any sub-contractors, material men, or vendors, whose presence is necessary must attend meetings (referred to as job meetings), when called by the Executive Director or his representative for the purpose of discussing the execution of the work. Each of such meetings will be held at the time and place designated by the Executive Director or his representative. All decisions, instructions, and interpretations given by the Executive Director or his representative at these meetings shall be binding and conclusive on the Contractor. The proceedings of these meetings will be recorded and the Contractor will be furnished a reasonable number of copies for his use and for distribution to the various sub-contractors, material men and vendors involved.
- B. Job Meetings may also be called by the General Construction Contractor for the purpose of expediting and scheduling the work of all Contracts; and other Contractors and their sub-contractor, material men or vendors whose presence is necessary, are required to attend. These meetings may at the discretion of the General Construction Contractor be held at the same place and immediately following the Job Meetings called for by the Executive Director.

15A-1.33 Sub-contractors

- A. The Contractor shall, before subletting any portion of the work or materials of this contract, submit to the Executive Director for his approval, the name of each concern or individual to whom he proposes to sublet any part of the work or material. He shall not sublet any part of the work or material to any

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15A-1.33 Sub-contractors - (Cont.)

concern or individual until the Executive Director has approved in writing the sub-letting of that part of the work or material to such concern or individual.

- B. Nothing contained herein shall in any way lessen the responsibility of the Contractor to secure as sub-contractors, firms, concerns, or individuals of good standing in their respective lines, who shall be required to comply with all drawings, specifications and instructions of the Executive Director and with all general and special conditions of the contract, precisely the same as the Contractor himself. All transactions with such parties shall be made through the Contractor, unless he shall, in writing, sanction that they may confer with the Executive Director, but this, however, shall not release the Contractor from full responsibility therefor.

15A-1.34 Contractor's Superintendent

- A. The Contractor must devote his time and personal attention to the work, and shall employ and retain at the building from the commencement until the entire completion of the work, a Contractor's Superintendent competent and capable of maintaining proper supervision and care of the work and acceptable to the Executive Director, who, in the absence of the Contractor, and irrespective of any superintendent or foreman employed by any sub-contractor, shall see that the instructions of the Executive Director are carried out.
- B. The Contractor's superintendent on the job shall not be changed or removed without the consent of the Executive Director unless the Contractor's superintendent proves to be unsatisfactory.

15A-1.35 Responsibility, Watchman, Lights, Etc.

- A. The Contractor shall assume all responsibility for his work and materials until the final completion and acceptance of his work and shall, without extra cost to the Board of Education, replace and make good any of his work or materials which may be stolen or damaged prior to the acceptance of the work.
- B. The watchman or watchmen required under the contract for General Construction shall not be responsible for materials or work of this contract. If the Contractor, in order to protect his materials and work as specified in Par. .35(A) this section requires the services of a watchman or watchmen, he shall supply such without additional cost as part of this contract.

15A-1.35 Responsibility, Watchman, Lights, Etc. - (Cont.)

C. The Contractor shall be responsible for any and all damages which may arise or occur to any party whomsoever by reason of taking down or removing materials on or from the premises, the opening or blocking of streets, excavating for any purpose, or by neglecting to provide proper lights, guards, barriers, or any other safeguards to prevent damage to property or injury to persons.

D. Security

1. Contractor Employee Identification

The Contractor shall provide photo identification badges for all his employees and, in addition, require that any and all sub-contractors provide same for their employees.

The badges are to be worn on outer clothing and be conspicuously displayed at all times while present on Board of Education premises.

The badge is to include the Contractor's name, the employee's name, the employee's social security number, date of birth, height and weight along with a photograph of the employee.

2. The Contractor is hereby notified that any employee of the Board of Education shall have the right to inspect the badge. If the contractor's employee refuses to display or produce a badge for examination, the Regional Manager of Maintenance shall be notified, and the contractor may be directed to remove his employee from the premises until such time as he is able or willing to produce said badge.

15A-1.36 Openings, Channels, and Cutting

Notes:

1. The following stipulations apply for work in connection with new construction, (new buildings; additions; reconstruction of foundation walls, floors, partitions in present buildings).

2. For work in existing structures requiring new holes in existing foundation walls, floors, partitions, etc., see Paragraph 15A-3.03.

A. The Contractor for General Construction shall build openings, channels, chases, flues, etc., as required to complete his contract, also such openings, etc., as are shown and noted on the construction drawings for the heating, sanitary and electric

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15A-1.36 Openings, Channels and Cutting - (Cont.)

work. Where channel bucks are required for chases not originally shown on the general construction drawings, such channel bucks shall be furnished and erected by the General Contractor and paid for by the Contractor requiring same.

Note: When the floor and roof slab construction for a project is metal deck and reinforced concrete, all openings required by the Plumbing and Drainage Contractor shall be part of the requirements of the Plumbing and Drainage Contract including cutting through steel decks, etc.

- B. The Contractor for General Construction will do all cutting and patching as required to complete the general construction work; cutting if required by other Contractors, shall be paid by the Contractors requiring same.
- C. Contractors for Plumbing and Drainage, Heating and Electric Work, or for any other installation not included in the general construction work, shall furnish, set and maintain all pipe sleeves in floor slabs for risers and shall also furnish to the Contractor for General Construction, complete detail drawings for other openings, channels, chases, etc., required in the foundation walls, in connection with their work. Such pipe sleeves shall be set and information furnished in ample time to allow the construction work to proceed without delay. In the event any of the several contractors fail to furnish the foregoing information, they will be required to do all cutting and refinishing in connection therewith at their own expense. See Paragraph 15A-2.08.
- D. After the installation of such work for which openings, channels, chases, etc., have been provided by the Contractor for General Construction, he shall build in, finish over and around all openings, channels, chases, etc., as required to complete the construction contract.
- E. All openings through exterior foundation walls shall be made watertight by the Contractor for General Construction after pipes, conduits, etc., passing through the walls have been installed by the various equipment contractors. This building is planned and detailed, and it is the intent of these specifications to provide a structure that will prevent the penetration by rodents and vermin of any vacant space where they might find a harborage; also see Par. 1.36 (A) this section and Par. 2.09. The Contractor will be held responsible for securing this condition by the closing of all points of access to such spaces, including the passage of piping and conduits, through all walls, partitions, ceilings and furred out spaces, the closing of access to voids in hollow tile or cinder blocks, etc.

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15A-1.36 Openings, Cutting and Cutting - (Cont.)

There shall be a special inspection of the building with regard to this matter before final acceptance.

- F. Positive instructions shall be obtained in writing from the Executive Director or his representative before cutting, drilling or boring floor beams or other structural members, arches, lintels, etc.

15A-1.37 Repairing

The Contractor shall do all repairing of work that becomes damaged by his workmen or the workmen of any of his sub-contractors during the progress of his work or prior to its acceptance.

15A-1.38 Permission for Working Overtime

No work shall be done on the job before 8 A.M. nor after 5 P.M. nor shall any work be done on Saturdays, Sundays, or legal holidays unless the Contractor shall have given the Executive Director at least 48 hours advance notice in writing.

15A-1.39 Overtime Custodial Services

- A. Contractors requesting and receiving permission from the Executive Director to perform work in buildings under the jurisdiction of the Board of Education on Saturday afternoons, Sundays, Holidays and other than regular hours of duty on business days are required to pay the Custodian-Engineer, Custodian or Cleaner-in-Charge of such buildings for the duly authorized extra service entailed, compensation in accordance with the following schedule:

SCHEDULE OF FEES

- | | |
|----------------------------------|-------------------------|
| 1. After 5 P.M. on Business Days | \$24/hour |
| 2. Saturdays, Sunday & Holidays | \$24/hour; \$96 minimum |

For this purpose, holidays are as follows: New Year's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Election Day, Veterans' Day, Thanksgiving, Christmas Day, Lincoln's Birthday, Washington's Birthday, Martin Luther King's Birthday, Good Friday, Rosh Hashanah and Yom Kippur.

3. Before 7:45 A.M. on all regular business days during summer, Christmas and Easter Vacation periods \$24 per hour pro-rated.

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15A-1.39 Overtime Custodial Services - (Cont.)

- B. When several Contractors are working at a school at the same time of the day hereinbefore stated, each Contractor shall pay the Custodian-Engineer, Custodian or Cleaner-in-Charge his share of fee which will be derived by dividing the Custodian Compensation Fee per hour or Minimum Fee by the number of Contractors at work. Custodian-Engineer, Custodian, or Cleaner-in-Charge will keep an hourly record of number of Contractors at work and their names.
- C. For keeping the schools open for the benefit of Contractors for purposes or in a manner not clearly covered in the foregoing schedule and schedule conditions the Executive Director shall be empowered to apply the most equitable rate or rates.
- D. Contractor shall not pay the Custodian anything in excess of the above schedule

15A-1.40 Overtime Work (Ordered by Board of Education)

- A. The Board of Education can order overtime work when, in the opinion of the Executive Director, delay occurs and such delay is not the fault of the Contractor; or, when work is of such an important nature that delay in carrying such work to completion would result in serious disadvantage to the public.
- B. When overtime work is ordered by the Board of Education, such "Order" will be issued on a special form letter over the signature of the Executive Director, Division of School Buildings.
- C. When the Contractor receives such order, he shall make immediate application to the Industrial Commissioner of the N.Y. State Department of Labor for dispensation in accordance with subdivision 2 of Section 220 of the Labor Law. Upon receipt of such dispensation, Contractor shall proceed expeditiously with ordered overtime work.

15A-1.41 Instruction of Custodian

When the plumbing, drainage, and gas systems have been tested, fixtures, apparatus, etc. adjusted and operating to the satisfaction of the Executive Director, and a Custodian is regularly at the building, the Contractor shall furnish a competent man whose duty shall be the responsible operation and supervision, and the instruction of the Custodian, in the care and operation of the plumbing and drainage of the building. The Plumbing and Drainage Contractor shall also furnish a competent person who shall instruct the operator in the care and operation of the Heavy Kitchen and Cafeteria Equipment.

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15A-1.42 Field Office, Storage, Sheds, Etc.

- field.
- A. The Contractor shall furnish, erect and maintain a ~~field~~ office, if required, of suitable size for his own use, and shall also provide and maintain material sheds, protections, or other structures as may be required for any of the work or for the storage of his materials. The location of such structures shall be such as will not interfere with the progress of any of the work. The Contractor will not be permitted to use any room or space in the building for a field office or for the storage of materials, except upon written consent from the Executive Director and then for an agreed stated period only.
 - B. No restaurants, lunchrooms, or other concessions of any kind whatsoever shall be operated on the site of this project except with written permission of the Executive Director.

15A-1.43 Plumbing Work for Temporary Toilet, Inspectors' Field Office, Etc.

- A. The Contractor for General Construction will provide a trailer type toilet building for the use of workmen and an office trailer for the inspectors' field office. Each trailer will be furnished complete with all plumbing work installed including fixtures, wastes, vent and supply piping. The Plumbing and Drainage Contractor shall furnish and install underground temporary soil and water piping providing for all temporary plumbing facilities indicated on drawings and Standard Details, making connections to outlets provided at bottom of each trailer and completing all other outside plumbing work required for proper and continuous functioning of these trailers. The General Construction Contractor will also provide a temporary wood trap pit where shown on drawings.
- B. All temporary drainage pipe and fittings shall be extra heavy cast iron. Trap shall have two hand holes with cast-brass screw plug. All joints shall be caulked with oakum and lead.
- C. All exposed water and drainage piping, including traps and fittings, subject to frost shall be insulated with two 1" thick layers of moulded fiberglass pipe insulation. The outer layer shall have a vapor barrier jacket as specified for cold water piping in Section 15A-16, Coverings. The vapor barrier jacket shall then be covered with a weatherproof jacket of asphalt saturated roofing felt having a nominal weight of 15 lbs. per square. The weatherproof jacket shall be applied with all joints lapped at least 3". Horizontal joints shall be lapped downward to shed water. The jacket shall be secured in place with No. 20 gauge galvanized annealed steel wire.

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15A-1.43 Plumbing Work for Temporary Toilet,
Inspectors' Field Office, Etc. - (Cont.)

- D. Toilet fixtures shall be supplied with water through galvanized steel pipe of sizes indicated on drawings and shall be connected to the public water supply line in street in accordance with Section 15A-8 of the Standard and as indicated on drawings. See Standard Detail.
- E. The Plumbing and Drainage Contractor shall also install a 1-inch branch water supply line from temporary lines if necessary into boiler room with a valved outlet where directed and the Heating and Ventilating Contractor will connect from said outlet to boilers for temporary heat.
- F. When the workmen's temporary toilet and the temporary toilet of inspectors' field office are removed, all such temporary plumbing work including supply line for temporary heat shall be removed and any necessary work such as plugging mains, sewers, etc., shall be done by the Plumbing and Drainage Contractor.
- G. After the temporary Workmen's and Inspectors' toilet facilities have been removed from the site, the General Construction Contractor will assign a toilet room within the building for the use of the workmen and a toilet for the use of the Board of Education Inspectors. The Plumbing and Drainage Contractor shall complete the work in and make these rooms available. The General Construction Contractor shall maintain these toilet facilities (including the Plumbing Work and Fixtures) in a clean and sanitary manner. This maintenance shall also include the replacement by the General Construction Contractor of sanitary fixtures in these toilet rooms which may be broken during the maintenance period.

15A-1.44 Posters and Signs on Sheds or Buildings

No posters, advertising billboards or signs of any nature shall be placed on any part of any post, fence, bridge, railing, shed, building or structure of any kind erected in or about the premises, except such as may be necessary in connection with the work under this contract to identify the Contractor and his work.

15A-1.45 Temporary Light and Power

- A. Suitable outlets for temporary lighting throughout the building, together with outlets for portable extensions and for pipe threading machines in the cellar or basement will be provided by the Contractor for Electric Work in the number and location indicated in the Specifications for Electric Work, copies of which may be examined in the office of the Executive Director.

15A-1.45 Temporary Light and Power (Con't)

- B. The Contractor for Electrical Work will also provide such temporary or permanent wiring connections as conditions require or permit for such apparatus as may be needed for temporary heating of the buildings.
- C. Should the Contractor desire or require any wiring, fittings, outlets, etc., for lighting or portables in addition to that specified to be installed by the Contractor for Electric Work, he shall provide same, complete, at his own expense and pay for all current consumed by this additional wiring. Submit all wiring, trailers, attachments, etc., to the Executive Director for approval before attaching to the T.L. and P. System.
- D. Current for all apparatus necessary for temporary heating and for all lighting required will be paid for by the Contractor for General Construction but this Contractor shall pay the Contractor for General Construction for all other current he may use for power purposes unless the Board of Education pays for any such current.
- E. A temporary on-site exterior security lighting system will be provided by other contractors for preventing vandalism and thefts during the course of construction.

After the security lighting system is installed and in operation, and a part of the system interferes with the work of Plumbing and Drainage Contractor, the expense of removing, relocating, and replacing wire and conduit or a lighting standard shall be completely borne by the P.&D. Contractor requiring removal of the interference.

15A-1.46 Overtime Use of the Temporary Light and Power System

- A. The term "Overtime Use of the Temporary Light and Power System" shall mean use of the system before 7:45 A.M. and after 4:15 P.M. on any regular working day, or use of the system at any time on a Saturday, Sunday or a Holiday. Any Contractor requiring Overtime Use of the Temporary Light and Power System shall pay the entire cost of keeping the system energized and maintained during the overtime period. If more than one Contractor is involved, the charge shall be pro-rated among Contractors.
- B. The Contractor for Electric Work and the Contractor or Contractors requiring such overtime use of the Temporary Light and Power System shall agree on cost and manner of payment prior to commencing work. The Board of Education will not be a party to any agreement between contractors, and shall not pay any part of the cost of energizing or repairing the system during the overtime period; nor settle any disputes arising from such agreements.

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15A-1.47 Removal of Rubbish

- A. The Contractor for General Construction will be responsible for removal of all rubbish until he has completed his work. From then on, the Plumbing and Drainage Contractor shall keep the building, premises and surrounding sidewalks and streets clean and free from his rubbish and discarded or surplus material. He shall provide suitable receptacles of adequate size and number in handy locations about the premises to receive his own rubbish and discarded or surplus materials from the various floors and yards, including that of his subcontractors, and shall cart it from the premises and leave the building "broom-clean" as far as his rubbish and that of his subcontractors is concerned. Rubbish shall not be thrown out of windows, down shafts nor through openings to floors below. Premises adjoining sidewalks and streets shall be kept free from rubbish and obstructions due to work operation at all times.
- B. Should the Contractor fail to keep the buildings, premises and surrounding streets clean and free from rubbish, as specified in paragraph (A); then the Executive Director shall employ such parties as he pleases, in the open market, to remove the rubbish and shall withhold from any payments due the Contractor such as may be required to pay for the removal of the rubbish or material, and such sum shall be deducted from the amount of the contract.

15A-1.48 Protection of Finished Walls

Great care shall be taken by mechanics and other workmen doing any work in or around locations where the finished coat of plaster or tile has been applied so that they will not mark, soil or deface these plastered or tile surfaces in any way. In the event that any finished plastered or tile surfaces become marked, soiled or defaced in any way by mechanics or workmen in the employ of the Contractor for Plumbing and Drainage or any of his subcontractors, then the Contractor for Plumbing and Drainage shall clean and restore such plastered surfaces to their original clean condition.

15A-1.49 Cleaning

At the completion of the work and before the final inspection is made the Contractor for Plumbing and Drainage shall thoroughly clean all fixtures, including heavy kitchen equipment, apparatus, appurtenances, piping, brass and chrome and nickel-plated work, marble and stone work, and leave same free from all marks, scratches, stains, etc. All pumps, filters, heaters, etc., shall be cleaned and left in condition to operate, and the work, as a whole, left in perfect working order. All tools, debris, etc., of whatever nature shall be removed from the premises.

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15A-1.50 Temporary work and removal of Same

- A. All temporary work and equipment provided or erected by the Contractor shall be removed and shall become the property of the Contractor when such temporary work is no longer required, or when directed, or at completion of the contract.
- B. Materials for temporary work shall be sound and of adequate structural strength. Erect in a neat workmanlike manner and secure firmly in place. Work exposed to school personnel shall be smooth and flush. Hoists, scaffolds, protection and other temporary work shall comply with the requirements of local, state and Federal departments having jurisdiction.
- C. The Contractor shall erect all such temporary items as required for the most satisfactory and expeditious performance of the work. Scaffolds shall be erected in such manner that cornices and gutters are not damaged and so that cornice supports are not overstressed. Scaffold loads shall be distributed over the full length of distance between scaffold supports by means of plank decking.

15A-1.51 Pavements

The street pavements that may be opened in the performance of this contract shall be restored at the expense of the Contractor, in the manner required by the Bureau of Highways. This Contractor shall also pay the Inspector designated by the Bureau of Highways to supervise the work of opening and excavating for the work to be installed, also for the filling of said excavation and the restoration of said pavement, for each and every day actually employed at the rate fixed by the said Borough President. All pavements and curbs scheduled to remain shall be adequately protected during the entire progress of the job to prevent damage thereto. Any pavements or curbing damaged during construction shall be repaired or replaced in accordance with the requirements of the authorities having jurisdiction.

15A-1.52 Water

A. New Buildings

1. The Contractor for General Construction will provide and pay for all the water necessary for all work on premises, up to the time of its completion, by means of a water line installed by the Plumbing and Drainage Contractor, connected to the street main or other sources as may be directed by the Bureau of Water Supply, and extended to a location on the site as directed or shown on drawings.

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15A-1.52 Water - (Cont.)

2. As part of the work of his contract, the Contractor for Plumbing and Drainage Work shall provide all labor required for maintaining water services for temporary toilets and for maintaining water services for work on the premises from 7:45 A.M. to 4:15 P.M. on all regular working days, not including Saturday, Sundays and Holidays.
3. Contractors requiring the use of water for temporary toilets or water for work on the premises (except for temporary heating) before 7:45 A.M. or after 4:15 P.M. on all regular working days; or on Saturdays, Sundays, and Holidays, shall pay the Contractor for Plumbing and Drainage Work the costs of all labor required for maintaining such services.
4. If more than one Contractor is involved, the costs shall be prorated among the Contractors involved. Contractors involved shall agree on costs and manner of payment prior to commencing work before 7:45 A.M. or after 4:15 P.M. on regular working days. The Board of Education will not be a party to any agreement between Contractors and will not pay any part of the costs.

B. Existing Buildings - Modernizations and Alteration Work

1. Water required for construction may be taken only from existing hose bibbs or Janitor's Sink Closets.
2. This Contractor shall allow an amount in his bid equal to \$15.17 for the first \$1,000.00 or fraction thereof and \$5.06 for each additional \$1,000.00 or fraction thereof of his bid price. This amount is to appear as a separate item on his submitted "Schedule of Items and Costs" entitled "Water usage charge." Within thirty (30) days of his receipt of Notice to Begin Work the Contractor will pay the Bureau of Water Register the required fee as calculated above. The receipt for this fee shall be presented with the payment requisition voucher requesting payment for this item.

15A-1.53 Gas for Temporary Heat

- A. The Plumbing and Drainage Contractor shall furnish and install gas supply piping necessary for the operation of oil burner equipment for temporary and permanent heating of the building, including gas piping to incinerator burner. However, the Contractor for General Construction will make application to the Utility Company to provide the metering equipment for gas fuel at the building. The Contractor for General Construction shall sign all documents, and pay all fees and charges required by the Utility Company for opening these accounts, including all deposits required for meter equipment, good faith, etc.

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15A-1.53 Gas for Temporary heat - (Cont.)

- B. The Contractor for General Construction will also pay for all gas passing through metering equipment supplying the building. Payment by the General Construction Contractor for all gas shall continue until he is released from the obligation by notification in writing from the Executive Director. Such release will usually be issued when all contract work (General Construction and Mechanical) is completed sufficiently for a Custodian to take charge of the New Building or the New Addition and application has been made by the Executive Director for the installation of the permanent meter.

Note: Where gas mains have not been installed in the streets, the Contractor for General Construction will furnish and install bottle gas for operation of oil burner equipment for temporary heat and will pay all costs in connection therewith until released from this obligation as stated above. Gas shall be stored in suitable receptacle located outside of the building.

15A-1.54 Installation

In all cases the exact or proposed location of steam pipes, gas pipes, smoke, heat, ventilating, ducts, electric conduits, panel boards, switches, etc., shall be ascertained, and pipes run accordingly so as not to interfere therewith. Work shall be so installed that the work of other Contractors shall not be delayed.

15A-1.55 Iron and Steel

All iron and steel work of any kind that is required by this specification shall be of American manufacture.

SECTION 15A-2

GENERAL CONDITIONS OF INSTALLATION

15A-2.01 Installation of Pipe (General)

- A. The run and arrangements of all pipes shall be approximately as shown on drawings or specified and as directed during installation, and shall be as straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. No pipe shall be installed where the head-room will be interfered with unless the conditions are such that it is unavoidable and permission is obtained from the Executive Director. Offsets will be permitted where walls reduce in thickness or beams interfere with direct runs; offsets shall be made at an angle of 45 degrees to the vertical; in no case shall the space between the pipes, partitions, walls, etc., exceed 5 inches. All exposed risers shall be erected plumb, standing free, close to and parallel with walls and other pipes and be uniformly spaced. All horizontal runs of piping hung from ceilings shall be erected as closely as possible to bottom of floor slabs, ceilings, or I-beams as the case may be. In no case shall the headroom, beneath the pipe, be less than (7'-0") where the pipe is installed more than (1'-0") from wall, partition, etc., except where piping is required to be installed in Boiler Room above floor. Horizontal piping shall be so graded as to drain to the low points and water lines to drain bibbs. All piping installed in floor shall be painted with a heavy coat of asphaltum.
- B. Glass piping shall be protected at all times against scratching. When encased in concrete, concealed within masonry partitions, passing through holes or sleeves, etc., glass pipe shall be covered with a factory applied casing. Casing shall be expanded polystyrene with an O.D. equal to the O.D. of a standard drainline coupling.

Note: Glass piping shall not be permitted underground.

- C. The Contractor for Plumbing and Drainage shall at all times work in conjunction with the Contractors for General Construction, Heating and Ventilating and Electrical Work in order to avoid interference of piping and unnecessary cutting of floors and walls.
- D. Roughing under ground or concealed in the floor or wall construction shall be properly installed, tested and inspected before any of the roughing is covered up. Should any work be covered up before being inspected and tested, it shall be uncovered and recovered at the expense of the Contractor. Plugged fittings shall be installed when called for. Reducer

Section 15A-2

General Conditions of Installation

15A-2.01 Installation of Pipe (General) - (Cont.)

fittings shall be used in making reductions in sizes of pipes; bushings will not be allowed. Suitable air chambers shall be provided as called for in other sections.

- E. *Equipment noted (N.I.C.) on the drawings, or to be furnished or removed by other Contractors shall have all connections, fittings, plumbing accessories and other items furnished and installed or removed by the Plumbing and Drainage Contractor. Where new equipment is to be provided and set by another Contractor, the Plumbing and Drainage Contractor shall provide piping with plugged outlets in the manner and locations shown or required to permit the equipment to be installed and then the Plumbing and Drainage Contractor shall extend from these plugged outlets and fully connect all items. Coordination and cooperation between Contractors is essential in this operation and the Plumbing and Drainage Contractor shall furnish all detailed information necessary to the General Construction Contractor so that proper provision will be made in the equipment to receive the Plumbing and Drainage Contractor's work.*

15A-2.02 Piping in Waterproofing

All lines of piping and branches for fixtures passing through or in connection with waterproofing shall be brought to the proper locations and levels so that fixtures, etc., may be installed without disturbing the waterproofing in any way. See Paragraph 15A-7.08.

15A-2.03 Methods of Fastening

The following rule, except where otherwise specified, shall be observed throughout the entire work: Where fastenings are made to wood, there shall be used long screws or lag screws; to brickwork, cement, stone and marble, approved long expansion bolts; to fire-proof block work, approved toggle bolts, and to iron work, approved bolts and nuts. The use of wood plugs and nailing will not be permitted. Sundries used in connection with galvanized iron shall be galvanized. Those in connection with brass work shall be of brass, finished to match the connecting work.

15A-2.04 Pipe Joints

- A. Joints for vitrified tile pipe and fittings shall be compression joints and shall conform to all the requirements of A.S.T.M. C425, Latest Revisions. Submit shop drawing of joint for approval.

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General Conditions of Installation

15A-2.04 Pipe Joints - (Cont.)

- B. Joints in cast-iron bell and spigot pipes, shall be caulked joints made with picked oakum and molten lead, 12 ounces of which must be used for each inch in diameter of the pipes at each joint and must be poured in at one time. The lead to be used for this purpose shall be soft "Pig" or "Bar." After cooling and shrinking, the lead shall be thoroughly caulked and the joints made impermeable to gases and liquids, and also be capable of withstanding the tests applied. The face of the lead joints shall finish flush with the face of the hub and be left without putty, paints or cement. Whenever joints are made on the floor or surface they shall be recaulked after being placed in position.
- C. Joints for precast reinforced concrete pipe shall be watertight and shall be made by using approved rubber gaskets. Joints, including rubber gaskets, shall conform to all the requirements of A.S.T.M. C-443, Latest Edition.
- D. Unless otherwise specified, joints in silicon iron pipe shall be made by firmly and carefully ramming special acid resistant rope packing around spigot into the bottom of the hub until the hub is one-half full. Packing shall be Sealite No. 312 or approved equal. Upon the packing, molten lead shall completely fill the hub at one pouring. The lead shall be thoroughly caulked and finished flush with face of hub. Lead wool may be used in lieu of molten lead; if used it shall be thoroughly caulked and finished flush with face of hub.

Note: Where specified, a mechanical joint may be substituted for molten lead filling of the hub. The mechanical joint shall consist of a stainless steel clamp with a sintered non-porous teflon inner sleeve and a neoprene outer sleeve. An approved mechanical joint adapter shall be used for joining silicon pipe to polypropylene plastic pipe. Submit shop drawings of joints and adapters for approval.

- E. The joints of steel brass, copper pipes shall be screwed joints of full length, tapered threads or iron pipe standard, unless otherwise indicated or required. All pipes shall be screwed close up to their shoulders. Joints between "Yoloy" steel or galvanized steel and cast-iron pipes shall be caulked as specified for cast-iron pipes. The use of lamp wick is prohibited in threaded joints.
- F. Where lead pipes are connected to cast-iron or "Yoloy" steel pipes, brass ferrules or soldering nipples of the same size as the pipe shall be wiped to the lead pipe and be caulked or screwed to the iron or steel pipes.
- G. Joints in Acid-Resisting Glass Drainage and Vent Pipe and Fittings shall be of the compression type. The compression joint shall consist of a stainless steel coupling fitted with a Buna-N rubber compound sleeve with a TFE (tetra-fluorethylene)

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General Conditions of Installation

15A-2.04 Pipe Joints - (Cont.)

liner. The compression joint shall be drawn tight by means of a bolt and nut installed on the coupling. Adapters, fully approved and installed as recommended by the manufacturer, shall be furnished and installed at points of connecting glass piping to piping of other materials. Submit shop drawings of joints and adapters for approval.

- H. Joints in type "L" copper tubing and type "K" copper tubing shall be brazed joints.
- I. Flux for brazing shall be equal to "Handy Flux" and shall comply with Navy Dept. Spec. 51F 4a. Unless the joint is concealed with pipe covering the surplus flux shall be wiped off immediately after completion of brazing.
- J. The silver brazing alloy for brazed joints shall be similar to Handy & Harmon Sil-Pos brazing alloy having a silver content of not less than 15% and a flow point of 1300° Fahrenheit.
- K. Polypropylene pipe and fittings shall be joined by use of electrical fusion coils, energized by a variable, low voltage power supply according to the manufacturer's recommendation.
- L. Joints in P.V.C. plastic piping shall be cemented. Cement shall be composed of pure P.V.C. or copolymer resins and an evaporation retardant in a solvent system. The following steps shall be followed to insure sound, leak-proof joints:
 - 1. Cut ends of pipe square, to butt fully against shoulder of fitting.
 - 2. After cutting, sand pipe ends smooth to eliminate burrs and assure full contact with shoulder of fitting.
 - 3. Clean pipe ends and fittings with cleaner such as methyl ethyl ketone (MEK), acetone or similar ketone solvents.
 - 4. With clean brush, apply cement liberally to fitting, including shoulder of fitting and butt end of pipe.
 - 5. Insert pipe to fitting and give 1/4 (90 degree) turn. Time elapse-from start of cement application to completion of the 1/4 turn must not exceed 1 1/2 minutes, regardless of pipe size.
 - 6. Block fitting tightly or hold in place for several minutes to insure complete bond. Never disturb bond by re-adjusting pipe after 1/4 turn is made.

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General Conditions of Installation

15A-2.04 Pipe Joints - (Cont.)

M. Joints in ductile iron pipe shall be as specified in Section 15A-5.

15A-2.05 Hangers and Pipe Supports

A. When support method is not shown on drawings, pipes laid underground shall be firmly bedded on solid ground under the body of the pipe. Where suitable bearing cannot be obtained because the ground has been disturbed by excavating, or for any other reason, the pipe shall be supported by concrete piers or by approved brackets secured to the walls. Piers and/or steel brackets shall be installed at not more than 5'-0" intervals. New or altered piping passing under cinder concrete areas shall be supported by hangers secured by means of beam clamps fastened to existing floor beams. Where pipe support spacing is excessive between existing steel, beam clamps shall be fastened to structural members that are furnished and installed by this Contractor and approved by the Executive Director. Removed fireproofing around beams shall be replaced to original condition. In existing reinforced concrete slabs, expansion bolts may be used which are approved equal to self drilling concrete anchors as manufactured by Phillips Drill Co. Hilti Inc. "Kwik bolts" are also approved for use in existing reinforced concrete slabs. In new concrete slabs, inserts shall be used as described in Paragraph 2.06 this section. No hangers or supports shall be attached to hung ceiling, cinder concrete, ductwork or work of other trades.

B. All overhead horizontal drains, vents, supply or other piping shall be supported by adjustable wrought iron, steel or malleable iron hangers, made in accordance with details and at intervals no greater than herein, outlined. The metal decks shall not be used for support of piping or equipment.

Note: Installation of hangers and supports shall be done before the General Contractor is ready for application of fireproofing material, and shall be primed and coated with one coat of red lead before installation.

1. Cast iron soil and vent pipe.--At 5 ft. intervals and within eighteen (18) inches of each hub or joint.
2. Threaded pipe (1 in. or less).--At 8 ft. intervals.
3. Threaded pipe (1 1/4 in. or over).--At 12 ft. intervals.
4. Copper tubing (1 1/4 in. or less).--At 6 ft. intervals.

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15A-2.05 Hangers and Pipe Supports - (Cont.)

5. Copper tubing (1 1/2 in. or over). At 10 ft. intervals.
 6. Plastic piping shall be supported by hangers at intervals not greater than 4 1/2 feet or continuously on a metal shelf or channel with hanger rods spaced at 10 foot intervals.
 7. Other Materials.--As required for structural stability, service and as further stipulated in specifications and drawings.
- C. The gas, soil, waste and vent lines and vertical lines of water supply piping shall be supported at the base of the lines by brick or concrete piers, wrought-iron clamps, clevis type hangers or cradle type supports secured to the floor beams, walls or ceilings with beam clamps, expansion shields, knee brackets and 1/2" bolts. Install pipe clamps, for gas and water risers and for soil, waste, vent and leader stacks. Intervals of supports for vertical piping shall be as follows:
1. Cast iron soil and vent pipe.--At base and at each story height, but in no case at intervals greater than 20 ft.
 2. Threaded pipe.--At every other story height, but in no case at intervals greater than 25 ft.
 3. Copper tubing (Hard Temper).--At each story height.
 4. Other materials.--As required for structural stability and service.
- D. See Standard Detail latest series for Hanger Installation.
- E. All pipe hangers in Cellar or Basement including pipe spaces and pipe chambers throughout the building shall be cleaned and painted. See Section 15A-15, (Painting).
- F. For vitrified pipe the bottom of trenches shall be carefully graded so as to provide an even bed for the full length of pipe with the bottom of the trench hollowed out for each hub. In rock trenches provide a bed of earth not less than six inches deep under the pipes. Also see Par. A above.
- G. The Contractor for Plumbing and Drainage shall furnish and set all brick and concrete piers, ties and planks that are required to support any or all of his piping.

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15A-2.05 Hangers and Pipe Supports--(Cont.)

- H. Groups of risers and horizontal running lines shall be provided with temporary spacers to maintain spacing and allow for separate pipe covering.
- I. Glass pipe installation shall be in strict accordance with the manufacturers recommendation and the installation shall be supervised by the personnel of the glass pipe manufacturers or its bona fide distributor.

Glass piping shall be adequately supported as recommended by the piping manufacturer. The entire system shall be installed free of stress. Metal hangers shall be of the clevis type as specified in the P.&D. Standard for above ground drainage piping, suitably padded with a liner of 1/4" thick solid Neoprene or Buna-N-Rubber bonded to the bearing surface of the hanger, and spaced at not more than 10 foot centers. Horizontal branches of less than 8 foot in length shall be supported only at the bottom on the vertical riser. Riser supports shall be of type and spacing as recommended by the manufacturer.

15A-2.06 Inserts

- A. All piping, and equipment, hung from ceilings shall be properly supported from the ceiling slabs by means of required number of inserts. Inserts shall be installed in their proper locations before the pouring of the floor slabs. Inserts shall be furnished and installed by this Contractor together with all necessary drawings, etc., showing their proper locations, spacing, etc., in ample time to enable the Contractor for General Construction to install concrete work. The Plumbing and Drainage Contractor shall assume full responsibility for his work. This Contractor shall also cooperate with the Contractor for Heating and Ventilating, Contractor for Electric Work and any other Contractors in order to prevent any confliction as to locations, etc., of inserts.
- B. Inserts for conventional reinforced poured concrete slabs shall be designed for insertion of heavy nuts suitable for screwing up to and including 3/4" rods. Inserts shall not be primed. All inserts shall be so installed that hangers will appear true and uniform. Insert No. 650 made by Carpenter & Patterson, Insert No. 281 made by Grinnell, and Insert "No. 100" made by C.H. Leibfried Mfg. Corp., conforming with the above requirements will be approved. Submit shop drawings of insert with rod or strap attachment for approval.

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15A-2.06 Inserts - (Cont.)

- C. For composite metal deck, consisting of metal deck and conventional poured reinforced concrete, steel deck inserts shall be used. Steel deck inserts shall be of a type that is supported by the concrete slab and not by the metal deck. They shall be approved by the N.Y.C. Board of Standards and Appeals and shall be ITT Philips Drill Co.'s Red Head Steel Deck Inserts or approved equal. Insert size shall conform to the size of the hanger rod. Submit shop drawings of insert and rod for approval.
- D. P.&D. Contractor shall take every precaution to furnish and set all sleeves, wood boxes or other devices that are required for proper installation of his work, before concrete is poured. After concrete has set, should additional openings or inserts be required he shall pay the General Contractor for same.

15A-2.07 Cleanouts and Cleaning Screw Plugs

- A. Furnish and install cleanouts in the following locations: On all traps, at the ends of and at all points in change of direction of all drains and branch drains, at all offsets, at the ends of all branch soil and waste pipes, and located in runs not more than fifty (50'-0") feet on center, and at all points to make accessible all parts of the drainage system. In underground lines the cleanouts for drains, traps, or branches shall extend up to and finish flush with finished level or made accessible with brick pits with cast iron frame and covers. All cleanouts in connection with vertical cast iron pipe above the cellar, except the traps and fittings on horizontal branches, shall have tapped tee fittings, same size as pipe, closed with brass or bronze screw plugs. All other cleanouts in connection with cast iron pipes, traps and fittings shall have heavy full size cast iron ferrules, same size as pipes or fitting, caulked into hub and closed with a brass or bronze screw plug. All cleanouts in connection with "Yoloy" pipe, traps and fittings shall consist of drainage fittings closed with brass or bronze screw plugs of heavy pattern. All cleanouts for silicon iron pipe shall be silicon iron, with silicon iron bolted covers, except cleanouts flush with floor, which shall be of the type as specified hereinafter.
- B. Plugs used for cleanouts shall be same size as the fittings up to and including 4 inches. Sizes above 4 inches shall be reduced to allow for 4 inch cleanouts. For house traps 8 inches and larger plugs allowing for 6 inch cleanouts shall be used.
- C. Cleanouts shall conform to the basic requirements as set forth in paragraph (A) and paragraph (B) above, and the features of the cleanouts contained in the schedule listed hereinafter. The manufacturers numbers are for the purpose of type only. All

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15A-2.07 Cleanouts and Cleaning Screw Plugs - (Cont.)

manufacturers shall conform to the requirements, and the Plumbing and Drainage Contractor shall submit shop drawings of each type required on the job before installation for approval.

Note: Gasket seal plugs will not be accepted in place of taper thread of lead seal plugs.

D. Cleanout Schedule:

| Location | Piping | Figure Number |
|-----------------------------------|---------------------|--|
| Wall | Exposed Cast Iron | Josam 58500-22 Smith 4420 Zurn Z-1450-7 Wade W-8550-D |
| Wall | Exposed Steel | Josam 58540 Smith 4470 Zurn ZAB-1470 Wade W-8590-D |
| Wall | Concealed Cast Iron | Josam 58790-15-22 Smith 4532-U |
| Wall | Concealed Steel | Josam 58890-15 Smith 4472-U |
| Floor - Concrete Heavy Duty | Steel or Cast Iron | Josam 56040-15-22 Smith 4248-U Zurn Z-1425-27 |
| Floor - Asphalt Tile | Steel or Cast Iron | Josam 56020-12-15-22 Smith 4168-U Zurn ZN-1405-7 |
| Floor - Terrazzo | Steel or Cast Iron | Smith 4188-U Zurn ZN-1405-10 Wade W-7040-U |
| Floor - General Finished Areas | Steel or Cast Iron | Josam 56000-15-22 Smith 4028-U Zurn ZN-1425-2 |
| Outside Grade General Purpose | Steel or Cast Iron | Josam 58850-22 Smith 4258 |

E. All cleanouts occurring in membrane waterproof floors shall be provided with a flashing clamp device secured with brass bolts. Cleanouts in unfinished areas shall have brass or bronze tops and cover. Cleanouts in finished areas shall have polished nickel bronze tops and cover. All cleanout covers shall be provided with spanner type vandal proof screws.

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15A-2.08 Sleeves for Pipes

Notes:

1. Sleeves for gas piping through exterior walls and floor slabs on earth shall be installed and sealed in accordance with the rules and regulations of the gas company and according to the latest regulations of the Administrative Code of the City of New York.

The space between each pipe and its sleeve through floor slabs on earth and exterior walls for all other piping shall be sealed tightly with picked oakum and molten lead. The lead caulking shall finish flush with the face of the sleeve.

2. For interior walls and floors, the space between each installed pipe and its sleeve shall be sealed with a three hour rated fire stop penetration material that is listed by Underwriters' Laboratories and approved by the New York Board of Standards and Appeals. Fire stop materials shall be 3M Brand Fire Barrier Caulk CP25 and Putty 303 or approved equal and shall be installed in accordance with the instructions of the manufacturer. Other materials as required by the manufacturer for installation of fire stop materials shall include cardboard, mineral-wool batts, ceramic fiber blanket material and masking tape. In addition, escutcheon plates as specified in Paragraph 15A-2.09 shall be installed. In existing buildings, the space between each installed sleeve and wall or floor slab shall be sealed with non-shrinking grout. Submit shop drawings of installation of fire stop materials for approval.

- A. General - All plumbing pipes passing through floors, walls, partitions, furring, beams, trenches, and wherever else indicated on plans or specified in amendments, shall be provided with sleeves installed and maintained by the P & D Contractor. The Contractor for General Construction will provide and install all sleeves required in waterproof floors, walls, pits, etc. See Paragraph 15A-7.08. Where plumbing pipes pass through potentially wet floors that do not have membrane waterproofing such as toilet rooms, cafeteria kitchens, serving areas, dish washing room, J.S.C., mechanical equipment rooms and areas that are provided with fire protection sprinkler systems, the P & D Contractor shall provide sleeves of galvanized steel pipe with welded clips or equivalent at bottom ends for securing sleeves to form work and shall project one inch above finished floors, and shall be caulked watertight.

B. Sheet Metal Sleeves

1. Sleeves for pipes passing through floors, partitions, hung or furred ceilings, shall be made of not lighter than No. 24 gauge galvanized sheet steel with 1/2-inch maximum clearance all around pipes. Each sleeve for a pipe passing through a

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15A-2.08 Sleeves for Pipes - (Cont.)

floor slab shall be fitted with a one-inch flange, or equivalent, at the bottom end for the purpose of securing it to the form work or sheet metal deck. The sleeve shall finish flush with the top of the finished floor. Sleeves for pipes passing through partitions, hung or furred ceilings shall be of one piece construction and shall finish flush with the finished surface.

2. Whenever pipes pass through vent ducts, there shall be furnished and set in the vent ducts, sleeves constructed of 24-gauge galvanized sheet steel, securely fastened, soldered and made airtight. All necessary material and labor to install sleeves and alter duct shall be furnished by this contractor.

C. Pipe Sleeves

Sleeves for pipes passing through concrete beams or brick walls shall be extra heavy cast iron pipe or standard galvanized steel pipe through same and of proper length to finish flush with both sides of the surfaces they penetrate. Water and gas services and drainage piping with 1/2-inch maximum clearance around the pipes passing through foundations walls and floor slabs on earth shall be also provided with pipe sleeves.

15A-2.09 Floor, Ceiling and Wall Plates

- A. Exposed or concealed pipes passing through walls, partitions, floors or ceilings, including unfinished rooms and spaces, shall be provided with escutcheon plates to cover the openings between the pipes and their sleeves. Plates shall fit snugly around pipes and shall be fastened in place before pipes are covered or concealed.
- B. Escutcheon plates for pipes passing through walls, partitions and ceilings shall be chrome plated solid cast iron with set screw and shall be Elcen Metal Products Fig. 600 or an approved equal. Escutcheon plates for pipes passing through floors shall be chrome plated solid cast iron with set screw and shall be Elcen Metal Products Fig. 601 or an approved equal.
- C. Waste and water supply piping at all plumbing fixtures including lavatories, drinking fountains, cabinet sinks and wash sinks, etc., shall be fitted with chromium plated cast brass escutcheon plates which shall be provided with brass set screws. Escutcheon plates shall be Elcen Metal Products Fig. 600 or approved equal. Submit shop drawings for approval.

Section 15A-2
General Conditions of Installation

15A-2.09 Floor, Ceiling and Wall Plates - (Cont.)

- D. Water closet and/or urinal water supply piping (concealed), with exposed flush valves, shall be fitted with brass chromium plated escutcheons (less set screws) held to wall surfaces with the required length of 20-gauge chromium plated covering tube sized to slip on the supply pipe and about the escutcheon and lock shield compression stop.
- E. At the location where glass piping is installed which is subject to damage and where indicated on drawings to be protected, such portions of the glass piping shall be suitably protected from damage by an enclosure of expanded wire mesh properly reinforced, or an angle iron frame, as directed. Paragraph 15A-20.01, Metal Casings shall apply for glass pipe.

15A-2.10 Unions

All equipment (Pumps, Circulators, Tanks, Meters, etc.) shall be connected to water lines with unions. The union shall be installed as close to the equipment as practical.

15A-2.11 Gate Valves, Angle and Straight Stops

- A. Furnish and install approved gate valves on all branches of piping from main distributing lines and at all other locations indicated on drawings or specified.
- B. Furnish and install chrome plated cast brass angle or straight stops on all short branch water supplies under lavatories, sinks, drinking fountains and under all other fixtures indicated on drawings or specified. Angle or straight stops shall be of the lock and shield type, operated by a detachable key instead of a wheel handle and shall be Kohler, Dick Brothers, or approved equal. Furnish and deliver to the Custodian, six (6) keys for each size of stop having a lock shield.
- C. Submit shop drawings of valves and stops for approval before installation.

15A-2.12 Welding

When welding is to be performed as part of the work covered in this specification, the Contractor before assigning any welder for this work shall provide the Executive Director with the names of welders to be employed in this work, together with certification that each of these welders has passed qualification tests. Welding work shall be performed only by persons who have obtained a license from the Commissioner of the Department of Buildings of the City of New York.

Section 15A-2
General Conditions of Installation

SECTION 15A-3

WORK IN PRESENT BUILDING

Note: This section applies only to work in present buildings or other existing structures, that are being modernized, enlarged or altered, or both.

Smoking will not be permitted within the premises.

15A-3.01 Examination of Premises

The Contractor shall be held to have examined the premises and compared it with the drawings and specifications and to have satisfied himself of the conditions existing there at as to the performance of the work required, the storage and handling of materials, the position, condition and type of furniture, equipment, lockers and other portable and built-in items, school activities and all other conditions incidental to completion of the Contract, before submission of his bid. No allowance will subsequently be made to the Contractor for errors on his part due to his negligence in performing the conditions of this paragraph. Prospective bidders will have access to the premises during bidding period for the purpose of examination on weekdays, other than hereinafter designated holidays, from 8:00 A.M. to 5:00 P.M. and on Saturdays from 8:00 A.M. to 12:00 P.M. Before commencing examination, report to the Custodian-Engineer or his duly authorized representatives in charge.

15A-3.02 Removals, Replacements, Adjustments

- A. The Contractor shall remove, relocate, replace, adjust or adapt all existing piping, fixtures and other plumbing equipment or apparatus as required by the drawings and specifications, and also as required when such plumbing work is uncovered or when found to interfere in any way with carrying out and completing the work of this Contractor or other Contractors, including Contractors for General Construction, Heating and Ventilating, and Electrical Work. The work shall include the furnishing of all materials, all necessary extensions, connections, cutting, repairing, adapting, and other work incidental thereto, together with such temporary connections as may be required to maintain service pending completion of the permanent work, and shall be left in good working order and in a condition equal to the adjacent new or existing work.

Section 15A-3
Work in Present Building

15A-3.02 Removals, Replacements, Adjustments (Cont.)

- B. When existing fixtures which are to remain, are disconnected from present systems of piping that are to be removed, these fixtures shall be reconnected to new plumbing and drainage system as shown on plans, or as directed by the Executive Director.

Note: For fixtures attached to new metal stud partitions see notes in Section 15A-13 under appropriate item concerned.

- C. The Contractor shall, unless otherwise specified, remove furniture, shades, clocks, pictures, maps, plaster casts and other articles or fixtures on the walls, also radiators, radiator screens or shields, sanitary, steam and gas work or electric work of any description as may be necessary to complete the alterations or for convenience or to facilitate repairing and painting, and all such articles shall be reset, relocated, secured and replaced as directed, and as necessary to leave the work or premises in perfect order and completed. When any of the above equipment is defective this condition shall be reported to the Inspector and the Custodian before any equipment is disturbed. Present window shades, toilet accessories or other appliances disturbed in the work shall be replaced and left in good condition. Those which cannot be replaced shall be left in care of the Custodian. Where work as planned or specified interferes with coal, wood or any other material stored on the premises, such material shall be shifted and replaced after work is done.

New work shall be installed in sections and made ready for a quick tie-in to existing fixtures and equipment before removing old lines, to obtain the shortest period of non-service possible for each case. The outage times shall coincide with The Staging of the Work for specific areas of the Building as closely as possible. Where new lines are shown running in the same locations previously occupied by existing lines which are to be removed minimize the time of substitution and reactivation. Do not leave the building without water service at any time during normal occupancy or during the heating season. Do not leave any existing sprinkler system without water service overnight or over any periods when the building is not normally occupied, and when necessary to disconnect the sprinkler system obtain the written approval of the Executive Director to do so based on the commitment that it will be restored to service in time to comply with the above noted non-occupancy requirements.

Section 15A-3
Work in Present Building

15A-3.02 Removals, Replacements, Adjustments (Cont.)

- D. New Material--The Contractor shall furnish all new plumbing equipment together with all piping, fittings and all other work required to complete the plumbing work in the present building, all as indicated on the drawings and described in the specifications.

15A-3.03 Cutting and Repairing

- A. The Contractor shall do all cutting and repairing required to install his work in the Existing Structures including replastering. Holes through foundation walls for sleeves and piping shall be made by core drilling.
- B. The above work shall include but not be limited to cinder block, hollow tile block, lightweight concrete block, gypsum block, concrete work, tile work, etc.
- C. Damaged Work, Etc.--Where work in Present Existing Structures is damaged in the execution of this contract, or where openings are left or surfaces are exposed, due to the removal of fixtures, pipes, equipment or apparatus, the same shall be repaired or closed up by this contractor to correspond in material, quality, shape and color with that of similar work and adjoining finish.
- D. Damaged Apparatus--Should any damage, due to the execution of this contract, occur to the furniture, gas or electric fixtures, clock or any equipment or apparatus, such damage shall be properly repaired and made good without extra charge, through the supply of new articles or otherwise as may be required to leave the building and plant in perfect order at completion.
- E. Painting--The surfaces of all wood, brickwork, metal, plastering and other work that are to be painted or varnished in Present Building, shall be properly prepared therefor, by nailing, piecing, puttying, scraping, pointing, washing, cleaning, sandpapering, smoothing, etc., either in part or all over as the case may require and as may be directed. painting of replastered areas and other ceiling, wall and floor surfaces requiring a finish coat of paint, due to the work of this contract, shall be performed by this Contractor only in rooms and areas not scheduled to be painted by the Contractor for General Construction. Color and type (flat, semi-gloss enamel, gloss enamel) of paint shall match the adjoining finish.

Section 15A-3
Work in Present Building

15A-3.03 Cutting and Repairing (Cont.)

- F. Positive instructions shall be obtained in writing from the Executive Director or his representative before cutting, drilling or boring floor beams or other structural members, arches, lintels, etc. All openings cut through floor slabs shall be drilled from upward, using an electric drill, and these holes shall in no case be made more than three (3) inches larger in diameter than the finished openings are required to be. All cutting and repairing, and other work shall be promptly done by men skilled in the various trades.
- G. Any contractor whose work requires him to install, place, carry or store materials through or on any roof of the building, shall do all things necessary to maintain the integrity and continuity of the existing roof bond in the areas he is involved with. Each such contractor shall provide all necessary flashing, roofing, pitch pockets and similar items to the written satisfaction of the Bonding Company and the firms who were the guarantors and the manufacturers of the present roofs. Submit written revalidation of roof bond with final requisition for payment. The identity of the original roof bonding agency and the installing contractor may be obtained from the borough Area Office of the Board of Education.

15A-3.04 Use and Ownership of Removed Material

- A. Reused Material--Present material or equipment may be reused only when same is specified or shown on the drawings to be re-used or relocated. All other materials and equipment shall be new and as specified. Where present equipment, or fixtures are re-located, new branch piping, valves, traps, etc., shall be provided for same, unless otherwise called for.
- B. Salvageable Items--All salvageable items are to be carefully removed, crated and tagged. A quadruplicate (4) receipt showing the contractor, trade, specification, and items must accompany the delivery of the items to the designated receiving offices and be signed by the Foreman of Mechanics or his representative. One (1) copy of the receipt must remain with the Foreman of Mechanics or his representative of the receiving office. Three (3) copies of the receipt must be attached to bills submitted to the Board of Education for payment. All items are to be delivered to the designated location within the receiving office, as per amendments. A copy of that portion of the specification listing the items designated for salvage must be presented to the Foreman of Mechanics or his representative at the time of delivery.

Section 15A-3
Work in Present Building

15A-3.04 Use and Ownership of Removed Material (Cont.)

- C. Property of Contractor--All material or apparatus specified or shown on all drawings to be removed and not to be re-used or stored shall become the property of the Contractor, who shall promptly remove same from the premises. The expense of removing same or the value thereof shall be taken into consideration at the time of making the bid. All removed material and equipment such as piping, equipment, fixtures, etc., which are not to be re-used shall be promptly carted away from the premises. Removed insulating material and masonry shall be carted away by the Contractor for Plumbing and Drainage.

15A-3.05 Protection

The premises shall not be used as a workshop to the detriment of any portion thereof. Neither the teachers' nor the pupils' desks, tables or equipment shall be used as workbenches, nor shall materials or other furniture be piled thereon without protection.

15A-3.06 Excavation

- A. When existing drains are underground, make the necessary excavation to install piping and new connections to the existing drains as indicated on drawings. See also, Par. .01 this Section.
- B. Backfilling--All excavations shall be refilled in layers of not over 6 inches in depth, well tamped, and the surfaces shall be replaced with material and workmanship to match the present work and surroundings.

15A-3.07 Fire Pots, Etc.

All mechanics using fire pots, furnaces, blow torches, etc., in the building, must leave the same at the end of the day's work in the possession of the Custodian. For failure to comply with this rule the Custodian will be required to lock up such apparatus for safe keeping, and the Contractor can only redeem same by a letter from the Executive Director after satisfactory explanation is given why this rule was not complied with. See also, Section 15A-1.10 Par. D.

15A-3.08 Non-Interference with Occupation of the Building and Premises

- A. The fundamental purpose of the building, insofar as the contract is concerned, is hereby declared to be that of affording opportunity for instruction or occupancy under safe and sanitary conditions.

Section 15A-3
Work in Present Building

15A-3.08 Non-Interference with Occupation of the Building and Premises(Cont)

- B. The Contractor must take into careful consideration the fact that the sessions of the school, etc., must be continued as usual during the progress of the work. The operation of the heating and ventilating, fire alarm telegraph, the interior fire alarm system, gongs, bells and the telephones, plumbing, etc., during school sessions, etc., must not be interfered with.
- C. Fixtures or essential parts of material or equipment shall not be removed so as to threaten the safety of or inconvenience the occupants of the building and in the case of replacements not until such time as the essential material or fixtures thereof shall have been delivered at the building.
- D. The safety of the pupils and teachers, etc., renders it imperative that nothing shall be done which shall in any way block the streets in or about the exits themselves. Neither shall there be any unauthorized interference with the free and unobstructed use of the yards, hallways, stairways, toilets and rooms. Therefore, in the carrying forward of the work, as required by the contract and these specifications, whereby it is necessary that mechanics should work in any portion of the premises normally occupied, application must be made before entering therein to the Executive Director, who thereupon will perfect a working agreement with the Principal of the School so that the work may be carried forward in a manner to interfere as little as possible with the school sessions.
- E. Wherever work is carried on during school sessions not more than one stairway shall be closed off from free and safe use at any time. This stairway shall be used exclusively for work operations and this only after written permission of the Executive Director has been obtained. No part of the building or premises shall be closed to the use of the occupants without the permission of the Executive Director. When such permission has been given, the Contractor shall erect temporary partitions and barriers wherever required to insure the absolute safety of the occupants of the building or premises.

Section 15A-3
Work in Present Building

SECTION 15A-4

EXCAVATIONS, FILLING AND GRADING

15A-4.00 General

- A. This Contractor shall furnish labor, materials, equipment, etc. for excavations, sheet piling, shoring, pumping, backfilling and grading etc., that is necessary for the installation or removal of his work.
- B. Paragraphs .01, .02 and .03 of this section and the rules and regulations of the Bureau of Sewers, Bureau of Water Supply and the Department of Transportation of New York City shall apply for the installation or removal of his work from the lot line to the sewers, water and gas mains in the street. In addition, Paragraphs 15A-1.10 and 15A-1.51 of the Standard shall apply.
- C. Paragraphs .01 through .04 inclusive of this section, shall apply for the installation or removal of his work on the site within the lot line.

15A.4.01 Excavations

- A. The Contractor shall, unless otherwise specified or indicated on drawings, do all excavating of earth, rock or other materials to the depths required to install the work herein specified and shown on drawings.

Note:

- 1. All excavation required under the terms of this contract shall be considered for the purpose of bidding, as "earth excavation." Should rock be defined in the Specification for General Construction (a copy of which may be seen at the Estimating Room) be encountered, same will be considered as an extra.
- 2. Additional payment for such rock excavation will be made as follows:
 - a. General Rock Excavation & Removal \$41.00 per cu. yd.
Soft
 - b. Other Rock Excavation & Removal \$49.90 Med.
\$68.20 Hard
- 3. The Contractor will not be paid for rock excavation exceeding in width or depth the actual amount of excavation necessary for the proper installation of his work. In case of dispute the Executive Director shall be the sole judge and his decision shall be accepted by the Contractor.

Section 15A-4
Excavations, Filling and Grading

15A-4.01 **Excavations (Cont.)**

- B. When water and gas lines and a house sewer are run in the same trench, the water and gas lines shall be supported on separate shelves cut into the trench.
- C. The bottom of trenches for vitrified tile pipe shall be carefully graded so as to provide an even bed for full length of the pipe with the bottom of the trench hollowed out for each hub. In rock trenches provide a bed of earth not less than 6 inches deep under all pipes.
- D. Excavations shall not be made around city monuments and bench marks until the said monuments or marks have been referenced and reset or otherwise disposed of by the Chief Engineer of the Bureau of Highways. The necessary labor and materials required to remove, care for, and reset all such monuments and bench marks shall be furnished by the Contractor.
- E. When the excavations are made by the General Construction Contractor, the suitable backfill from the excavations will be left on the premises for the use of the Contractor for Plumbing and Drainage. All labor, equipment and additional material required to fully fill and grade trenches, etc., shall be furnished by the Contractor for Plumbing and Drainage. He shall also remove from the premises all surplus material.

15A-4.02 **Sheet Piling, Shoring, Etc.**

All excavations shall be properly guarded and protected so as to prevent same from becoming dangerous to persons or property. The sides of all excavations, five (5) feet or greater in depth, shall be sheet-piled, braced or shored in accordance with the provisions of Section C26-1903.2 of the Building Code of the City of New York. Labor, materials, equipment, etc. for guarding, protecting, sheet-piling, bracing and shoring shall be furnished by this Contractor.

15A-4.03 **Pumping**

Furnish and run constantly sufficient pumping machinery to keep the trenches free from water up to the time of inspection and acceptance of that part of the work.

15A-4.04 **Backfilling and Grading**

- A. Backfill trench up to a level of one (1) foot over the top of the pipe with clean earth or sand in uniform layers not exceeding six inches in depth. Each layer shall be placed, then carefully and uniformly rammed solidly so as to eliminate the possibility of displacement of the pipe.

**Section 15A-4
Excavations, Filling and Grading**

15A-4.04 Backfilling and Grading (Cont.)

- B. Backfill for remaining height of trench taken from one (1) foot above the top of the pipe shall be with earth that is free from debris and contains no stones over six (6) inches in their largest dimension. Backfill shall be deposited in successive layers not exceeding one (1) foot in depth. Each succeeding layer shall be firmly compacted by tamping and left solid to the level required for seeded, sodded or planted areas, or pavements.
- C. All excavated materials including that left by the General Construction Contractor at locations where he has excavated for the Plumbing and Drainage Contractor which is not suitable for grading or required for backfilling shall be removed from the premises by the Contractor for Plumbing and Drainage.

Section 15A-4
Excavations, Filling and Grading

SECTION 15A-5

MATERIALS

15A-5.01 General

- A. Only new materials may be used unless otherwise indicated on drawings, or specified in the Amendments.
- B. All materials shall conform to applicable American Society of Testing Materials (A.S.T.M.) Standards (current edition) and to the requirements of the Administrative Code of the City of New York including all amendments in force.

15A-5.02 Cast-Iron Pipe

- A. Cast-iron pipe shall be evenly coated, cylindrical, smooth, free from all defects, of uniform thickness and of the weights required by the New York City rules governing Plumbing and Drainage, and shall be of the grade known in commerce as "extra heavy." Each length of pipe and each fitting shall be plainly marked with the manufacturers initials or registered trademark and with the letters "XH" to indicate "Extra-Heavy." The marking may be cast, stenciled, or otherwise applied on the pipe so as to be clear and legible at the time of installation. The marking shall be cast on fittings and shall be located away from the spigot end so as not to interfere with proper joining upon installation. Cast-iron soil pipe and fittings shall comply with A.S.T.M.-A74, latest edition.
- B. Threaded Cast-Iron Pipe; Pipe in 1 1/2" dia. and 2" dia. sizes shall be in ten foot lengths. Pipe sizes 3" dia. and over shall be in eighteen foot lengths. All threaded cast-iron pipe shall conform to U.S.A.S.I. A40.5 and WWP-356.36. The externally threaded ends shall comply with U.S.A.S.I. B16.12 and shall be properly gauged and checked as required by this standard for pipe threads. All externally threaded ends shall be provided with disposable thread protectors of metal or other material to protect the threads from damage in shipment and handling.

15A-5.03 Silicon Pipe

- A. Silicon pipe shall be cast silicon pipe with hub and spigot ends of the same pattern thickness, etc., as Extra Heavy, cast iron pipe made from a cast ferro-silicon alloy showing the following analysis:

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Materials

15A-5.03 Silicon Pipe (Cont.)

Silicon 14.50% average; Carbon 0.85% average; Manganese 0.65% average; Molybdenum Nil; Iron Remainder.

- B. Three (3) certified copies of the analysis shall be filed with the Executive Director before the pipe is installed.

15A-5.04 Vitrified Tile Pipe

Vitrified tile pipe shall be of extra strength, made of fire clay, surface clay, shale, or a combination of these materials. Pipe shall be glazed or unglazed, sound straight, cylindrical and of uniform diameter and thickness, without cracks or other imperfections, perfectly burned and shall conform to A.S.T.M. C700, latest edition.

15A-5.05 Precast Reinforced Concrete Pipe

- A. Precast reinforced concrete pipe shall conform to all requirements of A.S.T.M. C-76 and shall be Class III, Wall B of that standard.

- B. The pipe shall be made by a manufacturer who has had previous experience in the manufacture of precast reinforced concrete pipe. Inside surface of pipe shall be smooth.

- C. Visual Inspection

Precast reinforced concrete pipe shall be subject to visual inspection at the site of the work. Individual imperfect pieces may be rejected on account of any of the following:

1. Fractures or Cracks: Fractures or cracks passing through the shell, except that a single end crack that does not exceed the depth of the joint shall not be cause for rejection. However, if such single end cracks exist in more than 10 per cent of the pipe inspected, all defective pipe shall be rejected.
2. Mixing and Moulding Imperfections: Defects that indicate imperfect mixing and moulding.
3. Surface Defects: Surface defects indicating honeycombed or open texture.

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Materials

15A-5.05 Precast Reinforced Concrete Pipe (Cont.)

- 4. Spalls: Spalls deeper than one-half the depth of the joint or extending more than 4 inches around the circumference. However, if spalls are not deeper than one-half the depth of the joint or extending not more than 4 inches around the circumference exist in more than 10 per cent of the pipe, all the defective pipe shall be rejected.
 - 5. Misplaced Reinforcement: Exposure of the circumferential reinforcement when such exposure would indicate that the reinforcement is misplaced.
 - 6. Water Deficiency: The complete absence of distinct weblike marking, which is indicative of a possible deficiency of water in the concrete mix from the external surface of pipe made by any process in which the forms are removed immediately after the concrete has been placed.
 - 7. Holes drilled or cast into pipe for lifting bolts shall be adequately plugged with a suitable precast concrete plug which shall be properly grouted and sealed before backfill is placed.
- D. Pipe joints and gaskets that are rejected because of failure to conform to the requirements of A.S.T.M. C-143 and pipe damaged from handling or any cause whatsoever, whether in or out of the trench, shall be removed from the site by this contractor and replaced by him without additional cost to the Board of Education.

15A-5.06 Nickel Copper Alloy Steel Pipe

Nickel copper alloy steel pipe, the equal of "Yoloy" steel pipe, as manufactured by Jones & Loughlin Steel Corp., shall be in accordance with A.S.T.M. Specification A-714, Grade V. The nickel copper alloy steel pipe shall be schedule 40 and the alloy content shall meet or exceed the following:

| | |
|-----------------------|-----------|
| Carbon, max. | 0.20 |
| Manganese, max. | 1.06 |
| Phosphorus, max. | 0.045 |
| Sulphur, max. | 0.05 |
| Copper, percent | 0.75-1.25 |
| Nickel, percent | 1.60-2.24 |

It shall be black or galvanized, as specified. Pipe sizes 1 1/2 and smaller shall be butt weld type; 2 inch and larger pipe shall be seamless. All "Yoloy" pipe shall be identified with blue bands. "Yoloy" pipe 2 inches and larger shall be paint stencilled "YO. Std. 1506, Yoloy," and 1 1/2 inch and smaller pipe, when bundled, shall be identified with a blue tag marked "Yoloy." Seamless "Yoloy" pipe shall be hot rolled die marked, "Ysyooy," with 1/4 inch letters at intervals of approximately 11-inches.

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Materials

15A-5.07 Steel Pipe

- A. Black steel pipe and galvanized steel pipe shall be welded or seamless and shall be made in accordance with the current Edition of the A.S.T.M. A-53, Grade B Specifications. Pipe shall be free from scale, and rust, injurious sand marks, blisters, scale pits, laminations, imperfect welds, or other defects that might affect its strength, appearance or liability to corrode. The marker's name shall be rolled or stamped in the metal at intervals of each length of pipe 2-inches and larger, and stamped on a metal tag secured to each bundle of pipe 1 1/2-inches and smaller. Steel pipe shall be made by National Tube Div. U.S. Steel Corp., Spang-Chalfant & Co., Republic Steel Corp. Steel & Tube Div., Bethlehem Steel Co., Wheeling Steel Corp., Jones & Loughlin Steel Corp., or other approved equal.
- B. Unless otherwise specified or indicated on drawings, black steel pipe shall be standard weight (Schedule 40) pipe and galvanized steel pipe shall be extra-strong (Schedule 80) pipe.

15A-5.08 Brass Pipe

Brass pipe shall be seamless drawn red-brass pipe made of an alloy containing not less than eighty-five (85%) copper, semi-annealed, regular weight of standard iron pipe gauge with threads iron pipe size (I.P.S.). The maker's name shall be stamped at intervals on each length of pipe and the pipe shall be color-coded white in accordance with The Copper and Brass Research Association Standards. Before any brass pipe is delivered at the site the Plumbing and Drainage Contractor shall file with the Executive Director a notarized affidavit in triplicate stating that all of the brass pipe to be installed in his work is made from the alloy specified above and he shall submit the name of the manufacturers whose pipe he purposes to use, for approval by the Executive Director. Brass pipe shall be made by Chase Brass & Copper Co., Phelps Dodge Copper Products Corp., Revere Copper & Brass, Inc., American Brass Co., Bridgeport Brass Co., or other approved equal.

15A-5.09 Copper Tubing

- A. Copper Tubing Type T.P. (Threadless Pipe) shall be hard drawn seamless tubing in accordance with Copper & Brass Research Association Tube 4-A approved August 26, 1961 and A.S.T.M. B-302. Each tube shall be identified by means of color bars, gray running the full length of each tube, together with the letters "TP" appearing at approximately twelve inch intervals.
- B. Copper Tubing Type "K," shall be hard drawn seamless tubing manufactured in 20 foot lengths, in accordance with the Copper Development Association and A.S.T.M. B-88, for below ground use only. Each tube shall be identified by means of color bars, green, running full length of each tube.

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15A-5.09 Copper Tubing (Cont.)

- C. Copper Tubing Type "L," shall be hard drawn seamless tubing manufactured in 20 foot lengths, in accordance with the Copper Development Association and A.S.T.M. B-88, for above ground use only. Each tube shall be identified by means of color bars, blue, running full length of each tube.

15A-5.10 Acid-Resisting Glass Drainage and Vent Pipe, Etc.

Acid-resisting glass drainage and vent pipe and fittings shall be transparent, acid-resisting borosilicate glass having a low coefficient of expansion (18×10^{-7} inch/inch/°F.); or lower. Glass shall be a product such as Glass No. 7740, designated as "Pyrex double tough drainline," as manufactured by Corning Glass Works or "Kinax" as manufactured by Owens-Illinois. Piping shall be "Regular Schedule."

15A-5.11 Plastic Pipe

A. Polypropylene Plastic Pipe, Etc.

Polypropylene plastic pipe as herein specified may be substituted for cast-ferro-silicon alloy or acid-resisting glass. Pipe shall be GSR Fusual Schedule 40 flame retardant polypropylene as approved by N.Y.C. Board of Standards and Appeals. Materials shall be in accordance with A.S.T.M. D-2146 and shall be flame retardant in accordance with A.S.T.M. test D-635. All piping shall be bluish in color, shall be compatible with the coil fusion method and shall have the following markings: GSR Fusual, NSF-CW, pipe size, schedule 40, PP-2-FR, manufacturer's quality control number. Submit sample of pipe showing required markings, for approval.

NOTES:

1. Polypropylene pipe and fittings shall not be used underground.
2. Strainers, overflows, outlets and traps for science sinks and science tables shall be Durion as specified in Paragraph 15A-13.21

B. Poly Vinyl Chloride (PVC) Pipe)

Pipe shall be unthreaded, PVC 1120, schedule 80 poly (vinyl chloride) (PVC) pipe and shall conform to all the requirements of A.S.T.M. D-1785-76. PVC pipe shall be as manufactured by Borg Warner, Cabot Piping System-Edison N.J., or an approved equal. Submit sample for approval. Pipe sample must have all identifying markings in accordance with A.S.T.M. 1785-76.

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15A-5.12 Zinc Coating

Where pipes and fitting are specified to be zinc coated or galvanized, zinc coat shall be thoroughly and evenly applied by the hot dip process on both inside and outside. Zinc coatings shall meet the requirements of the A.S.T.M. Specifications.

15A-5.13 Fittings

- A. Fittings for cast-iron and silicon iron pipes shall be extra heavy pattern, manufactured in accordance with the current A.S.T.M. Standard Specifications and shall correspond with the pipe in all particulars.
- B. Where screwed pipe is used for storm water or sanitary drainage purposes, fittings and couplings shall be galvanized cast-iron, recessed and threaded drainage fittings with smooth interior waterway and with threads tapered so as to give a uniform grade to branches of not less than 1/4-inch to the foot and keep the vertical lines plumb. Fittings for screwed vent piping shall be galvanized cast-iron recessed drainage fittings. Fittings for gas piping shall be black malleable iron fittings.
- C. Fittings for brass water supply piping shall be standard brass of the same pattern and thickness as Standard weight cast-iron fittings. [They shall be made of hard red brass containing not less than eighty-five percent (85%), copper and five (5%) each of lead, tin and zinc.] Exposed fittings for waste connections at fixtures shall be drainage pattern. Brass fittings on exposed connections to fixtures only, 1 1/4-inches and smaller shall be heavy beaded red brass fittings. All connecting threads of pipes and fittings shall be iron pipe size and standard. Exposed fittings for fixtures connection shall be rough, plain, polished or chromium plated as specified. See Section 15A-13, Fixtures.
- D. Fittings for "TP" pipe shall comply with Mil. Spec. F 1183 (latest edition), 150 lbs. W.S.P. as manufactured by Stanley Plagg and Co., or approved equal. See Paragraph 15A-2.04 for brazing alloys.
- E. Fitting for acid-resisting glass pipe. All fittings, the shape of which will permit, shall be tempered by heat treatment in order to increase their resistance to failure. The ends of all straight lengths (unless field cut) shall be tempered.
- F. Fittings for Type "K" copper tubing shall be cast bronze solder joint fittings suitable for brazing and shall be in accordance with A.N.S.I. Std. B16.18-1972. Fittings for Type "L" copper tubing shall be wrought copper solder joint fittings suitable for brazing and shall be in accordance with A.N.S.I. Std.

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15A-5.13 Fittings (Cont.)

B16.22-1973. Type "K" and Type "L" fittings shall have a minimum working water pressure of 150 p.s.i. and shall be as manufactured by Nibco Inc., Stanley Flagg & Co., or approved equal. See Section 15A-2.04 of Standard for brazing alloys. Exposed fittings for fixture connections shall be chrome plated as specified under Section 15A-13, Fixtures.

- G. Fittings for polypropylene plastic pipe shall be GSR Fuseal DWV pattern flame retardant schedule 40 polypropylene fittings as approved by New York City Board of Standards and Appeals. Materials shall be in accordance with A.S.T.M. D-2146 and shall be fire retardant in accordance to A.S.T.M. test D-635. Fittings shall be legibly marked with molded on letters showing manufacturer's trade mark, pipe size of each socket, manufacturer's part number, N.S.P.-CW and symbol PPR indicating the material. Submit samples of fitting, showing required markings, for approval.
- H. Fittings for Poly Vinyl Chloride (PVC) pipe shall be schedule 80 socket type PVC plastic precision molded of virgin materials to exacting dimensions and shall conform to the requirements of A.S.T.M. D-2467 for socket type. Fittings shall be of the same manufacture as for PVC pipe.
- I. Fittings for ductile iron pipe shall be as specified in Paragraph .15 of this section.
- J. Fittings for vitrified tile pipe shall be of extra strength, manufactured in accordance with A.S.T.M. C700, latest revisions and shall correspond with the pipe in all particulars.

15A-5.14 Copper Pipe

Copper pipe shall be not less than 99 percent copper and shall be semi-annealed seamless drawn tubing, of standard iron pipe gauge, with threads of iron pipe size; the finish shall be plain, polished, chromium plated, or tinned, as called for in Amendments, or noted on drawings.

15A-5.15 Ductile Iron Pipe

A. General

Ductile iron pipe shall have an outer coating of coal tar and shall comply with the requirements of the latest Standard Specifications of A.N.S.I. A21.51. Ductile iron fittings shall have a pressure classification of at least equal to that of the pipe with which they are used. Fittings, joints and accessories shall comply with the requirements of the latest Standard Specifications of A.N.S.I. A21.10 and A.N.S.I. A21.11.

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15A-5.15 Ductile Iron Pipe (Cont.)

B. Mechanical Joint Pipe

Pipe and fittings shall be Standardized Mechanical Joint Pipe For Water and Mechanical Joint Pipe Fitting as manufactured by U.S. Pipe or an approved equal. Retainer glands shall also be use and shall be Ductile Iron Mechanical Joint Retainer Glands as manufactured by Standard Fire Protection Equipment Co. or an approved equal. Pipe shall be Class 52 for 3" or 4" pipe sizes and shall be Class 56 for pipe sizes 6" and larger.

C. Push-on Joint Pipe

Push-on rubber gasketed joint pipe shall be: the Super Bell-Tite Joint of Amstead Industries; the Tyton Joint of U.S. Pipe and Foundry; the Pastite Joint of American Cast Iron Foundry; or an approved equal. Push-on joint fittings shall be U.S. Pipe's Tyton Fittings or an approved equal. Pipe shall be Thickness Class 51 for all sizes of pipe.

D. Ductile iron pipe shall also comply with the following requirements:

1. Marking

In addition to the weight and class and other designated markings required by A.N.S.I. specifications, the pipe manufactured shall have the letters "N.Y.C." and the date of manufacture distinctly stenciled at the foundry on all ductile iron pipe, fittings and specials. All markings shall be painted conspicuously in white on the outside of each pipe length, fitting and special casting after the shop coat has hardened.

2. Cement Lining

All pipe shall be cement lined in accordance with A.N.S.I. Standard A21.4. However, thickness of lining shall be 1/8" minimum. A plus tolerance of 1/8" shall be permitted on all sizes of pipe.

3. Inspection and Testing

All pipe and fittings shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured. The Contractor shall furnish in duplicate to the Executive Director, sworn certificates of such tests. Pipes and fittings shall be subjected to a careful inspection and a hammer test just before being laid or installed.

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4. Handling and Cutting Pipe

- (a) The Contractor's attention is directed to the fact that the cement linings used for pipe and fittings are comparatively brittle. Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe and linings, scratching or marring machined surfaces, and abrasion of the pipe coating or lining.
- (b) Any fitting showing a crack and any fitting or pipe which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work.
- (c) In any pipe showing a distinct crack and in which it is believed there is no incipient fracture beyond the limits of the visible crack, the cracked portions, if so approved, may be cut off by and at the expense of the Contractor before the pipe is laid so that the pipe used is perfectly sound. The cut shall be made in the sound barrel at a point at least 12 inches from the visible limits of the crack.
- (d) All pipe shall be cut only by means of abrasive saws, hack saws, wheel type cutters, or milling type cutters. The use of "squeeze" type pipe cutters and cutting torches will not be permitted. All cut ends shall be examined for possible cracks caused by cutting.

5. Installing Pipe and Fittings

- (a) No defective pipe or fittings shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.
- (b) Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.
- (c) Pipe and fittings shall be laid accurately to the lines and grades indicated on the drawings or required. Care shall be taken to insure a good alignment both horizontally and vertically.

15A-5.15 Ductile Iron Pipe (Cont.)

6. Testing and Cleaning

All ductile iron piping shall be field tested for leakage by the Contractor at his own expense and in the presence of a representative of the Executive Director. Testing shall be in accordance with the requirements of Section 18 of the Standard. When the pipe lines are laid in excavation or bedded in concrete, the testing shall be done prior to refilling or placing the concrete covering. All joints shall be examined during the test and all leaks shall be repaired to the satisfaction of the Executive Director. The Contractor shall thoroughly clean all piping before placement and keep all lines free from every kind of foreign matter of whatever origin.

7. Damaged Pipe

Pipe damaged from handling or any cause whatsoever, whether in or out of the trench, shall be removed forthwith from the site of the work by the Contractor and replaced without additional cost to the Board of Education.

15A-5.16 Lead Pipe

When lead pipe is indicated on plans or specified in amendments, the lead shall be drawn pipe of pure soft lead. Water closet bends or straight connections shall be 8-lb. lead pipe.

15A-5.17 Ferrules and Soldering Nipples.

Ferrules shall be extra heavy cast brass, not less than 6 inches in length, of required diameter, and weights. Soldering nipples shall be extra heavy brass pipe, iron pipe size and weights.

15A-5.18 Iron, Sheet Metal and Wire Mesh Work

- A. All iron, sheet metal and wire work shall be of the dimensions shown on plans and details. Any iron, sheet metal and wire work necessary but not shown shall be furnished of the usual size and weight of sheet and plate iron, steel and wire work.
- B. All iron, sheet metal and wire work shall be securely put together with bolts, rivets, etc., and all bolts, nuts, washers, etc., that may be necessary shall be furnished, and all tapping, drilling or punching shall be done as may be required to place all work in position.

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15A-5.19 Monel Metal Fittings, Valves, Sheets, Etc.

- A. Fittings shall be of iron pipe size, thickness, etc., as described for Brass Pipe.
- B. Valves shall be of the same size and pattern as brass valves.
- C. Sheet metal shall be of the gauges indicated on drawings.
- D. Angles, channels, tees, flats, etc., shall be solid. Covered or encased forms or shapes will not be accepted.
- E. Joints in sheet metal shall be welded. Angles, channels, etc., shall be bolted, riveted or welded.
- F. Finish of the above materials shall be No. 8 grind or polished as indicated on drawings.

15A-5.20 Solder and Flux (for Monel Metal)

Solder shall be ninety-five (95%) percent tin and five (5%) percent antimony; flux shall be of a non-corrosive type.

15A-5.21 Unions

Unions shall have bodies of the same material as the pipes to which they are connected, but all unions shall have brass or bronze ground seats. Unions used for connections larger than 2-inches shall be flanged pattern. All gaskets shall be Grade "A" rubber. Unions shall be the equal of "Dart," "Grinnell," "Stockham," or "Flagg."

15A-5.22 Gate and Angle Valves

- A. Valves shall be full size of pipes. Gate valves shall be provided in water main lines. Where angle valves are used on branches to fixtures they shall have renewable seats. Iron body, flanged, bronze mounted valves with bolted bonnets shall be used on : water service and sprinkler service assemblies 3 inches and larger; water distribution piping 4 inches and larger; discharge piping of all sizes from pumps. Valves on water distribution piping 3-inches and smaller shall be brass or bronze body. Brass shall have a minimum copper content of eighty percent (80%) and a maximum lead content of five and one-half percent (5 1/2%). Handles shall be iron wheel japanned. Lockshield valves shall be provided where specified. See Sections 15A-2 and 15A-13 of this Specification.

Note: Iron body flanged valves shall be provided with sealing and insulating M.P. Gaskets as manufactured by BDN Industries or approved equal.

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15A-5.22 Gate and Angle Valves (Cont.)

B. Valves shall be suitable for a steam working pressure of not less than 125 pounds per square inch. All valves shall have the name or trade mark of the manufacturer and guaranteed working pressure cast or stamped on the body of the valve. All flanges shall be drilled for American Standards Association 125-pound Standard, companion flanges for all iron body gate valves, check valves, pressure reducing valves, strainers, etc., shall be iron.

Note: All valves of one type, i.e., all gates, or globes, etc., shall be of one manufacturer.

Brass or bronze gate and globe valves shall be of not less than the weights tabulated below.

| | | | | | |
|--------|------------|------------|-------------|-------------|-------------|
| Size | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| Weight | 10 oz. | 13 oz. | 1 lb. 0 oz. | 1 lb. 8 oz. | 2 lb. 3 oz. |
| Size | 1 1/4" | 1 1/2" | 2" | 2 1/2" | 3" |
| Weight | 3 lb 0 oz. | 4 lb 6 oz. | 7 lb. | 11 lb. | 17 lb. |

C. SCHEDULE OF VALVES APPROVED FOR WATER SUPPLY

Gate Valves

| Manufacturer | I.B. Non Rising | Brass or Bronze | | Outside Sc. & I.B. | Yokë Brass |
|--------------|-----------------|-----------------|------------|--------------------|------------|
| | | WH/Handle | Lockshield | | |
| Jenkins Co. | 326C | 370 | 370 LS | 651C | 275-U |
| Stockham Co. | G-612 | B-110 | B-110 | G-623 | B-133 |
| Powell Co. | 1787 | 507 | | 1793 | 1153 |
| Hammond | IR1138 | IB-646 | IB-646-L | IR-1140 | |
| Nibco Scott | P-619 | T-133 | T-133-L | P-617-O | |
| Milwaukee | P-2882 | 1140M | | P-2885 | |

Note: Unless otherwise specified, valves for Type "K" and Type "L" copper tubing shall be all bronze gate valves, equal in construction to the valves listed in the above table, except the valves shall be modified with brazing ends for Type "K" and Type "L" copper tubing. Valves shall be manufactured by one of the companies listed in the above table. Submit shop drawings for approval.

15A-5.23 Gate Valves for Type "TP" Copper Tubing

Valves shall be all bronze gate valves adaptable for silver brazing alloy, union and/or screw bonnet, and malleable iron non-heat wheel handle; 125 p.s.i., manufactured by any of the companies listed in above table; ends modified for "TP" tubing.

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15A-5.24 Check Valves

- A. Check valves in water supply lines shall be horizontal type of the material, makes and working pressure specified in paragraph .22 of this Section. Check valves shall be full size of pipes and shall be installed where shown on the drawings or herein specified.
- B. Check valves for threadless pipe "TP" shall be all bronze swing type 125 p.s.i. working pressure similar to Walworth No. 406 W.S.; "Flagg Flow," Fairbanks, Ohio Brass Co. 6606 or approved equal.
- C. Check valves for pneumatic systems shall be flanged silent check valves similar to Williams-Bager "Silent Check Valves," 125 lb. working pressure, Figure 329, Mueller Stream Specialties No. 101-AP, or approved equal.
- D. Check valves for Type "L" copper tubing shall be bronze swing type, equal in construction to the valves listed in the table below, except the valves shall have brazing ends modified for Type "L" copper tubing. Valves shall be manufactured by one of the companies listed in the table below. Submit shop drawings for approval.

SCHEDULE OF APPROVED CHECK VALVES

| Check Valves | | |
|--------------|--------------------|--------------------------|
| Manufacturer | Iron Body Swing | Brass or Bronze Swing |
| Jenkins Co. | E24C | |
| Stockham Co. | G-931 | B-319 |
| Powell Co. | 559 | 578 |
| Hammond | IR-1124 | IB-940 |
| Nibco-Scott | P-918-B | T-413-B |
| Milwaukee | P-2974 | 509 |

15A-5.25 Wall Hydrants and Sill Cocks

- A. Wall hydrants shall be nickel bronze with nickel bronze casing, polished nickel bronze face, brass operating parts, throughout, adjustable wall clamp, renewable nylon seat, 3/4" HPT standard hose outlet with integral vacuum breaker, 3/4" IPS male thread ground joint union elbow adapter, nickel bronze access box and nickel bronze hinged cover with locking device. Furnish and deliver four (4) operating keys to superintendent. Wall hydrants shall be Josam 71000, Jay R. Smith 5509, Wade W-8625, Zurn 2-1300 or approved equal. Submit shop drawings for approval.

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15A-5.25 Wall Hydrants and Sill Cocks (Cont.)

- B. Wall hydrants shall be set in exterior walls at the time these walls are being erected. The Plumbing and Drainage Contractor shall cooperate with the General Construction Contractor to insure that each wall hydrant is at the location and elevation noted on drawing.
- C. Sill cocks, when indicated on outer walls of building, shall be brass with lock shield cap, integral flange and 3/4 inch Hose Pipe Thread (HPT) outlet for standard hose connection. Each sill cock shall be provided with an atmospheric vacuum breaker.

15-5.26 Plug Cocks

Where indicated on plans, furnish and install Plug Cocks on circulating line (i.e., regulating flow) similar to Walworth-554, 125 Labs. P & D Contractor shall adjust plug cocks and regulate same so that a good circulation of hot water is obtained.

15A-5.27 Drain Bibbs

- A. Furnish and install drain bibbs in the following locations:
 - 1. At the base of all water risers.
 - 2. At low points of water lines.
 - 3. On the hot supply branch under one fixture in each room, including warming pantry and kitchen area, having a floor drain or stall urinal.
 - 4. At all other points indicated on drawings.
- B. The drain bibbs shall be 1/2 inch heavy brass compression faucets with plain end and rough brass finish.

Note: The drain bibbs in the supply connections under the lavatories and wash sinks (see Section 15A-13) shall have lock shields and loose keys. Exposed drain bibbs and lock shields shall be chrome plated brass.

15A-5.28 Hose Bibbs

Where indicated on drawings, furnish and install Woodford Model NO. 24 or approved equal 3/4 inch brass hose bibbs with integral vacuum breakers and nickel plated finish.

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15A-5.29 Traps

- A. Brass traps shall be heavy pattern cast brass New York regulation traps conforming with the Building Code of New York City. All cast brass visible traps shall be chrome plated.
- B. Cast-iron and silicon iron traps shall be extra heavy pattern, manufactured in accordance with the current A.S.T.M. Standard Specifications.
- C. All traps shall be full size of the piping to which it connects as indicated on drawings.

15A-5.30 Back Water Valves

Back water valves installed on sanitary drainage lines below floors of basements or cellars shall be open seat back water valves having cast iron valve housing with hub and spigot connections, threaded brass cleanout access cover, brass top swing revolving disc and brass seat (disc suspended on double fulcrum bearings) equal in all respects to Smith NYBE 7022. All back water valves shall carry Board of Standards and Appeals Calendar and approval number. When buried below floor or grade, back water valves shall be furnished with extension piece so that cleanout will be flush with finished floor. When valves are located more than 1'-0" below floor or grade, a valve pit with cover shall be provided by the General Construction Contractor, when indicated on plans.

15A-5.31 Vacuum and Air Piping

All risers and branches shall be black steel with malleable iron fittings. All piping and fittings at the air and vacuum pumps, shall be 85% red brass or threadless copper pipe, type "T.P."

15A-5.32 Stainless Steel

Stainless steel unless otherwise specified shall be chrome nickel cold rolled alloy, designated by the trade name Stainless Steel 18-8, Type 302, No. 4 Finish; it shall contain a minimum of 18% chromium, 8% nickel, and not more than 0.12% carbon, sheets shall be non-magnetic (straight chrome irons not accepted).

15A-5.33 Monel Metal (Cafeteria)

Monel metal shall be equal to the grade No. 35 Monel Metal.

15A-5.34 Galvanized Steel

All galvanized steel shall be galvanized by the hot dip process and shall conform in all respects with A.S.T.M. designation A93-27.

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15A-5.35 Cold Rolled (Furniture) Steel

All furniture steel shall be prime cold rolled, stretcher-leveled, resquared and oiled sheets, of the gauge indicated on drawings, and free of all defects, scale and rust.

15A-5.36 Galvannealed Steel

Galvanneal steel shall be galvanized by the hot dip process, specially treated and shall be slow cooled, resulting in a non-flaking zinc coating having a dull matte finish. It shall conform with A.S.T.M. A-93 Latest.

15A-5.37 Chromium Plating

All metal parts including tubular shapes, castings, etc., shall be finely ground and polished to a smooth satin finish. Every particle of scale, rough or foreign matter shall be removed. All pieces must be thoroughly and chemically cleaned before plating. Copper plating shall be applied as a first step, then properly buffed and polished, then a heavy deposit of nickel plating meeting the requirements of the A.S.T.M. specifications shall be applied and buffed and polished to a bright finish. The final treatment shall be the application of the chromium coatings, and the buffing and polishing of the surfaces to yield the desired finish.

15A-5.38 Cadmium Plating

All cadmium plating shall conform with all requirements of the A.S.T.M. specifications A-165 Latest. The cadmium coating shall have a uniform appearance, shall be adherent and free from blisters, and substantially free from other defects that may affect the appearance or protective value of the coatings.

15A-5.39 Aluminum

Aluminum plates and sheets shall contain not less than 99 percent aluminum and shall comply with Federal Specification QQ-A-250, of the grade, type and class suitable for the purpose.

15A-5.40 Nickel Silver, Tubing, Castings, Etc.

White Metal (nickel silver) for tubing, channels, angle shapes, etc., shall contain not less than 20 percent nickel. All nickel silver tubing shall be the equal of Chase Brass Company, American Brass Company, or Revere Brass and Copper Company.

The Contractor shall file with the Executive Director an affidavit in triplicate stating that the nickel silver used in the work of his contract contains not less than the percentage of nickel herein specified, and conforms in all respects with Federal Standard Specification QQ-N-321.

Section 15A-5
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15A-5.41 Gauges

- A. When gauges are specified for stainless steel, monel metal or furniture steel it shall mean U.S. Standard Gauge. See table of gauges below. The gauges specified shall be of the following thickness:

| | | | |
|--------------|-------------|--------------|-------------|
| No. 12 gauge | .109 inches | No. 18 gauge | .050 inches |
| No. 14 gauge | .078 inches | No. 20 gauge | .037 inches |
| No. 16 gauge | .062 inches | No. 22 gauge | .031 inches |
| No. 17 gauge | .055 inches | No. 24 gauge | .025 inches |

- B. Tolerances: When gauges are noted on drawings or specified, these gauges shall be not less than the decimal thickness specified. A tolerance of .005 inch plus or minus is the maximum tolerance that will be permitted for finished stainless steel, monel metal, or furniture steel sheets before painting or plating.

15A-5.42 Glass Wool

- A. All insulating material used for ranges, bake ovens, and broilers shall be vermin and moisture proof vitreous fiber which is chemically, physically, and mechanically stable up to 1000° Fahr. and shall not at any time contain voids; shall be packed at a homogeneous density of not less than 4 1/2 pounds per cubic foot; shall have a thermal conductivity at a mean temperature of 70° Fahr. not exceeding 0.25 B.T.U. per hour, per square inch, per degree Fahr. and a heat capacity of not more than .075 B.T.U. per degree Fahr. per foot. The ranges, bake ovens, broilers, etc., in which this insulation is installed, shall be unconditionally guaranteed against all insulation hazards.
- B. Fiber Glass Insulation for Reach-In Refrigerators. The basic material shall be mineral wool made of rock, slag, glass or mixtures thereof, processed from a molten state into fibrous form with binder added to form sheets or bats. The average density shall be not greater than 4-lbs. per cubic foot.
- C. The fiber glass shall comply with Federal Spec. AA-R-211(c), Par. 3-11-3 and shall be similar to Owens Corning PF-453.
- D. The insulation shall be applied in a manner to preclude possibilities of settling particularly to doors, where added stability is required. The bottom of refrigerator shall be reinforced with styrofoam or cork. The exterior surfaces of insulation space shall be vapor sealed with all spaces filled completely so as to leave no voids.

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15A-5.43 Cork Board

Cork Board shall be composed entirely of pure cork ground up, compressed into moulds to form sheet, and baked. The cork sheets shall be of the thickness noted on detail drawing. The sheets shall weigh not more than sixteen pounds per cubic foot and shall withstand immersion in water or boiling at atmospheric pressure for three hours without disintegrating or expanding more than two percent linear expansion in either length, breadth or thickness. The cork board shall be similar to that manufactured by **Armstrong Cork Co.**, or other equal approved by the Executive Director.

15A-5.44 Copper Sheet

Copper sheet shall be made from the best grades of virgin metal and scrap of known and approved composition. The material shall contain not less than 99.90 percent copper, silver being counted as copper. The sheets shall conform in all respects with Standard Federal Specification QQ-c-501.

15A-5.45 Tools, Cutters, Etc.

- A. Tools for installing brass shall be of the following type: Vises shall have special jaws without teeth. Wrenches shall be of the "Paramalee" or "Warnrock" type. Pipes installed bearing marks of vises or wrenches will not be accepted. All brass pipe shall be cut with square-end cutters or hack saws; wheel cutters will not be permitted.
- B. Vises used for installing copper tubing shall have special jaws without teeth. Tubing installed bearing vise marks will not be accepted. All tubing shall be cut with square-end cutters or hack saws; wheel cutters will not be permitted. Bending of tubing shall not be permitted.

SECTION 15A-6

ELECTRIC APPARATUS, ETC.

Note: General - The Contractor for Plumbing and Drainage shall furnish all materials, labor and appliances, all of which shall be of the very best quality necessary to complete the installation of the motors, etc., as herein specified in a thoroughly workmanlike manner. All appliances shall be of the latest pattern and approved by the Executive Director and installed in accordance with the rules and regulations of the Bureau of Electric Controls.

15A-6.01 Motors

A. General - Furnish and install all electric motors of sizes, speeds, current characteristics, etc., as shown on the drawings and in accordance with the following specifications.

Note: Where 205-volt motors are specified, 200-volt motors will be accepted.

B. Standards

1. All motors shall conform to the Standards of the National Electrical Manufacturers Association and to American Standards for Rotating Machinery latest editions. Unless otherwise specified, motors over 1/4 H.P. capacity shall be designed for continuous duty to operate on 3-phase, 60-cycle, 208-volt, A.C. operation. Standard 220-volt motors will not be accepted. Single phase motors shall be self starting of the capacitor type wherever practicable. Split phase motors will not be approved. Where motors with brushes are supplied, an additional set of brushes shall be furnished.

2. Motors in general, unless otherwise specified, shall be of the squirrel cage induction type with cast iron frames to withstand full voltage starting and shall meet NEMA locked rotor current standards for constant, multi-speed or wound rotor variable speed type, to suit the particular conditions. Motors for reversing operation shall be especially rugged for this service. Motors shall be of proper starting and running torque and have sufficient horsepower to avoid injurious overheating for the respective functions they are to perform. In general, motors of NEMA design "B," normal torque, low starting current, low slip shall be used. Where conditions require high starting torque, motors of NEMA design "C" high starting torque low starting current shall be used. Special applications may require motors of other designs so that equipment will not be subject to undue stress or damage.

Section 15A-6
Electric Apparatus, Etc.

All motors shall have a 1.15 Service Factor Configuration and shall be furnished only with copper stator windings and copper wiring from the stator windings to the connection outlet box. Aluminum or copper clad windings or wiring are not acceptable. All motors shall have a combined efficiency of 85% under full load conditions and shall reflect a power factor of at least 0.85 into the electrical service lines under full load conditions. All devices (capacitors, etc.) needed to correct the power factor shall be furnished and installed as part of the motor unit and wired directly to the motor within the motor enclosure.

Nameplate data on the motor shall indicate the electrical data of the motor/capacitor combination and the motor manufacturer shall be responsible for the assignment of overload (heater) element settings for the motor controller design. Other forms of power factor correction, other than by capacitors, shall be considered by the Board of Education for approval after submission by the Contractor.

3. Where drawings or specifications indicate motor horsepower for equipment it shall be understood that these are minimum and where requirements dictate a motor of larger rating, it shall be furnished as part of this contract.
4. Motor speeds shall be as stated in the amendments. Motors shall be selected with a view to quiet operation and where practicable shall have resilient mountings. Each motor shall be equipped with a name plate giving full information as to phase, voltage, frequency, horsepower, speed, duty, temperature rise and type of enclosure. Each motor shall have the direction of rotation permanently marked on the motor frame by means of an arrow.
5. Except for motors mounted on same sub-base with the driven apparatus and provided with adjustable belt tighteners, all motors used for belt drives shall be equipped with grooved slide rail bases with corresponding tongue on motor feet, and may be of cast iron or pressed steel. Fractional horsepower motors may be equipped with slotted feet.
6. Motor Enclosures and Temperature Rise -Temperature rise with class "A" insulation shall be based on the following: Open frame: 40°C., totally enclosed and fan-cooled: 55°C. Temperature rises shall conform to A.I.E.E. standards for continuous and/or short time rated motors. Motors subject to excessive dust or abrasives shall be of the totally enclosed type. Motors subject to dripping oil or water may be of the drip or splash proof type, otherwise closed.

Section 15A-6
Electric Apparatus, Etc.

15A-6.01 Motors (Cont.)

Conditions constituting a hazard from an explosive standpoint shall require a motor of the proper explosion proof class.

7. Bearings, unless otherwise noted, shall be of the ball or roller type with pressure relief type lubrication. Where sleeve bearings are deemed desirable other than for direct coupling, permission may be granted by the Executive Director. Integral horsepower motors equipped with oil ring sleeve bearings shall have accessible protected fittings for oiling provided with means for determining oil level. Oil cup lubricators shall be equipped with drain plugs and suitable drip pans.
 8. Motors shall be equipped with suitable terminal boxes of ample size to make and house motor wire and conduit connections. Terminals or connectors shall be of an approved type. Boxes on enclosed type motors shall be of cast iron with threaded hubs and gaskets, and with non-corrosive cover screws.
- C.
1. The Executive Director and the Chief Engineer of Light and Power (Bureau of Electric Controls) reserve the right to make such tests as they deem necessary. In case such tests are unsatisfactory, motors may be rejected and the Contractor will be ordered either to modify, rebuild or replace equipment to meet specification. All motor test data shall be subject to the approval of the Executive Director before motors are shipped from the factory.
 2. The Contractor shall fill ALL items on Motor Data sheets, such as "Building," "Job No.," "Application," and any other information facilitating identification of motors with respective machines, and shall bind or securely fasten Test Sheet with proper Dimension Sheet.

15A-6.02 Motor Pulleys

- A. Except where it is necessary to use pulleys for flat belts so as to match existing work, all motor pulleys shall be furnished by the manufacturer of the V-belt drive.
- B. Pulleys shall exactly fit shafts and shall be properly fastened by means of steel keys and cup-point set screws.

15A-6.03 Drip Pans

Oil lubricated motors that are not mounted on the same sub-bases with other apparatus, or motors with drain plug located at bottom shall each be provided with a drip pan made of No. 20-gauge galvanized sheet steel, 1 1/2-inches deep.

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15A-6.04 Approved Makes

Motors shall be of the highest grade manufactured by the following concerns: Allis Chalmers Mfg. Co., Baldor Electric Co., Century Electric Co., Continental Electrical Motors Co., General Dynamics Corp., General Electric Co., Howell Electric Motors Co., Imperial Electric Co., Louis Allis Co., Lima Electric Motor Co., Marathon Electric Mfg. Co., Peerless Electric Co., Reliance Electric & Engineering Co., Wagner Electric Corp., or Westinghouse Elec. & Mfg. Co.

15A-6.05 Bureau of Electric Controls

- A. The drawings and specifications for all light and power installations have been submitted to the Bureau of Electric Controls to facilitate any inspections that may be made by the Agency. It is the intention of these Specifications that as a minimum requirement, all electric work shall be done in strict accordance with the rules of the Bureau of Electric Controls, and with Chapter 30, Title "B" of the Administrative Code of the City of New York (Electrical Code). Where the requirements of the plans or specifications exceed the requirements of the Electrical Code, the requirements of the plans and specifications shall be binding upon the Contractor. Where the Bureau of Electric Controls does inspect and issue a violation, the Contractor shall correct the work to eliminate this violation as part of his contract obligation.
- B. Wherever the works "Chief Engineer of Light and Power" are used, they refer to and designate the Chief Engineer of Light and power of the Bureau of Electric Controls, or his duly authorized representative.
- C. The electric work, all connections, etc., covered in these specifications and shown on drawings, shall be under the general supervision of the Board of Education, subject to the spot inspection and test of the Bureau of Electric Controls. Should there be any controversy or difference of opinion as to the true meaning of either drawings or specifications, or the interpretation of them, covering the electrical work, etc., the same shall be referred to the Executive Director and by him to the Chief Engineer of Light and Power, Bureau of Electric Controls, and after consultation with the Executive Director and his Engineers, his decision shall be final and accepted as such by the Contractor.

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15A-6.05 Bureau of Electric Controls (Cont.)

- D. Certificates - All material and appliances shall be approved by the Executive Director and installed in accordance with the rules and regulations of the Bureau of Electric Controls. The Contractor shall file application with the Bureau of Electric Controls before starting on work covered thereby. Application for certificates of inspection shall be submitted to the office of the Executive Director for review and approval before being forwarded to the Bureau of Electric Controls. Electrical Inspection Certificates will no longer be issued by the Bureau of Electric Controls on most projects. The Contractor is still required to file an application for electrical inspection. On those projects where the Bureau declines to inspect, the Board of Education shall accept the submission of the pink copy of the job posting card issued by the Bureau of Electric Controls as meeting the requirement for a final inspection certificate. Contractor shall be responsible for payment of all inspection fees.

15A-6.06 Work by Others

Contractor for Electric Work will furnish and install all the starters for motors and also all the electric wiring to motors and starters, except where otherwise specified.

15A-6.07 V-Belt Drives

- A. All belt drives shall be of the multiple V-belt type, with sheaves, and size and number of belts as shown on the drawings. Each drive shall be complete with driving and driven sheaves bored to fit shafts, necessary belts, keys, setscrews, etc., to render it complete for the duty intended.
- B. Sheaves - Sheaves shall be of the best quality gray cast-iron or steel provided with grooves to fit the belt to be furnished and bored to fit the respective shaft exactly. Sheaves shall be fastened by means of heavy steel keys and countersunk, cup-point set-screws. Split taper bushings or interchangeable concentric bushings also will be accepted. The diameters of the sheaves shall be as shown on the drawings.
- C. Belting - Belts shall be strong cord-reinforced rubber of the highest quality, or other approved equal, designed to fit the sheave grooves properly. The manufacturer's name and brand of belt or trademark shall be moulded or indelibly stamped on each belt for easy identification. When required, samples of belting shall be submitted for approval. Belts shall be Browning Mfg. Co.'s "Super-Gripbelt," Dayton Industrial Products Co.'s "Super-Thorobred," Gates Rubber Co.'s "Super Vulco," U.S. Rubber Co.'s "U.S. Royal," or Worthington Corp.'s "E.C. Cord."

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15A-6.07 V-Belt Drives (Cont.)

- D. Drawings - The Contractor shall furnish to and receive the approval of the Executive Director of detailed drawings of each drive, before drives are made up. The drawings shall indicate the following data:
1. Name of Manufacturer.
 2. Manufacturer's catalog number of drive.
 3. Horsepower of drive.
 4. Number and size of belts.
 5. Diameter and type of driving pulley.
 6. Diameter and type of driven pulley.
 7. Distance between centers.
- E. Guarantee - Each complete drive shall be fully guaranteed by the manufacturer and the Contractor shall agree to keep the belts in good working order for a period of one year after the contract has been completed.

15A-6.08 Motor Starters

- A. All motor starters furnished as part of the electrical equipment shall be the equal of Allen-Bradley, Cutler-Hammer, Square D, Federal Electric Pacific Co., Westinghouse, or General Electric Co., equipped with under-voltage and overload protection, and shall be of such size as to operate without damage on the usual currents which may be normally expected for motors of the individual equipment.
- B. For type, size and detailed description of starters, see under individual equipment.

15A-6.09 Switches

Switches furnished as part of the electrical equipment shall be durable and shall break full load current of motor without damage to switch. Switches shall be similar to those manufactured by Bryant Electric Company, Hart & Hegemen, General Electric Company, Westinghouse Electric Company or approved equal.

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15A-6.10 Guards, Safety, Protection

- A. All equipment of a type containing moving parts, cutting edges or other features of a hazardous nature that might cause bodily injury to operators of same shall be equipped with sheet metal or wire guards. All of these guards shall be finished to harmonize with the design and finish to which attached, and shall be of types conforming with New York State Factory Laws governing same. See under each item of equipment for type of guard or safety device required.
- B. All electrically operated cutting equipment, slicing equipment or other equipment of a hazardous type, shall be provided with signal light.

15A-6.11 Wiring for all Electrically Heated Equipment

- A. Wiring shall be suitable for the load requirements specified and shall be tinned copper, having heat and water resisting insulation, the equal of "Delta-beston" range wire. Exposed wiring shall be run in Greenfield.
- B. Where noted in these specifications that other Contractor will provide a signal light in his wall mounted switch box, it may be omitted. This applies only to stationary (fixed) items connected in conduit or Greenfield. All portable electrically heated equipment shall be provided with signal light. All equipment requiring a cord and plug shall be provided with 6-feet of approved flexible rubber covered 3-wire cord (one for ground) to meet the requirements of heavy duty service type "S" and cord shall terminate with plug to suit receptacle furnished and installed by other contractor.
- C. Pilot lights shall be of the Neon Type with resistors to suit voltages.

15A-6.12 Immersion Type Water Heaters

- A. Elements shall have a large surface of the low temperature type and shall be not less than the rating specified in Amendments. Elements shall be made of copper, monel, Everdur or Stainless Steel, designed for single phase and either one, two or three heat operation as specified for the particular item.
- B. Immersion heaters of the following manufacturers are accepted and approved as meeting the requirements of this specification.

E.L. Wiegand Co.
General Electric Co.
Cutler Hammer
Westinghouse Electric & Mfg. Co.

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15A-6.13 Thermostats

- A. All electrically operated heating equipment shall be thermostatically controlled to the temperature specified in Amendments and shall be furnished complete with red ruby signal light.

- B. Thermostats of the fixed type shall be set and sealed at the factory to the temperatures specified. Variable type thermostats shall be calibrated at the factory to the temperature range specified. Thermostats manufactured by the following manufactures are accepted and approved as meeting all requirements of this specification, Robt. Shaw Thermostat Co., Wilcolator Co., E.L. Wiegand Co., General Electric Co., Westinghouse Elec. & Mfg. Co.

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SECTION 15A-7

DRAINAGE

15A-7.01 General

All materials, items, etc., for drainage that are described or specified in this section or shown on drawings, shall be furnished and installed by the Plumbing and Drainage Contractor.

15A-7.02 Manhole

- A. Construction of manholes, setting of standard manhole heads, all incidentals and appurtenances, shall be in accordance with the requirements of the Bureau of Sewers.
- B. The Plumbing and Drainage Contractor shall pay for all labor, materials, equipment, inspection and supervision costs incurred.

15A-7.03 House Sewers

- A. The house sewers shall be extra heavy cast iron pipe. Unless otherwise shown on drawings, house sewers shall be connected either to private or public sewers. All work shall be done in accordance with the latest specifications and under the direct inspection and supervision of the Bureau of Sewers.
- B. When connections are to be made to the public sewers or to a private sewer and new spurs are indicated, a section of the sewer shall be removed and replaced with new piping and a fitting with a spur of the required size. This work shall be performed in conformity with the rules and regulations of the Bureau of Sewers.
- C. The Board of Education will arrange with the owners of private sewers and drains for permission to connect thereto the house sewers or drains as indicated on drawings. For costs which shall be included in the bid, see Amendments. The Contractor for Plumbing and Drainage will obtain and pay for all permits in connection therewith.

15A-7.04 House Drain

- A. House drains, unless otherwise indicated on drawings, shall be of X.H.C.I. and each drain shall be fitted with a running trap having two cleanouts, placed where indicated on plans and, with the exceptions noted in the Plumbing Rules, the connection for the ejector discharge shall be on the sewer side of the house trap. If the traps are below floor, the cleanouts shall be extended to bring the countersunk cleanout plugs flush with floor where so indicated, and not higher than 18 inches above center line of pipe, or traps shall be in pits, in which

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15A-7.04 House Drain (Cont.)

case the screw plugs shall be flush with bottom of the pits. Floor level cleanouts shall be Josam 58090-25, Smith NYBE 4241 or Zurn Z-1450-1. Cleanouts shall consist of a cast iron ferrule with seriated cut-off sections, countersunk brass plug and adjustable head with heavy duty scoriated cover. The house drain shall be extended to a point not less than 2 feet beyond the outer walls of the building, area, or vault.

- B. Fresh air inlets of the diameter indicated on drawings shall be connected to a fitting in the house drain on the house side of the main house trap and extended outside of the building and shall be terminated above grade with a satin finish nickel bronze face plate equal to Josam 1850 or Jay R. Smith NYBE 9005 with pipe expander locking device and vandal proof cap.
- C. Face plates shall be minimum 1/4" thickness and shall protrude no more than 7/8" from face of building, and shall be of size as indicated on plans.
- D. Traps for leader, yard, area and floor drains in basement or cellar, unless otherwise noted on drawings shall be running traps accessible as indicated on drawings.

15A-7.05 Yard Drains

As indicated on drawings, the yard surfaces will be drained to catch basins provided by the Contractor for General Construction, or to cast iron drains provided by the Contractor for Plumbing and Drainage. The catch basins or cast iron drains shall be connected with extra heavy cast iron pipe. Drawings shall indicate when piping shall end in dry wells, or shall be connected to the main house drain or to the sewer in the street. Cast iron drains and extra heavy cast iron pipe shall be furnished and installed by this Contractor.

Note: When indicated on drawings, vitrified tile pipe may be used in lieu of extra heavy cast iron pipe.

15A-7.06 Boiler Blow-offs

When blow-off pipes for steam boilers or blow-off tanks are indicated they shall be X.H. cast-iron pipe with caulked joints as specified under pipe joints in Section 15A-2. Ends of pipes shall be capped or closed as directed and left so that the pipes may be extended by the Contractor for Heating and Ventilating Work. When connected to the sump the pipe shall extend to a point 4" above the bottom of the pit.

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15A-7.07 Drains

- A. Drains shall be heavy cast iron, with double drainage flange and weepholes, with outlet connection as indicated and of sizes indicated on drawings. Drains (except as noted) shall be furnished with high polished brass or bronze tops consisting of one piece rim secured to the body with vandal proof spanner type stainless steel screws solid brass or bronze grate with reinforcing members on under side (no cladding over iron permitted). Removable sediment bucket shall be of heavy duty one piece construction as specified hereinafter. Acid drains shall be cast ferro-silicon iron of the composition specified for silicon pipe in Section 15A-5. For the type and location of acid drains, see drawings.

- Notes: 1. All strainers and grates for drains shall be secured with vandal proof spanner type stainless steel screws.
2. The Plumbing and Drainage Contractor shall provide the School Custodian or a representative of the Executive Director with spanner type tools that may be used for removal of strainers and grates. Two (2) such tools shall be provided for each different type drain.
3. Gasket-joint drains and no-hub joint coupling drains shall not be used in drainage system.

- B. Types (J, K, L, M, N, O, P) drains shall conform to the provisions as set forth in Paragraph (A) except they shall be all cast iron lacquer finish - no polish brass tops required.
- C. The various manufacturers figure numbers referred to are for the purpose of type only. All manufacturers shall conform to the provisions as set forth in Paragraph (A) and the specifications as listed hereinafter. The P & D Contractor shall submit shop drawings for approval of each type required on job before installation. The shop drawings shall be marked as to type and shall include all dimensions, free area, and features as to meet the specifications.
- D. All drains in membrane waterproof floors shall be equipped with 6 lb. lead flashing or 20 oz. soft rolled sheet copper and secured to the flashing flange with brass bolts and cast iron clamping device. Flashings shall bond not less than 1'-0" on all sides into membrane waterproofing.

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15A-7.07 Drains (Cont.)

E. Drain Types:

1. Type A: (Independent Trap) shall be cast iron with double drainage flange and weepholes, bottom outlet connection, flashing clamp device, and 6" round adjustable strainer of high polished brass or bronze. In individual shower compartments use a 6" round adjustable strainer of high polished nickel bronze and in Shower Rooms, drain shall be provided with 8" diameter adjustable strainer of high polished nickel bronze. Drains shall be Josam 30000-A, Smith NYBE 2010-A, Zurn 415, Wade W-1100, or approved equal.
2. Type B: (Integral Trap) shall be cast iron with double drainage flange and weepholes, integral trap with minimum 2 inch seal, with 6 inch diameter adjustable strainer (unless otherwise indicated) of high polished brass or bronze, and shall be Josam 30600-A, Smith NYBE 2020-A, Zurn 450, Wade W-1120, or approved equal.
3. Type C: (Integral Trap) shall be cast iron with double drainage flange and weepholes, integral trap with minimum 2 inch seal, and round adjustable strainer with sediment bucket of high polished brass or bronze. Drain shall be Josam 30600-A, Smith NYBE 2020-A, Zurn 450, Wade W-1120, or approved equal.
4. Type D: (Independent Trap) shall be cast iron with double drainage flange and weepholes, bottom outlet connection and 7 inch diameter adjustable strainer with sediment bucket of high polished brass or bronze. Drain shall be Josam 30000-E1, Smith NYBE 3510-F37, Wade W-1100-ER7, or approved equal.
5. Type E: Custodian Mop Sink shall be cast iron body drain with bottom outlet connection, flashing flange with weepholes and clamping device, cast aluminum or brass, removable sediment bucket and polished brass or bronze top and grate. For assembled bucket use stainless steel bolts and nuts peened after assembly. Strainer plate shall not be secured to body as required for other drains. Drain shall be Smith NYBE 2488 or approved equal. Furnish and install over drain an approved rigid type combination faucet 4'-0" above floor. The faucet shall be a 1/2" supply fitting equipped with integral vacuum breaker, integral stops, renewable seats and heavy cast brass spout braced to wall with rigid support. Faucet shall be Speakman S-5811, American Standard 8344.111, T & S Brass and Bronze Works, inc. B-1958, Water Saver Faucet VR-769, or an approved equal. Faucet shall have a hose thread and shall be furnished with a four foot length of 4-ply rubber hose connected to hose end of faucet.

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6. Type F: Funnel shall be cast iron with bottom outlet connections, double drainage flange and weepholes, clamping device secured with brass bolts, 7 inch diameter adjustable strainer with 4 inch diameter funnel screwed to strainer grid - both of high polished bronze or brass. Drains shall be Josam 30000-E2, Smith NYBE 3510-F11, Zurn 415/414, Wade W-1100-EP4, or an approved equal.
7. Type G: (Independent Trap) shall be cast iron with bottom outlet connection, double drainage flange with weepholes, removable cast iron sediment bucket with perimeter drainage slots, loose set polished bronze grate so designed that grate cannot be set unless bucket is in position. Drain shall be Josam 32120, Smith NYBE 2220, Wade W-1310-TD, or an approved equal.
8. Type H: (Adjustable Type) shall be cast iron with bottom outlet connection, double drainage flange and weepholes, adjustable collar with rolled thread or alignment tract and locking screws, removable sediment bucket and polished bronze grate so designed that grate cannot be set unless bucket is in position. Drain shall be Josam 31120, Smith NYBE 2350, Wade 1340-TD, or an approved equal.
9. Type J: (Interior Areas) shall be cast iron, triple drainage, bottom outlet caulk connection, medium duty round grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drains shall be Josam 34420, Smith NYBE 2230, Wade W-1210-TD, or an approved equal.
10. Type K: (Interior Areas) shall be cast iron, triple drainage side outlet caulk connection, medium duty round grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drains shall be Josam 34430, Smith NYBE 2235, Wade W-1230-TD, or an approved equal.
11. Type L: (Exterior Areas) shall be cast iron triple drainage with double drainage flange and weepholes, bottom outlet caulk connection, heavy duty round grate and slotted sediment bucket with auxiliary drainage rim and 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drain shall be furnished with vandalproof locking device consisting of angle latches, 3/8" x 7/8" minimum stainless steel locking bar drilled and tapped to receive 3/8" stainless steel screw with spanner type stainless steel cap set flush with top of grate. Under side of grate shall be provided with recess to receive a boss cast into sediment bucket or other locking device to prevent grate from turning in bucket. Drains shall be Smith NYBE 2253-U-2, Wade W-1710-A-NY, or approved equal.

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15A-7.07 Drains (Cont.)

12. Type M: (Exterior Areas) shall be cast iron triple drainage with double drainage flange and weepholes, side outlet caulk connection, heavy duty grate and slotted sediment bucket with auxiliary drainage rim and 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drain shall be furnished with vandalproof locking device consisting of angle latches, 3/8" x 7/8" minimum stainless steel locking bar drilled and tapped to receive 3/8" stainless steel screw with spanner type stainless steel cap set flush with top of grate. Under side of grate shall be provided with recess to receive a boss cast into sediment bucket or other locking device to prevent grate from turning in bucket. Drains shall be Smith NYBE 2255-U-2, Wade W-1710-MS-NY, or approved equal.
13. Type N: (Exterior Walks, Etc.) shall be cast iron, double drainage, bottom outlet caulk connection, heavy duty tractor grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Each drain shall be furnished with a vandalproof locking device as described for "Type L" drain. Drain shall be Smith NYBE 2233-U-2, Wade W-1210-TD-NY, or an approved equal.
14. Type O: (Exterior Walks, Etc.) shall be cast iron, double drainage, side outlet caulk connection, heavy duty tractor grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Each drain shall be furnished with a vandalproof locking device as described for "Type M" drain. Drain shall be Smith NYBE 2238-U-2, Wade W-1230-TD-NY, or approved equal.
15. Type P: (Exterior Walks, Etc.) shall be cast iron heavy duty trench drains with deep hub body, sediment bucket, grate, end plates and gaskets. Drain shall be Smith NYBE 2710-1 or approved equal.
16. Type Q: shall be 14 gauge, type 304, (18-8) stainless steel floor through, completely welded and coved, as manufactured by IMC/Teddy Corp. or approved equal. All welds shall be grounded and polished smooth. Each through shall be fitted with a special stainless steel cup with removable perforated stainless steel basket to accommodate up to 3" waste pipe. For configuration of through, see detail on drawing.

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15A-7.08 Piping in Waterproof Cellars, Basements, Etc.

When indicated on sanitary plans that the cellar or basement floor, walls, pits, sumps, etc., are to be waterproofed, the waterproofing will be done by another Contractor. The Contractor for General Construction shall provide and install all sleeves required in waterproofed floors, walls, pits, etc. The Contractor for Plumbing and Drainage shall work in conjunction with the Contractors interested in this part of the work and he shall caulk his piping after same has been installed through sleeve.

15A-7.09 Building House Storm Drain, Etc.

Building House Storm Drains shall be extra heavy cast iron. Each house storm drain shall be fitted with an extra heavy cast iron running trap having two cleanouts and shall be installed where shown on drawings. If the traps are below the floor, cleanouts shall be installed as described in Paragraph 15A-7.04, House Drain.

15A-7.10 Rain Leaders

- A. Inside leaders shall be located where indicated on drawings. Below ground, in cellars and in unfinished basement areas, the pipes shall be extra heavy cast iron. In finished basement areas and in all areas above the basement, the piping shall be extra strong (Schedule 80) galvanized steel pipe with galvanized cast iron recessed drainage fittings. Leaders shall be offset as required, to keep the pipes close to walls or columns or in chases. The lower ends of leaders shall be turned by means of long sweep, 90 degree bends ; provide accessible tapped tee cleanouts with brass screw -plug above bends, all properly supported on brick or concrete piers, or wrought iron hangers which must be approved before being used. Leader connections at roof shall be kept in hung or furred ceilings where possible.
- B. It is the intent that the leaders shall be put into service as soon as required. The leaders shall be protected against frost, obstructions and all damage, by the Contractor for Plumbing and Drainage, who shall replace damaged leaders and remove obstructions until the work is completed and accepted.

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15A-7.11 Roof Drains

- A. On all roofs (other than copper roofs) and in gutters drained by inside leaders, furnish and set, in conjunction with the roofer, and when directed by the General Construction Contractor, approved roof drains of cast iron unless otherwise indicated. Drains shall be set not less than 2'-6" from parapet wall or inner edge of exterior wall.
- B. Flashing of 6 lb. lead or 20 oz. soft rolled sheet copper 34" x 34" shall be furnished and installed at each roof drain by means of non-puncturing type flashing clamping device.
- C. For copper roofs and gutters, the Contractor for the General Construction will provide pipes from the drains of roofs and gutters, pipes ending below the ceiling of the floor below or inside of walls in attic space to which the contractor for Plumbing and Drainage shall make connections.
- D. Roof Drain Types

Notes: 1. Domes for roof drains shall be cast iron.

- 2. For each roof, the Plumbing and Drainage Contractor shall ascertain from the General Construction Contractor whether Standard Roof or Optional Roof type of construction is to be used.

Type A - (Standard Storm Water Drainage)

1. Standard Roof:

- (a) Drain shall be cast iron, Smith 1010-R-C or an approved equal and shall be modified with an 8 1/4 inch high cast iron dome.
- (b) Each drain shall be furnished with flashing collar with seepage openings, sump receiver and under deck clamp. Dome shall have slots no greater than 1/2 inch in width and it shall be secured to the drain body by means of a locking device.

2. Optional Roof:

- (a) Drain shall be cast iron, Smith 1010-E-R-C-W-(C-2) or an approved equal.
- (b) Each drain shall be furnished with primary and secondary flashing devices, extension collar, sump receiver, under deck clamp and cast iron dome. Double row of 1/4 inch diameter seepage openings shall be provided in the extension collar by the manufacturer.

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15A-7.11 Roof Drains (Cont.)

- (c) The height of the extension collar shall be such that the height of the roof (membranes; insulation; gravel) shall terminate below the top of the gravel stop. Plumbing and Drainage Contractor shall coordinate drain height and installation of drain with General Construction Contractor. The installed roof drain shall have its dome extending at least four inches above the gravel surface of the roof and it shall be secured to the body of the drain by means of a locking device.

Type B - (Controlled Flow Storm Water Drainage)

Drain shall be cast iron, Smith 1085-E-R-C-W-(C-2) or an approved equal. Each drain shall be furnished with primary and secondary flashing devices, deck clamp, cast iron dome, extension collar and sump receiver. Double row of 1/4 inch diameter seepage openings shall be provided in the extension collar by the manufacturer. Dome shall have slots no greater than 1/2 inch in width and shall be secured to the body of drain by means of a locking device. Unless otherwise indicated, each drain shall have one "Flow Rate Control Weir." Weir shall be pre-set at the factory in accordance with the drawing specifications and shall be provided with vandal proof fasteners to prevent unauthorized tampering with settings. Plumbing and Drainage Contractor shall coordinate drain height and installation of drain with General Construction Contractor.

- Notes: 1. For Standard Roof Construction, the height of the extension collar shall be such that the overall height of the roof insulation and membranes shall terminate at the inner top of the collar.
2. For Optional Roof Construction, the height of the extension collar shall be such that the overall height of the roof, (membranes, insulation, gravel) shall terminate below the top of the gravel stop.

Type C shall be cast iron with one piece flashing clamp device, 1 1/2" minimum sump, and brass angle type grate secured by clamp device, equal to Josam 24700, Smith NYBE 1510, Zurn ZRB-187 or Wade W-3270.

Type D shall be cast iron with bottom or side outlet connection as required, full size brass clamping device and brass dome secured with vandal proof screws. Drain shall be Smith 1630 or 1690, or an approved equal.

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15A-7.11 Roof Drains (Cont.)

Type E shall be cast iron with bottom outlet connection, 4" wide integral flange, minimum 12 inch round top with extra thick anti-tilting grate having minimum free area of 61 square inches. Drain shall be furnished with one piece brass rim secured with vandal proof screws and brass grate, both with high polished finish. Drains shall be Smith NYBE DX-2566-2-U, or an approved equal.

Type F shall be cast iron with bottom outlet connection, primary and secondary flashing devices, extension collar, cast iron grate, sump receiver and under deck clamp. Double row of 1/4 inch diameter seepage holes shall be provided in the extension collar by the manufacturer. Cast iron grate shall be secured to the body of the drain with vandal proof screws. Drain shall be Smith 1409-C-R-U, or an approved equal.

15A-7.12 Soil, Waste and Vent Lines

- A. Except as specified below, the soil, waste and vent stacks shall be extra heavy cast iron. Offsets in the stack vent portion of soil and waste stacks above the highest fixture drainage connection, and offsets in vent stacks and connections of vent stacks at the bottom to a soil or waste pipe or to the building house drain shall be made at an angle of at least 45 degrees to the horizontal. All waste and vent stacks that are 3 inches or smaller shall be extra strong (Schedule 80) galvanized steel pipe. From a point one foot below the top floor ceiling and upward, the waste and vent stacks shall be extra heavy cast iron pipe and shall end at the same height as the parapet wall coping or roof barrier fence. Where required, to allow for the proper installation of flashing, stacks passing through roofs adjacent to parapets, bulkheads, etc., shall be offset close to slab to a point not less than 2'-6" from parapet or inner edge of exterior wall.
- B. At the foot of the soil, waste and vent stacks and at all offsets and at other points indicated on drawings, there shall be furnished and connected in an accessible location an approved tapped T-fitting of same size and material as the stack to which it connects, and provided with an approved brass screw plug. Plugs shall be the same size as the piping up to size four inch (4").

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15A-7.12 Soil, Waste and Vent Lines (Cont.)

- C. All branches of soil piping shall be extra heavy cast iron. Branches of waste and vent piping in cellar, boiler rooms, pipe spaces and storerooms of basement, and fan rooms shall be extra heavy cast iron. Except as specified all branches of waste and vent piping above the cellar, connected to the soil, waste and vent stacks shall be extra strong (Schedule 80) galvanized steel pipe with galvanized cast iron recessed drainage fittings. All soil, waste and vent pipes located underground shall be extra heavy cast iron.

Note: 1. For acid wastes and vents, see Paragraph 15A-7.13.

2. All piping from discharge of pumps to connection into gravity system shall be extra strong (Schedule 80) galvanized steel pipe with galvanized cast iron recessed drainage fittings. Furnish and install flanges for connections to valves on discharge piping from pumps.

- D. All soil, waste and vent pipes passing through roofs shall be flashed so as to prevent leakage and yet allow for the expansion and contraction of the pipes. For this purpose tubes of 20-ounce copper 18 inches long and of such diameter as to permit the free movement of the pipes shall be soldered to a sheet of copper of like weight, 20 inches square, slipped over the pipes, and secured to the roof in a neat manner. Sleeves 6 inches long, made from cast-iron pipe shall be slipped over the pipes and extended down over the copper tubes at least three inches. The sleeves shall be secured in place by caulking the upper half of the sleeves with lead which shall finish flush with the top of the sleeve.

Note: A cast iron roof coupling with double threads may be used as an alternate flashing sleeve. Sleeve shall be Josam 26440, Smith NYBE 1750, Zurn Z-196-3, Wade W-3670, or approved equal.

- E. Furnish and install cast iron sleeves in roof slabs for soil, waste and vent pipes to pass through. For method of installation, see drawings.
- F. When indicated on plans or specified, roof stacks shall terminate with cast iron vandal proof hooded vent caps. Vent caps shall be Josam 26700, Smith 1748, Zurn Z-193, or approved equal.

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DRAINAGE

15A-7.01 General

All materials, items, etc., for drainage that are described or specified in this section or shown on drawings, shall be furnished and installed by the Plumbing and Drainage Contractor.

15A-7.02 Manhole

- A. Construction of manholes, setting of standard manhole heads, all incidentals and appurtenances, shall be in accordance with the requirements of the Bureau of Sewers.
- B. The Plumbing and Drainage Contractor shall pay for all labor, materials, equipment, inspection and supervision costs incurred.

15A-7.03 House Sewers

- A. The house sewers shall be extra heavy cast iron pipe. Unless otherwise shown on drawings, house sewers shall be connected either to private or public sewers. All work shall be done in accordance with the latest specifications and under the direct inspection and supervision of the Bureau of Sewers.
- B. When connections are to be made to the public sewers or to a private sewer and new spurs are indicated, a section of the sewer shall be removed and replaced with new piping and a fitting with a spur of the required size. This work shall be performed in conformity with the rules and regulations of the Bureau of Sewers.
- C. The Board of Education will arrange with the owners of private sewers and drains for permission to connect thereto the house sewers or drains as indicated on drawings. For costs which shall be included in the bid, see Amendments. The Contractor for Plumbing and Drainage will obtain and pay for all permits in connection therewith.

15A-7.04 House Drain

- A. House drains, unless otherwise indicated on drawings, shall be of X.H.C.I. and each drain shall be fitted with a running trap having two cleanouts, placed where indicated on plans and, with the exceptions noted in the Plumbing Rules, the connection for the ejector discharge shall be on the sewer side of the house trap. If the traps are below floor, the cleanouts shall be extended to bring the countersunk cleanout plugs flush with floor where so indicated, and not higher than 18 inches above center line of pipe, or traps shall be in pits, in which

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15A-7.04 House Drain (Cont.)

case the screw plugs shall be flush with bottom of the pits. Floor level cleanouts shall be Josam 58090-25, Smith NYBE 4241 or Zurn Z-1450-1. Cleanouts shall consist of a cast iron ferrule with seriated cut-off sections, countersunk brass plug and adjustable head with heavy duty scoriated cover. The house drain shall be extended to a point not less than 2 feet beyond the outer walls of the building, area, or vault.

- B. Fresh air inlets of the diameter indicated on drawings shall be connected to a fitting in the house drain on the house side of the main house trap and extended outside of the building and shall be terminated above grade with a satin finish nickel bronze face plate equal to Josam 1850 or Jay R. Smith NYBE 9005 with pipe expander locking device and vandal proof cap.
- C. Face plates shall be minimum 1/4" thickness and shall protrude no more than 7/8" from face of building, and shall be of size as indicated on plans.
- D. Traps for leader, yard, area and floor drains in basement or cellar, unless otherwise noted on drawings shall be running traps accessible as indicated on drawings.

15A-7.05 Yard Drains

As indicated on drawings, the yard surfaces will be drained to catch basins provided by the Contractor for General Construction, or to cast iron drains provided by the Contractor for Plumbing and Drainage. The catch basins or cast iron drains shall be connected with extra heavy cast iron pipe. Drawings shall indicate when piping shall end in dry wells, or shall be connected to the main house drain or to the sewer in the street. Cast iron drains and extra heavy cast iron pipe shall be furnished and installed by this Contractor.

Note: When indicated on drawings, vitrified tile pipe may be used in lieu of extra heavy cast iron pipe.

15A-7.06 Boiler Blow-offs

When blow-off pipes for steam boilers or blow-off tanks are indicated they shall be X.H. cast-iron pipe with caulked joints as specified under pipe joints in Section 15A-2. Ends of pipes shall be capped or closed as directed and left so that the pipes may be extended by the Contractor for Heating and Ventilating Work. When connected to the sump the pipe shall extend to a point 4" above the bottom of the pit.

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- A. Drains shall be heavy cast iron, with double drainage flange and weepholes, with outlet connection as indicated and of sizes indicated on drawings. Drains (except as noted) shall be furnished with high polished brass or bronze tops consisting of one piece rim secured to the body with vandal proof spanner type stainless steel screws solid brass or bronze grate with reinforcing members on under side (no cladding over iron permitted). Removable sediment bucket shall be of heavy duty one piece construction as specified hereinafter. Acid drains shall be cast ferro-silicon iron of the composition specified for silicon pipe in Section 15A-5. For the type and location of acid drains, see drawings.

- Notes: 1. All strainers and grates for drains shall be secured with vandal proof spanner type stainless steel screws.
2. The Plumbing and Drainage Contractor shall provide the School Custodian or a representative of the Executive Director with spanner type tools that may be used for removal of strainers and grates. Two (2) such tools shall be provided for each different type drain.
3. Gasket-joint drains and no-hub joint coupling drains shall not be used in drainage system.

- B. Types (J, K, L, M, N, O, P) drains shall conform to the provisions as set forth in Paragraph (A) except they shall be all cast iron lacquer finish - no polish brass tops required.
- C. The various manufacturers figure numbers referred to are for the purpose of type only. All manufacturers shall conform to the provisions as set forth in Paragraph (A) and the specifications as listed hereinafter. The P & D Contractor shall submit shop drawings for approval of each type required on job before installation. The shop drawings shall be marked as to type and shall include all dimensions, free area, and features as to meet the specifications.
- D. All drains in membrane waterproof floors shall be equipped with 6 lb. lead flashing or 20 oz. soft rolled sheet copper and secured to the flashing flange with brass bolts and cast iron clamping device. Flashings shall bond not less than 1'-0" on all sides into membrane waterproofing.

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E. Drain Types:

1. Type A: (Independent Trap) shall be cast iron with double drainage flange and weepholes, bottom outlet connection, flashing clamp device, and 6" round adjustable strainer of high polished brass or bronze. In individual shower compartments use a 6" round adjustable strainer of high polished nickel bronze and in Shower Rooms, drain shall be provided with 8" diameter adjustable strainer of high polished nickel bronze. Drains shall be Josam 30000-A, Smith NYBE 2010-A, Zurn 415, Wade W-1100, or approved equal.
2. Type B: (Integral Trap) shall be cast iron with double drainage flange and weepholes, integral trap with minimum 2 inch seal, with 6 inch diameter adjustable strainer (unless otherwise indicated) of high polished brass or bronze, and shall be Josam 30600-A, Smith NYBE 2020-A, Zurn 450, Wade W-1120, or approved equal.
3. Type C: (Integral Trap) shall be cast iron with double drainage flange and weepholes, integral trap with minimum 2 inch seal, and round adjustable strainer with sediment bucket of high polished brass or bronze. Drain shall be Josam 30600-A, Smith NYBE 2020-A, Zurn 450, Wade W-1120, or approved equal.
4. Type D: (Independent Trap) shall be cast iron with double drainage flange and weepholes, bottom outlet connection and 7 inch diameter adjustable strainer with sediment bucket of high polished brass or bronze. Drain shall be Josam 30000-E1, Smith NYBE 3510-F37, Wade W-1100-ER7, or approved equal.
5. Type E: Custodian Mop Sink shall be cast iron body drain with bottom outlet connection, flashing flange with weepholes and clamping device, cast aluminum or brass, removable sediment bucket and polished brass or bronze top and grate. For assembled bucket use stainless steel bolts and nuts peened after assembly. Strainer plate shall not be secured to body as required for other drains. Drain shall be Smith NYBE 2488 or approved equal. Furnish and install over drain an approved rigid type combination faucet 4'-0" above floor. The faucet shall be a 1/2" supply fitting equipped with integral vacuum breaker, integral stops, renewable seats and heavy cast brass spout braced to wall with rigid support. Faucet shall be Speakman S-5811, American Standard 8344.111, T & S Brass and Bronze Works, inc. B-1958, Water Saver Faucet VR-769, or an approved equal. Faucet shall have a hose thread and shall be furnished with a four foot length of 4-ply rubber hose connected to hose end of faucet.

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6. Type F: Funnel shall be cast iron with bottom outlet connections, double drainage flange and weepholes, clamping device secured with brass bolts, 7 inch diameter adjustable strainer with 4 inch diameter funnel screwed to strainer grid - both of high polished bronze or brass. Drains shall be Josam 30000-E2, Smith NYBE 3510-F11, Zurn 415/414, Wade W-1100-EF4, or an approved equal.
7. Type G: (Independent Trap) shall be cast iron with bottom outlet connection, double drainage flange with weepholes, removable cast iron sediment bucket with perimeter drainage slots, loose set polished bronze grate so designed that grate cannot be set unless bucket is in position. Drain shall be Josam 32120, Smith NYBE 2220, Wade W-1310-TD, or an approved equal.
8. Type H: (Adjustable Type) shall be cast iron with bottom outlet connection, double drainage flange and weepholes, adjustable collar with rolled thread or alignment tract and locking screws, removable sediment bucket and polished bronze grate so designed that grate cannot be set unless bucket is in position. Drain shall be Josam 31120, Smith NYBE 2350, Wade 1340-TD, or an approved equal.
9. Type J: (Interior Areas) shall be cast iron, triple drainage, bottom outlet caulk connection, medium duty round grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drains shall be Josam 34420, Smith NYBE 2230, Wade W-1210-TD, or an approved equal.
10. Type K: (Interior Areas) shall be cast iron, triple drainage side outlet caulk connection, medium duty round grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drains shall be Josam 34430, Smith NYBE 2235, Wade W-1230-TD, or an approved equal.
11. Type L: (Exterior Areas) shall be cast iron triple drainage with double drainage flange and weepholes, bottom outlet caulk connection, heavy duty round grate and slotted sediment bucket with auxiliary drainage rim and 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drain shall be furnished with vandalproof locking device consisting of angle latches, 3/8" x 7/8" minimum stainless steel locking bar drilled and tapped to receive 3/8" stainless steel screw with spanner type stainless steel cap set flush with top of grate. Under side of grate shall be provided with recess to receive a boss cast into sediment bucket or other locking device to prevent grate from turning in bucket. Drains shall be Smith NYBE 2253-U-2, Wade W-1710-A-NY, or approved equal.

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15A-7.07 Drains (Cont.)

12. Type M: (Exterior Areas) shall be cast iron triple drain with double drainage flange and weepholes, side outlet caulk connection, heavy duty grate and slotted sediment bucket with auxiliary drainage rim and 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Drain shall be furnished with vandalproof locking device consisting of angle latches, 3/8" x 7/8" minimum stainless steel locking bar drilled and tapped to receive 3/8" stainless steel screw with spanner type stainless steel cap set flush with top of grate. Under side of grate shall be provided with recess to receive a boss cast into sediment bucket or other locking device to prevent grate from turning in bucket. Drains shall be Smith NYBE 2255-U-2, Wade W-1710-MS-NY, or approved equal.
13. Type N: (Exterior Walks, Etc.) shall be cast iron, double drainage, bottom outlet caulk connection, heavy duty tractor grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Each drain shall be furnished with a vandalproof locking device as described for "Type L" drain. Drain shall be Smith NYBE 2233-U-2, Wade W-1210-TD-NY, or an approved equal.
14. Type O: (Exterior Walks, Etc.) shall be cast iron, double drainage, side outlet caulk connection, heavy duty tractor grate and slotted sediment bucket with 1/4" bottom seepage holes, so designed that grate cannot be set unless bucket is in position. Each drain shall be furnished with a vandalproof locking device as described for "Type M" drain. Drain shall be Smith NYBE 2238-U-2, Wade W-1230-TD-NY, or approved equal.
15. Type P: (Exterior Walks, Etc.) shall be cast iron heavy duty trench drains with deep hub body, sediment bucket, grate, end plates and gaskets. Drain shall be Smith NYBE 2710-1 or approved equal.
16. Type Q: shall be 14 gauge, type 304, (18-8) stainless steel floor through, completely welded and coved, as manufactured by IMC/Teddy Corp. or approved equal. All welds shall be grounded and polished smooth. Each through shall be fitted with a special stainless steel cup with removable perforated stainless steel basket to accommodate up to 3" waste pipe. For configuration of through, see detail on drawing.

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15A-7.08 Piping in Waterproof Cellars, Basements, Etc.

When indicated on sanitary plans that the cellar or basement floor, walls, pits, sumps, etc., are to be waterproofed, the waterproofing will be done by another Contractor. The Contractor for General Construction shall provide and install all sleeves required in waterproofed floors, walls, pits, etc. The Contractor for Plumbing and Drainage shall work in conjunction with the Contractors interested in this part of the work and he shall caulk his piping after same has been installed through sleeve.

15A-7.09 Building House Storm Drain, Etc.

Building House Storm Drains shall be extra heavy cast iron. Each house storm drain shall be fitted with an extra heavy cast iron running trap having two cleanouts and shall be installed where shown on drawings. If the traps are below the floor, cleanouts shall be installed as described in Paragraph 15A-7.04, House Drain.

15A-7.10 Rain Leaders

- A. Inside leaders shall be located where indicated on drawings. Below ground, in cellars and in unfinished basement areas, the pipes shall be extra heavy cast iron. In finished basement areas and in all areas above the basement, the piping shall be extra strong (Schedule 80) galvanized steel pipe with galvanized cast iron recessed drainage fittings. Leaders shall be offset as required, to keep the pipes close to walls or columns or in chases. The lower ends of leaders shall be turned by means of long sweep, 90 degree bends ; provide accessible tapped tee cleanouts with brass screw -plug above bends, all properly supported on brick or concrete piers, or wrought iron hangers which must be approved before being used. Leader connections at roof shall be kept in hung or furred ceilings where possible.
- B. It is the intent that the leaders shall be put into service as soon as required. The leaders shall be protected against frost, obstructions and all damage, by the Contractor for Plumbing and Drainage, who shall replace damaged leaders and remove obstructions until the work is completed and accepted.

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15A-7.11 Roof Drains

- A. On all roofs (other than copper roofs) and in gutters drained by inside leaders, furnish and set, in conjunction with the roofer, and when directed by the General Construction Contractor, approved roof drains of cast iron unless otherwise indicated. Drains shall be set not less than 2'-6" from parapet wall or inner edge of exterior wall.
- B. Flashing of 6 lb. lead or 20 oz. soft rolled sheet copper 34" x 34" shall be furnished and installed at each roof drain by means of non-puncturing type flashing clamping device.
- C. For copper roofs and gutters, the Contractor for the General Construction will provide pipes from the drains of roofs and gutters, pipes ending below the ceiling of the floor below or inside of walls in attic space to which the contractor for Plumbing and Drainage shall make connections.

D. Roof Drain Types

Notes: 1. Domes for roof drains shall be cast iron.

- 2. For each roof, the Plumbing and Drainage Contractor shall ascertain from the General Construction Contractor whether Standard Roof or Optional Roof type of construction is to be used.

Type A - (Standard Storm Water Drainage)

1. Standard Roof:

- (a) Drain shall be cast iron, Smith 1010-R-C or an approved equal and shall be modified with an 8 1/4 inch high cast iron dome.
- (b) Each drain shall be furnished with flashing collar with seepage openings, sump receiver and under deck clamp. Dome shall have slots no greater than 1/2 inch in width and it shall be secured to the drain body by means of a locking device.

2. Optional Roof:

- (a) Drain shall be cast iron, Smith 1010-E-R-C-W-(C-2) or an approved equal.
- (b) Each drain shall be furnished with primary and secondary flashing devices, extension collar, sump receiver, under deck clamp and cast iron dome. Double row of 1/4 inch diameter seepage openings shall be provided in the extension collar by the manufacturer.

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- (c) The height of the extension collar shall be such that the height of the roof (membranes; insulation; gravel) shall terminate below the top of the gravel stop. Plumbing and Drainage Contractor shall coordinate drain height and installation of drain with General Construction Contractor. The installed roof drain shall have its dome extending at least four inches above the gravel surface of the roof and it shall be secured to the body of the drain by means of a locking device.

Type B - (Controlled Flow Storm Water Drainage)

Drain shall be cast iron, Smith 1085-E-R-C-W-(C-2) or an approved equal. Each drain shall be furnished with primary and secondary flashing devices, deck clamp, cast iron dome, extension collar and sump receiver. Double row of 1/4 inch diameter seepage openings shall be provided in the extension collar by the manufacturer. Dome shall have slots no greater than 1/2 inch in width and shall be secured to the body of drain by means of a locking device. Unless otherwise indicated, each drain shall have one "Flow Rate Control Weir." Weir shall be pre-set at the factory in accordance with the drawing specifications and shall be provided with vandal proof fasteners to prevent unauthorized tampering with settings. Plumbing and Drainage Contractor shall coordinate drain height and installation of drain with General Construction Contractor.

- Notes: 1. For Standard Roof Construction, the height of the extension collar shall be such that the overall height of the roof insulation and membranes shall terminate at the inner top of the collar.
2. For Optional Roof Construction, the height of the extension collar shall be such that the overall height of the roof, (membranes, insulation, gravel) shall terminate below the top of the gravel stop.

Type C shall be cast iron with one piece flashing clamp device, 1 1/2" minimum sump, and brass angle type grate secured by clamp device, equal to Josam 24700, Smith NYBE 1510, Zurn ZRB-187 or Wade W-3270.

Type D shall be cast iron with bottom or side outlet connection as required, full size brass clamping device and brass dome secured with vandal proof screws. Drain shall be Smith 1630 or 1690, or an approved equal.

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15A-7.11 Roof Drains (Cont.)

Type E shall be cast iron with bottom outlet connection, 4" wide integral flange, minimum 12 inch round top with extra thick anti-tilting grate having minimum free area of 61 square inches. Drain shall be furnished with one piece brass rim secured with vandal proof screws and brass grate, both with high polished finish. Drains shall be Smith NYBE DX-2566-2-U, or an approved equal.

Type F shall be cast iron with bottom outlet connection, primary and secondary flashing devices, extension collar, cast iron grate, sump receiver and under deck clamp. Double row of 1/4 inch diameter seepage holes shall be provided in the extension collar by the manufacturer. Cast iron grate shall be secured to the body of the drain with vandal proof screws. Drain shall be Smith 1409-C-R-U, or an approved equal.

15A-7.12 Soil, Waste and Vent Lines

- A. Except as specified below, the soil, waste and vent stacks shall be extra heavy cast iron. Offsets in the stack vent portion of soil and waste stacks above the highest fixture drainage connection, and offsets in vent stacks and connections of vent stacks at the bottom to a soil or waste pipe or to the building house drain shall be made at an angle of at least 45 degrees to the horizontal. All waste and vent stacks that are 3 inches or smaller shall be extra strong (Schedule 80) galvanized steel pipe. From a point one foot below the top floor ceiling and upward, the waste and vent stacks shall be extra heavy cast iron pipe and shall end at the same height as the parapet wall coping or roof barrier fence. Where required, to allow for the proper installation of flashing, stacks passing through roofs adjacent to parapets, bulkheads, etc., shall be offset close to slab to a point not less than 2'-6" from parapet or inner edge of exterior wall.
- B. At the foot of the soil, waste and vent stacks and at all offsets and at other points indicated on drawings, there shall be furnished and connected in an accessible location an approved tapped T-fitting of same size and material as the stack to which it connects, and provided with an approved brass screw plug. Plugs shall be the same size as the piping up to size four inch (4").

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15A-7.12 Soil, Waste and Vent Lines (Cont.)

- C. All branches of soil piping shall be extra heavy cast iron. Branches of waste and vent piping in cellar, boiler rooms, pipe spaces and storerooms of basement, and fan rooms shall be extra heavy cast iron. Except as specified all branches of waste and vent piping above the cellar, connected to the soil, waste and vent stacks shall be extra strong (Schedule 80) galvanized steel pipe with galvanized cast iron recessed drainage fittings. All soil, waste and vent pipes located underground shall be extra heavy cast iron.

Note: 1. For acid wastes and vents, see Paragraph 15A-7.13.

2. All piping from discharge of pumps to connection into gravity system shall be extra strong (Schedule 80) galvanized steel pipe with galvanized cast iron recessed drainage fittings. Furnish and install flanges for connections to valves on discharge piping from pumps.

- D. All soil, waste and vent pipes passing through roofs shall be flashed so as to prevent leakage and yet allow for the expansion and contraction of the pipes. For this purpose tubes of 20-ounce copper 18 inches long and of such diameter as to permit the free movement of the pipes shall be soldered to a sheet of copper of like weight, 20 inches square, slipped over the pipes, and secured to the roof in a neat manner. Sleeves 6 inches long, made from cast-iron pipe shall be slipped over the pipes and extended down over the copper tubes at least three inches. The sleeves shall be secured in place by caulking the upper half of the sleeves with lead which shall finish flush with the top of the sleeve.

Note: A cast iron roof coupling with double threads may be used as an alternate flashing sleeve. Sleeve shall be Josam 26440, Smith NYBE 1750, Zurn Z-196-3, Wade W-3670, or approved equal.

- E. Furnish and install cast iron sleeves in roof slabs for soil, waste and vent pipes to pass through. For method of installation, see drawings.
- F. When indicated on plans or specified, roof stacks shall terminate with cast iron vandal proof hooded vent caps. Vent caps shall be Josam 26700, Smith 1748, Zurn Z-193, or approved equal.

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15A-7.12 Soil, Waste and Vent Lines (Cont.)

- G. Where offsets in stacks occur, either as shown on plans and/or under job conditions, relief vents shall be installed in accordance with the New York City Building Code.
- H. Furnish and install test tees in soil, waste and vent piping in order to permit testing in compliance with the rules and regulations of the Department of Buildings.

15A-7.13 Acid Wastes and Vents

- A. All piping for acid wastes shall be cast ferro-silicon alloy, acid resisting glass or polypropylene plastic.
- B. Horizontal acid waste lines of silicon iron or glass shall be covered as specified in Section 15A-16.
- C. All exposed horizontal and vertical lines and offsets of polypropylene plastic piping shall be covered in accordance with the requirements for cold water piping as specified in Section 15A-16. All concealed polypropylene plastic piping shall not be covered.
- D. From a point one foot below the top floor ceiling and upward, the acid waste and vent stacks shall be cast ferro-silicon alloy (silicon iron) pipe and shall end at the same height as the parapet wall coping or roof barrier fence. Pipes passing through roofs shall be flashed to prevent leakage. Flashing requirements shall be the same as specified for soil, waste and vent lines in this section.
- E. For joining silicon iron pipe to polypropylene plastic pipe or to glass pipe, see joints in "silicon iron pipe" and joints in "acid-resisting glass pipe" under "Pipe Joints" in Section 15A-2.

15A-7.14 Grease Interceptors

- A. Furnish and install grease interceptors where indicated on plans. Interceptors shall be cast iron with acid resisting finish exterior and white porcelain enamel interior, non-submerged inlet and outlet connections, full size internal air relief, visible double wall deep seal code trap, removable baffles and gasketed cover with lift rings and flow control fitting.
- B. Interceptors shall be Josam JA Series; Smith NYBE 8000; Wade W-5100 Series; or an approved equal. Interceptors shall be of size and capacity as listed on drawings.

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15A-7.14 Grease Interceptors (Cont.)

- C. Interceptors recessed in the floor shall be provided with porcelain enamel interior steel extension of required height so as to make cover flush with finished floor. Interceptors occurring in membrane waterproof floors shall be provided with flashing flange and clamping device at proper location so as to make a water tight connection, and shall be Josam JX Series, Smith NYBE 8200, Wade W-5100-XT Series, or an approved equal.

- D. The Plumbing and Drainage Contractor shall submit shop drawings of the type required for each job before installation. Shop drawings shall include all dimensions and features as listed herein. Interceptors shall carry the Board of Standards & Appeals approval number.

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SECTION 15A-8

COLD WATER SUPPLY

15A-8.00 General

- A. The Plumbing and Drainage Contractor shall be responsible for bacteriological examination and disinfection of the potable water system in accordance with the requirements of Paragraph P.107.27 of the New York City Building Code.
- B. All piping, trimmings, materials, etc. for cold water supply that are described or specified in this section or shown on drawings, shall be furnished and installed by this Contractor.

15A-8.01 Water Supply

- A. Water Supply. The Contractor shall obtain and pay for all permits, taps, connections, valves, boxes, etc., required in making connections to the water supply mains.
- B. The size of the water service mains shall be as specified on the plans and not less than one inch diameter. The connections to the street mains together with the necessary provisions to make such connections are under the jurisdiction of the Bureau of Water Supply or private water company.
- C. All operative permanent water service mains supplied by city or private water company shall be metered. Temporary service mains shall be metered if required by the contract drawings or the water company.
- D. Private Water Supply. For buildings located in the Fourth and Fifth Wards in the Borough of Queens, in the areas supplied by the Jamaica Water Co., the water supply shall be obtained from the local water company. The local water company will furnish meters required without cost to the Board of Education, but the Contractor shall install the meter in accordance with the standards of the water company.
- E. City Water Supply. The Contractor shall furnish and connect meters of the size indicated on drawings to all water supply mains. Furnish and install a compound meter for main water service, a disc meter for auxiliary water service and a fire line meter for fire service. Water meters shall comply with the requirements of the Bureau of Water Register. Meters shall be supported on a suitable shelf or pier above the floor in all cases.

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Cold Water Supply

15A-8.01 Water Supply (Cont.)

- F. The Contractor shall also furnish and install with four expansion screws where directed, one neatly framed, under glass, "Instructions" on how to read each type of installed water meter

15A-8.02 Cold Water Service Mains and Connections

- A. Unless otherwise indicated on drawings, all cold water service mains including fire service shall be brass iron size pipe or ductile iron mechanical joint pipe. All pipes, fittings, valves, etc., shall be furnished and installed by the Plumbing and Drainage Contractor.
1. Ductile iron pipe shall be Class 52 for 3" and 4" pipe sizes and Class 56 for pipe sizes 6" and larger. Ductile iron pipe shall be cement lined, have an outer coating of coal tar and shall comply with the requirements of Paragraph 15A-5.15 of this specification.
 2. Brass pipe shall be provided with two settlement loops. One loop at the tap (or wet connection) shall be to the right when facing the street main, and one loop immediately outside the building shall be to the right hand when facing the building. Each loop shall consist of four (4) 125 lb. S.W.P. (Schedule 40) rough brass screwed elbows and three (3) pieces of brass pipe, each piece of pipe not less than 2'-0" in length.
- B. Service mains shall be connected to the street mains by corporation stops, wet connections or other connections only by employees of the Bureau of Water Supply or private water company in accordance with their regulations. The size of tap is determined by the Bureau of Water Supply, based upon the water demand load.
- C. Provide and install on domestic service mains 2'-0" from the curb, where indicated on drawings, an approved valve, same size as the service main, with square nut on stem, with extension rod securely fastened to valve stem and a wrench or key which shall be left with the Custodian-Engineer of the building. The valve shall be enclosed in an extra heavy cast-iron extension valve box having the word "Water" cast on the cover, set flush with the surface of the sidewalk, and in conformity with the rules of the local water company or the Bureau of Water Supply.
- D. Provide and set under and at the side of each valve a footing 18 x 18 x 6-inch, composed of stone concrete for the valve box to rest on.

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Cold Water Supply

15A-8.01 Cold Water Service Mains and Connections (Cont.)

- E. Each service main shall be extended inside of the building and shall end with a header which shall be fitted with O.S. & Y. valves, check valves, strainers (reducing valves, when indicated on plans), plugged fittings, meters, pressure gauges, appurtenances, etc., and all shall be of the size and arrangements and materials indicated on drawings. See standard detail, latest series. The Contractor shall protect from any and all damage, all of the water supply piping installed by him.

15A-8.03 Fire Service (Mains and Connections)

- A. When indicated, furnish and install a sprinkler control valve located under the sidewalk in an approved type flush sidewalk box located within two feet of the street line, and furnish and install an approved porcelain enameled sign on the fence or building opposite the valve where indicated on plans. The sign shall have a white background with one-inch red letters bearing the following inscription: "Automatic Sprinkler. Shut-off valve 2 feet opposite this Sign."
- B. Furnish and install at the main sprinkler control valve inside the building an enameled sign (4" x 10"). The sign shall have a white background with one-inch red letters bearing the following inscription: "Main Sprinkler Valve."

15A-8.04 Cold Water Mains, Risers, Etc.

- A. The distributing mains shall be suspended from the ceilings, and shall be of the sizes and arrangements indicated on drawings. The branches to fixtures in the cellar, basement and first floor shall be connected to the distributing mains and all shall be of the sizes indicated on drawings, and each branch provided with a gate valve.
- B. Furnish and install gate valves, unions and 1/2" drain bibbs on all branches from main to risers; see drawings. Branches connected to risers shall be connected in such a manner that the riser is free to expand upward for its entire length. Furnish and install air chambers on hot and cold supplies to each fixture. Air chambers shall be 24 inches where conditions permit.
- C. When indicated on plans, furnish and install water hammer arrestors (shock eliminators) as herein described:

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15A-6.04 Cold Water Mains, Risers, Etc. (Cont.)

Engineered water hammer arrestors shall consist of a stainless steel housing, welded metal or elastomer bellows, pneumatic displacement cushion, hydraulic displacement fluid, and threaded plug. Shock Absorbers shall be sized and installed accordance with Plumbing and Drainage Institute Standard PDI-WH201 and ASSE Standard 1010. Shock Absorbers shall be Josam Series 75000, Smith NYBE Series 5000, Zurn Series 1700, or approved equal.

- D. The short branches to lavatories, showers, drinking fountains, sinks and wash sinks shall be 1/2-inch; and 3/4-inch to service sinks. Where branch supplies are trapped, drain bibbs shall be provided at low points for emptying purposes. The hot and cold water piping under plumbing fixtures, including kitchen fixtures, shall be brass piping. Exposed piping shall be chrome plated.
- E. The headers supplying flushometers to water closets shall be run in pipe spaces or as indicated on plans and shall be 1 1/4 inches for 2 water closets, 1 1/2 inches for 3 or 4 water closets and 2 inches for 5 to 10 water closets with 1-inch branch for each water closet flushometer and 3/4-inch for urinal flushometer. Each flush header branch from riser shall be provided with a gate valve. The header shall be extended with an air chamber full size to a height of at least two feet or with shock eliminator where indicated on plans. The capped top of air chamber shall be provided with a 1/2-inch brass plug cock, all secured by means of approved hangers. The plug cock shall be omitted in inaccessible locations.

15A-6.05 Material of Pipe, Etc. for Cold Water Distribution Piping

All pipes, fittings, etc., for cold water distribution piping shall be brass or type "TP" threadless copper pipe (hard drawn) or type "L" copper tubing (hard drawn) as designated by the Copper and Brass Research Association. Threadless pipe shall be stamped "TP" and have manufacturer's name (for composition, see Section 15A-5, Materials).

15A-6.06 Pressure Reducing Valves

Provide and install where indicated on the drawings flanged pressure reducing valve (screwed ends 2 1/2 inches and smaller) with equalizing pipe, and needle valve similar to Kiely Mueller, Warren Engineering Co., Watts Regulating Co., or other approved equal. Up to 2" the pressure reducing valves shall be all bronze; over 2" the valves shall be iron body. Valves shall be of the size and type suitable for the service and flow conditions.

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5.



15A-8.06 Pressure Reducing Valves (Cont.)

Note: The manufacturer of the reducing valves, relief valves, safety valves, etc., shall regulate and set them for the pressures called for in the specifications, or indicated on the drawings.

15A-8.07 Post Hydrant

Furnish and install post hydrants where indicated on drawings. Post Hydrant shall be cast iron non-freeze with aluminum housing, brass casing, brass valve housing, brass removable operating parts and neoprene, washers, removable handle with 3/4" hose connection, 3/4" IPS inlet, approved equal to Josam 71700, Smith 5910, Zurn 1385, or Wade W-8610. For number, location, depth, etc., see drawings and standard detail.

15A-8.08 Strainers

Strainers shall be provided and installed in water mains and shall Kieley and Muller, Inc. No. 330 or J.R. Smith NYBE 8795 with bronze basket and bronze handle and 1/8-inch perforations or other approved equal; all other strainers shall be Kieley and Muller No. 340 or approved equal.

15A-8.09 Pressure Gauges

Furnish and install pressure gauges where indicated on drawings. Gauges shall be single spring water pressure gauges approximately 6 inches in diameter, having an iron or cast aluminum case with a chrome-plated brass ring and a silver finished brass black figured dial graduated from zero to 200. The interior mechanism shall consist of an improved Bourdon brass tube spring thoroughly seasoned, standard geared and non-corrosive movement. Gauges of manufacturer meeting the above requirements shall be submitted for approval.

15A-8.10 Water Gauges

Provide and connect as indicated on drawings approved water gauges with four guards, threaded for 1/2-inch connection. Glass shall be 5/8-inch diameter as manufactured by Corning or approved equal provided with angle valves and try cocks; all fittings in connections with gauges shall be finished brass.

15A-8.11 Vacuum Breakers and Backflow Prevention

Note: Where indicated on plans and as required by the latest edition of the Administrative Code of the City of New York furnish and install vacuum breakers and backflow prevention equipment as herein outlined. The following manufacturers meeting these specifications will be acceptable: Bidoro, Watts Regulator Co., Hersey, Febco Inc. or Lawler.

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15A-8.11 Vacuum Breakers and Backflow Prevention (Cont.)

A. Atmospheric Vacuum Breakers

1. General: Atmospheric Vacuum Breakers must assure positive protection against back-siphonage of impure water into the main supply in the event that pressure loss causes vacuum conditions. Poppets are to be molded plastic (polypropylene) or unicellular hi-car rubber. The vacuum breakers are to be finished in rough brass. Rough chrome and polished chrome can be made available in 1/4" and 3/8" sizes.
2. Specification: Atmospheric Vacuum Breakers shall be installed on the discharge side of the last shutoff or zone valve and shall be of the nonspilling type. No valve shall be installed after the vacuum breaker. It shall be rated to 150 psi working pressure and shall withstand water temperature to 212°F. The uni-cellular hi-car rubber is recommended in 1/2" and 3/4" for low flow applications. The vacuum breaker cannot be subjected to more than 12 hours of constant pressure. Atmospheric Vacuum Breakers shall be Fecco 710A and 715A or approved equal.
3. Typical Applications: Lawn Sprinkler Systems; Hose Bibbs; Laboratory Sinks; X-Ray Tanks; Sill Cocks; Wall Hydrants.
4. Installation: Atmospheric Vacuum Breakers may be used as protection against cross connections where the vacuum breaker is not subjected to back pressures due to pumps or gravity and must be installed on the discharge side of the last shutoff. They must be installed a minimum of 6" above the highest overflow level. It must be installed with the air inlet in a level position.

B. Pressure Vacuum Breakers

1. General: Pressure Vacuum Breakers are designed to be installed under pressure for long periods of time without becoming inoperative. The vacuum breaker is used for positive protection against back-siphonage and incorporates a check valve and a vacuum relief in one assembly. In sizes above 2", two check valves are required.
2. Specification: Pressure Vacuum Breaker Assemblies shall consist of an approved check valve, vacuum relief, inlet and discharge shutoffs and field testing cocks, nipples and other fittings shall be red brass. They shall be rated to 150 psi working pressure and shall withstand water temperatures to 170°F. The vacuum relief valve must be of

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brass construction with a spring loaded diaphragm member to assure positive opening of air inlet when back-siphonage occurs. Pressure Vacuum Breakers shall be Febco 760, 765, 770, 775, or approved equal.

3. Typical Applications: Lawn Sprinkler Systems; Cooling Towers; Laboratories; Swimming Pools.
4. Installation: The Pressure Vacuum Breaker may be installed where it would be subject to continuous pressure but must be installed 12" above the highest outlet it is protecting. It should be installed where it would be accessible for periodic testing.

C. Double Check Valve Assembly

1. General: This assembly is a device for backflow prevention of nontoxic liquids such as air, steam, etc. It consists of two independently operating spring loaded check valves, two gate valves and four test cocks for field testing. The check valves must be loaded to withstand 1 psi in direction of flow and must have soft rubber discs to assure positive closure. All internal parts are to be readily accessible for maintenance without removing device from the line.
2. Specification: The Double Check Valve Assembly shall consist of two brass internally spring loaded check valves, two brass gate valves and field testing cocks. Double Check Valve Assembly shall be rated to 150 psi working pressure and shall withstand water temperatures to 170°F. and shall be Lawler ITT Series DC, Febco 792, 805, or approved equal.
3. Typical Application: Steam Boilers; Sterilizers; Closed Heating Systems; Heat Exchangers.
4. Installation: The Double Check Valve Assembly must be installed in a horizontal position and they must be accessible for periodic testing.

D. Reduced Pressure Backflow Preventer

1. General: This unit is designed to positively prevent contamination of water lines due to pressure reversal. This is accomplished by automatically reducing the pressure through the unit by means of the "reduce pressure principle." The unit consists of two "Y" pattern spring loaded check valves, a differential pressure relief valve, two shut off valves, and test cocks for field testing. Under

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15A-8.11 Vacuum Breakers and Backflow Prevention (Cont.)

normal flow conditions both check valves remain closed. Under a backflow condition or where one of the check valves leaks, the differential relief valve opens and it will discharge to the atmosphere enough to maintain a 3.0 psi differential.

3. Specification: The Reduced Pressure Backflow Preventer shall consist of two separate spring loaded "Y" type check valves and one differential relief valve having two diaphragms separated by a spacer. This device shall automatically reduce the pressure in the "Zone" between the check valves. Should the pressure differential, normally 4.5 psi, drop to 3.0 psi, the relief valve shall open, dumping the liquid to atmosphere and maintaining the proper differential. A small hole in the spacer will bleed to atmosphere if either diaphragm is damaged giving visual evidence of diaphragm failure. Both check valves and relief valves shall be constructed so they may be serviced without removing the device from the line. It shall be rated to 150 psi working pressure and 212°F. water temperature. Backflow preventers 2" and smaller shall have bronze bodies and bronze trim. 2 1/2" and larger shall have cast iron bodies with epoxy coating and bronze trim. Backflow preventers shall be Febco 825, Beeco 6C, Watts No. 900 or Lawler ITT Series, RZ Backflow Preventer, or approved equal.
3. Typical Applications: Lawn Sprinkler Systems; Water Service to Buildings; Service to Steam Boilers with connections to toxic Substances.
4. Installation: This device may be installed under continuous service pressure and subject to back pressure. They should be installed in an area that is protected against flooding around the discharge from the differential relief valve assembly.

15A-8.12 Street Washer

Furnish and install street washers where indicated on drawings. All street washers shall be 3/4" and shall be Josam 71600; Jay R. Smith 5810; Zurn 2-1360; Wade W-8609, or approved equal.

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SECTION 15A-9

HOT WATER SUPPLY

15A-9.00 General

All piping, trimmings, materials and other items for hot water supply that are described or specified in this section or shown on drawings, shall be furnished and installed by the Plumbing and Drainage Contractor.

15A-9.01 Booster Heater for Dishwasher

Furnish and install where indicated on plan a booster heater having a heating capacity of 700 gallons of water per hour from 130°Fahr. to 190°Fahr. using steam at atmospheric pressure. The heater shall be furnished complete with 78'-0" lineal feet of 3/4" O.D. copper tubing 18 B.W.G. thick. Heater shall be tapped for 1 1/2" water inlet and 1 1/2" outlet, and for 1 1/2" steam supply and 1" steam drip. Heater shall be a four pass type with steam in shell and water in tubes. The heater shall be similar or approved equal to Patterson Kelley No. DS-6-49, having a 6 5/8" O.D. shell, schedule 40 pipe, over-all length 66" and outside flange of 11 inches. Booster heater shall be suspended from ceiling by means of approved pipe hangers or brackets. See detail. Submit shop drawings for approval.

15A-9.02 Booster Heater for Dishwasher (Electric)

- A. Furnish and install when indicated on plans Electric Booster Heater of the size shown in the Equipment Schedule. Submit shop drawing for approval.
- B. The body of the heater shall be made of "Everdur" or stainless steel and shall be provided with brass nipples for inlet, outlet and drain connection. The head shall be removable and fitted with electric heating elements and aquastat.
- C. The heater shall be insulated with 2" of rock or glass wool, enclosed in an outer casing of enameled steel and shall be mounted on the platform with enameled steel saddles or as otherwise shown or noted on drawing. The piping shall include shut-off gate valve, strainer, check valve, temperature and pressure relief valve. The discharge pipe from the relief valves and drain valves shall be extended to spill over funnel.

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Hot Water Supply

15A-9.02 **Booster Heater for Dishwasher (Electric) (Cont.)**

- D. The heater shall be furnished with thermostatically controlled immersion type heating elements, with stainless steel sheaths, suitable for operation on a 208-volt, 3-phase, 3-wire circuit. This Contractor shall furnish an approved magnetic contactor and control panel (if required) of the type recommended by the booster manufacturer, to the Electric Contractor who will flush mount same. This contractor shall terminate all wiring in a metal enclosure at the head of heater and furnish wiring diagram in quadruplicate for approval.
- E. Electric Contractor will furnish disconnect switch, flush mount contactor and control panel, furnish remote pilot with signal light, extend wiring and fully connect booster heater.

15A-9.03 **Hot Water Mains and Risers**

- A. Furnish and connect to the hot water reservoir and extend, suspended from the cellar or basement ceiling, brass pipe or copper threadless pipe or Type "L" copper tubing hot water mains of the size indicated on drawings and extend from same the required number of branches and rising lines to supply all fixtures, apparatus, etc. All mains, risers and branches to fixtures shall have air chambers as called for under cold water supply.
- B. Furnish and install gate valves, unions and 1/2 inch drain bibbs on all branches from mains to risers.

15A-9.04 **Three-Way Regulating Valves**

- A. Where indicated on plans or in specifications, furnish and install on top of the hot water reservoir, a new brass thermostatic three-way hot water regulating valve, including all valves, strainers, etc. as specified hereinafter.
- B. The three-way valve shall be set to deliver water at a temperature of 110° Fahrenheit and shall have a temperature range adjustment from 100°F. to 140°F. Regulating valve shall be Lawler Type "S", Powers No. 11 or an approved equal.
- C. Holby temperature regulating valve may be substituted for the Lawler Type "S" valve. This valve shall have a temperature range adjustment between 100°F. to 180°F. The end of the valve, where the adjusting screw is located, shall have a clear space of 24 inches with any fixed object. This clearance will allow access for regulating and servicing of the valve.

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Hot Water Supply

15A-9.04 Three-Way Regulating Valves (Cont.)

- D. The capacity of the valve, size of hot and cold inlets and tempered water outlet shall be as noted on the drawings or as specified in Schedule Specifications.
- E. The regulating valve shall be installed and connected to the hot header at top of the reservoir and to the cold water header with separate branches of pipe and fittings. Provide and install brass and/or bronze "Y" type strainers on the hot and cold water inlet piping to regulator. The hot and cold water branches shall each be fitted with gate and check valves, drain faucets and unions.
- F. Extend from regulating valve with a tempered water header provided with the required tees for thermometer bulb, regulating bolt and connections for tempered water supply to fixtures throughout the building.
- G. Provide and install O.S. & Y valved by-pass between hot water header and tempered water header.
- H. Submit shop drawings of regulating valves for approval before installation.

15A-9.05 Material of Pipe, Etc. for Hot Water Supply

All pipe, fittings, etc., for the hot water and circulation system shall be brass, or Type "TP," threadless copper pipe (hard drawn) or Type "L" copper tubing (hard drawn) as designated by the Copper and Brass Research Association. Threadless pipe shall be stamped "TP" and have manufacturer's name. (For composition see Section 15A-5, Materials.) The hot water and circulation risers and branches shall be so connected to the risers and the risers installed and supported at their base in such a manner that they are free to expand upward for their entire length.

15A-9.06 Circulation Pipe

- A. From a point on the ceiling below the branch to the highest fixture on each riser, extend circulating pipes to the return main, which shall be extended and connected to the piping at hot water reservoirs as indicated on drawings. At the base of the hot and circulation pipes and before they connect to return main, provide gate valves, unions and 1/2-inch drain bibbs.
- B. Furnish and install plug cocks as specified in Section 15A-5.26.

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Hot Water Supply

15A-9.07 Vacuum Breakers

See Section 15A-8.11. Vacuum breakers shall be suitable for use on 180° Fahr. hot water.

15A-9.08 Pressure Reducing Valve

Furnish and install a pressure reducing and regulating valve ahead of the automatic rinse valve on dishwasher. A strainer shall be installed ahead of this valve as shown on Standard Detail. The valve shall be Cash Acme-Model "B," 3/4-inch, screwed ends with bronze body, monel working parts and monel diaphragm; or approved equal. The valve shall be set at the factory for 30 P.S.I. outlet pressure.

15A-9.09 Thermometers

Furnish and connect in the hot water supply outlet of each reservoir and booster heater a mercury actuated dial thermometer having a bulb 6" long with a brass separable socket, 1" NPT filled with a conducting medium and fitted with stainless steel capillary protected by bronze spiral armor of the necessary length. Mount thermometers on a finished oak board, 1 1/4" thick furnished by the Contractor for Plumbing and Drainage and locate as indicated on drawings or as directed by the Executive Director. The dial shall be white enameled, black figured, approximately 8" in diameter, graduated 30 to 240 degrees F. The case shall be cast aluminum, cast brass or 12 gauge stainless steel body with polished chrome plated brass or stainless steel ring. Thermometers shall be Weksler No. 815A-CJL or approved equal. Submit shop drawing for approval.

SECTION 15A-10

GAS PIPING, FITTINGS, ETC.

Note: All gas piping to points on plans is in this contract.

15A-10.01 General

A. The work, in so far as the nature, number and distribution of appliances, and the economical control of same are concerned, shall be executed strictly in accordance with these specifications and the plans, to the satisfaction of the Executive Director, the Gas Utility Company and the Department of Buildings. The Executive Director shall be notified when all is ready for the Gas Company to extend their service pipe to the street line; and again after tests, when all is in readiness for the installation of the meters. The meters shall then be connected with the service pipes, and with the several lines of distributing pipes. The setting, piping and connecting up of the meters shall be done in accordance with the rules of the Gas Company. The service pipe shall be extended by the Plumbing Contractor from the street Line as required to the meter location.

Note: Gas service and gas distribution piping shall be installed in accordance with the rules and regulations of the gas company and according to the latest regulations of the Administrative Code of the City of New York. Any additional work, material and other alterations on contract plans caused by the aforesaid, shall be the work of the Plumbing and Drainage Contractor as part of the work of his contract and at no additional cost to the Board of Education. Contractor shall notify the gas company prior to installation of gas service.

B. The Contractor shall consult with the Gas Company as to whether artificial or natural gas is to be furnished. If natural gas is to be furnished the Contractor shall arrange for inspection and adjustment of all gas appliances of the contract, so that they will properly and safely operate with said natural gas.

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Gas Piping, Fittings, Etc.

15A-10.01 General (Cont.)

- C. The Contractor shall notify the Executive Director of School Buildings when he is ready for the Gas Company to extend its service pipe to the street line as required before sidewalk is laid, and when gas is required for the building the Contractor shall make the same notification to have meters furnished and set. The Contractor shall then connect with service pipes, and with the several lines of distributing pipes and all necessary valves and other materials for supplying the building complete and ready for use. The Contractor shall comply with the rules of the Gas Company regarding sizes of pipes and the setting of meters.

15A-10.02 Pipe

All gas pipe shall be black standard steel pipe (see Section 15A-5, Materials), free from flaws or other defects and of a true and uniform section. In no case shall any gas pipe be less than 1/2 inch. The figured sizes of pipe indicate internal diameters. Piping up to and including 3" in size that is installed above grade shall be connected with screwed fittings. For piping installed above grade that is larger than 3" in size, joints and fittings shall be as specified and approved by the Gas Company. All piping installed below grade shall be connected only by welding by approved certified welders, or with compression type fittings as specified and approved by the Gas Company. Pipe used for compression fittings shall have plain ends and pipe used for welding shall have beveled ends.

15A-10.03 Fittings

- A. Fittings for screwed gas piping above ground shall be 150 lbs. malleable iron fittings. Plugged tees in place of elbows shall be used whenever directed. Where pipes of different sizes come together, reducing fittings shall be used. No bushings will be permitted.
- B. No screwed fittings are permitted underground (see Par. .02 this Section). When required by the Gas Company insulating compression couplings or anodic protection connections shall be provided.

Notes:

1. All service piping below grade shall be mill wrapped in accordance with the Gas Company regulations.

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2. Backfill operations shall be started only after welding inspection and coating inspection and testing have been completed as per regulations of the Gas Company.

15A-10.04 Installation of Pipe

- A. All main distributing pipes shall be suspended from the cellar or basement ceilings. All connections of branches with main shall be made with malleable iron right and left couplings and nipples. Whenever gas lines are unavoidably trapped an accessible drip shall be provided with access door to same. Pipe and fittings shall be threaded joints made with joint compounds (pipe dope) applied sparingly and only to the male threads of pipe joints. Such compounds shall be resistant to the action of liquefied petroleum gases. The burrs made in cutting the pipe shall be removed. Outlets shall not be less than 1/2-inch diameter.
- B. Risers shall be of diameter shown and have approved brass gate valves or gas cocks placed at the base for each rising line. Provide approved sleeves in floors for risers to pass through. Brass gate valves or gas cocks of the same size as the pipe shall be placed where indicated on plan. All gate valves and gas cocks for gas throughout the building shall be tagged with approved numbered metal tags. Furnish and install brass drip cocks at base of all risers.
- C. All gas pipes and fittings placed on brick walls shall have Clinch, Diamond or U.S.S. cast-iron expansion sleeves, with straps, or lug fittings, and shall be secured with wood or lag screws. Where placed on hollow tile, wire lath, walls, partitions or ceilings, they shall be secured with round-headed machine full-threaded toggle bolts of approved make, through straps or lug fittings. In no case shall a gas pipe run through a heat duct. The Contractor shall do all cutting and boring of holes necessary for extending pipes and branches, making all necessary openings in walls, and shall make all repairs to same.
- D. Gas ranges in Home Economics Units may be connected with "Flexible Range Connectors" approved by the New York City Board of Standards and Appeals. Connectors made by Techniflex Corp., Johnson Metal Hose, Inc., and Flexible Connector Company of America will be accepted.
- E. All schools shall have one meter for all purposes with separate lines for lunch kitchen, boiler pilot lights, and gas hot water heater and incinerator where required, and one for all other equipment. Each line shall be controlled by a separate valve near meter. Final connections to pilot lights shall be made by the Plumbing and Drainage Contractor.

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Gas Piping, Fittings, Etc.

15A-10.04 Installation of Pipe (Cont.)

- F. All gate valves and gas cocks shall be as approved by the Gas Company.

15A-10.05 Master Gas Control Valve

- A. Furnish and install at location indicated on plan a packless, explosion-proof solenoid operated valve. The valve shall have screwed aluminum or brass body and Jenkins Type renewable composition discs for tight seating to handle type of gas supplied. Valve shall be of normally closed construction - open when energized equipped with explosion-proof solenoid approved by Underwriters for Class 1, Group D, hazardous locations. Valves shall be fully automatic (requiring no manual operation to reopen the valve after the valve has shut off the gas supply). The solenoid valve shall be protected by a brass or bronze body strainer with stainless steel screen. For pipe sizes up to and including 2 inches in size, strainer shall be Automatic Switch Co., Catalog No. 8600, Muessco No. 351, or McAlear No. 539S. For pipe sizes greater than 2 inches in size, strainer shall be Muessco No. 352 or approved equal. Valve shall be Automatic Switch Co. Bulletin No. 8215 with continuous duty class H insulation coil or an approved equal for low pressure of the size shown on plan. Submit shop drawing for approval.
- B. Solenoid valves for classrooms shall be designed to operate on 80-90 volt D.C. circuit. Solenoid valves for kitchen areas and warming pantry areas shall be designed to operate on 120 volt A.C. circuit. Valve shall be tapped for 1/2 inch conduit and arranged so conduit shall be on the same side as inlet of gas pipe. Other contractor will provide switches, conduit and wiring and extend same and make all necessary connections to valve solenoid.
- C. Provide a by-pass connection with shut off cocks (tee handle) on supply to fixtures and by-pass so that the solenoid valve may be removed for repairs; see standard detail.

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Gas Piping, Fittings, Etc.

SECTION 15A-11

PUMPING APPARATUS

15A-11.01 Pumps General

- A. Where indicated on the drawings, furnish and install the required number of electrical motor driven pumps. Pumps shall be of the type called for in the specifications or on the drawings and shall be designed to withstand a water test pressure of 150 pounds per square inch. Shop drawings of pumps must be submitted for approval before installation. See Section 15A-1, Paragraph .19, Shop Drawings.
- B. The casing for pumps shall be of close-grained cast iron for bronze fitted pumps or bronze on all bronze pumps. The waterways must have large cross-section areas with smooth turns so that the water will pass through at a low velocity without shock. Suitable openings shall be provided for the suction gauge, discharge gauge, air vent and cock. Openings shall be tapped and plugged. Pumps shall also be provided with grease lubricated bearings of rugged construction. For horizontal pumps, the casing shall be split horizontally so that the upper half may be easily removed, giving access to the interior of the pump, without disconnecting the suction or discharge piping, or pump and motor couplings. The casing for horizontal pumps shall also have ample provision for its support on the bedplate so that the pump and shafts will keep in alignment.
- C. Unless otherwise specified, the shaft shall be of the best grade of 18-8 stainless steel and of ample size to transmit safely the maximum amount of power required. Shaft shall be provided with ample keyway and key to accurately hold the impeller in place. The impeller shall be secured to the shaft using a nut and locking washer. The impeller shall be hydraulically balanced for all pressures and shall be of bronze, hand finished on the inside, machine turned and polished on the outside, dynamically balanced at all speeds, and with liberal keyway to fasten to shaft. Coupling shall be flanged and of the flexible type with pin and rubber bushing construction. That portion of the shaft passing through the pump casing and stuffing boxes shall be encased in a bronze sleeve, securely fastened to the shaft.
- D. A name-plate showing the serial number, discharge GPM and Head of each pump shall be attached to the respective pump. The necessary wiring and controlling devices will be furnished and installed complete by Electrical Contractor, unless otherwise specified.

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Pumping Apparatus

15A-11.01 Pumps General (con't)

- E. The motor and pump shall be mounted on the same sub-base, with the motor connected directly on the shaft and both motor and pump shall be provided with all necessary approved grease lubricated bearings and approved grease cups; also provide an approved compression grease cup on each packing gland, for use during periods of non-use of the pump. The sub-base shall be bolted to a one-piece heavy cast-iron bed plate, provided with flanges extending 2 inches below and one inch above the foundation, forming a drip pan; bed plate shall be tapped and provided with a 1/4-inch angle draw cock. See detail.
- F. The bed plate in which the pump shall be mounted shall be of one piece and of heavy cast iron. Bed plate shall be provided with flanges extending 2 inches below concrete foundation, and 1 inch above, forming drip pan, and bed plate shall be tapped and provided with a 1/4-inch angle draw-off cock.
- G. For sump and ejector pits, the Plumbing and Drainage Contractor shall have the pump supplier verify the depth of the pit so that proper length shaft will be supplied.
- H. Certified test curves of the pumps to be installed shall be provided for all pumps in accordance with Section 15A-18 of the Standard.
- I. Pump Foundations - Where shown on drawings, pumps and motors shall be set on footings and foundations (furnished by the Contractor for Plumbing and Drainage) of stone concrete, about 20 inches above finished floor, unless otherwise shown on drawings. Concrete shall consist of 1 part Portland cement, 2 parts clean, sharp sand and 4 parts 1-inch broken stone; the footings shall be 8 inches thick and extend 6 inches on all sides beyond the foundations; furnish and secure to the top of the foundations a 3 x 3-inch steel angle curb mitered and continuously welded at corners and embedded in the foundation with 4--1 1/2 x 3/16-inch anchors welded to curb. The pump and motor shall be set and connected as directed by the manufacturer or his agents, and bolted to pads provided therefore in the drip pan.

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Pumping Apparatus

15A-11.01 Pumps General (Cont.)

- J. Flexible Hose Connections - Where indicated on plans or specified the Contractor for Plumbing and Drainage shall connect the pumps to piping with flexible hose as manufactured by Chicago Metal Hose Co., Tite Flex Metal Hose Co., Anaconda Metal Hose Co. or other approved equal.
- K. Motors - See Section 15A-6 of the Standard.
- L. For pressure set, the water service main shall be connected to the pumps, pressure tank and pressure main of the size and arrangement with the necessary valves, etc., as indicated on drawings.
- M. Pressure set controller shall be furnished by the Plumbing and Drainage Contractor. The Contractor for Plumbing and Drainage shall connect the pressure connection from tank to controller with brass pipe of the size shown on drawings. See Section 15A-12.03 and Standard Detail.

15A-11.02 Pressure Pumps and Motors

- A. Each pump shall be centrifugal type, double suction bronze fitted pump mounted on a cast-iron sub-base and to be direct connected by means of a flexible coupling to a 3 phase, 60 cycle, 208 volt, 1750 R.P.M. squirrel cage, ball bearing, drip proof electric motor of size indicated on plans and/or amendment.
- B. Pumps shall be connected to suction and discharge piping with flexible hoses as specified in Par. .01(H) this Section.

Section 15A-11
Pumping Apparatus

15A-11.03 Sump Pump (Heavy Duty)

- A. Where indicated on plans, furnish and install bronze fitted heavy duty sump pumps of the completely submerged centrifugal type as made by Aurora Pump Co., Chicago Pump Co., Ketchum Pump Co., Federal Pump Co., Peerless Pump Co., Weil Pump Co., or approved equal. Impeller, pump bearings and intermediate bearings shall be bronze. Casing, suction plate, suspension plate, motor pedestal and strainer shall be cast iron. Suspension pipe and discharge pipe shall be extra-strong (Schedule 80) galvanized steel pipe. Each pump shall be of the capacity specified and shall be directly connected to an electric motor by means of a flexible coupling; the speed of the pumps shall not exceed 1150 R.P.M. For model of pump, H.P. of motor, etc., see Amendments. Submit shop drawing for approval.
- B. Thrust Ball bearing shall be provided approximately 6" above the suspension plate in a fully enclosed dust and moisture-proof housing to take the weight of the pump shaft and impeller. Pumps shall have 18-8 stainless steel shafts and shall be provided with individual automatic pressure grease lubricators to each bearing. The shaft seal at the support plate shall be a packing gland type seal. Mechanical seals will not be accepted in lieu of packing glands.
- C. The motor shall be 1150 R.P.M. mounted on pedestals. The exact depth of the sump pit shall be measured at the site so as to determine the length of the shafts. Where depth of pit exceeds 5 feet pumps shall be provided with intermediate guide sleeve bearings.
- D. Sump pump shall be controlled by a pedestal mounted float switch in a Nema Type 4 watertight and dusttight enclosure that is actuated by a minimum 7 inch stainless steel ball float and stainless steel rod guided above and below floor plate of pump.
 1. When duplex pumps are indicated on plans, furnish and install a pedestal mounted float switch with built-in alternator, Square Dee Class 9038 Type AW-1 or approved equal. Float switch shall be equipped with stainless steel ball float, stainless steel rod and rod guide.
 2. When simplex pumps are indicated on plans, furnish and install a two-pole, heavy duty float switch, Square Dee Class 9035 Type DW-10 or approved equal. Float switch shall be equipped with stainless steel ball float, stainless steel rod and rod guide.

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Pumping Apparatus

15A-11.03 Sump Pump (Heavy Duty) (Cont.)

- E. For all installations, furnish and install a high water alarm consisting of an auxiliary pedestal mounted single pole float switch equipped with a pedestal guide, gas-tight stainless steel rod and minimum 7 inch stainless steel ball float.
- F. Materials, equipment, labor, etc. for electric connections to float switches and high water alarms shall be furnished by the Electrical Contractor.
- G. The Plumbing and Drainage Contractor shall furnish an angle frame and sump pit cover as indicated on plans and Standard Detail. The General Construction Contractor will install the angle frame and cover when sump pit is poured.
- H. The Contractor shall, upon the completion of the cellar or basement floor, or when directed by the Executive Director, install the sump pump complete, making, if necessary, temporary connections to the house drain or sewer. He shall, at all times during the construction of the building, maintain the pump in working order for use when temporary heat is required. He shall be solely responsible for its operation and shall make good any damage to the pumping apparatus which may be caused by its use. The electric connections and current will be furnished by the Electrical Contractor. This sump pump shall not be used at anytime for the purpose of dewatering the site.
- I. Where sump receives boiler blow-off drain, the Plumbing and Drainage Contractor shall furnish and install 3/4-inch valved cold water piping to sump and connect to air gap fitting as shown on detail.
- J. For motor requirements, tests, etc., see Section 15A-6.
- K. The Plumbing and Drainage Contractor shall submit shop drawings of the pump motors, angle frame and cover for approval before installing pumps.

15A-11.04 Sump Pump (Light Duty)

A. Upright Pump

Furnish and install an upright sump pump having a 1/3 H.P. single phase, 60 cycle, 115 volt, 1750 R.P.M. motor. Pump shall be Penberthy "M" Series or approved equal. The pump shall be set in a concrete pit for which a frame and split cover shall be provided by this Contractor. The cover shall be of 5/16" steel checkered plate drilled for installation of the pump and float guide and shall have a minimum of sixteen 5/8" hole perforations.

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Pumping Apparatus

15A-11.04 Sump Pump (Light Duty) (Cont.)

Frame shall be a 2" x 2" x 1/4" angle iron frame. The General Construction Contractor will install the angle frame and cover when sump pit is poured. Submit shop drawings of pump, angle frame and cover for approval before installation.

B. Submersible Pump

Furnish and install a Weil 1 1/4" Series 1400 or an approved equal submersible sump pump in a sump pit where shown on drawings. Pump shall have bronze impeller, 18-8 stainless steel shaft, factory sealed grease lubricated ball type bearings, mechanical seal and a perforated bronze or steel strainer. Pump motor shall be 1/3 H.P., 1750 R.P.M., single phase, 115 V, hermetically sealed capacitor start with built-in overload protection and Class "B" insulation. Control shall consist of a single differential type mercury float switch that is bracket mounted on the pump, furnished with 10 feet of power cord and a "piggy back" combination, grounded plug and receptacle.

C. For each sump pump, the Plumbing and Drainage Contractor shall furnish a 2" x 2" x 1/4" angle iron frame and a 5/16" split steel checkered plate sump pit cover. The cover shall be drilled for installation of the pump and shall have a minimum of sixteen 5/8" hole perforations. The General Construction Contractor will install the angle frame and cover when sump pit is poured.

D. The Plumbing and Drainage Contractor shall submit shop drawings of the pumps, pump motors, angle frame and cover for approval before installing pumps.

15A-11.05 Automatic Sewage Ejector

A. Where indicated on plans, furnish and install automatic sewage ejector units and appurtenances as specified hereinafter. Sewer ejector units shall be as manufactured by Aurora Pump Co., Chicago Pump Co., Federal Pump Co., Ketchum Pump Co., Peerless Pump Co., Weil Pump Co., or approved equal. Each pumping unit of the ejector shall consist of a heavy duty, non-clogging type vertical submerged sewage pump. Each pump shall have a discharge pipe of size shown on drawings and shall have an impeller and liquid passages designed to pass a sphere not less than 2 1/2 inches in diameter. Pump shafts shall be 18-8 stainless steel and not less than 1 1/4 inch diameter. Thrust ball bearing shall be provided approximately 6" above the suspension plate in a fully enclosed dust and moisture-proof housing to take the weight of the pump shaft and impeller. Bottom bearing and intermediate bearings shall be of bronze sleeve construction. Submit shop drawings for approval.

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Note: Sewage ejector pump must be approved by Board of Standards and Appeals, and shall have name plate with approval number.

- B. Each pump shall be direct connected by a flexible coupling to a vertical ball bearing motor, of size and characteristics specified in the amendments.
- C. Furnish and install a tank of heavy cast iron construction coated with black asphaltum paint. Tank size shall be as indicated on P & D plans and/or amendments. Vent connections and inlet connections shall be of size shown on the P & D plans. All tank connections shall be as indicated on drawings. Tank shall be provided with an 18-inch diameter manhole, with air tight gasket.
- D. Individual automatic pressure grease lubrication shall be provided for each bearing. The shaft seal at the support plate shall be a packing gland type seal. Mechanical seals will not be accepted in lieu of packing glands.
- E. Coupling is to be of the flexible type with rubber bushings or inserts.
- F. Motor is to be 1150 R.P.M., vertical type, ball bearing, shielded, drip-proof, in accordance with general specifications covering motors. See Section 15A-6.
- G. Model of pump, horsepower of motor and current characteristics shall be indicated in amendments.
- H. Ejector shall be controlled by a pedestal mounted float switch in a Nema Type 4 watertight and dusttight enclosure that is actuated by a minimum 7 inch stainless steel ball float and gas-tight stainless steel rod guided above and below floor plate of pump.
 1. When duplex pumps are indicated on plans, furnish and install a pedestal mounted float switch with built-in alternator, Square Dee Class 9038 Type AW-1 or approved equal. Float switch shall be equipped with stainless steel ball float, gas-tight stainless steel rod and rod guide.
 2. When simplex pumps are indicated on plans, furnish and install a two-pole, heavy duty float switch, Square Dee Class 9035 Type DW-10 or approved equal. Float switch shall be equipped with stainless steel ball float, gas-tight stainless steel rod and rod guide.

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15A-11.05 Automatic Sewage Ejector (Cont.)

- I. For all installations, furnish and install a high water alarm consisting of an auxiliary pedestal mounted single pole float switch equipped with a pedestal guide, gas-tight stainless steel rod and stainless steel ball float.
- J. Materials, equipment, labor, etc. for electric connections to float switches and high water alarms shall be furnished by the Electrical Contractor.
- K. Each ejector shall be mounted on an individual suspension plate, independent of the basin cover.

15A-11.06 Vacuum Pump (Laboratory)

- A. Furnish and install a vacuum pump where shown on drawings. The vacuum pump shall be a positive rotary vacuum pump guaranteed to develop a vacuum within 1/4" of the barometer on a closed suction test, pump to be water cooled, equipped with automatic oiling system, including a solenoid valve in the oil and water lines and constructed with internal parts of monel metal. Pump shall be provided with V-belt drive and mounted with motor on a single cast iron bedplate. For model of pump, size of motor, etc., see amendments. Submit shop drawing for approval.
- B. Furnish and install vibration eliminator rails similar to those manufactured by Vibration Eliminator Co. under the vacuum pump. Submit shop drawing for approval.

15A-11.07 Air Compressor (Laboratory)

- A. Furnish and install an air compressor where shown on drawings. The air compressor shall be a positive rotary compressor suitable for operating at pressures up to 30 lbs. per square inch, the pump shall be water cooled, and equipped with an automatic lubricating system, including a solenoid valve in the oil and water lines, and constructed with internal parts mounted with a motor on a single cast iron bedplate. For model of pump, size of motor, etc., see amendments. Submit shop drawing for approval.

Note: For piping for compressor and vacuum see drawings. For materials see Section 15A-5. For tests see Section 15A-8.

- B. On the connection between the air compressor and the tank and on the connection between the vacuum pump and the tank there shall be furnished and installed a flexible metal hose to prevent vibration, as specified in Par. 01(H) this section.

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Pumping Apparatus

15A-11.07 Air Compressor (Laboratory) (Cont.)

- D. Provide and install under the air compressor, vibration eliminator rails securely fastened to the concrete bases as manufactured by the Vibration Eliminator Co., or other approved equal. Submit shop drawing for approval.

15A-11.08 Circulating Pump (Domestic Hot Water)

- A. When indicated on drawings, adjacent to steam coil water heater, furnish and install a hot water circulating pump unit on a concrete base with all connections as shown. The unit shall consist of a centrifugal type bronze pump that is direct connected to an electric motor with approved vibration arresting hose connection similar to "Vibrestor" as manufactured by Chicago Pump Co., Anaconda Metal Hose Co., or Tite Flex Metal Hose Co. Furnish and install valves, etc., as shown on drawings. The pump shall be Federal Pump Co., Chicago Pump Co., Weil Pump Co., Ketchum Pump Co., or approved equal.

Note: When indicated on drawings, this Contractor shall furnish and install an in-line bronze body circulating pump with brass or bronze impeller, pump shall be Crane Co., Torush Co., or Bell and Gosset.

- B. Capacity, head, model of pump and pump motor requirements shall be as specified in the amendments.
- C. Also furnish and install immersion type automatic electric control switch to control the operation of circulating pump; the switch shall have bulb installed in a bulb well into the circulating line, and shall be arranged for conduit connection.
- D. Electric Control shall have an adjustable range from 40° to 160°Fahr., where temperature of water in storage tank is 140°Fahr., the pump shall start at approximately 105°Fahr., and stop at 109°Fahr. It shall be a Honeywell L4006A with bulb assembly or other approved equal.
- E. A fused motor switch, and automatic starter providing overload and low voltage protection will be furnished and installed by the Electrical Contractor and the latter will do all wiring required.
- F. Submit shop drawings of pump and motor for approval.

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15A-11.09 Booster Hot Water Circulating Pump

When indicated, furnish and install in circulating line at location indicated on drawing an in-line bronze body circulating pump. Motor for pump shall be electrically connected with built-in overload protection. Pump shall be by Crane Co., Thrush Co., or Bell and Gosset. Capacity, feet of head, model of pump and pump motor requirements shall be as specified in the Amendments. Submit shop drawings for approval.

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Pumping Apparatus

SECTION 15A-12

TANKS

Notes:

1. Shop drawings, including computations for head thickness, Par. 15A-12.01 (E), of the tank, and drawings of the steam coil must be submitted before approval by Board of Education. See Par. 15A-1.19, shop drawings.
2. For size of tank; length and size of removable heating coil; water heating capacity; air compressor size; pump size; etc., see Amendments and drawings.

15A-12.01 Tanks

- A. When indicated on drawings furnish and set on pipe stand, a reservoir made of steel sheets and fitted with all necessary lappings, equipment and piping as shown on Standard Detail 1, latest revision, and as shown on contract drawings.
- B. The construction of the tank and all connections to the tank shall be in accordance with the latest revision of the ASME Boiler and Pressure Vessel Code, Section VIII Unfired Pressure Vessels. Tank shall have a working pressure of 150 psi and be tested hydrostatically at 300 psi. All joints shall be double butt welded. Radiographic inspection not required.
- C. Manufacturers data report, as specified in ASME Boiler and Pressure Vessel Code, Section VIII Unfired Pressure Vessels and certified by an approved inspection agency, shall be furnished in triplicate.
- D. Tank shall be a horizontal with a 11 x 15 manhole and shall be constructed of steel complying with ASTM Spec. A-285 Grade "C" with a minimum tensile strength of 55,000 psi for diameters up to 48". For diameters over 48" the steel shall comply with ASTM Spec. A-212 Grade "B" or A-515 Grade 70 with a minimum tensile strength of 70,000 psi.
- E. Heads shall be seamless ellipsoidal with skirt or seamless torispherical with skirt. The thickness shall be computed in accordance with the latest edition of the ASME Boiler and Pressure Vessel Code, Section VIII Unfired Pressure Vessels. With an additional 1/16" added to the computed thickness for corrosion allowance.

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Tanks

15A-11.11 Tanks (Cont.)

- F. Shells shall have a minimum thickness in accordance with the following table.

| Diam. | Shell Thick. | Diam. | Shell Thick. | Diam. | Shell Thick. |
|-------|--------------|-------|--------------|-------|--------------|
| 18" | .212 | 54" | .395 | 90" | .616 |
| 24 | .262 | 60 | .432 | 96 | .653 |
| 30 | .313 | 66 | .469 | 102 | .690 |
| 36 | .363 | 72 | .506 | 108 | .727 |
| 42 | .413 | 78 | .543 | 114 | .764 |
| 48 | .464 | 84 | .579 | 120 | .801 |

- G. The reservoir shall set on a stand of black steel pipe, cast iron steam pattern fittings, 3/8" thick minimum steel saddles and channel bases or bearing pads. Welded frame and saddle may be used in lieu of pipe stands. See details. Contractor shall submit drawings for approval before installation.

- H. The tank shall be thoroughly cleaned and the entire interior given a cement wash and a coating of cement applied in a total thickness of approx. 3/4" in not less than 2 applications and troweled to a smooth finish. Cement lining shall be one (1) or equal to the following approved by the Board of Standards and Appeals of the City of New York:

1. Ford Tank Maint. Co., Inc. - "CIMCO"
2. American Pipe & Tank Lining Co. - "AMPLICO"
3. A.S.G. Pipe Lining Co. - "PERM-O-LINE"
4. Atlas Tank Maint. Co. - "HYDRAULIC CEMENT"
5. Patterson Kelly Co., Inc.

- I. In the application of the cement lining, due precautions shall be taken to prevent cement from entering into or interfering in any manner with pipes, openings or any accessories connected to the tank.

- J. After all cement work has been completed, inspected and approved, the manhole shall be installed. Approximately 6 hours after the cement lining has been completed, the tank shall be slowly filled with water. The normal water pressure at the building shall be maintained in the tank while the cement is in the plastic state, in order that the cement lining will be expanded to follow the contour and changing form of the tank under pressure.

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Tanks

15A-12.01 Tanks (Cont.)

- F. The Contractor shall submit a list of not less than 5 buildings in which he has satisfactorily performed work of this type, in the past three years.
- G. The Contractor shall furnish written guarantee that the cement lining is free from defects due to material or workmanship and should any defects develop in the cement lining within a period of five (5) years from the date of application, such defects shall be rectified by the Contractor, without cost to the Board of Education.

15A-12.02 Hot Water Reservoir

- A. Tank shall be constructed in accordance with Par. 15A-12.01.
- B. Each reservoir shall have multiple "U" Coil made of annealed copper tubing drawn to shape (not bent) and which shall be expanded into a tube sheet of flange quality steel. The holes in the tube sheet shall be drilled and accurately reamed to size.
- C. Each heating coil shall have a manufacturer's name plate securely fastened with tap screws to the steam head of the coil. The plates shall bear the name of the manufacturer and the serial number and the dimensions of the reservoir, also the size, number, gauge and linear feet of copper tubing in the coils.
- D. Steam coil heater shall have a vacuum breaker capable of withstanding 12 inches of vacuum similar to McAlear No. 308, Schade Davis No. 1724 or other approved equal.
- E. An ASME approved 1 1/2 inch bronze body automatic combination pressure and temperature relief valve shall be furnished and installed by the Plumbing and Drainage Contractor on the hot water reservoir as indicated on the Standard Details. Valve shall be rated at 125 psi and 210°F. and shall be Watts No. 340 or approved equal.
- F. Steam Valve and Temperature Regulator - Will be furnished, installed and regulated by the Contractor for Heating and Ventilating.
- G. Thermometers shall be in accordance with Section 15A-9.09.

Section 15A-12
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15A-11.03 Pneumatic Water System

- A. Furnish and install where indicated on plan a complete pneumatic water system consisting of two (2) pumps; hydropneumatic water storage tank; air compressor; combination air, volume and pressure control and alarm; and all piping and accessories for automatic operation of the pumps and air compressor.
- B. Hydropneumatic Water Storage Tank shall be constructed in accordance with Paragraph .01 of this section.
- C. Pressure Pumps - See Section 15A-11.
- D. Silent Check Valves - See Section 15A-5.
- E. Air Compressor shall be an air cooled type equipped with intake strainer and silencer and centrifugal unloader, V-belt drive with approved guard, mounted on extended base plate powered by a 3-phase, 60-cycle, 208-volt, 1150 R.P.M. squirrel cage ball bearing drip proof electric motor of size indicated on plans and/or amendments. Compressor shall be similar or approved equal to Curtis Type C, or Quincy D230. Provide pressure relief and two soft seated check valves on compressed air discharge line to tank.
- F. Tank shall be fitted with water gauge glass and all necessary tapings for equipment and piping as shown on plan. Provide a 1 1/4" valved drain connection at bottom of tank and a 1 1/4" pressure relief valve at top of tank. Bottom of tank shall be fitted with heavy angle iron or cast iron saddles see Par. .01(G) this section to keep bottom of tank 2-feet above finished floor.
- G. Pressure Set Controller
 1. Furnish and install where shown on drawings a type DC2RH2ANY PlanPak Duotrol, Class 1503, Probe Type, NEMA I, for wall mounting and operation on 208/3/60 AC power. Unit shall be for control of two domestic water pumps and one air compressor, and shall have alarm stations for abnormal high and low pressures. Provide automatic electric alternator for rotation of pumps.
 2. Unit shall be housed in single sheet steel case approximately 24" wide by 36" high by 7" deep, and shall contain combination across-the-line motor starters with 3 phase overload protection and undervoltage release for each controlled motor, as sized below, and external overload resets, H.O.A. switches, start pressure sensor for each pump and the compressor. Include a control power circuit

Section 15A-12
Tanks

15A-12.1 Pneumatic Water System (Cont.)

- breaker, 4 1/2" flush mounted pressure gauge calibrated 0-100 psi., and brass shut-off and bleed valves.
3. Furnish for separate mounting on the hydropneumatic tank a type PBX-1 probe fitting and stainless steel probe cut to proper size for efficient tank operation. Provide bulkhead fitting for connection of 1/4" pressure line to air section of tank.
 4. Starters for pumps shall be size 1 3/4 with 70 amp "EA" frame moulded case circuit breakers.
 5. Starter for air compressor shall be size "0" with 15 amp "EA" frame moulded case circuit breakers.
 6. Equipment shall monitor pressure in hydropneumatic tank and when it descends to 46 psi shall start lead pump. Pump shall be stopped by action of probe when normal high level is reached, and if air pressure is low, air compressor shall operate to bring tank to normal high pressure of 65 psi, or until water level lowers below probe.
 7. In event capacity of first pump is exceeded, lag pump shall start at 45 psi.
 8. Low alarm shall occur at 40 psi and high alarm at 70 psi. Individual pressure sensors accurate to within 1/2 of 1% without minimum differential shall be furnished for each of the five points in the program described above.
 9. Unit shall be all manifolded and interwired, factory tested, and ready for connection to power, motors and separate probe, and shall be a system controller per NEMA standards for Class II equipment as manufactured by Autocon Industries, of St. Paul, Minnesota, or approved equal.
 - H. The Plumbing and Drainage Contractor shall furnish a wiring diagram to the electrical contractor. The electrical contractor will furnish and install all wiring for pumps and compressor except for internal wiring of control unit.
 - I. The Plumbing and Drainage Contractor shall supply to the Executive Director an operating manual and copies of all wiring diagrams and equipment drawings.

Section 15A-12
Tanks

SECTION 15A-13

FIXTURES

NOTICE

- A. All vitreous, porcelain and cast iron enameled fixtures shall be white unless otherwise indicated.
- B. Fixture Schedule - The Plumbing and Drainage Contractor shall submit for approval, the required number of copies of Schedule of all fixtures required under the contract. The Schedule shall contain cuts, manufacturer's plate numbers and complete descriptions of all fixtures and accessories. It shall be neatly bound in sets with the title of the school on the front cover page. After tentative approval of the schedule, samples of fittings and trimmings shall be submitted for approval, as hereinafter specified, and after these have been approved, final approval shall be issued for the schedule, with the understanding that all fixtures and accessories must meet the requirements specified regardless of approval by catalog numbers, cuts or description.

15A-13.00 General

A. Water Saving Requirements

All plumbing fixtures and fittings installed under this contract, which are listed as water saving type fixtures and fittings by the New York State Department of Environmental Conservation, shall comply with the performance standards specified in Section 15-0314 of Environmental Conservation Law.

- B. All fixtures, fittings, trimmings, supports, materials and other items described or specified in this section or shown on drawings, shall be furnished and installed by the Plumbing and Drainage Contractor.
- C. Where fixtures come in contact with walls or floors, the space between the fixture and wall or floor shall be sealed against water seepage with Dow Corning 786 or an approved equal mildew resistant silicone sealant. Color of sealant shall be white.

15A-13.01 Vitreous Ware

- A. A distinction shall be made between vitreous china, semi-vitreous china, and porcelain ware. The name or trademark of the manufacturer must be printed or pressed on all fixtures.

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Fixtures

15A-13.01 Vitreous Ware (Cont.)

- B. Vitreous china fixtures shall be vitreous china of the best quality, so burned that the whole mass is thoroughly fused and vitrified, producing a material with hard, smooth and permanently non-absorbent surface which, when fractured, will show a homogeneous mass, close grained and free from pores. The glazing shall be thoroughly fused and united to the body without discolorations, chips and flaws, and shall be free from craze. All surfaces, except those coming in contact with walls or floors shall be glazed. All surfaces coming in contact with walls or companion fixtures shall be ground and fitted true. Warped or otherwise imperfect fixtures will not be accepted.
- C. Vitreous ware and porcelain enameled cast iron ware shall be of Kohler Company; American Standard Mfg. Company; Eljer Company or approved equal.

15A-13.02 Porcelain Enameled Iron Ware

Enameled iron ware shall be the best quality cast-iron of the necessary thickness to form fixtures of the best grade manufactured. The enamel coating on the fixtures shall be acid resisting and shall be thoroughly fused on all surfaces where required after the iron has been rubbed smooth and shall be smooth and of even thickness, without discoloration, free from chips, flaws or craze. Exposed surface not required to be enameled shall be rubbed smooth and painted one coat of zinc chromate and oil paint at the factory. The name or trademark of the manufacturer must be permanently fixed on all fixtures.

15A-13.03 Samples for Approval

There shall be submitted to the Executive Director for approval as to the quality, design, etc., two pieces of each piece of brass work required in connection with plumbing fixtures and showers. These samples must conform to the requirements hereinafter or before specified; also to the approved samples in the office of the Executive Director. After the samples have been approved and marked one complete set shall be retained in the office of the Executive Director and one set turned over to the Contractor for installation in the building under the direction of the Inspector of Plumbing, who will make a record of the sample and location and forward said record to the office of the Executive Director for filing. The brass work furnished for all fixtures to be installed in the balance of the building shall correspond in every particular to the samples approved, any article that fails to do so will be rejected and must be removed at once from the premises and replaced with approved material. Upon completion and acceptance of the work the Contractor shall remove the samples retained in the office of the Executive Director.

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Fixtures

Note: When Plumbing and Drainage Contractor furnishes an affidavit that brass fixture trim he intends to furnish is the equal of the approved samples in the Executive Directors office, the submission of samples as specified will be waived.

15A-13.04 Fixture Height Schedule

A. Installation height of fixtures from rim to finished floor, except for those fixtures that are to be used by the handicapped, shall be as follows:

| Fixtures | Primary | Inter- mediate | High School |
|---|---------------------------|-------------------|----------------|
| Water Closet | All Pupils Toilets - 15" | 15" | 15" |
| | All Adult Toilets - 15" | 15" | 15" |
| Urinals - Wall Hung | Pupils Toilets - 16" | 20" | 24" |
| | Adult Toilets - 24" | 24" | 24" |
| Lavatories | All Pupils Toilets - 27" | 29" | 31" |
| | All Adult Toilets - 31" | 31" | 31" |
| Wash Sinks (with legs) (without legs) | 25" | 30" | 35" |
| | 28" | 32" | 36" |
| Drinking Fountain (with or without cuspidor) | Kind. and Pre-Kind. - 27" | | |
| | Pupils - 28" | 32" | 35" |
| | Adults - 35" | 35" | 35" |
| Sinks (General) | Pupils - 28" | 32" | 36" |
| | Adults - 36" | 36" | 36" |
| Sinks (Science Rooms) Classroom Sink and Drinking Fount. Unit | Pupils - 30" | 36" | 36" |
| | Kind. and Pre-Kind. - 27" | | |
| | Pupils Classroom - 28" | 32" | 36" |
| Electric Water Cooler | 40" | 40" | 40" |

Section 15A-13
Fixtures

15A-13.04 Fixture Height Schedule (Cont.)

B. Installation height of fixtures for handicapped shall be as follows:

1. In Pupils' Toilets, water closets for handicapped shall be installed with top of seat: 17 inches above finished floor in Primary Schools; 19 inches above finished floor in Intermediate and High Schools.
2. In Adult Toilets of all schools, water closets for handicapped shall be installed with top of seat 19 inches above finished floor.
3. Wall hung urinals, in Pupils' Toilets of all schools, shall be installed with rim 17 inches above finished floor.
4. Lavatory for Handicap - See Drawings.
5. Handicap lavatory - See Drawings.
6. Handicap Wash Center - See Drawings.
7. Barrier Free Wash fountains shall be installed with bottom of bowl 29 inches above finished floor.
8. Drink Fountains:
 - (a) Wall mounted type shall be installed with spout outlet no higher than 36 inches above finished floor.
 - (b) Pedestal type shall be installed with rim 33 inches above ground level.
9. Electric Water Cooler shall be installed with bottom of cooler 27 inches above finished floor and spout outlet no higher than 36 inches above finished floor.
10. Combination Sink Bowl and Drinking Fountain "Type A" shall be installed with counter surface 34 inches above finished floor.

15A-13.05 Water Closets

A. Water Closets shall be approved extra heavy vitreous china, and so marked with name of manufacturer on each closet. The trap and outlet shall be a smooth interior waterway without sharp corners capable of passing a ball 2 1/4" in diameter.

Section 15A-13
Fixtures

- Notes:
1. Unless otherwise specified or indicated on drawings, all water closets shall be wall hung type.
 2. Unless otherwise specified, water closets on first floor and below shall be blowout type. All other water closets shall be siphon jet.

B. Water Closet Roughing Connections

1. Marble or china rings for floor outlet closets shall be furnished by the Plumbing and Drainage Contractor to the Contractor for General Construction, who will install same.
2. When the branch vents from floor type closets are installed in concrete floor slabs, the vent piping shall be made of 85% brass pipe, and shall be given one coat of asphaltum paint.
3. Floor flange for floor outlet water closets shall be cast iron and 4" x 4" in size. The flange shall be secured to the floor, inside caulked to the soil pipe and secured to the base of the water closet with heavy brass bolts and cap nuts.
4. Wall hung water closets shall be supported in place by adjustable combination chair carriers and fittings as manufactured by Jay R. Smith or approved equal. Carrier supports shall have two separate base supports that are secured to a face plate. In addition, each support fitting shall be installed with a Jay R. Smith-M51 or approved equal anchor foot assembly. In lieu of plastic, material for nipples and adjustable couplings shall be cast iron.

Note: Where required for the installation of each wall hung water closet for the handicapped, this contractor shall furnish and install an applicable Jay R. Smith Hi Set Elevated Adjustable Fixture Support or an approved equal.

5. Where floor slab is on earth or is constructed of reinforced concrete, carrier base supports and anchor foot assemblies, shall be securely fastened to the structural slab, utilizing all support openings provided, with approved anchor bolts and shields. For other types of slab construction, including cinder concrete, carrier base supports and anchor foot assemblies shall be secured with bolts through the floor slab and with fish plates and nuts on underside of slab.

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6. For floor outlet water closets where the floor slab for the toilet area is not depressed, provide an 8"x8"x2" depression at the waste outlet in order to install the china ring. Depressed area around waste outlet shall be waterproofed with pitch.
7. Combination carriers with waste and vent connections are generally required where roughing above floor slab is indicated on plans.
8. Combination carriers or fixture supports with separate waste and vent connections may be used when roughing below floor slab is indicated.

C. Types of Water Closets:

1. Floor Outlet Water Closets, when indicated on drawings shall be of the following siphon jet types:
 - a) For pupils and adults in all schools, except for handicapped, water closets shall be Eljer 111-1115, Kohler K-4262-ET, or an approved equal.

Note: Floor outlet water closet in Principal's Toilet shall be as specified in "C2" or this paragraph.
 - b) Floor Outlet Siphon Jet water closets for handicapped pupils in Intermediate Schools and High Schools and for handicapped adults in all schools shall be American Standard 9468.016, Kohler K-4268-ET, Eljer 111-1245, or an approved equal.
2. Floor Outlet Water Closet in Principal's Toilet shall be round front siphon vortex action bowl and tank in one piece and shall be American Standard 2007.012 or an approved equal. Fixture shall be furnished with an Olsonite No. 40 or approved equal solid plastic white seat with cover. Supply shall be Kohler K-7630 or an approved equal 3/8" angle supply with stop and chrome plated cast brass escutcheon.
3. Wall Hung Siphon Jet Water Closets, including those for handicapped, shall be as follows:
 - (a) Water closets for use with exposed flush valves shall be American Standard 2477.016, Eljer 111-1405, Kohler K-4430-ET, or an approved equal.

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15A-13 Water Closets (Cont.)

(b) Water closets for use with concealed flush valves shall be American Standard 2478.014, Eljer 111-1425, Kohler K-4432-ER, or an approved equal.

4. Wall Hung Blowout Water Closets including those for handicapped, shall be as follows:

(a) Water closets for use with exposed flush valves shall be American Standard 2512.010, Kohler K-4450-ET, or an approved equal.

(b) Water closets for use with concealed flush valves shall be American Standard 2511.012, Kohler K-4451-ER, or an approved equal.

Notes: 1. For wall hung water closets in rooms with new metal stud partitions, use a carrier or fitting suitable for such installation.

2. When the distance from the face plate to the back of the finished wall for wall hung water closet supports is greater than 7", add the Jay R. Smith suffix "-M40" or approved equal to the support.

D. Water Closets Seats

1. Toilet seats shall be without covers, open front, extended back, without seams, joint or crevices; and shall properly fit water closet bowls to which attached.

Note: Seat for Principal's water closet shall be as specified in "C.2" of this paragraph.

2. Construction of seats shall be of solid white plastic not less than 3/4" in thickness and shall be solid throughout. All seats to have 5 1/2" hinge spread.

3. Materials shall be polystyrene moulding compound, ureaformaldehyde, or melamine formaldehyde and shall be impervious to moisture and medicinal chemicals.

4. Hinges shall be bent brass rod or stainless steel which shall have a plastic covering of the same material used on the seats, molded integrally onto the post. No checks on hinge posts and each post is to be furnished with two (2) rubber or leather washers, one (1) brass washer and one (1) brass 3/8" ESNA stop nut (Elastic Stop Nut Company), or other approved stop nut.

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15A-13.05 Water Closets (Cont.)

5. Two (2) rubber bumpers shall be secured with vandalproof screws to the bottom of seats.
6. All seats shall have manufacturers name and "Board of Education" clearly imbedded on underside. "Board of Education" shall be in gold foil.
7. Seats for all types of water closets, excluding Principal's water closet, shall be Olsonite No. 10 BOE, or an approved equal.

E. Toilet Paper Holders

1. Furnish and install at the side of each water closet partition, a toilet paper holder, secured by bolting through metal partition with theft proof stainless steel sex bolts.
2. Toilet paper holders shall also be provided and installed for all toilet rooms where no metal toilet partitions are provided for securing toilet paper holders. In these locations paper holders shall be secured to walls with expansion or toggle bolts to suit the condition.
3. Holders for pupils toilet rooms shall be constructed of heat treated aluminum alloy 1/8 inch thick, two inches wide and shall have a polished satin finish. Holders shall be the equal of Bradley No. 5053 or "Sav Haf" made by Smith Holder Manufacturing Co.
4. Holders for adult toilet rooms shall be Bradley No. 505, Scott No. 964, or approved equal.
5. Holders for use by the handicapped shall be Bradley No. 505, Scott No. 964, or approved equal.

F. Coat Hooks

Furnish and install in each water closet stall and also on each dressing compartment door a cast brass chrome plated combination bumper and coat hook with rubber tip inserted on end of bumper. Location of coat hooks shall be as designated by the Executive Director. Combination bumper and coat hook shall be Bradley No. 915, or an approved equal.

15A-13.06 Flush Valves

Note: Unless otherwise indicated on drawings, all flush valves shall be of the concealed type.

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- A. Flush valves for water closets and urinals shall be heavy pattern, polished brass chrome plated assembly including oscillating disc, tail piece, vacuum breaker and adjustable stop valve.
- B. Flush valves shall be Coyne and Delany "Flushboy," Sloan "Royal" or "Crown," or other approved equal.
- C. For connection of flush valves to flush headers, see standard detail and Paragraph 15A-8.04E. All flush headers shall be secured to wall with approved hangers.
- D. Exposed flush valves for floor outlet water closets shall be Coyne and Delany "Flushboy" 602C-3G, Sloan "Royal" 110HL-3YO-3, or an approved equal. All flush valves shall be chrome plated and shall have 3 inch metal oscillating disc in front of valve, 1 inch screw driver angle stop with protective bumper, vacuum breaker, flush connection and coupling for 1 1/2 inch top spud, wall and spud flanges.
- E. Concealed rough brass flush valves for wall hung water closets shall have 1 inch wheel handle angle stop, vacuum breaker, 3 inch metal oscillating disc through wall, elbow flush connection and coupling for 1 1/2 inch concealed back spud. All exposed parts shall be polished chrome. Approved types of flush valves shall be as follows:
 - 1. Concealed flush valves for siphon jet type water closets shall be Coyne and Delany "Flushboy" 537C-3, Sloan "Royal" 152L-3-3, or an approved equal.
 - 2. Concealed flush valves for blowout type water closets shall be Coyne and Delany "Flushboy" 537C, Sloan "Royal" 152L-3, or an approved equal.
- F. Exposed flush valves for wall hung water closets shall be chrome plated and shall have 3 inch metal oscillating disc in front of valve, 1 inch screw driver angle stop with protective bumper, vacuum breaker, flush connection and coupling for 1 1/2 inch top spud, wall and spud flanges. Approved types of flush valves shall be as follows:
 - 1. Exposed flush valves for siphon jet type water closets shall be Coyne and Delany "Flushboy" 602C-3G, Sloan "Royal" 110HL-3YO-3, or an approved equal.
 - 2. Exposed flush valves for blowout type water closets shall be Coyne and Delany "Flushboy" 602CG, Sloan "Royal" 110HL-3YO, or an approved equal.

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15A-13.06 Flush Valves (Cont.)

- G. Exposed flush valves for urinals, except urinals used by the handicapped, shall be chrome plated and shall have 3/4 inch screw driver angle stop, cap on stop, flush connection for 3/4 inch top spud, 3 inch oscillating disc in front of valve and vacuum breaker. Flush valves shall be Coyne and Delany "Flushboy 651CJ, Sloan "Royal" 186 HL-3, or approved equal. Exposed flush valves for urinals used by the handicapped shall be Coyne and Delany "Flushboy" 452-1.5-J or approved equal.
- H. Concealed flush valves for urinals shall be rough brass and shall have 3/4 inch wheel handle straight stop, elbow flush connection for 3/4 inch concealed rear spud, polished chrome 3 inch oscillating disc through wall and vacuum breaker. Flush valves shall be Coyne and Delany "Flushboy" 571C, Sloan "Royal" 195L-3, or approved equal.

15A-13.07 Urinals

A. Stall Urinals

- 1. Urinals shall be Class A (or of best grade of manufacture) vitreous china urinals with separate vitreous china seam covers. The backs of all urinals shall be ground to fit close to the wall at the backs of the urinals. When located in corners, the ends of the urinals shall also be ground to fit close to walls at ends. Eighteen-inch urinals shall be an approved equal of Kohler K-4920-T; 18 inches wide and 42 inches high. Stall urinals shall be ground for 21-inch center to center roughing measurements for elementary and intermediate schools, and 24" center to center for adults and High Schools. Urinals shall have integral flushing rims.
- 2. For each urinal, this Contractor shall furnish and install a 2 inch brass trap weighing not less than four pounds and a Kohler K-9183 or approved equal strainer with stainless steel beehive grate that is screwed on to a waste plug. A 2 inch fixture waste brass pipe shall be furnished and shall connect trap to waste plug. Also 6 pound lead flashing shall be furnished and installed for each urinal as per standard detail.

B. Wall Hung Urinals, except those for handicapped, shall be vitreous china siphon jet urinals with integral flushing rim, integral trap, 3/4 inch inlet spud, wall hangers and 2 inch iron pipe size outlet connection.

- 1. Urinals for use with concealed flush valves shall be Kohler K-4985-R; Eljer 161-1095; or an approved equal.
- 2. Urinals for use with exposed flush valves, except those for handicapped, shall be Kohler K-4985-T; Eljer 161-1090; or an approved equal. Urinals for use by the handicapped shall be Kohler K-5014-T or approved equal.

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1. Furnish and install new floor mounted type supports for wall hung urinals. Supports shall be Jay R. Smith Fig. 637-M31 or an approved equal. Where floor slab is on earth or is constructed of reinforced concrete, support bases shall be securely fastened to the floor slab, utilizing all support openings provided, with approved anchor bolts and shields. For all other types of slab construction, including cinder concrete, support bases shall be secured with bolts through the floor slab and with fish plates and nuts on underside of slab.

15A-13.08 Lavatories

- Notes:
1. Where floor slab is on earth or is constructed of reinforced concrete, lavatory support bases shall be securely fastened to the floor slab, utilizing all support openings provided, with approved anchor bolts and shields. For all other types of slab construction, including cinder concrete, support bases shall be secured with bolts through the floor slab and with fish plates and nuts on underside of slab.

2. Concealed arms for lavatory supports shall be ductile iron.

3. Lavatories, except those for use by the handicapped, in pupil and adult public toilets shall be vitreous china, 20" x 18" in size and shall be Eljer 051-1848, Kohler K-2030, or approved equal. Each lavatory shall be secured in place with a concealed arm, floor mounted type lavatory support. Lavatory supports shall be Jay R. Smith Fig. 706-M31, or approved equal. The lavatories must have rear punching to accommodate the concealed arms. The Plumbing and Drainage Contractor shall cooperate with the General Construction Contractor so that the concealed lavatory supports are installed in the proper manner.

1. Lavatory drain for each fixture shall have an integral perforated grid, cast brass lock nut, 1 1/4 inch diameter tail piece, chrome plated finish and shall be: American Standard 2411.015; Kohler K-7715; Eljer 803-0552; or an approved equal.
2. Lavatories shall be supplied with hot and cold water through chrome plated heavy pattern cast brass, slow self-closing plunger faucets operated both in opening and closing without water hammer with hot and cold index. Faucets shall be Bradley 605, Chicago Faucet No. 335-E12, Speakman 4122-NYC with brass yoke assembly, or approved equal. Submit shop drawings for approval.

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3. The center faucet hole of each lavatory shall be provided with a Kohler K-7732 or an approved equal chrome finish lavatory faucet hole cover.

B. Adult lavatories in non-public toilets (Teachers' Rooms, Principals' Office, Medical Office, etc.) shall be vitreous china, 20" x 18" in size and shall be Eljer 051-1644, Kohler K-2032, or approved equal. Each lavatory shall be secured in place with a concealed arms, floor mounted type lavatory support. Lavatory supports shall be Jay R. Smith Fig. 700-M31, or approved equal. Except as noted, faucet with pop-up drain for each lavatory shall be American Standard 2379.156, Kohler K-6883-P, or approved equal.

Note: Faucet for lavatory in Medical Office and Dental Office shall have 4 inch wrist control handles and pop-up drain and shall be American Standard 2103.786 or an approved equal.

C. In Kitchen area and at all additional locations indicated on drawings, furnish and install 20" x 18" vitreous china special lavatories. Lavatories shall be American Standard 0124.024, Kohler K-1746, or an approved equal and shall be fitted with American Standard 2103.620, Eljer 559-2300, T & S Brass and Bronze Works B-894, or approved equal supply fittings having spray spout and 4 inch wrist control handles. Lavatory drains with integral flat perforated strainer and 1 1/4" tailpiece shall be American Standard 2411.015, Eljer 803-0552, Kohler K-7715, or an approved equal. Also furnish and install a Bradley No.756-20 or an approved equal 6" x 20" x 18 gauge stainless steel shelf 54" above the finished floor and over the centerline of each lavatory. Furnish and install a floor mounted type lavatory support to support each lavatory. Lavatory supports shall be Jay R. Smith Fig. 800-M31, or an approved equal.

D. For the installation of all lavatories (Par. A, B, and C) the following sub-paragraphs are to be adhered to:

1. The supply piping to each lavatory shall be equipped with Eljer 801-0106, Kohler K-7664, or approved equal 1/2 inch chrome plated brass pipe lock shield angle stop cocks with loose key.
2. The tail piece for each lavatory waste shall be connected to 1 1/2-inch heavy pattern chrome plated cast brass New York regulations pattern trap with 1 1/4-inch heavy pattern chrome plated cast brass slip nut, chrome plated friction ring and rubber washer, and heavy plated brass trap screw, equal to Eljer 804-1125 or Kohler K-9010.

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3. The exposed hot and cold water piping shall be chrome plated brass piping and shall extend and connect to the risers or through floor and connect to mains or branches as indicated on drawings.
4. Provide and install a chrome plated lock shield drain bibb above valve on hot supply under one lavatory in each toilet room in which a floor drain or stall urinal occurs.
5. Provide and install chrome plated brass escutcheon plates for hot, cold and waste lines. See Section 15A-2.09

- Notes:
1. Where indicated on plans furnish and install a thermostatic mixing valve similar or approved equal to Lawler Model 4205 or Powers Series 420, with combination union angle stops, checks, strainers and chrome plated brass dome shield.
 2. Heights for lavatories are designated in Paragraph .04 of this section.

E. Lavatory for Handicap

1. Furnish and install a lavatory for handicap, including all accessories and supports, at the locations shown on drawings and as herein specified.
2. Lavatory shall be fabricated of type 304 (18-8), 18 gauge stainless steel and shall be Elkay Model No. ELVW02220 CSX or an approved equal. Overall size shall be 22" x 20", shall have overflow in rear, 2 1/2" backsplash, 2 1/2" apron and three holes on 2" centers to suit mounting of faucet. Size of bowl shall be 16" long x 11 1/2" wide x 5 1/2" deep and shall have 1 3/4" radius vertical and horizontal coved corners. Exposed surfaces shall have a uniform satin luster finish and underside of bowl shall be undercoated to provide a sound and condensation barrier. Wall hanger and stainless steel integral supporting brackets shall be furnished with lavatory.
3. Lavatory faucet shall be chrome plated cast brass metering faucet, Bradley Model 90-75, with double chrome plated zinc die cast handle and rubber diaphragm spray diffuser contained in a vandal resistant nozzle. Faucet shall be adjusted for a ten second flow cycle and shall require a force of five pounds or less for actuation as per ANSI A117.1-1980. Internal flow control shall be as per ASHRAE 90-75.

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15A-13.08 Lavatories (Cont.)

4. Lavatory drain shall be cast brass, polished chrome plated with captive grid, 1 1/4" x 4" long 17 gauge tailpiece and shall be T & S Brass Model B-899 or an approved equal.
5. Tailpiece shall be connected to heavy pattern chrome plated cast brass New York Regulations pattern trap having a 1 1/4" inlet and 1 1/2" outlet. Trap shall be Konler K-9010 or an approved equal.
6. Exposed hot and cold water piping shall be chrome plated. Provide and install chrome plated cast brass escutcheon plates for hot, cold and waste lines in accordance with Paragraph 15A-2.09
7. Furnish and install a polished chrome plated thermostatic mixing valve with combination union angle stops, checks, strainers and chrome plated lock shield dome. Mixing valve shall be: set for an outlet temperature of 105°F.; secured to wall in an approved manner; Lawler Model 4205 or an approved equal.
8. The integral supporting brackets of lavatory shall be bolted (2 bolts, each bracket) to a Jay R. Smith Fig. 648-M31 or an approved equal floor mounted type fixture support. The base of each fixture support leg shall be securely fastened to the floor slab in an approved manner.

F. Handicap Lavatory

1. Furnish and install a handicap lavatory including all accessories and supports, at the locations shown on drawings and as herein specified.
2. Handicap Lavatory shall be Bradley Model 1123 NYBE-REC for recessed installation and Model 1123NYBE-SM for surface mounted installation or approved equals.
3. Design shall permit sufficient clearance for comfortable usage of lavatory by persons in wheelchairs. Unit shall be factory assembled, tested, for proper operation, ready for connection to plumbing services. Unit shall have Bradley Model 90-75 metering faucet, thermostatic mixing valve, 1 1/2" 90 degree bath ell with stainless steel cover on bottom of bowl, and hinged access panel with vandal proof screws. Overall dimensions 17 1/8"W x 27 1/2"H with a 17 1/8" projection from finished wall surface (20 7/8" on surface mounted units). Unit to have 7/16" return flange with 4 corners soldered.

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For each fixture, this Contractor shall furnish and install a heavy pattern cast brass New York regulation trap conforming with the Building Code of New York City.

4. Material: Cabinet fabricated of type 304 (18-8) 22 gauge stainless steel, bowl of oval design 13 5/8"L x 10 1/8"W x 5"D fabricated of 18 gauge stainless steel, bowl apron fabricated of 18 gauge stainless steel.
5. Faucet shall be chrome plated cast brass metering faucet, Bradley Model 90-75, with double chrome plated zinc die cast handle and rubber diaphragm spray diffuser contained in a vandal resistant nozzle. Faucet shall be adjusted for a ten second flow cycle and shall require a force of five pounds or less for actuation as per ANSI A17.1-1980. Internal flow control shall be as per ASHRAE 90-75.
6. Each wash unit shall be furnished with a Bradley 222 Vernatherm Mixing Valve or an approved equal. Mixing valve shall be pre-set at the factory for a washing temperature of 105°F. Valve shall shut off immediately if either supply fails.
7. A mounting accessory shall be furnished and installed by this Contractor for each lavatory.

Note: Handicap Lavatories and mounting accessories shall be by the same manufacturer.

15A-13.09 Handicap Wash Centers

Furnish and install handicap wash centers where shown on drawings.

- A. Pre-assembled wash centers shall be Bradley Bradpack Model 1027 Modified; or an approved equal. Design shall permit sufficient clearance for comfortable usage of lavatory by persons in wheel chairs (see detail on drawings). Unit shall be factory assembled, tested for proper operation, ready for connection to plumbing services. Unit shall have Bradley Model 90-75 metering faucet, thermostatic mixing valve, 32" high mirror, medicine cabinet with two shelves, 800 multi-fold/C-fold towel dispenser with narrow opening, 100 oz. soap dispenser with Bradley Model S09-050 or an approved equal lather soap valve, access panel with hinge and vandalproof screws, stainless steel cover on bottom of bowl, 1 1/2" 90 degree bath ell with exposed portions to have stainless steel cover. Unit shall be less light and

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15A-13.09 Handicap Wash Centers (Cont.)

electrical. Unit to have 7/16" return flange soldered on 4 corners. Overall dimensions 62" high x 20" wide with a 17 1/2" projection from finished wall surface. For each fixture, this Contractor shall furnish and install a heavy pattern cast brass New York regulation trap conforming with the Building Code of New York City.

- B. Material: Cabinet fabrication of type 304 (18-8) 22 gauge stainless steel with exposed surfaces in architectural satin finish, bowl of rectangular design 14"L x 14"W x 5"D to be fabricated of 20 gauge stainless steel, bowl apron fabricated of 18 gauge stainless steel, spout interior to be brass with chrome-plated exterior, mirror of first quality 1/4" plate glass electrolytically copper plated.
- C. Faucet shall be vandal resistant chrome plated cast brass metering faucet, Bradley Model 90-75. Faucet shall be adjusted for a ten second flow cycle and shall require a force of five pounds or less for actuation as per ANSI A17.1-1980. Internal flow control shall be as per ASHRAE 90-75.
- D. Thermostatic Mixing Valve: Each wash center shall be furnished with a Bradley 222 Vernatherm Mixing Valve or an approved equal. Mixing valve shall be preset at the factory for washing temperature of 105°F. Valve shall shut off immediately if either supply fails.
- E. A mounting frame of 11 gauge steel as detailed on standard details shall be furnished and installed by this Contractor for each wash center.

NOTE: Handicap Wash Centers and mounting frames shall be of the same manufacturer.

15A-13.10 Combination Sink Bowl and Drinking Fountain Type "A"

- A. Furnish and install combination sink bowl and drinking fountain Type "A" Units for use by the handicapped where shown on drawings. Units shall be Elkay Mfg. Co. Model No. LK-BE10 or approved equal. Units shall be 18 gauge type 302 stainless steel with Elkay LK-6K satin finish and underside sound deadened. Each unit shall be furnished with stainless steel tubing legs having flange feet and 50 inches long wall hanger and shall be secured to metal studs in an approved manner. Approximate overall size shall be 60" x 25" having a sink depression of 19" x 16" and 4 1/2" deep and a drinking fountain receptor depression of 9 1/4" x 12" and 3 1/2" deep. Furnish and install Elkay LK-BE11 stainless steel piping enclosure beneath the sink unit. Enclosure shall be secured to wall in an approved manner.

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15A-13.11 Combination Sink Bowl and Drinking Fountain Type "A" Contd.

- B. Sink bowl shall be fitted with a chrome plated brass single lever faucet, having a 9 inch swing spout with vandal proof aerator and shall be Moen Model 7300 or approved equal. Chrome plated strainer and tailpiece shall be American Standard 4311.023, Elkay LK-18, Kohler K-8807 or approved equal.
- C. Bubbler for drinking fountain receptor shall be cast brass, polished chrome plated, heavy duty, vandal resistant bubbler and shall be Haws Model 5708 or approved equal. Control for bubbler shall be polished chrome plated, feather touch, vandal-resistant push-button valve with brass body and shall be Haws Model 5871 or approved equal. Chrome plated strainer and tailpiece shall be Elkay LK-8, American Standard 4362.026, Kohler K-8820, or approved equal.
- D. Furnish and install a polished chrome plated thermostatic mixing valve with combination union angle stops, checks, strainers and chrome plated lock shield dome. Mixing valve shall be: set for an outlet temperature of 105°F.; secured to wall in an approved manner; Lawler Model 4205 or an approved equal.
- E. Traps shall be 1 1/2" x 2" heavy pattern cast brass swivel type with front or side cleanout.

15A-13.11 Combination Sink Bowl and Drinking Fountain Type "B"

- A. Furnish and install a combination sink bowl and drinking fountain Type "B" at each location shown on drawings. Sink bowl and drinking fountain shall be Elkay Mfg. Co. No. DRKR-4022-R5 or DRKR-4022-L5 (depending on location of drinking fountain receptor), or approved equal and shall be 18 gauge, type 302 stainless steel with self rimming feature. Compartments in faucet ledge shall be recessed 3/16" below outside edge of sink. Exposed surfaces shall have a uniform LK-6K-H satin finish. Entire underside shall be sound deadened. Approximate overall size shall be 40" x 22" having a sink bowl depression size of 19" x 16" x 7 1/2" deep and a drinking fountain receptor depression size of 9 1/4" x 12" x 3 1/2" deep. The sink bowl and drinking fountain depressions shall have a minimum of 6" of separation between the two closest edges. The extended back ledge shall have three holes for a water supply fitting; the sink bowl depression shall have a 3 1/2" opening and the drinking fountain depression shall have a 2 3/16" opening.

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- B. Sink bowl shall be fitted with a chrome plated heavy brass combination faucet, with swing spout, vandal proof aerator and indexed handles and shall be American Standard 4146.130, Kohler K-7761-TL, or approved equal. Chrome plated strainer and tailpiece shall be American Standard 4311.023, Elkay LK-18, Kohler K-8807 or approved equal.
- C. Bubbler for drinking fountain receptor shall be cast brass, polished chrome plated, heavy duty, vandal resistant bubbler and shall be Haws Model 5708 or approved equal. Control for bubbler shall be polished chrome plated, feather touch, vandal-resistant push-button valve with brass body and shall be Haws Model 5871 or approved equal. Chrome plated strainer and tailpiece shall be Elkay LK-8, American Standard 4362.026, Kohler K-8820, or approved equal.
- D. The sinks shall be supplied with hot and cold water through branches of 1/2-inch brass pipes extended from nearest supplies as indicated on drawings. Provide 1/2-inch brass gate or angle valves close to the supplies for each sink.
- E. Traps shall be 1 1/2" x 2" heavy pattern cast brass swivel type with front or side cleanout.
- F. Self rim type stainless steel sinks shall meet the following:
 - 1. Corning silicone rubber bath and tub sealant shall be applied under entire sink edge.
 - 2. Mounting channels with openings for insertion of clamps shall be welded to underside of sink on all sides.
 - 3. Mounting studs and clamping clips with teeth grips shall be inserted in the channels and tightened as required to insure proper seating of sink edge. Spring type push on clips will not be acceptable as mounting clips.
 - 4. Sufficient clamps shall be spaced around all edges with a maximum distance of eleven (11) inches between clamps.
 - 5. All excess sealant shall be removed from around sink edge leaving a clean sealed appearance.

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15A-13.11 Combination Sink Bowl and Drinking Fountain Type 'B' (Cont.)

3. For kindergartens, furnish and install a Lawler Model 4205, Powers Series 420, or an approved equal thermostatic mixing valve with combination union angle stops, checks, strainers and chrome plated brass dome shield.

NOTE: Cabinet, sink top, back and end splashers will be furnished and installed by the G.C. Contractor. The P & D Contractor shall furnish to the G.C. Contractor the recommended size and shape for the counter top opening. After the General Construction Contractor has installed the sink top, the P & D Contractor shall set the sink bowl into the Formica top in a workmanlike manner and fully connect to water supply and waste piping including fittings specified above.

15A-13.12 Sink Bowls and Trim for Cabinets

A. General

1. Cabinet, top, back and end splashers will be furnished and installed by the G.C. Contractor.
2. The P & D Contractor shall furnish to the G.C. Contractor a template showing size of sink opening.
3. Sink bowls shall be furnished and set by Plumbing and Drainage Contractor. Bowls shall be back ledge type 18-gauge stainless steel of double or single compartment and shall be as manufactured by Elkay Mfg. Co., or approved equal. Sizes shall be as herein specified.
4. Sink bowls shall be drilled for and fitted with a combination faucet with vandal proof aerator. Combination faucet shall be furnished and installed by this Contractor and shall be American Standard 4146.130, Kohler K-7761-TL, or approved equal. This Contractor shall also furnish and install American Standard 4331.013, Kohler K-8801, or an approved equal stainless steel strainer and stopper with 17 gauge chrome plated tailpiece.
5. The underside of sink bowls shall be coated with approved moisture and fireproof sound deadening material.
6. After the G.C. Contractor has installed the sink top, the P & D Contractor shall set the sink bowl into the plastic laminate top in a workmanlike manner and make final connections to water supply and waste piping including all pipes, trim and fitting as herein specified.

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15A-13.11 Sink Bowls and Trim for Cabinets (Cont.)

7. Sink bowls shall be supplied with hot and cold water through branches of 1/2 inch brass or T.P. copper pipes extended from nearest supplies as indicated on drawings and each branch shall be valved within and below the table top of sink compartment.
8. All visible trim shall be furnished in polished chrome.
9. Traps shall be 2 inch heavy pattern cast brass New York regulation pattern trap weighing at least four pounds and provided with heavy brass tap screw.
10. Sink bowls shall be self rimming type and shall meet the requirements specified in .11F of this section.

B. Size of Sink Bowls

- Type (P) - Double compartment bowl, overall (32" by 21"). Each bowl inside dimension shall be 14" by 15 1/2" by 7 1/2" deep.
- Type (Q) - Single compartment bowl, overall (24" by 21"). Inside dimensions shall be 21" by 15 1/2" by 7 1/2" deep.
- Type (R) - Single compartment bowl, overall (17" by 14"). Inside dimensions shall be 12" by 12" by 7 1/2" deep.
- Type (S) - Single compartment bowl, overall (32" by 21"). Inside dimensions shall be 28" by 16" by 7 1/2" deep.
- Type (T) - Single compartment bowl 16 gauge s/s, overall size shall be 30" by 24" by 10" deep with Elkay-35 basket strainer similar to Elkay drawing No. LK-280-151-XA-2R or 2L, check with contract drawing, each supplied with deck mount laboratory service fitting with swing gooseneck, Water Saver Faucet Co. LR2210 of vandal resistant quality and two cold self-closing deck faucets similar to Kohler K-7500. A 2" sediment trap Wade W-5742 shall also be furnished and installed as indicated on plans.

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15A-13.13 Sink Top (Integral Single Sink Bowl and Top)

- A. Type "A" shall be 31" by 49 1/2".
- B. Cabinet shall be furnished and installed by the General Construction Contractor. After the cabinet has been installed, the Plumbing and Drainage Contractor shall: furnish and secure the sink top to the cabinet; furnish and install all piping, fittings, traps, valves and trim and make final connections to water supply, vent and drainage systems.
- C. Sink top, including end splashes when required, shall be 16 gauge Type 302 stainless steel with satin finish, manufactured by Elkay Mfg. Co. or approved equal and model number shall be as indicated on drawings. Each sinktop shall be furnished with two self closing faucets with vandal resistant aerators, one combination faucet with vandal resistant aerator and one sink strainer with 1 1/2" x 4" tailpiece. Self closing faucets shall be T & S Model B-2257, water saver VR-903-SCAE or approved equal and both handles shall have cold designations. Combination faucet shall have hot and cold handles and shall be T & S Model BL-2010-1, Water Saver VR-515-55, or approved equal. Sink strainer with tailpiece shall be Elkay LK-18, Eljer 803-0570, Kohler K-8807 or approved equal. Exposed trim shall be chrome plated brass. The hot and cold brass supplies to faucets shall be supplied through angle stop valves located within the wood cabinet below. The sink bowl shall drain through a 2" sediment trap, Wade W-5742 or approved equal, also located within the confines of the wood cabinet.

15A-13.14 Sink Top (Integral Double Sink Bowl and Top)

- A. Type "B" shall be 31" by 72".
- B. Type "C" shall be 31" by 96".
- C. Cabinet shall be furnished and installed by the General Construction Contractor. After the cabinet has been installed, the Plumbing and Drainage Contractor shall: furnish and secure the sink top to the cabinet; furnish and install all piping, fittings, traps, valves and trim and make final connections to water supply, vent and drainage systems.

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15A-13.14 Sink Top (Integral Double Sink Bowl and Top)

- D. Sink top, including end splashers when required, shall be 16 gauge type 302 stainless steel with satin finish, manufactured by Elkay Mfg. Co. or approved equal and model number shall be as indicated on drawings. Each sink top shall be furnished with four self closing faucets with vandal resistant aerators, two combination faucets with vandal resistant aerators and two sink strainers with 1 1/2" x 4" tailpieces. Self closing faucets shall be T & S Model B-2257 Water Saver VR-903-SCAE or approved equal and four handles shall have cold designations. Combination faucets shall have hot and cold handles and shall be T & S Model BL-2010-1, Water Saver VR-515-55, or approved equal. Sink strainer with tailpiece shall be Elkay LK-18, Eljer 803-0570, Kohler K-8807, or approved equal. Exposed trim shall be chrome plated brass. The hot and cold brass supplies to faucets shall be supplied through angle stop valves and the double sink bowls for each sink top shall drain through a single 2 inch sediment trap, Wade W-5742 or approved equal, all as shown on drawings.

15A-13.15 Art Science Cabinet Sink

- A. The cabinet and sink top with drillings will be furnished and installed by the General Construction Contractor and he will also furnish the necessary information for the Plumbing and Drainage Contractor to install his equipment as herein specified. This information will include center line locations of cabinet sinks in rooms and center line locations of trim. The Plumbing and Drainage Contractor shall furnish the General Construction Contractor the required sizes for drilling.
- B. After the cabinet sink has been installed, the Plumbing and Drainage Contractor shall furnish and install all piping, fittings, traps, trim, valves, cocks, etc. and make final connections to the drainage, vent, water supply and gas piping systems. Each sink shall be fitted with one gooseneck combination faucet having a vandal resistant aerator and hot and cold designated handles, one gas cock and one sink strainer with tailpiece. Faucet shall be T & S Model BL-2012-1, Water Saver VR-512-55, or approved equal. The gas cock shall be T & S Model BL-2013-1, Water Saver VR-2900-158, or approved equal and shall be located on splash back of sink top 6" from right hand end and 4 1/4" above counter top. The branch supply to gas cock and the hot and cold brass supplies to faucet shall each be fitted with an angle stop valve, all located within the wood cabinet. Sink strainer with tailpiece shall be Elkay LK-18, Eljer 803-0570, Kohler K-8807, or approved equal. Exposed trim shall be chrome plated brass. Sink bowl shall drain through a 2" sediment trap, Wade W-5742 or approved equal, also located within the wood cabinet.

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15A-13.16 Dark Room Sink (Graphic Arts)

Furnish and install a 14 gauge stainless steel dark room sink, Elkay Model No. EWM-2620X or approved equal, where shown on drawings. Sink shall be furnished with T & S Model BL-5775-1 or approved equal mixing faucet and Elkay LK-18-B or approved equal stainless steel drain fitting and tailpiece.

15A-13.17 Wash Sinks

- A. Type "A," Type "B," and Type "C" wash sinks shall be of acid resisting porcelain enameled cast iron of size shown on the drawings and provided with back drillings to allow for (3) spray faucets for 4'-0" wash sinks and (4) spray faucets for 6'-0" wash sinks. The 6'-0" (Type "A"), 4'-0" (Type "B") and 4'-0" (Type "C") wash sinks shall be Kohler K-3200 or approved equal and shall be modified as per Standard Details. All exposed pipe and fittings shall be chrome plated.
- B. The wash sink shall be supplied with warm water (105°F.) from a Lawler Model 4210 or approved equal polished chrome plated thermostatic mixing valve with chrome plated brass dome shield. Faucet shall be Speakman S-4100-NYC (with brass yoke assembly), T & S Brass and Bronze Works No. B-800 with volume and flow regulator, or approved equal.
- C. The wash sinks shall be set at heights above floor as per schedule, see Par. .04 this section.
- D. Wash sinks shall be provided with concealed wall hangers, and enameled iron pedestals, unless otherwise indicated.
- E. When sinks without pedestals are indicated on drawings, replace the wall hanger with a J.R. Smith Fig. 850 or approved equal sink support.
- F. The Type "C" wash sink shall be provided with a Wade No. W-5742 or approved equal sediment trap in place of "P" trap. Pedestal and wall hanger shall be replaced with J.R. Smith Fig. 850 or approved equal sink support.

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15A-13.18 Barrier-Free Wash Fountains

- A. Where indicated on drawings, furnish and install barrier-free wash fountains as herein described.
- B. Wash fountains shall be Bradley 36" CHC Tri-Fount or approved equal. Bowl and pedestal shall be precast terrazzo construction of 85% stone, 15% binder, structurally reinforced, ground, polished, and finished with clear epoxy coating. Fixture dimensions shall be: 36" wide, 26" deep and 40" high. Height of rim above finished floor shall be 34". Bottom of rim above finished floor shall be 29 1/2".
- C. Pre-assembled bowl module shall consist of receptor with backsplash and spray head and shall be factory pre-piped and tested.
- D. Integral spray head shall be equipped with three front-serviced metering valves with all components enclosed in a replaceable Bradley 90-75 style cartridge. Timing shall be field adjustable from 5 - 20 seconds. Each of three nozzles shall deliver .5 GPM and shall be independently controlled by a separate push button valve that requires less than five pounds of pressure to activate a safe, tempered flow of water. Valving shall include Bradley combination stop, strainer, check valves and a Bradley No. 222 Vernatherm thermostatic mixing valve. Mixing valve shall be preset at the factory for a washing temperature of 105°F. Valve shall shut off immediately if either water supply fails.
- E. Fountain shall include two Bradley Model S09-046 vandal resistant horizontal liquid soap dispensing valves, backsplash mounted and supplied from a two gallon soap tank in pedestal.
- F. Pedestal shall consist of stainless steel framework, precast terrazzo side panels and front access, vandal-resistant, 16 gauge stainless steel enclosure panel.
- G. The pedestal of each fountain shall be secured to the floor with 1/2 inch anchor bolts and each bowl anchor bracket shall be secured to the wall in an approved manner.

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- A. Type "A" service sinks shall be of acid resisting cast iron porcelain enameled inside, 24 x 20 x 12 inches deep, with roll rim (furnished with stainless steel guard on front and sides) and integral back, set on vertically adjustable iron trap standard 3 inches in diameter provided with a cleanout and brass wall escutcheon. Sinks shall be provided with heavy pattern polished brass waste plug and strainer, supplied with hot and cold water through 1/2-inch heavy brass long shank self-closing flange bibbs, T & S Brass and Bronze Works Inc. No. B-708 WA or approved equal. Hot and cold supplies to service sinks shall be 3/4" brass or TP copper pipe. The waste and vent pipes shall be of size shown. Sinks shall be Kohler K-671b, Eljer 242-0155 or approved equal. The strainer and the bibbs shall be polished brass, chromium-plated directly on the brass. Service sinks in Boiler Room and wherever else called for shall be galvanized iron.
- B. Type "B" service sinks shall be as specified in Par. (A) above, but shall be 22" x 18". Sinks shall be Kohler K-671b, Eljer 242-0150, or approved equal.
- C. Type "C" service sink shall be of acid resisting cast iron, porcelain enameled, 22 x 18 x 12 inches deep, Kohler K-671b, Eljer 242-0120 or approved equal, (furnished with stainless steel guard on front and side) set on vertically adjustable iron trap, standard 2 inches in diameter, provided with a clean out and brass wall escutcheon. Sink shall be provided with heavy pattern, polished brass waste plug and strainer. Furnish and install an approved rigid type combination faucet, 4'-0" above floor. The faucet shall be a 1/2" supply fitting equipped with integral vacuum breaker and stops, renewable seats, heavy cast brass spout braced to wall for rigid support and shall be Speakman SC-5611, Water Saver VR-769, T & S Brass and Bronze Works Inc. No. B-1958, American Standard 8344.111, or approved equal. Faucet shall have a hose end and shall be furnished with a 2 foot length of 4 ply, rubber hose, connected to hose end of faucet.

15A-13.20 Mop Service Basin

- A. Furnish and install one-piece precast Terrazzo Mop Service Basins of the sizes and at the locations shown on the drawings. Mop Service Basins shall be Powers-Fiat Corp. Model TSB-12 or an approved equal. Shoulders shall be not less than 2-inches wide with stainless steel protective cap cast integral on all exposed sides.

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15A-13.20 Mop Service Basin (Cont.)

- B. Drain body shall be chrome plated brass, cast integral, and shall provide for a caulked lead connection to a 3-inch pipe. Removable strainer plate shall be chrome plated brass.
- C. Terrazzo shall be made of marble chips cast in gray portland cement to produce a compressive strength of not less than 3000 PSI seven days after casting. Terrazzo surface shall be ground and polished with all air holes and pits grouted and any excess removed.
- D. Furnish and install over each mop service basin an approved rigid type combination faucet 4'-0" above floor. The faucet shall be 1/2" supply fitting equipped with integral vacuum breaker, integral stops, renewable seats, heavy cast brass spout braced to wall with rigid support and shall be: American Standard 8344.111; Water Saver VR-769; Speakman SC-5811; T & S Brass and Bronze Works Inc., B-1958; or an approved equal. Faucet shall have a hose thread and shall be furnished with four foot length of 4-ply rubber hose connected to nose end of faucet.

15A-13.21 Trim for Science Sinks and Science Tables

A. General

- 1. The General Construction Contractor will furnish and install the table top, cabinet and sink units with drillings. The General Construction Contractor will furnish to the P. & D. Contractor the information necessary for the P. & D. Contractor to properly install his equipment. This information will include center line locations of units in room and trim locations. The P & D Contractor shall furnish the G.C. Contractor the required sizes for drillings.
- 2. The P & D Contractor shall furnish and install all piping, trim, waste plugs, traps, valves, cocks, etc. to completely install and connect the tables to the drainage, water supply, gas system, etc.
- 3. The P & D Contractor shall furnish and install on each hot, cold and gas branch an insulating coupling similar or approved equal to Walter Vallett Co. of Detroit, Michigan, located within and below the table top of each sink compartment.
- 4. Each hot, cold and gas branch shall be valved within and below the table top of each sink compartment.
- 5. All visible trim shall be furnished in polished chrome.

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6. The quantity and type of trim required for each table and/or sink shall be as herein specified.
7. All water faucets and gas cocks shall be T & S Brass and Bronze Works or Water Saver Faucet Co. of Chicago, figure numbers as given or approved equal. Serrated hose ends on faucets and gas cocks into turrets shall be cemented with "Loc-Tite." Aerators shall be vandal proof type.
8. Strainers, overflows, adapters, outlets, traps, shall be Durion Mechanical Joint Acid Resisting Drain Pipe and Fittings, Bulletin No. PF/68 figure numbers as given or approved equal.

Note: Sink outlets shall be connected to drum traps by "Hub To Mechanical Joint" adapters.
9. Submit shop drawings for approval of all trim and accessories for each type of table and/or sink.

B. Types of Science Sinks and Science Tables

1. S10 (Laboratory Sink).
One duplex cold water faucets, T & S Brass and Bronze Works, B-2254, Water Saver Faucet Co. VR-766.

Two (2) two-way 90° gas cocks, T & S Brass and Bronze Works BL-4203-0, Water Saver Faucet Co. VR-132-A.

Beehive style sink overflow, No. AY 13983B.
2" Drum-Trap, No. SA3862AAOO or SA3863AAOO.
Sink outlet No. FE1005.
2. S11 (Laboratory Sink)

Two (2) faucets with serrated tip, T & S Brass and Bronze Works B-2251, Water Saver Faucet Co. VR-903-VB.

Beehive style sink overflow, No. AY 13983B.
2" Drum-trap No. SA3862AAOO or SA3863AAOO.
Sink outlet, No. FE1005.
3. S12 (Laboratory Sink)

Same items as for S11.
4. S13 (Laboratory Sink)

Combination faucet with aerator and hot and cold handles, T & S Brass and Bronze Works BL-2010-1, Water Saver Faucet Co. VR-515-55.

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15A-13.21 Trim for Science Links and Science Tables (Cont.)

Beehive style sink overflow, No. AY 13983B.
2" Drum-Trap No. SA3862AAOO or SA3863AAOO.
Sink outlet No. FE1005.

Liquid Soap Dispenser, 40 oz. as per Section 15A-14.03 (B)

5. S14 (Laboratory Sink)

Same items as for S13, except no soap dispenser required.

6. S15 (Laboratory Sink)

Two (2) individual cold water faucets, T & S Brass and Bronze Works B-2252 and B-2253 or Water Saver Faucet Co. VR-631-VB-90R and VR-631-VB-90L. Handles on faucets shall face outward from each other..

Beehive style sink overflow, No. AY 13983B.
2" Drum-trap No. SA3862AAOO or SA3863AAOO.
Sink outlet No. FE1005.

7. T10 (Instructor's Table Type A)

See Standard Detail for trim and accessories. Material of waste outlet (acid, or non-acid) shall be as indicated on plans.

8. T11 (Science Table)

Three (3) pairs of individual cold water faucets. Each pair shall have T & S Brass and Bronze works B-2252 and B-2253 faucets or Water Saver VR-631-VB-90R and VR-631-VB-90L faucets. Handles on each pair of faucets shall face outward from each other.

Two (2) two-way 90° gas cocks, T & S Brass and Bronze Works BL-4203-0, Water Saver Faucet Co. VR-132-A.

Two (2) single cocks, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131.

Three (3) Beehive style sink overflows, No. AY13983B.
Three (3) 2" Drum-traps, No. SA3862AAOO or SA3863AAOO.
Three (3) Sink outlets, No. FE1005.

9. T12 (Science Table)

Two (2) individual cold water faucets, T & S Brass and Bronze Works B-2258, Water Saver Faucet Co. VR-631-VB-180.

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15-13.1. Trim for Science Sinks and Science Tables Cont.

Two (2) two-way 180° gas cocks, T & S Brass and Bronze Works, BL-4203-2, Water Saver Faucet Co. VR-132-S.

Beehive style sink overflow, No. AY13983b
2" Drum-Trap, No. SA3862AA00 or SA3863AA00
Sink outlet, No. FE1005

10. T13 (Science Table)

One duplex hot and cold water faucets, T & S Brass and Bronze Works, B-2259, Water Saver Faucet Co. VR-766.

Four (4) single gas cocks, T & S Brass and Bronze Works, BL-4203-1, Water Saver Faucet Co. VR-131, mounted vertically.

Beehive style sink overflow, No. AY13983B.
2" Drum-trap, No. SA3862AA00 or SA3863AA00.
Sink outlet, No. FE1005.

11. T14 (Science Table)

One duplex hot and cold water faucets, T & S Brass and Bronze Works, B-2259, Water Saver Faucet Co. VR-766.

Two (2) single gas cocks, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131.

Beehive style sink overflow, No. AY13983B.
2" Drum-trap, No. SA3862AA00 or SA3863AA00.
Sink outlet, No. FE1005.

12. T15 (Science Table)

Two (2) single gas cocks mounted vertically, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131.

13. T16 (Science Table)

Same items as for T13.

14. T17 (Science Table)

Same items as for T14 except four (4) single gas cocks mounted vertically, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131.

15. T18 (Science Table)

Four (4) single gas cocks mounted vertically, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131.

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15A-13.11 Trim for Science Sinks and Science Tables (Cont.)

16. T19 (Science Table)

Same items as for T13 except two (2) single gas cocks, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131, mounted vertically, in lieu of (4) single gas cocks.

17. T20 (Science Table)

Same items as for T12 except four (4) single gas cocks, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131, mounted vertically, in lieu of (2) two-way 180° gas cocks.

18. T21 (Science Table)

Same items as T14 except four (4) single gas cocks, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131, mounted vertically, in lieu of (2) single gas cocks.

19. T22 (Science Table)

One (1) single gas cock, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131.

20. T23 (Science Table)

One (1) two-way 90° gas cocks, T & S Brass and Bronze Works BL-4203-0, Water Saver Faucet Co. VR-132-A.

21. T24 (Science Table)

Five (5) pairs of individual cold water faucets. Each pair shall have T & S Brass and bronze works B-2252 and B-2253 faucets or Water Saver VR-631-VB-90R and VR-631-VB-90L faucets. Handles on each pair of faucets shall face outward from each other.

Two (2) two-way 90° gas cocks, T & S Brass and Bronze Works BL-4203-0, Water Saver Faucet Co. VR-132-A.

Six (6) single gas cocks, T & S Brass and Bronze Works BL-4203-1, Water Saver Faucet Co. VR-131.

Five (5) Beehive style sink overflows, No. AY13983B.

Five (5) 2" Drum-traps, No. SA3862AA00 or SA3863AA00.

Five (5) Sink outlets, No. PE1005.

Five (5) 1 1/2" x 2" adapters, No. BS26346AB.

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15A-13.22 Eye Wash Sink

Eye wash sinks shall be Speakman SE-400 or approved equal and shall be furnished and installed complete with: mounting brackets, stainless steel bowl, protective shields covering solid cast brass water ways, 1/2" full flow valve activated by push handle, supply line strainers with removable stainless steel filter elements, 1 1/2" chrome plated brass tailpiece and 1 1/2" chrome plated cast brass trap. Furnish and install a J.R. Smith Fig. 800 fixture support or approved equal to support eye wash sink.

15A-13.23 Bathtubs

- A. Where indicated on drawings, furnish and install enameled cast-iron bathtubs, including bath filler and shower combination with concealed 1/2 inch thermostatic mixing valve, 1 1/2 inch pop-up drain fitting, curtain rod, hold back hook and chain. Size of bathtub and location of outlet shall be as shown on drawings.
- B. Bathtub 5' long shall be American Standard 2605.103, 2607.109; Kohler K-505-S, K-506-S; or approved equal.
- C. Bathtub 5 1/2' long shall American Standard 2185.403, 2187.409; Kohler K-515-S, K-516-S; or approved equal.

15A-13.24 Drinking Fountain

- A. Furnish and install the type of drinking fountains, including accessories, shown on drawings and as specified hereinafter.
 - 1. Drinking fountains, except pedestal models, shall be wall mounted. All fountains shall be furnished and installed with: chrome plated strainer and tailpiece, heavy duty vandal-resistant chrome plated bubbler, automatic stream pressure regulator, self-closing push button valves, 1/2" IPS concealed supply with screw driver stop, 1 1/2" IPS cast brass trap. Furnish and install mounting brackets and vandal-resistant bottom plates on wall mounted fountains. All exposed fittings shall be polished chrome plated.
 - 2. All bubblers shall be: polished chrome plated cast brass; with shielded anti-squirt angle stream; with integral basin shank and vandal-resistant mounting, locknut and washer; Haws Model 5708 or approved equal.
 - 3. All valves shall be Haws Model 5871 or approved equal polished chrome plated, brass body, feather-touch, vandal-resistant push button valves.
- B. This Contractor shall furnish and install a floor mounted type fixture support to support each wall mounted drinking fountain.

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NOTE: Where floor slab is on earth or is constructed of reinforced concrete, drinking fountain support bases shall be securely fastened to the floor slab, utilizing all support openings provided, with approved anchor bolts and shields. For all other types of slab construction, including cinder concrete, support bases shall be secured with bolts through the floor slab and with fish plates and nuts on underside of slab.

C. Types of Drinking Fountains

NOTE: All drinking fountains shall be modified with copper interior water supply piping.

1. Type "A" (Single Bubbler) shall be vitreous china, Haws Model 1201BOE modified with feather-touch, vandal-resistant push button valve or approved equal. Vandal-resistant bottom plate shall be Haws Model VP11 or approved equal. Floor mounted fixture support shall be Jay R. Smith Fig. 810-M31 or approved equal.
2. Type "B" (Two Bubbler) shall be enameled iron, Haws Model 1430 or approved equal. Vandal-resistant bottom plate shall be Haws Model VP-17 or approved equal. Floor mounted type fixture support shall be Jay R. Smith Fig. 823-M31 or approved equal.
3. Type "C" (Three Bubbler) shall be enameled iron, Haws Model 1435 or approved equal. Vandal resistant bottom plate shall be Haws Model VP16 or approved equal. Floor mounted type fixture support shall be Jay R. Smith 823-M31 or approved equal.
4. Type "D" (single Bubbler) shall be vitreous china, semi-recessed, Haws Model 2200 modified with feather-touch, vandal-resistant push button valve or approved equal. Trap shall be installed with cleanout to wall.
5. Type "E" (Semi-Recessed Single Bubbler Drinking Fountain/Cuspidor Combination) shall be vitreous china, Haws Model 2203 or approved equal. Fountain shall be modified with feather-touch, vandal-resistant push button valve. Furnish and install supply piping for cuspidor flushing. Traps shall be installed with cleanout to wall.

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6. Type "F" (Single Bubbler, Pedestal Model) for use in outside areas shall be Haws Model 3120 or approved equal. Fountain shall have a square pedestal constructed of precast reinforced concrete in natural color with exposed aggregate finish. Bubbler shall be mounted on a stainless steel receptor that is surrounded by an extension of the precast stone pedestal to deter bubbler damage or destruction. The receptor shall be recessed flush with concrete top to prevent tampering and shall be anchored to pedestal with vandal-resistant bowl holder. A feather-touch push-button valve with automatic stream regulation, for activating bubbler, shall have a heavy gauge stainless steel access plate that is secured in place with vandal-resistant screws. This Contractor shall also furnish all labor and materials to mount drinking fountain as shown on drawings.

15A-13.35 Barrier-Free Drinking Fountains

- A. Furnish and install barrier-free type drinking fountains, including accessories, where shown on drawings and as specified hereinafter.
- B. This Contractor shall furnish and install a floor mounted type fixture support to support each wall mounted fountain.

NOTE: Where floor slab is on earth or is constructed of reinforced concrete, drinking fountain support bases shall be securely fastened to the floor slab, utilizing all support openings provided, with approved anchor bolts and shields. For all other types of slab construction, including cinder concrete, support bases shall be secured with bolts through the floor slab and with fish plates and nuts on underside of slab.

C. Types of Barrier-Free Drinking Fountain

Type 1 (Single Bubbler):

1. Drinking fountain shall be Haws Model 1201BOE, modified with copper interior water supply piping, or approved equal. Drinking fountain shall be vitreous china, wall mounted, and shall be furnished with: mounting brackets, vandal-resistant bubbler, automatic stream pressure regulator, self closing push button valve, chrome plated strainer and 1 1/2" brass chrome plated tailpiece, 1 1/2" cast brass trap. Cold water supply shall be 1/2" brass piping controlled by 1/2" screw driver stop. All exposed fittings shall be chrome plated.
2. Bubbler shall be: polished chrome plated cast brass; vandal-resistant; shielded anti-squirt angle stream with integral basin shank and vandal-resistant mounting, lock nut and washer; Haws Model 5708 or approved equal.

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3. Fountain shall be modified with self-closing feather-touch push button valve, Haws Model 5871 or approved equal.
4. Fountain shall be furnished and installed with Haws Model VP11 vandal-resistant bottom plate or an approved equal.
5. This Contractor shall furnish and install a floor mounted type fixture support to support drinking fountain. Fixture support shall be Jay R. Smith Fig., 810-M31 or an approved equal.

Type 2 (Single Bubbler):

1. Drinking Fountain shall be Elkay Model EHFD or an approved equal. - Fountain shall be wall mounted and shall be furnished with: mounting brackets, strainer, 1 1/4" diameter tailpiece, self-closing push-bar and automatic stream control bubbler as herein described. Cold water supply shall be 1/2 inch brass piping controlled by straight loose key stop. Waste and trap shall be 1 1/2 inch brass. All exposed fittings and trim shall be chrome plated.
2. One-piece backsplash and basin shall be type 302 stainless steel, not less than 20 gauge, polished to a lustrous satin finish.
3. Cabinet shall be not less than 20 gauge steel with sandalwood vinyl finish.
4. Flexi-Guard Bubbler by Elkay or an approved equal, shall be strong, abrasion resistant and shall meet U.L. requirements and all sanitary codes. - An in-line flow regulator shall automatically maintain constant stream height from bubbler at line pressures of 20 to 100 PSI. A self-closing extra wide push-bar for feather-touch water control shall be located on front of unit.
5. Straight stop with loose key shall be Kohler K-7670 or an approved equal.
6. Furnish and install chrome plated brass escutcheon plates for fixture cold supply and waste line. Escutcheons shall be Elcen Metal Products 600 or an approved equal.
7. Furnish and install a floor mounted type fixture support to support drinking fountain. Support shall be Jay R. Smith Fig. 830-M31 or an approved equal.

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Type 3 (Single Bubbler, Pedestal Type):

1. Fountains shall be Haws Model 3176 or approved equal, for use in outside areas and shall be mounted 33" from ground level to rim. Each fountain shall be complete with: pedestal, receptor, bubbler, push-button valves with automatic stream regulation, 1/2" screwdriver stop and tailpiece with strainer, washers and locknut.
2. Pedestals shall be constructed of precast reinforced concrete, in natural color with exposed aggregate finish. Each pedestal shall also be furnished with vandal-resistant access plate and heavy-gauge steel mounting plate with four 1/2" diameter mounting holes.
3. Bubblers shall be Haws Model 5708, polished chrome plated cast brass, heavy-duty, anti-squirt, vandal-resistant bubblers.
4. Each bubbler shall be mounted on a stainless steel receptor and surrounded by an extension of the precast stone pedestal to deter bubbler damage or destruction. The receptor shall be recessed flush with concrete top to prevent tampering and shall be anchored to pedestal with vandal-resistant bowl holder. Two feather-touch push-button valves with automatic stream regulation, for either right or left hand operation, shall activate the bubbler.
5. This Contractor shall provide and set concrete blocks and shall furnish all labor, materials and mounting hardware to mount drinking fountains as shown on drawings.

15A-13.26 Electric Water Cooler (Wall Mount)

- A. Furnish and install an electric water cooler where shown on drawings and as herein specified.
- B. Electric water cooler shall be Elkay Model EWA-14 or an approved equal. Cooler shall be wall mounted and shall be furnished with: mounting brackets, glass filler, built in strainer, 1 1/4" diameter tailpiece and automatic stream control projector with separate push-button control. Cold water supply shall be 1/2 inch brass piping controlled by straight loose key stop. Waste and trap shall be 1 1/2 inch brass. All exposed fittings and trim shall be chrome plated.
- C. Cooler shall deliver 14 GPH of 50°F. drinking water at 80°F. inlet water and 90°F. ambient.

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15A-13.16 Electric Water Cooler (Wall Mount) (Cont.)

- D. Cabinet shall be not less than 20 gauge welded steel with grey-beige finish.
- E. Fountain top shall be one piece, 20 gauge, type 302 stainless steel, with splash resistant surface.
- F. Glass filler shall be Elkay Push Button Type Model LK-110 or an approved equal.
- G. Automatic stream control projector shall be Flexi-Guard Bubbler by Elkay or an approved equal. Bubbler shall be strong, abrasion resistant and shall meet U.L. requirements and all sanitary codes. An in-line flow regulator shall automatically maintain constant stream height from bubbler at line pressures of 20 to 100 PSI.
- H. Motor compressor shall: be hermetically sealed, reciprocating type, 1/5 HP, 115 V, 60 hertz single phase; have sealed in life-time oil supply; be equipped with electric cord and three prong molded rubber plug.
- I. Cooling unit shall be combination tube-tank type and shall be all copper. Shall be fully insulated with polyurethane foam which meets Underwriters Laboratories requirements for self extinguishing plastic Group III.
- J. Refrigerant shall be controlled by accurately calibrated capillary tube for positive trouble free performance.
- K. Enclosed adjustable temperature control thermostat shall be factory preset and shall require no adjustment other than for altitude requirements.
- L. Compressor and hermetically sealed refrigeration system shall have a five year warranty.
- M. Straight stop with loose key shall be Kohler K-7670 or an approved equal.
- N. Furnish and install a heavy pattern cast brass New York regulation trap conforming with the Building Code of New York City.
- O. Furnish and install chrome plated brass escutcheon plates for fixture cold supply and waste line. Escutcheons shall be Elcen Metal Products Fig. 600 or an approved equal.

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- B. Furnish and install a floor mounted type fixture support to support drinking fountain. Support shall be Jay R. Smith Fig. 830-M31 or an approved equal.

NOTE: Where floor slab is on earth or is constructed of reinforced concrete, drinking fountain support bases shall be securely fastened to the floor slab, utilizing all support openings provided, with approved anchor bolts and shields. For all other types of slab construction, including cinder concrete, support bases shall be secured with bolts through the floor slab and with fish plates and nuts on underside of slab.

15A-13.27 Barrier-Free Electric Water Cooler

- A. Furnish and install a barrier-free electric water cooler for the handicapped where shown on drawings and as specified hereinafter.
- B. Electric water cooler shall be Elkay Model EHF-8 or an approved equal. Cooler shall be wall mounted and shall be furnished with: mounting brackets, strainer, 1 1/4" diameter tailpiece, self-closing push-bar and automatic stream control projector as herein described. Cold water supply shall be 1/2 inch brass piping controlled by straight loose key stop. Waste and trap shall be 1 1/2 inch brass. All exposed fittings and trim shall be chrome plated.
- C. One-piece backsplash and basin shall be type 302 stainless steel, not less than 20 gauge, polished to a lustrous satin finish.
- D. Cabinet shall be not less than 20 gauge steel with grey-beige vinyl finish.
- E. Cooler shall deliver 8 GPH of 50°F drinking water at 80°F inlet water and 90°F ambient.
- F. Motor compressor shall: be hermetically sealed, reciprocating type, 1/5 HP, 115 V, 60 hertz single phase; have sealed in life-time oil supply; be equipped with electric cord and three prong molded rubber plug.
- G. Cooling unit shall be combination tube-tank type and shall be all copper. Shall be fully insulated with polyurethane foam which meets Underwriters Laboratories requirements for self extinguishing plastic Group III.
- H. Refrigerant shall be controlled by accurately calibrated capillary tube for positive trouble free performance.
- I. Enclosed adjustable temperature control thermostat shall be factory preset and shall require no adjustment other than for altitude requirements.

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15A-13.27 Barrier-Free Electric Water Cooler (Cont.)

- J. Compressor and hermetically sealed refrigerant system shall have a five year warranty.
- K. Flexi-Guard Bubbler by Elkay or an approved equal, shall be strong, abrasion resistant and shall meet U.L. requirements and all sanitary codes. An in-line flow regulator shall automatically maintain constant stream height from bubbler at line pressures of 20 to 100 PSI. A self-closing extra wide push-bar for feather-touch water control shall be located on front of unit.
- L. Straight stop with loose key shall be Kohler K-7670 or an approved equal.
- M. Furnish and install chrome plated brass escutcheon plates for fixture cold supply and waste line. Escutcheons shall be Elcen Metal Products Fig. 600 or an approved equal.
- N. Furnish and install a heavy pattern cast brass New York regulation trap conforming with the Building Code of New York City.
- O. Furnish and install a floor mounted type fixture support to support electric water cooler. Support shall be Jay R. Smith Fig. 830-M31 or an approved equal.

NOTE: Where floor slab is on earth or is constructed of reinforced concrete, drinking fountain support bases shall be securely fastened to the floor slab, utilizing all support openings provided, with approved anchor bolts and shields. For all other types of slab construction, including cinder concrete, support bases shall be secured with bolts through the floor slab and with fish plates and nuts on underside of slab.

15A-13.28 Dental Cuspidor

Where future dental cuspidor is indicated on drawings the water, air waste and gas connections shall end with caps in a box, in the floor slab provided by the General Contractor. The gas and water connections shall be 1/2-inch and the waste 1 1/2-inch with trap on ceiling below. When cuspidor is indicated as required for present installation the Plumbing and Drainage Contractor shall obtain template from Electrical Contractor and he shall fully install the cuspidor, with required water, gas, and waste piping connections, including copper tubing for compressed air, the copper tubing shall be Type L, with copper sweat fittings. Provide union connections for all lines.

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A. Shower Head (Group or Gang)

Shower head shall be a heavy cast brass chrome plated self cleaning shower head set approximately 6'-0" above the floor and shall have a tamper proof stream that is adjusted by means of a socket wrench or key. Shower head shall be furnished and installed with back plate and through bolts and shall be Speakman S-2260-AF-BP, Symmons 4-151-B-3, or approved equal. Submit shop drawings for approval.

B. Shower Head (Individual)

Shower head shall be heavy cast brass, chrome plated, self cleaning and shall have a one-way ball joint. Shower head shall be Bradley Model No. 445-2.5FC-1BJ or approved equal and shall be furnished and installed approximately 6'-0" above the floor with back plate, couplings, studs and nuts. Submit shop drawings for approval.

C. Shower Control Valve

Each shower head shall be supplied from a thermostatic control valve that is set 4'-0" above the floor. The thermostatic mixing valve (TMV) for individual showers shall be non-scalding with temperature limit stop, concealed screw driver stop and check valves. Thermostatic valve for concealed piping shall be Powers Type 425 Standard, Lawler Series 3500, Leonard LVC-FS, or approved equal. Thermostatic valve for exposed piping shall be Powers Type 423 Standard, Lawler Model 4205, Leonard LVC-EFS, or approved equal. Valves, shower heads and branch piping when exposed shall be chrome plated. Submit shop drawings for approval.

D. When indicated on plans, use a master mixing valve with cabinet in conjunction with a pressure balancing control valve at each shower head as herein described, in lieu of thermostatic control valves. Submit shop drawings for approval.

1. The master mixing valve of the size indicated on plans shall be Leonard "TM;" Powers "Series 430 Hydroguard;" Lawler "Series 66" or other approved equal.

2. The master mixing valve shall be installed in a recessed type stainless steel cabinet of the size, gauge and finishes indicated on drawings similar or approved equal to Powers Regulator Co. "Series 430 Hydroguard" with lock. Provide four (4) keys with tag attached to each key ring stamped "Shower Control." Cabinet shall come assembled with a cold water supply valve, standard 4" dial thermometer, graduated from 0° - 200° F. as detailed.

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3. Control valve at each shower head shall be of the pressure type, automatically compensating for sudden changes of pressure. Valves shall be equipped with integral check stops, temperature limit stop, C.P. brass handle and escutcheon. Visible screws shall be vandal proof. Valve shall be Speakman "Sentinal" S-1735-M-IS-VR; Symmons "Safety Mix" 4-500X-VP; or other approved equal. Valves shall be set 4'-0" above the floor.
- E. For built-in shower compartments and for shower rooms, furnish and install a Type "A" drain with round adjustable strainer of high polished nickel bronze as specified in Paragraph 15A-7.07 of the Standard. For enameled iron shower cabinet with terrazzo base, the drain shall be as described under (G) of this paragraph.
- F. Shower Curtain and Rod with End Flanges
1. On all shower enclosures and girls' shower drying compartments, furnish and install type 304 stainless steel, satin finish shower curtain rods with end flanges. Rods shall be 1-1/4" in diameter, 18 gauge, Model No. 1206-A and end flanges shall be 2-7/8" minimum diameter, 11 gauge, model No. 1207-A, all as manufactured by American Specialties Inc. or approved equal. Rod with end flanges shall be secured in place with vandal proof stainless steel screws.
 2. Furnish and install shower curtains at all shower stalls, and girls' shower drying compartments. The curtains shall be made of eight oz. white duck pre-shrunk hemmed top and bottom. Top hem shall be fitted with chromium plated brass grommets, spaced equally, not over 6 inches on centers with chromium plated shower curtain rings. The side edges of curtains shall be selvage finished. Curtains shall be of length to hang down to floor of shower stalls and shall be 12 inches wider than the opening it is to close. The exact size of the curtains shall be determined from measurements taken at buildings after rods have been set in place.
- G. Shower Cabinet
1. Where indicated on plans, furnish and install a 36" c 36" x 82" high shower cabinet. The cabinet shall be: Model LFO-36 (the Luxor) by Global Steel Products; Model S-86 (The Commander) as manufactured by Powers Fiat Corp.; or an approved equal. All walls shall be double wall construction, consisting of 20-gauge galvanized-bonderized

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steel panels with rounded corners inside and water impervious insulated core. Cabinet shall be finished in white synthetic baked-on enamel. Panels shall be joined with anodized aluminum extruded molding. Core shall be water impervious insulation permanently bonded to walls with water impervious adhesive and all field-assembled joints shall be of double barrier type to assure leakproof connections.

2. Receptor shall be one piece 6" high terrazzo of white cement with black and white marble chips. Flange, cast integral, shall be galvanized-bonderized steel and shall extend no less than 1 1/2" above the shoulder. Brass drain with removable stainless steel strainer plate shall be integrally cast. A bronze chrome plated soap dish shall also be provided.
3. This Contractor shall furnish and install additional trim required for shower cabinet such as shower head, thermostatic mixing valve, shower rod, shower curtain, etc., all as herein described and specified.

15A-13.30 Emergency Shower

- A. Where shown on drawings, furnish and install emergency showers complete with self-closing, non-clogging, solid brass deluge shower head, self closing valve with chain and pull ring and interconnecting fittings.
- B. Types of emergency shower shall be as follows:
 1. Ceiling mounted shall be Speakman SE-206 or approved equal.
 2. Wall mounted shall be Speakman SE-225 or approved equal.

15A-13.31 Medicine Cabinet

- A. Furnish and install in approved manner a recessed medicine cabinet at the applicable designation listed below in par. (B) and at all locations indicated on plans or specified in Amendments, the overall dimensions of which shall be a minimum of 16" by 26" or as specified. When cabinets are installed back to back they shall be 3" deep. The cabinet shall be made of 22 gauge, type 304 stainless steel welded into an integral whole with no visible joints on the face. Corners to be ground smooth and rough edges eliminated. Door shall be made of 22 gauge, type 304 stainless steel and shall be neatly designed with chrome plated brass or stainless steel frames to hold the mirror in place. Rubber bumpers are to be provided to prevent noise

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15A-13.31 Medicine Cabinets (Cont.)

and damaging shocks. The top of the cabinet shall be approximately 6'-0" above the finished floor. Medicine cabinets shall be provided with full mirror doors 16" x 26" (minimum).

B. Medicine Cabinets (Location)

| | |
|---------------------------------------|-------------|
| Principals Office Toilet | All Schools |
| District Superintendent Office Toilet | All Schools |

Health Instructors Office Toilet All Schools
Receptacle type electric lights (Electric Contract) are required over all Medicine Cabinets.

C. This Contractor shall provide the General Construction Contractor with size of opening in wall and locations of same.

D. The mirror shall be 16" by 26" minimum of No. 1 quality polished plate glass 1/4" thick and properly electro copper plated and water-proofed.

E. All exposed screws, bolts, etc., required for installation shall be chrome plated. Four 22 gauge, type 304 stainless steel shelves, supported on suitable brackets shall be furnished. The brackets must be adjustable to various heights.

F. Visible surfaces shall be satin finish stainless steel.

G. Medicine cabinet shall be Bobrick B-398, Bradley 175 or approved equal.

H. Medicine cabinets shall be surface mounted type when called for in Amendments.

I. The Plumbing and Drainage Contractor shall furnish the General Construction Contractor with metal frames for medicine cabinets of the type shown on Standard Detail.

J. Contractor shall submit shop drawings of cabinet for approval of the Executive Director before installation.

15A-13.32 Wall Mirrors

A. This Contractor shall furnish and install plate glass metal framed mirrors and mirror with shelf combinations at the locations as directed by the Executive Director and as indicated in the following schedules:

Note: Size and location of mirrors and mirror with shelf combinations for fixtures used by the handicapped shall be as shown on drawings or as specified in Amendments.

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15A-11.00 Wall Mirrors Cont.

| <u>Location</u> | <u>Schools</u> | <u>Description</u> | <u>Quantity</u> |
|---------------------------|---------------------|--------------------|---|
| Boys Toilet | All | Mirror | 1 Between each 2 Lavatories |
| Girls Toilet | All | Mir. & Shelf Comb. | 1 Between each 2 Lavatories |
| Girls Locker Room | Intermediate School | Mir. & Shelf Comb. | 4 |
| Boys Locker Room | Intermediate School | Mirrors | 4 |
| Girls Locker Room | High School | Mir. & Shelf Comb. | 10 |
| Boys Locker Room | High School | Mirrors | one at each end of each Locker Bank, Min. of 10 |
| Playground Toilet | | Mirror | 1 |
| Library Work Room | All | Mirror | 1 (over cab. sink) |
| Athletic Team Locker Room | High School | Mirror | 1 |
| Kindergarten Toilet | Public | No Mirror | |
| Teachers Rest Room | All | Mir. & Shelf Comb. | 1 |

B. Mirrors shall be 1/4" thick, polished plate glass, properly electro-copper plated and waterproofed with metal backing. Mirrors shall have type 304 satin finish stainless steel frames with heliarc-welded ground smooth corners and shall be secured to wall surfaces where directed with concealed hangers with theft-proof locking device. Size of mirrors over fixtures used by handicapped shall be as shown on drawings or specified in Amendments. All other mirrors shall be 16" wide x 20" high. Mirrors shall be Bobrick B-290 Series, Bradley 700 Series, or approved equal.

C. The mirror and shelf combination shall be 16" x 20" mirror, specified in Paragraph (B), and a 5" x 16" type 304 stainless steel shelf with satin finish. Mirror and shelf combination shall be Bobrick Model No. B-292-1620, Bradley Model No. 705-1620, or approved equal. Secure to wall with concealed hangers and theftproof locking device.

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15A-13.31 Wall Mirrors (Cont.)

D. Unless otherwise shown on drawings, the bottoms of mirrors for fixtures used by the handicapped shall be set 40-inches above the finished floor. For all other fixtures, the tops of mirrors shall be set above the finished floor as follows:

- | | |
|-------------------------------------|------------|
| 1. Primary Schools for Pupils: | 58-inches. |
| 2. Intermediate Schools for Pupils: | 68-inches. |
| 3. High Schools for Pupils: | 72-inches. |
| 4. All Schools for Adults: | 72-inches. |

E. Shop drawings shall be submitted for approval before installation.

15A-13.33 Fixture Protection

This Contractor shall protect all plumbing fixtures until final acceptance, both before and after installation, against damage and injury from building materials, acid, tools and equipment by means of substantial covers. Fixtures damaged through any cause shall be replaced at no cost to the Board of Education after the responsibility therefore has been established by the Executive Director.

15A-13.34 Cleaning Up

After all plumbing fixtures including Kitchen fixtures to be provided by this Contractor have been set and connected, and when directed by the Executive Director, this Contractor shall thoroughly clean the same, removing all plaster, paint, stickers, rust stains and any foreign matter or discolorations on fixtures and leave every part in perfect condition and ready for use. All rough brass shall be cleaned with carbon tetrachloride to remove grease.

15A-13.35 Acid Neutralizing Sump

- A. When indicated on drawings, furnish and install an acid neutralizing sump, of size shown on plan, manufactured by Knightware or approved equal, complete with an initial charge of white marble chips, to a depth of invert of outlet pipe. (Note: Hood to be on outlet side of sump.) For sign in conjunction with sump, see Section 15A-20.05.
- B. When indicated on drawings, furnish and install an individual acid neutralizing sump under each science and laboratory sink. Sump shall be as manufactured by Knightware or approved equal and shall be furnished with an initial charge of white marble chips as stated in Paragraph A above.
- C. Plumbing and Drainage Contractor shall furnish to the custodian, sufficient marble chips for (3) recharges for each acid neutralizing sump. Shop drawings of all acid neutralizing sumps, before installation, must be submitted and approved.

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LIQUID SOAP DISPENSERS

15A-14.01 General Requirements

- A. This Contractor shall furnish and install liquid soap dispensing valves supplied by gravity from tanks together with all piping and fittings required for same at all shower heads for gang or group showers and at all additional locations indicated on drawings or specified in the Amendments. This Contractor shall also furnish and install individual soap dispensers with integral valves at all class room sinks, cabinet sinks, lavatories, shower heads for individual showers, and at all additional locations indicated on drawings or specified in the Amendments. This Contractor shall furnish and install soap dispensing equipment for wash sinks as indicated on Standard Details.
- B. Shop drawings of all liquid soap tanks, valves, individual soap dispensers with integral valves and multi-purpose units shall be submitted for approval before installation.

15A-14.02 Liquid Soap Tanks

- A. Liquid soap tanks shall be Bobrick B-925, Bradley No. 612, or approved equal. Tanks shall have a capacity of 2 1/2 to 3 gallons; shall be constructed of minimum 24 gauge, type 304 (18-8) stainless steel with satin finish. Each tank shall be provided with combination shut-off chromium plated brass cock and union with 3/8" I.P.S. outlet connection attached to a flange. The filling opening shall be 1" diameter minimum with closing cover and each tank shall also be provided with a vandal proof capacity level indicating device. Provide three bolts in plate welded to back of tank to permit flush mounting of tank to wall with bolts extended through wall and with fish plates, washers and nuts on opposite side of wall. Submit installation drawings for approval before installation.
- B. A 2 1/2 gallon tank shall be provided over each wash sink, shop sinks and wherever else indicated on plans or specified. The tank shall be flush mounted 7 feet above floor and at center line of fixture. When soap tank is used for central distribution in Shower Rooms, each shower head shall be provided with an individual dispenser valve. The valve dispensers for shower heads shall be located 3'-6" above floor and 1'-0" to right of center of shower head.

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Liquid Soap Dispensers

15A-14.03 Liquid Soap Dispensers

- A. Each liquid soap dispenser shall have a minimum capacity of 40-oz., shall be constructed of minimum No. 20 gauge type 18-6 stainless steel, shall be equipped with an unbreakable window or vandal proof level indicating device, and shall be provided with a lather soap valve to conform to the specifications herein stated. A vandal proof concealed wall hanger and fastener shall also be provided.
- B. The 40-oz. liquid soap dispensers at lavatories and other fixtures specified in Paragraph .01 of this section, excluding fixtures used by the handicapped, shall be located at a height 4 inches above the back of the fixture and half way between the center line of the fixture and right hand faucet. When mirror with shelf prevents this installation, use an approved horizontal type and locate the dispenser at a suitable height to clear shelf for dispenser removal.
- C. The 40-oz. liquid soap dispensers at fixtures used by the handicapped shall be located as follows:
 1. Lavatory for Handicap: See detail on drawings.
 2. Handicap Lavatory: See Standard Detail P-6.
 3. Combination Sink Bowl and Drinking Fountain Type "A":

The soap dispenser shall be located 7" to the right of the center line of the sink bowl depression and at a height of 40 inches from the dispensing valve to the finished floor.
- D. Liquid soap dispensers shall be the following models or approved equal. Submit shop drawings for approval.
 1. Vertical Type: Bobrick B-146; Bradley 6562-13; American Specialties Inc. 0343A.
 2. Horizontal Type: Bobrick B-147; Bradley 6542-13; American Specialties Inc. 0342A.

15A-14.04 Liquid Soap Dispensing Valves

- A. Valves shall be Bobrick No. B-864, Bradley No. 6074-13, or approved equal. Valves shall dispense liquid soap in lather form according to Federal Spec. FF-396 (Latest Edition) and shall have a lather to liquid ratio of not less than 15 using soap as per Federal Spec. PS624.

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Liquid Soap Dispensers

15A-14.04 Liquid Soap Dispensing Valves (Cont.)

- B. The valve shall be constructed of chrome plated brass or stainless steel with all internal working parts in contact with soap of stainless steel or nylon. The valve button shall be theft-proof.

15A-14.05 Liquid Soap Piping and Hangers

- A. The piping shall be extended from tanks concealed in partitions or pipe spaces. All concealed piping shall be standard weight black steel with banded malleable iron fittings. All exposed pipe and fittings shall be brass, chrome plated. All piping shall be 3/8 inch.
- B. All piping must be securely fastened to wall with approved straps and toggle expansion bolts and all visible parts shall be chrome plated.

15A-14.06 Multi-Purpose Unit

- A. Multi-Purpose Units (MPU) shall be Sobrick B-330.41, Bradley No. 130-13, or approved equal and shall be furnished and installed by this Contractor at locations as directed by the Executive Director and as indicated in the following schedule:

Note: Furnish and install multi-purpose units at all additional locations as shown on drawings or specified in Amendments.

| <u>Location</u> | <u>Schools</u> | <u>Description</u> | <u>Quantity</u> |
|-----------------------|----------------|--------------------|----------------------|
| Women's Public Toilet | All | Multi-Purpose Unit | 1 over each lavatory |
| Men's Public Toilet | All | Multi-Purpose Unit | 1 over each lavatory |
| Teacher Toilet M & F | All | Multi-Purpose Unit | 1 over each lavatory |
| Medical Office Toilet | All | Multi-Purpose Unit | 1 over each lavatory |
| Medical Office | All | Multi-Purpose Unit | 1 over each lavatory |
| Dental Office | All | Multi-Purpose Unit | 1 over each lavatory |
| Custodians Office | All | Multi-Purpose Unit | 1 over each lavatory |
| Duplicating Room | All | Multi-Purpose Unit | 1 over each lavatory |
| Dieticians Office | IS & HS | Multi-Purpose Unit | 1 over each lavatory |
| Custodians Helps | | | |
| Locker Room Toilets | All | Multi-Purpose Unit | 1 over each lavatory |
| Cafeteria Helps | | | |
| Locker Room Toilets | All | Multi-Purpose Unit | 1 over each lavatory |
| Teachers Rest Room | | | |
| Infirmary | All | Multi-Purpose Unit | 1 over each lavatory |
| Audio Visual Center | All | Multi-Purpose Unit | 1 over each lavatory |

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Liquid Soap Dispensers

- B. Multi-Purpose Unit shall be recessed and shall incorporate mirror, paper towel dispenser, shelf and liquid soap dispenser. Unit shall be constructed entirely of 18-8 (type 304) 22 gauge stainless steel, all welded construction. All exposed surfaces of unit shall be satin finish. Flange shall be drawn, one piece seamless construction. Mirror shall be No. 1 quality 1/4" plate glass, electrolytically copper backed, polished edge mirror, fully protected with padding. 10 year guarantee against silver spoilage. Dimensions: 14 7/8" wide x 18" high. Mirror shall be mounted in door secured to cabinet with full length stainless steel piano hinge. Door shall be 18-8 (type 304) 22 gauge stainless steel and equipped with vandal proof tumbler lock. Soap vessel shall be 18-8 (type 304) 22 gauge stainless steel with a capacity of 3 quarts 5 fluid ounces with or without an unbreakable lexan refill indicator and shall have a liquid soap dispensing valve as described in Par. 15A-14.04 of the Standard Specification. Soap vessel shall be equipped with a vandal proof filler top with special key. The paper towel dispenser shall be 18-8 (type 304) 22 gauge stainless steel and adaptable to dispense multi-fold towels (800) or C-fold towels (500).
- C. A stainless steel frame shall be furnished and installed for each unit as detailed on plans. Recess for units shall be provided by the Contractor for General Construction. Top of recess shall be 72" above finished floor.

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Liquid Soap Dispensers

SECTION 15A-15

PAINTING

15A-15.01 Painting Materials

1. All painting materials shall be delivered on the premises in original sealed containers with unbroken seals.
2. All painting materials shall be factory mixed.
3. Varnish containers shall not exceed 1 gallon capacity.
4. All containers shall have labels stating the name and trade brand and address of the manufacturer and the appropriate Federal Specification number.
5. Contractors shall submit notarized certifications that all paint materials comply with the latest revised Federal Specifications.
6. Paint materials and Federal Specifications shall be as noted below.

| | |
|---|---------------|
| Turpentine | TT-T-801-a |
| Mineral Spirits | TT-T-291c |
| Linseed Oil (Boiled) | TT-L-190c |
| Aluminum Paint (Ready Mixed) | TT-P-38a (1) |
| Interior Flat Paint (Oil) | TT-P-51e |
| Interior Flat Paint (Alkyd) | TT-P-30b |
| Interior Flat Paint (Latex) | TT-P-29b |
| Primer Coating (Alkyd) | TT-P-636c (1) |
| Primer Paint, Zinc Chromate Alkyd | TT-P-645 |
| Gloss Enamel | TT-E-489d (1) |
| Galvanized Iron Primer | TT-P-641d |
| Asphaltum Varnish | TT-V-51c |
| Shellac | TT-S-300 |
| Machine Enamel | Approved |

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15A-15.02 Storage of Materials

1. Store only in assigned spaces.
2. Spaces to be maintained in clean condition, safe from fire hazards.
3. Containers to be kept tightly closed.
4. Floors to be protected with drop cloths or building paper.
5. Oily rags, waste and empty containers shall be removed from site each night.
6. Superintendent to be provided with one (1) key for each space if spaces are to be kept locked when not in use.
7. Fire extinguisher to be kept available at all times.

15A-15.03 Workmanship

A. Preparation

1. Clean all surfaces before painting to properly receive finish.
2. Remove all foreign matter.
3. Remove oil or grease with mineral spirits and detergent.

B. Painting

1. No work shall be performed in spaces which are not broom clean and free of dust and waste.
2. Apply paint materials to provide smooth finished surfaces, free of brush or roller marks, drips, runs and sags.
3. Paint materials shall be kept at proper and uniform consistency.
4. Thin only when necessary to achieve best results. Thinners shall be Turpentine, mineral spirits or material recommended by manufacturers of paint and in quantity as recommended.
5. Thinning of varnish or aluminum paint is prohibited.

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C. Protection of Surfaces

Provide coverings or drop cloths to protect all surfaces and all other work from splatterings, drippings or other defacement.

15A-15.04 Painting Schedule

Note: All items installed by the plumbing contractor shall be painted as herein specified. Plumbing items installed in hung ceilings, partitions and inaccessible furled out spaces, including covered piping and fittings also enameled or porcelain fixtures chrome plated items, baked enamel, polished brass and other items whose finishes are described in their respected paragraphs, shall be excluded from painting.

A. Uncovered Pipe

All uncovered drain (storm and sanitary), hangers and supports, exposed valves unions, etc., shall receive one (1) coat of zinc chromate primer paint and one (1) coat of aluminum.

B. Galvanized Sheet Metal, Steel Pipe

1. All exposed galvanized steel pipe and galvanized sheet metal in toilet pipe spaces and other unfinished spaces shall receive one (1) coat of galvanized iron primer and one (1) coat of aluminum.
2. All exposed galvanized steel pipe and galvanized sheet metal in finishing rooms or spaces shall receive one (1) coat of galvanized iron primer and necessary coating of flat interior paint, or enamel to match adjoining surfaces.
3. All galvanized steel or brass pipe placed underground, after test is completed, shall be painted one (1) coat of primer and two (2) coats of asphalt paint.
4. All exposed galvanized and brass traps, waste and supply pipes, escutcheons, etc., under fixtures, brackets and exterior surfaces of iron drinking fountains, sinks, service sinks, exterior surfaces of wash tubs and metal casings in all rooms shall receive one (1) coat of primer, one (1) coat of flat interior paint and one (1) coat of enamel, color as directed.

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15A-15.04 Painting Schedule (Cont.)

C. Gas Pipe

1. All exposed gas pipe in basement or cellar shall receive one (1) coat of zinc chromate primer paint and one (1) coat of aluminum.
2. All exposed gas pipe in finished spaces shall receive one (1) coat of zinc chromate primer paint and necessary coating of flat or enamel to match adjoining surfaces.

D. Covered Pipe

1. Coverings on all piping and fittings in Boiler Room and on all reservoirs, pressure tanks and heaters shall be given two (2) coats of latex fire retardant paint. Color of paint shall be light gray.
2. Coverings on all piping and fittings in finished spaces shall be given two (2) coats of latex fire retardant paint, the color of which shall match the adjacent surroundings. Fire retardant paint shall be Chessman-Elliott Co., Glidden, PPG Industries or other U.S. listed approved equal.

E. Fire Standpipe System

Exposed and concealed piping shall be primed with one (1) coat zinc chromate and one (1) coat red enamel paint.

15A-15.05 Stenciling

The supply piping coverings shall be stenciled with the words "Cold, Hot, Circ. Booster Hot, Booster Hot Circ. Warm, Press Cold" as the case may be. Piping for fire standpipe system shall be stenciled with the word "Standpipe" and piping for gas shall be stenciled with the word "Gas". The letters shall be black and one (1) inch high. In the cellar the lettering shall be at intervals of ten (10) feet, on each riser and on each floor, and on the branches from the risers as necessary for identification.

SECTION 15A-16

COVERINGS

15A-16.01 General Requirements

A. The Contractor for Plumbing and Drainage shall furnish and install non-conducting coverings on the following piping and apparatus installed by him in the manner specified hereinafter. For performing this work, he shall employ a sub-contractor specializing and experienced in covering work and approved by the Executive Director. All coverings, adhesives, mastics, cements, etc., shall be asbestos free.

B. Prior Tests

Piping, apparatus, etc. shall be tested before non-conducting covering is applied to them.

C. N.Y.C. Building Code

All insulation, vapor barriers, as well as the adhesives and finishing facings or jackets used herewith shall have a flame spread rating not over 25 without evidence of continued progressive combustion, and shall have a smoke developed rating not higher than 50. Flame spread rating and smoke developed rating shall be as defined in the N.Y.C. Building Code. All materials installed shall have composite fire and smoke hazard ratings to meet requirements of that Code.

D. Piping and Apparatus to be Covered

The following shall be covered:

1. All concealed and exposed hot water supply piping (which is not laid in the ground) including circulation and booster piping, tempered water piping, flanges, fittings and valves.
2. All concealed and exposed cold water supply piping (which is not laid in the ground) including flanges, fittings and valves.
3. All concealed and exposed horizontal runs and off-sets of storm water, acid waste and sanitary drainage piping (which is not laid in the ground) including fittings and vertical off-sets.

Note: All exposed polypropylene acid waste and vent piping, including fittings, shall be covered. All concealed polypropylene acid waste and vent piping shall not be covered.

Section 15A-16
Coverings

15A-16.01 General Requirements (Cont.)

4. Hot water reservoirs, booster heaters, pressure tanks, etc.
5. All drainage, soil, waste, water and gas piping which is exposed to freezing due to location in exterior walls or building or other causes.

Note: Exposed supply and waste connections under plumbing and kitchen fixtures shall not be covered.

E. Approved Manufacturers

Insulation manufactured by Certain-Teed Corp., Johns-Manville or Owens Corning Fiberglass Corp., complying with the requirements of the specifications will be approved. Adhesives manufactured by Benjamin Foster Co., or Insul-Coastic (Division of Birma Products Corp.) complying with the requirements of the specifications will be approved. All insulating materials, adhesives, etc. shall be delivered to the project in containers and/or cartons which are clearly marked with the manufacturer's name and brand.

15A-16.02 Thermal Insulation for Piping

- A. All piping insulation shall be one-piece moulded sectional fiberglass having a nominal 4-pound density. Its thermal conductivity shall not exceed 0.23 at 75°F. mean temperature. It shall be suitable for use on piping up to 370°F. Insulation for hot water piping shall be 1 inch thick for pipe sizes up to and including 3 inches and shall be 1 1/2 inches thick for larger pipe sizes. Insulation for cold water piping and polypropylene piping shall be 1 inch thick for pipe sizes up to and including 2 inches, and shall be 1 1/2 inches thick for larger pipe sizes. Insulation for horizontal runs and off-sets including fittings and vertical off-sets of soil, waste, and storm water piping shall be of the thickness specified for cold water piping. Insulation shall be applied to clean, dry surfaces, with insulation joints firmly butted together.
- B. Valves, fittings, etc. for hot water piping shall be insulated as follows:
 1. For pipe sizes smaller than 4 inches, one of the following ways shall be used:
 - (a) Apply insulating cement to a thickness equal to adjoining pipe insulation and trowel to a smooth finish.

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- (b) Wrap firmly under a minimum of a 3:1 compression, with 1 pound density fiberglass blanket, to a thickness equal to adjoining insulation. Secure with No. 20 gauge galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
2. For pipe sizes 4 inches and larger, fit segments of pipe insulation equal in thickness to adjoining insulation and secure with No. 20 gauge galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
 3. In lieu of the foregoing methods, the use of pre-moulded fiberglass fittings of the same thickness of adjoining pipe insulation will be accepted. Finish with a smooth coat of insulating cement.
- C. Valves, fittings, etc. for cold water piping, drainage piping, including polypropylene piping shall be insulated as follows:
1. For pipe sizes smaller than 4 inches wrap firmly under a minimum of a 3:1 compression, with 1 pound density fiberglass blanket, to a thickness equal to adjoining insulation. Secure with No. 20 gauge galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
 2. For pipe sizes 4 inches and larger, fit segments of pipe insulation equal in thickness to adjoining insulation and secure with No. 20 gauge galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
 3. In lieu of the foregoing methods, the use of pre-moulded fiberglass fittings of the same thickness of adjoining pipe insulation will be accepted. Finish with a smooth coat of insulating cement.
- D. All water meters shall be covered with a 1 inch thick 1.5 pound density fiberglass blanket. Over this insulation use a 2 inch hexagonal galvanized mesh wire, tightly stretched and secured in place with edges tied together. Finish with an approved insulating cement 1/4 inch thick in one coat, troweled to a smooth finish.

15A-16.03 ~~Feelings~~ ^{Linings} or Jackets

- A. Paper laminated jackets shall be permanently treated to retain its flame spread and smoke developed rating. Chemicals used for treating paper jacket laminates shall not be water soluble and shall be unaffected by water and humidity. All insulation installed on piping shall have a facing or jacket as herein specified:

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1. Hot Water Piping - Insulation on concealed and exposed hot water piping shall have a jacket of white kraft paper outer surface bonded to aluminum foil and reinforced with fiberglass yarn. Longitudinal laps shall be secured with outward clinch coated 9/16 inch staples on 4 inch maximum centers. Each edge and end lap of butt strips shall also be stapled. Insulation shall be additionally secured with 3/4 inch wide aluminum bands, installed on 12 inch (maximum) centers. Valves, fittings, etc., shall have a jacket of fiberglass fitting cloth smoothly adhered with lagging adhesive. Lap cloth on itself and adjoining insulation: 1 inch lap on 3 inch and smaller pipe, and 2 inches on larger pipe sizes.
2. Cold Water Piping and Polypropylene Piping - Insulation on piping shall have a vapor barrier jacket of white kraft paper outer surface bonded to aluminum foil and reinforced with fiberglass yarn. Longitudinal laps and butt strips shall be smoothly secured with insulation adhesive. Vapor barrier jackets on insulation must be applied with a continuous unbroken vapor seal. The use of staples on vapor barrier jacketed insulation is not permitted. Insulation on valves, fittings, water meter, etc., shall be vapor sealed by applying glass cloth embedded between two 1/16 inch thick coats of vapor barrier coating. Lap seal glass cloth at least 2 inches on itself and the adjoining insulation.
3. Horizontal Drainage Lines - Insulation on horizontal runs and off-sets including fittings, vertical off-sets of soil, waste, acid waste and storm water piping shall have a vapor barrier jacket as described for cold water piping, see Paragraph .03A2 of this section.

- Notes:
1. The use of pipe insulation having a "self-sealing" lap and "self-sealing" lap strips also is acceptable.
 2. The contractor shall provide special protection at all points of support by using inserts between the pipes and pipe supports. These inserts shall consist of rigid calcium silicate pipe insulation having a minimum 12 pound density and of thickness equal to adjoining insulation and shall be provided with vapor barrier where required. The length of inserts shall be not less than 12 inches. Galvanized metal shields shall be applied between supports and inserts. Thickness of shields shall be 18 gauge for pipe sizes up to and including 5 inches and 16 gauge for larger size pipes. Shields shall be formed to fit the insulation and

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Coverings

15A-16.03 Facings or Jackets (Cont.)

shall extend up to the center line of the pipe and of the length specified for the inserts. Metal shields shall be Carpenter & Paterson Fig. 265P, Elcen No. 219, or an approved equal.

15A-16.04 Protection Against Freezing

Where the drawings indicate piping to be frost proofed, it shall be insulated with two layers of moulded fiberglass pipe insulation. Thickness of each layer shall be 1 inch thick for pipe sizes up to and including 2 inches and 1 1/2 inches thick for larger pipe sizes. The outer layer shall be jacketed as specified for cold water piping in Paragraph .03A2 of this section. The final insulation shall be protected with not lighter than 0.016 inch aluminum casing. Where this piping is installed within a furred enclosure, the casing shall be omitted.

15A-16.05 Covering for Hot Water Reservoirs, Booster Heaters, Pressure Tanks

Hot water reservoirs, booster heaters and pressure tanks shall be covered with 1 1/2 inch thick calcium silicate blocks tightly butted and joints staggered. Blocks shall be held in place with No. 12 gauge galvanized steel annealed wire on 12 inch maximum centers. Where required, welded studs, clips or angles shall be provided as anchors for wires. Over the insulation, 1 inch hexagonal galvanized wire mesh shall be tightly stretched in place and secured by wiring to anchors, with edges tied together. Finish with 1/2 inch thick insulating and finishing cement applied in one coat, troweled to a smooth finish.

15A-16.06 Building Alterations

Any insulation disturbed or damaged by this Contractor during the progress of building alterations shall be replaced by him as part of his contract.

Section 15A-16
Coverings

LAWN WATERING SYSTEM

15A-17.01 General

As shown on drawings, furnish and install a lawn sprinkler system, washdown system, or combination lawn sprinkler and washdown system.

NOTE: This entire watering system shall be installed with a minimum of 18 inches of cover; set with a constant pitch sufficient to gravity drain all lines.

The system shall include all pipe, fittings, valves, pumps, reduced pressure backflow preventer, pits, couplers, sprinklers, hoses, etc., as specified, indicated on drawings and in accordance with the Municipal Code including all amendments.

Unless otherwise indicated on drawings, all piping and fittings on discharge side of reduced pressure zone backflow preventer shall be unthreaded, Schedule 80 Poly (vinyl chloride) (PVC) pipe and fittings.

15A-17.02 Poly Vinyl Chloride (PVC) Pipe, Fittings and Joints

- A. Piping shall be in accordance with the requirements of Paragraph 15A-5.11B of the Standard.
- B. Fittings shall be in accordance with the requirements of Paragraph 15A-5.13H of the Standard.
- C. Joints for PVC pipe and fittings shall be in accordance with the requirements of Paragraph 15A-2.04L of the Standard.

15A-17.03 The following items are required for the washdown system. Item "A." shall be furnished and installed by this Contractor. Items "B." through "F." shall be furnished and delivered by this Contractor to a location in the school as directed by the Custodian or his representative. Threaded items shall be furnished with iron pipe size threads. All items shall be manufactured by Potter-Roemer Inc. or approved equal.

- A. 1 1/2", U.L. listed, cast brass angle valves, Fig. 4060 (female inlet and male outlet). One valve for each valve pit as shown on drawings. Each angle valve shall be installed with a Fig. 4615 1 1/2" cast brass pin lug cap and chain secured to valve.

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Lawn Watering System

- B. Fig. 44-NC-44, all polyester neoprene covered single jacket, rubber lined, 1 1/2" hose. Four (4) lengths of one hundred (100) foot hose are required. Each hose shall be furnished with cast brass, 1 1/2" pin lug type couplings and washers.
- C. Fig. 2972, 1 1/2" U.L. listed, cast brass nozzle with satin finish and rubber bumper. Nozzle shall have adjusted fog, straight stream and shutoff features. One (1) required.
- D. Spare washers for 1 1/2" couplings, six (6) required.
- E. Fig. 6050, 1 1/2" size common spanner, cast aluminum, for pin lug fittings. Two (2) required.
- F. Fig. 2686, all steel hose cart with draw bar and baked enamel finish. One (1) required.

NOTE: Four (4) lengths of one hundred (100) foot hose with couplings, washers and nozzle as described in B and C of this paragraph shall be installed on cart as complete package.

15A-17.04 The items listed below are required for the lawn sprinkler system and shall be furnished and delivered by this Contractor to a location in the school as directed by the School Custodian or his representative. All items shall be as manufactured by Royal Coach Sprinklers, Inc. or an approved equal.

- A. No. 25001, 1" male and 3/4" female couplers, four (4) required.
- B. No. 25002, 1" female couplers, four (4) required.
- C. No. 45001, 1" hose swivels, four (4) required.
- D. No. 15301, roller sprinkler bases, four (4) required.
- E. No. 10153-18-08, sprinklers, 9/32" x 1/8" nozzle size, 1" male, four (4) required.
- F. Four (4) one hundred (100) feet of 1" approved heavy duty rubber hose with couplers. Submit sample of hose for approval.

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Lawn Watering System

15A-17.05 A quadruplicate (4) receipt must accompany the delivery of items specified in paragraphs 15A-17.03 and 15A-17.04 to the School Custodian. The receipt must show the Contractor, trade, specification and items to be delivered and must be signed by the School Custodian or his representative. One (1) copy of the receipt must remain with the School Custodian or his representative. Three (3) copies of the receipt must be attached to bills submitted to the Board of Education for payment. A copy of that portion of the specification listing the above items must be presented to the School Custodian or his representative.

15A-17.06 Drain Valve & Pit, Quick Coupling Valve & Pit, 1 1/2" Angle Hose Valve and Pit

Furnish labor and materials and install pits at the locations shown on drawings. All associated manhole frames and covers, hardware, crushed stone, piping, fittings, valves, clamps, etc., indicated on drawings shall be furnished and installed by this Contractor.

15A-17.07 Drain Valve and Valve Box

- A. Where shown on drawings, furnish and install drain valves and valve boxes in the water supply piping of the lawn sprinkler and washdown systems.
- B. Size of valves shall be four (4) inches. Valves shall conform to A.W.W.A. Specification C500 and shall be iron body, non-rising stem, inside screw, parallel seats, double disc gate valve with flanged ends and 2-inch square operating nut on stem. All surfaces of ferrous parts, inside and outside, shall be painted with two coats of approved asphaltum varnish. Valves shall be Kennedy Fig. 561X or an approved equal.
- C. Each valve shall be enclosed in a cast iron extension valve box with cover. The word "Water" shall be cast on the cover and the cover shall be set flush with the new surface. Valve box shall be Kennedy Fig. 121 or an approved equal.
- D. Furnish and turn over to the Custodian a Kennedy Fig. 122 or an approved equal wrench or key of the proper length for valve. Valve wrench or key shall have a steel shaft with free handle and cast iron socket head to fit 2-inch square operating nut on valve stem.
- E. Provide an 18-inch x 18-inch x 6-inch footing of stone concrete for each valve to rest on. Grout all open spaces between underside of valve and valve pipe ends and the 18-inch long top surface of the footing. The valve box shall be supported by brick and mortar joint piers located on each side of the valve between the top surface of the footing and the underside of the valve box.

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15A-17.08 Booster Pump Set

- A. Furnish and install as shown on plans a Weil Pump Co. Verti-Pump Booster System or an approved equal Factory Assembled House Pump System. The entire system shall be preassembled on a common steel base. Model and GPM rating of pump shall be specified in the Amendments.
- B. Unit to be complete with one simplex Weil Pump Co. vertical close coupled multi-stage diffuser type turbine pump, side suction, and motor. Pump shall have bronze shaft sleeve, high strength steel casing, K-monel shaft, Ni-resis impeller, cartridge type mechanical seal and shall be close coupled to drip proof, ball bearing, part winding induction motor. Rating of motor shall be specified in the Amendments.
- C. System complete with (1) 3" main control valve of cast iron bronze-fitted construction with 300# flanged ends with an adjustable range of 20 to 300#, factory adjusted to the set system pressure and (1) 1 1/2" auxiliary control valve of cast iron construction with stainless steel trim and 300# flanged ends for periods of low flow, with an adjustable range of 20 to 300#, factory adjusted to the set system pressure plus 3 p.s.i.g.
- D. Furnish (1) NEMA - 1 control panel to include part winding magnetic starter NEMA size 3, fused disconnect switch, HOA switch, fused control circuit transformers, purge valve test button, pilot light, and (3) pressure gauges (to indicate system pressure, suction line pressure and pump discharge pressure), completely mounted and wired. Wiring between panel, motor and purge valve shall be by this Contractor in accordance with the latest N.Y.C. Electrical Code.
- E. Pump will run continuously and control valves will maintain the desired pressure.
- F. The pump shall be furnished with a temperature sensor mounted on the pump casing to open the solenoid purge valve (110v.) when the temperature of the water in the pump exceeds a set limit.
- G. The Plumbing Contractor shall make the required suction and discharge header connection, furnish expansion joints plus a riser gate valve, pipe the purge valve through the outside wall as shown on drawing using brass pipe and provide proper supports.

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- H. A factory trained representative shall inspect the system installation prior to start-up and shall adjust pump system and instruct personnel for a minimum of two visits. The factory representative shall instruct the Custodian in the proper operation and maintenance of the booster pump system, including the method of adjusting for various pressures of operation. Normal pressures for washdown system at nozzle outlet is 100 psi and for sprinkler system outlet is 70 psi. Operating and maintenance manual shall be provided.
- I. Furnish and install an approved porcelain enameled sign at an approved location on wall close to booster pump set. The sign shall have a white background with one-inch red letters bearing the following inscription:
- *Maximum operating pressures for booster pump set
1. Washdown system: 160 psi
 2. Sprinkler system: 80 psi
- J. All necessary and applicable paragraphs of Section 15A-11 and 15A-18 shall apply (such as pump construction, tests, etc.).

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Lawn Watering System

SECTION 15A-18

TESTS, ETC.

15A-18.00 General

Every new plumbing system, gas piping system and fire standpipe system and every part of an existing system that has been altered or repaired shall be inspected and tested. Inspections and tests shall comply with the requirements of this section and also with the latest requirements of the Administrative Code of the City of New York. All equipment, materials and labor required for testing a system or part thereof shall be furnished by this Contractor.

15A-18.01 Tests

A. Water Test

The entire drainage system which includes soil, waste, leader and vent piping shall be tested by the contractor under a water test in the presence of a representative of the Department of Buildings and of the Executive Director, Division of School Buildings. The water test shall include the entire system from the lowest point to the highest pipe above the roof. Underground portions of the house drain and branches may be tested separately; if so tested the pressure shall be equal to that of a column of water the same height as the building. The system if tested in parts must include in one test under a head of at least 10 feet for at least 30 minutes, all joints and connections to points above floors and beyond the face of walls and partitions ready for the fixture connections.

B. Storm Drainage Piping

Storm drainage piping for playgrounds and areas outside of the building shall also be tested with water under 10 feet of head pressure for one hour. The test shall be conducted before the piping is covered.

Note: The plumbing and drainage contractor is responsible for damage to piping occurring during construction after the test has been completed.

C. Water Supply Test

When the water supply pipes are in place and the branches for the fixtures roughed in, the Contractor shall close all openings and test entire system under a pressure of 150 pounds per square inch for at least one hour as shown upon an approved test gauge.

Section 15A-18
Tests, Etc.

15A-18.01 Tests (Cont.)

Note: Piping for Washdown and Sprinkler System shall be tested as follows:

1. Washdown and Sprinkler System piping, excluding sprinklers and hoses, shall be thoroughly and completely tested for pressure strength and leakage. Piping installed underground shall be tested before backfill operations are undertaken.
2. The piping system shall be filled with water, taking care to bleed all entrapped air in the process. The pressure shall be slowly built up to 230 PSI for at least one hour. The piping shall be inspected in its entirety while the 230 PSI pressure is maintained. Where leaks or damage of any kind are discovered, they shall be properly repaired and the line shall be re-tested.
3. For piping installed underground, it may be necessary to partially backfill the line before testing in order to hold the line in place. Where such is the case, the partial backfill shall cover only the body of the pipe sections leaving all joints and connections uncovered for inspection purposes. It shall be demonstrated by testing that the piping system will function properly at a pressure of 230 PSI. At or below design pressure rating, the delivery of water shall be steady and there shall be no leaks or damage to the piping system and no water hammer.

D. Preliminary Operating Test, Etc.

After the system of water supply (hot, circulation and cold) is in place, all fixtures set, with pumps, tanks, reservoirs, heaters, etc., connected and ready for operation and before the coverings are in place, the interior parts of faucets, flushometers, check and gate valves, reducing, relief and safety valves and of all pumps, shall be removed and the system as a whole washed clean of oil, dirt, etc., and then the interiors shall be replaced. The system or systems shall be operated for a period of not less than 6 days in order to assure the Executive Director that a circulation of hot water can be maintained through the heaters, reservoirs, hot and circulation mains, branches and risers at one and the same time.

Section 15A-18
Tests, Etc

E. Daily Emptying of System, Etc.

During the preliminary operation the entire system or systems of piping shall be completely emptied each day. The interiors of pressure reducing valves, relief safety valves shall be removed, cleaned and replaced at the end of the operating period.

F. Adjustments

During the preliminary operation, the manufacturers of the different apparatus installed, including the starting and stopping devices, shall make adjustments as may be necessary.

G. Fixture Test

Fixtures shall be tested for soundness, stability of support, and satisfactory operation of all parts. All water-closet floor flanges must be tested and approved before water-closets are set.

H. Pump Tests

All pumps shall be tested by the manufacturers prior to shipment of the pump. The test shall show the characteristic curves, indicating the relations of capacity, head, efficiency and H.P. throughout the pump's entire range. For each pump three certified copies of the tests shall be delivered to the Executive Director before the pumps are set in position.

I. Final Operating Test

After the completion of the entire work, the Contractor shall operate the entire installation of plumbing and drainage in the presence of the Executive Director and of the representatives of the manufacturers of the different apparatus and appliances installed.

J. Notification of Officials, Etc.

The Executive Director and all Departments and Bureaus interested, who must witness and approve the different tests, also the manufacturers of the apparatus to be tested, shall be notified in writing by the Contractor at least 48 hours in advance of the time set for appointments, so that their representatives may be present at the tests.

Section 15A-18
Tests, Etc.

15A-18.01 Tests(Cont.)

Y. Pump Notice

The Executive Director and the Chief Engineer of Light and Power, Bureau of Electric Controls, shall be notified in writing when the pumps and motors are completely connected and ready for the five hours continuous trial.

Z. Fuel, Material, and Labor for Tests, Etc.

The Contractor shall furnish all fuel, apparatus, material and labor required for preliminary and final operations, cleaning, testing and adjusting, including the necessary oil, electric current and the services of competent mechanics.

15A-18.02 Gas Tests

A. When all lines of gas piping are in place and before the ranges, gas fixtures, etc., are installed, or connections made to meters, the Contractor shall make a preliminary test and prove all pipes and fittings tight before notifying the various Bureaus and Departments that the official test is desired. The official test shall consist of proving the piping tight by means of an air pressure test with a Mercury Gauge. A column of mercury 12 inches high shall be maintained for a period of thirty minutes. After the lines are filled and the air is contracted and is at the temperature of surrounding air, the mercury shall remain stationary for a period of five minutes. After the fixtures, apparatus, etc., are connected to the piping and before the meters are set and connected the gas system as a whole shall be subjected to a second air test and shall maintain for five minutes a column of mercury 3.5 inches high. Should the columns of mercury fall, the defects in the work shall be located and made good and the mercury test repeated until all piping and fittings are proved tight. At the completion of the tests, the Contractor shall grease all plug cocks, fixture keys, valves, etc., and leave the system in working order. When requested by the Executive Director the Contractor shall have the gas turned on the entire system by the gas company.

B. Gas tests shall be made in the presence of the representatives of Executive Director of School Buildings; the Department of Buildings and the Gas Company; and the piping shall be proven tight to their entire satisfaction. Notification shall be sent to these Various Bureaus seventy-two (72) hours in advance of the time set for the official test.

Section 15A-18
Tests, Etc.

15A-18.02 Gas Tests (Cont.)

C. Gas consumed before the building has been accepted by the Board of Education will not be paid for unless special permission to use gas has been granted by the Executive Director of School Buildings and the Chief Engineer of Light and Power, Bureau of Electric Controls.

Note: For gas connections, etc., for fixtures and apparatus furnished and set by other Contractors, see drawings and notes on drawings.

15A-18.03 Final Test of Fixtures

After all the fixtures are set and connected, Contractor shall turn water on at all fixtures, traps, etc. and the proper working of all shall be demonstrated by him to the satisfaction of the Executive Director of School Buildings.

15A-18.04 Smoke Test

When the plumbing and drainage system is finished in all its parts and in complete working order, the Contractor shall furnish an approved smoke machine, together with the necessary material and apply a smoke test to the entire system at a time approved by the Executive Director and in the presence of a representative of the Department of Buildings and of the Executive Director of School Buildings.

15A-18.05 Fire Standpipe Tests and Inspections

Every new system and every part of an existing system that is altered, extended, renovated, or repaired shall be inspected and tested. All applicable tests and inspections, including pressure tests and alteration tests, shall comply with the latest requirements of the Administrative Code of the City of New York. In addition, tests shall be performed in the presence of a representative of the Executive Director, Division of School Buildings.

15A-18.06 Inspection

The Executive Director reserves the right to order the Contractor to disassemble or take apart any or all material and equipment called for in order that it may be inspected to see that it has been constructed in strict accordance with the plans, specifications and details. If after inspection, it is found to fully comply, then the Contractor shall properly reassemble all such material and equipment. Any material or equipment that does not fully comply with the requirements of the plans, details and specifications will be rejected and shall be at once removed from the premises and shall be replaced with new material and equipment that complies fully with the requirements of the plans, details and specifications.

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Tests, Etc.

SECTION 15A-19

TAGS AND CHARTS

15A-19.01 Tags

- A. All controlling valves on hot water, circulation, cold water and gas supply pipes throughout the building, except those at fixtures, shall be provided with heavy brass tags approximately 2 inches in diameter, with numbers and the words "Hot," "Circulation," "Cold" or "Gas" thereon and attached by split key rings or heavy brass S-hooks to their respective valves. The numbers and letters shall be of the block type 1/2-inch high, stamped thereon and attached by split key rings or heavy brass S-hooks to their respective valves. The numbers and letters shall be of the block type 1/2-inch high, stamped thereon and filled with black enamel. The tags on circulation pipe valves shall be numbered the same as the hot water valve controlling the riser or branch to which the circulation pipe is connected.
- B. Each standpipe riser control valve shall be conspicuously marked with the number assigned to it on the riser diagram for the standpipe system. The marking shall be in white figures, 1 1/2 inches high, on a metal disk that is at least 3 inches in diameter with a red background. The metal disk shall be securely attached to the valve.

15A-19.02 Chart Numbers

- A. The numbers on valves shall be arranged in the following manner, unless otherwise specified in the Amendments:

| | |
|---|---------|
| In cellar or basement commencing with No. | 1 |
| In the first story | No. 100 |
| In second story | No. 200 |
| In third story | No. 300 |
| In fourth story | No. 400 |
| In fifth story | No. 500 |
| In penthouses | No. 600 |

- B. If it should occur that the number of valves on any floor exceed the number of tags provided for any of said floors, then a letter must be added which would read, for example 100A or 100B, and so on, until all valves on the floor are properly numbered, but in no case shall a number be applied other than as herein stated.

Section 15A-19
Tags and Charts

15A-19.01 Chart Numbers (Cont.)

- C. The number of each and every valve throughout the building shall be plainly typed on approved heavy paper. Opposite each number shall be set the location of the valve bearing that number, also the fixture or fixtures controlled by that valve. The charts shall be framed in an approved glazed frame. The frames shall be made of 1 inch wide oak picture moulding with wood back, and shall be finished with natural color varnish with screw-eyes and wire for hanging same, and shall be submitted to the Executive Director of School Buildings for approval. Hang the frames where directed, as follows: One in Boiler Room, one in Custodian's office and one on each floor.

Section 15A-19
Chart Numbers

SECTION 15A - 20
MISCELLANEOUS

15A-20.01 Metal Casings

All covered vertical pipes not concealed in pipe spaces shall be protected above the floor with removable metal casings, made of 24 gauge galvanized sheet iron or steel. The vertical casings shall extend 8 feet above the floor. The casings shall be in two parts, or halves, constructed in an approved manner, with all edges wired or turned back upon itself and neatly fitted. The casings shall be neatly finished and closely fitted around the coverings, and be joined together by means of Parker Screws.

15A-20.02 Pipe Vents, Etc.

Pipe vents for engineer's closet, gas meter room, record vaults, fresh air inlets, duct space in cellar or basement, etc., shall be of the size and arrangement as shown on Drawings. Unless otherwise indicated on Drawings, pipe vents above ground shall be Schedule 40 galvanized steel pipe with galvanized cast iron threaded fittings. Pipe vents underground shall be extra heavy cast iron pipe and fittings with caulked joints made with oakum and molten lead. Type-1, Type-3 and Type-4 pipe vents shall be fitted with face plates that are screwed on to the pipe or into the fittings (see Standard Detail). Open end of Type-2 pipe vent (return bend) shall be fitted with 16 gauge, 1/4" mesh galvanized iron screen that is secured to the return bend with vandal proof screws.

15A-20.03 Access Doors

- A. The Plumbing and Drainage Contractor shall furnish and deliver to the General Construction Contractor for installation when directed by the Executive Director, the required number of access doors, as indicated on plans. The Contractor for Plumbing and Drainage shall inspect the installation of these doors and shall immediately notify the Executive Director if they are not being installed to afford proper access to his valves and other equipment. Shop Drawings of access doors must be submitted and approved before installation.
- B. Non-rated access doors shall have one piece plain trim with hinged door and shall finish flush with the finish surfaces. The door openings shall be of sizes not less than those shown on the drawings and shall be ample to permit disconnection and removal of the equipment. Doors shall be provided with concealed hinges, shall close flush against continuous stops and shall be provided with approved paracentric type locks. All keys shall be interchangeable and four (4) keys shall be delivered to the Custodian. Access doors and the frames shall

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15A-10.03 Access Doors (Cont.)

be made of high grade sheet steel, not lighter than No. 16 gauge for frames and 14-gauge for doors. Access doors shall be equipped with anchors for setting in plaster, furred ceilings, metal stud walls, etc. They shall be primed at the factory and the finish painting will be performed by the Contractor for General Construction. Access doors shall be made by Karp Metal Products Co., or other approved equal.

- C. Fire-rated access doors shall be Karp Type KRP-150FR or approved equal and shall be rated by Underwriters Laboratories, Inc. for a fire rating of up to 1 1/2 hours. Frame shall be not lighter than 16 gauge steel with one inch wide flange and shall be equipped with anchors and bolt holes to facilitate installation in all kinds of construction. Door shall be not lighter than 20 gauge steel, welded pan type, shall contain two inches of fire rated insulation in sandwich type construction and shall swing on a continuous hinge. Latch shall be bolt type that is operated by a flush key. All keys shall be interchangeable and four (4) keys shall be delivered to the Custodian. Door and frame shall be prime coated at the factory and the finish painting shall be performed by the Contractor for General Construction.
- D. The following schedule designates the various sizes of the access doors that correspond to the letter or letters designating same on the Drawings:

| <u>Non-Rated</u> | <u>Fire-Rated</u> | <u>Approx. Size</u> |
|------------------|-------------------|---------------------|
| Type A | Type AF | 8 1/2" x 12" |
| Type B | Type BF | 12" x 16" |
| Type C | Type CF | 18" x 18" |
| Type D | Type DF | 18" x 24" |
| Type E | Type EF | 18" x 30" |

15A-20.04 Concrete for Piers

All Concrete for piers under water meters, pumps, reservoirs, etc., shall be stone concrete with a minimum compressive strength of 2500 PSI in 28 days. The ingredients shall be thoroughly mixed and sufficient clean water added to produce a concrete of quaky consistency which shall be deposited in wood or metal forms of the required sizes. As soon as the concrete is set the forms shall be removed and the surfaces finished smooth.

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15A-20.05 Sign for Acid Basin

Furnish and install where indicated on Plan a sign neatly framed under glass and firmly attached to wall with four expansion screws. Sign shall be lettered in letters at least 1/2-inch high.

IMPORTANT

ACID DILUTING BASIN MUST BE INSPECTED FREQUENTLY AND NEUTRALIZING AGENT REPLACED WHEN NECESSARY. FAILURE TO DO SO MAY RESULT IN SERIOUS DAMAGE TO PIPING SYSTEM.

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Miscellaneous**

SECTION 15A-21
HOT WATER HEATERS, ETC.

15A-21.01 General

- A. Furnish and install a "nickelshield supertank" water heater complete with venting, piping, controls, accessories, dampers, etc., as shown on drawings and as specified hereinafter. Heater must have an approved material and equipment acceptance number approval, shall be as manufactured by PVI Industries Inc. or approved equal and shall be specially built to operate on low gas pressure (4 1/2" water column minimum). The model number of the water heater, tank capacity and the gallons per hour recovery rate shall be specified in the amendments.
- B. Warranties, service policies and shop drawings of water heater, controls, accessories, venting, dampers, etc. must be submitted and approved before installation.

15A-21.02 Water Heater

A. Tank

The "Supertank" shall be constructed in accordance with ASME Code Section IV, stamped with the appropriate symbol, and hydrostatically tested at 190 PSI minimum. The tank shall have a removable manway entry into the vessel with a minimum diameter of 23". Each supertank shall be easily entered by the removal of this cover with an ordinary 3/4" socket or open-end wrench. The "Supertank" may be of modular design where more than one tank module will be required to meet the total gallon capacity. The tank shall contain a strata-baffle to divert the incoming cold water to allow 80% of the total "Supertank" storage to be effective at a useable temperature of $\pm 5^{\circ}\text{F}$ from the set point of the operating thermostats. All fittings will be of Type K heavy copper. No tank connections of other than nonferrous alloys will be accepted.

B. Controls

There shall be a minimum of two operating thermostats. These operating controls should be set at 125°F for the lower and 140°F for the upper with a maximum circulating water temperature in the plumbing system not to exceed 140°F . There shall be one temperature limiting device designed to prevent temperatures from exceeding a maximum of 200°F . There shall also be an ASME temperature and pressure relief valve set at not more than 125 PSI and 205°F . There shall also be installed,

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in the cold section of the tank as factory standard equipment, a thermal expansion control valve set to relieve pressures not to exceed 100PSI. Equipment submitted without these redundant controls; temperatures limiting device and thermal expansion control valve, will not be accepted.

C. Insulation

The "Supertank" shall be insulated with a heavy density fiberglass insulation and will be jacketed with segmented panels of 22 gauge steel with a factory baked enamel finish. Each panel shall be interlocked and shall be easily removable for field replacement should damage occur. The heat loss of the insulated tank shall not exceed 14 BTU/HR per square foot of tank surface area with not less than an ambient temperature of 65°F. The minimum jacket heat loss acceptable must not exceed those of ASHRAE 90 Standards. The entire water heater shall rest on 3" I-Beam skids.

D. Lining

The "Nickelshield Supertank" shall be completely lined, inside and out, with 97% pure nickel. The method of applying the nickel shall be the electroless chemical deposition method, creating a holiday-free, non-ferrous layer of pure 97% nickel over the ASME code steel. The "nickelshield supertank" shall have an additional overcoat of an elastomeric, polymerized, hydrophobic cross-linked space aged plastic to prevent any electrolysis that may develop within the plumbing system. Magnesium rods will not be installed. Cement lining or glass lining (porcelain enamel) with magnesium rods will not be accepted as an equal.

E. Warranty

The "Nickelshield Supertank" shall have a twenty year warranty to protect the owner against defects in material and workmanship, discolored water or tank perforation due to erosion and corrosion. Should the "Nickelshield Supertank" fail within the first eight full years after authorized start up the manufacturer will, at their option, pay for all repair or replacement, including material, labor, and freight. The next twelve years, the manufacturer will make available a new PVI product capable of comparable performance at a cost equal to 70% of the then prevailing manufacturer's suggested list price. Warranties and service policies must accompany submittal for approval. Less than the above described warranty will not be accepted.

F. "Turbopower" Gas

The energy package shall consist of a "Turbopower" gas fired module guaranteed to produce a fuel-to-water operating efficiency of 83% minimum. Start up shall be performed by a factory authorized craftsman. Start up performance data, verifying the 83% shall be supplied to the Executive Director. With 140°F stored water, a minimum nomograph reading of 9 1/2% CO₂ with a maximum net stack temperature of 300°F will be required. The complete combustion chamber shall be 100% submerged in water and shall be completely lined with copper. All fire tubes shall be of pure copper.

G. "Hi-Vet" Steam

Unless otherwise specified, this installation shall be supplied with 2 PSI steam. The "Hi-Vet" heat exchanger shall produce a minimum of 1300 BTU/°F/ square foot of heating surface and all internal parts shall be made of 9010 copper-nickel. Start up shall be performed by a factory authorized craftsman. Start up performance data shall be supplied to the Executive Director.

H. Warranty

The energy package shall have a three year warranty against material and, workmanship, corrosion and erosion. All material, labor, and freight must be completely paid for by the manufacturer should failure occur. The energy package warranty must be supplied with submittals. Less than the above described warranty will not be accepted.

I. Burner and Controls

The Firepower Burner shall be a forced draft power type with high fan curves that enable the burner to create an overfire pressure in the "Turbopower" module and all heating surfaces. The burner shall have a cast aluminum housing and be certified by Underwriters Laboratories. Burner and controls shall have a one year cost free service policy where all material, labor and freight is paid for by the manufacturer on defective parts.

J. Optional Equipment

Optional Equipment shall include: solid state electronic programmed flame safeguard prepurge and postpurge; dial thermometer; dial pressure gauge; low water cutoff; relay in control panel for operation of outside air damper - when burner operates, outside air damper shall open and when burner is off, outside air damper shall be closed.

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15A-21.02 Water Heater (Cont.)

K. Certification and Codes

The entire water heater shall meet UL requirements, shall fit properly in the space provided and shall conform to drawing specifications. The complete installation shall be in accordance with all applicable Federal, State, and Local Codes and installation Drawings.

15A-21.03 Venting

Venting for water heater shall be "Type B" round pipe and fittings as manufactured by Dura-Vent Corp., or approved equal. The vent shall have a storm collar with adjustable roof flashing and shall terminate three (3) feet above the roof with a vent top, all as manufactured by the Dura-Vent Corp., or approved equal.

15A-21.04 Multiblade Dampers

A. General Requirements

1. Multiblade damper in connection with outside air intake for the hot water heater burner shall be the product of Honeywell or approved equal.
2. Openings in walls for outside air intake, together with stationary louvers and screens, will be provided by the Contractor for General Construction, unless otherwise shown on the drawings.

B. Construction of Multiblade Dampers

1. Frames

Frames shall be of steel: 1/8-inch thick channel shape 1/4-inch thick flat bar. They shall be braced for rigid reinforcement. Frames shall be provided with bolt holes for mounting and with stationary stops on the four sides to prevent air leakage. Outside air intake damper frames shall be provided with drilled lugs on two sides in a lower corner, so that motor mounting bracket can be securely bolted to frame.

2. Blades

Damper blades shall be not wider than 10-inches, shall have formed interlocking edges, and shall have a 1/2-inch deep "V" pressed in the center to stiffen the blades. Blade axles, axle clamps and blade connecting lugs shall be of

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non-ferrous metal. Blades shall be linked firmly together so that all blades work in unison. The lower blade shall be provided with a linkage connection lug for motoroperation of the damper. Open position of the blades shall be limited to 90°. Unless shown otherwise on the drawing, damper blades for outside air intake shall be parallel type. Damper blades for outside air intake shall be not lighter than No. 14-gauge aluminum.

3. Bearings

Bearings on blade pivot points shall be fitted with stainless steel or non-ferrous metal sleeve (or ferrule type) pressed into damper frame. Bearings shall be accurately sized to fit blade axles, and shall provide smooth operation.

4. Linkage

Linkage or tie rod to interconnect blades shall be non-ferrous metal and shall be secured to the blade lugs by means of cotter pins and washers.

C. Painting

Damper frames shall be given one coat of black asphaltum paint over a prime coat of zinc chromate. Galvanized steel damper blades shall be primed with galvanized iron primer and given one coat of black asphaltum paint.

Painting shall be done at the shop.

D. Control for Multiblade Dampers

Outside air dampers shall be automatically controlled by means of electric damper motors as specified in Paragraph 15A-21.05.

15A-21.05 Outside Air Intake Damper Motors

The outside air intake dampers shall be provided with an oil-immersed, spring return, capacitor motor designed to operate with a transformer on 120-volt, 60 cycle, single phase alternating current. Transformer shall have overload protection. It shall cause the damper section to open fully whenever the hot water heater burner is operating and to close when the burner is not operating. Each motor shall be securely mounted on the damper frame and connected with linkage to the damper blades. Electric wiring between each control cabinet and

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15A-21.05 Outside Air Intake Damper Motors (Cont.)

its respective fresh air damper shall be provided and installed by this Contractor. Damper motors shall be approved equal of Honeywell's M845A. See Paragraph .04 of this section for Damper Specification.

15A-21.06 Electric Work

A. General

Contractor for Plumbing and Drainage shall furnish and install all wiring, connections, etc., (except where otherwise specified in Paragraph B) complete, leaving the entire water heater system in satisfactory operating condition. All equipment shall be provided with approved terminal boxes to receive the conduits. All electric work shall conform to the requirements of the Bureau of Electric Control and other departments having jurisdiction.

B. Work by Contractor for Electric Work

Contractor for Electric Work will furnish main electric service wiring to each control panel.

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SECTION 15A-22

FIRE STANDPIPE SYSTEM

15A-22.01 General Requirements

- A. The Plumbing and Drainage Contractor shall furnish and install a complete Dry Fire Standpipe System for the building as indicated on plans and as herein specified.
- B. The materials and equipment shall be of the type and size approved by the New York City Fire Department and installed in strict conformity with the New York City Building Code, latest edition.

15A-22.02 Approved Manufacturers

The equipment shall be manufactured by W.D. Allen Manufacturing, Division of J.W. Moon, Inc.; Croker Fire Prevention, Division of Fire End and Croker Corp.; Elkhart Brass Manufacturing Co., Inc.; or approved equal. Shop drawings must be submitted and approved before installation.

15A-22.03 Before Installation

All pipe for work of this Section shall be black standard steel pipe. See Section 15A-5, Materials. The name of the manufacturer and the pressure to which the pipe was tested shall be permanently and legibly indicated on all pipe used in standpipe systems.

15A-22.04 Fittings

Fittings for work of this Section shall be 350 P.S.I., black treaded malleable cast iron or flanged cast steel. Pressure ratings shall be cast in or on the fittings.

15A-22.05 Installation of Pipe

- A. All horizontal pipes shall be suspended from ceilings and shall be of sizes and arrangements as indicated on plans. The branches to the risers shall be connected to the cross connection main in the basement and shall be of the sizes indicated on plans. Each branch shall be provided with a gate valve.
- B. Risers shall be of diameters shown on plans. Provide approved sleeves in floors for risers to pass through. The riser valve shall be installed at a maximum of 7 feet above the floor or stair riser.

Section 15A-22
Fire Standpipe System

15A-22.05 Installation of Pipe (Cont.)

Note: The equipment specified for the Fire Department Hose Valve and Cabinet in paragraph 15A-22.09 shall be of one manufacturer for each complete unit. The manufacturer's figure numbers referred to are for purpose of type only. Other approved manufacturers are listed in Par. 02 of this Section.

15A-22.06 Valves

A. Check Valves

Check valves shall be flanged cast iron body, bronze mounted swing-type, 175 P.S.I. WWP, Stockham G-940, NIBCO F-908-W, or approved equal.

B. Control Valves

1. Riser control valves shall be O.S. & Y. gate valves with flanged cast iron body, bronze mounted, 175 P.S.I. WWP, Stockham G-634, NIBCO F-607-0, or approved equal. They shall be sealed open by means of heavy chain and approved type heavy tumbler locks. Control valve location shall be clearly indicated with necessary signs and arrows.
2. Each control valve shall be marked with the number assigned to it on the riser diagram for the stand pipe system. The marking shall be in white figures, 1 1/2 inches high, on a metal disk that is at least 3 inches in diameter with a red background. The metal disk shall be securely attached to the valve.

15A-22.07 Siamese Connections

- A. Flush Type: When indicated on plans, Siamese connections shall be 3" x 3" x 5" polished brass flush wall type, with escutcheon plate lettered "Standpipe", two individual drop clapper valves and cast iron plugs painted red with brass chain. Siamese body is roughed in during construction. Escutcheon and nipple assemblies are installed after construction. Siamese connection shall be W.D. Allen Co. No. 276, or approved equal. Threads to Fire Department specifications.
- B. Exposed Type: When indicated on plans, Siamese connections shall be 3" x 3" x 5" polished brass exposed type with escutcheon plate lettered "Standpipe", two individual drop clapper valves and cast iron plugs painted red with brass chain. Siamese connections shall be W.D. Allen Co., No. 270, or approved equal. Threads to Fire Department specifications.

Section 15A-22 Fire Standpipe System

15A-22.07 Siamese Connections (Cont.)

- C. Siamese connections shall be placed not less than eighteen inches nor more than thirty-six inches above the level of the adjoining ground or sidewalk.
- D. Each siamese connection shall be provided with a check valve located inside the building in a horizontal section of the pipe lines where shown on the Drawings.
- E. An automatic ball drip for 3/4" pipe shall be installed between the siamese connection and the check valve as indicated on drawings to properly drain system to prevent freezing. Automatic ball drip shall be W.D. Allen No. 2112 NY, or approved equal.

15A-22.08 Roof Manifold

Roof manifold shall be cast brass, three-way horizontal type of size indicated on plans, W.D. Allen Co., No. 439, or approved equal. Roof manifold shall be fitted with three cast brass valves equal to W.D. Allen Co., No. 170U 2 1/2, with caps and chains and with red enameled wheel handles. Threads to fire Department specifications.

15A-22.09 Fire Department Hose Valve and Cabinet

- A. Cabinet shall be a recessed type, 16 gauge steel body and trim, baked white enamel inside. Exposed trim shall be stainless steel 18-8, Type 302, with a No. 4 finish. Cabinet doors shall be 20 gauge stainless steel (finish to match cabinet trim), duo-panel wire inserted clear glass. Door shall be hinged right or left as indicated on drawings. Cabinet No. 280 Style "L" and door No. DW shall be as manufactured by W.D. Allen Co.
- B. Hose valve shall be a 2 1/2" angle valve, cast brass body, complete with red enameled wheel handle, with red enameled finish caps and chain. Valve shall be no. 170U and caps shall be No. 120. Provide escutcheon plate No. 7120 for valve. All numbers are of those manufactured by W.D. Allen Co.
 - 1. Hose valves shall be located not less than 5'-0" nor more than 6'-0" above the floor or stair landing and shall bear the manufacturer's name.

15A-22.10 Painting of Fire Standpipe Piping

Refer to Section 15A-15.

Section 15A-22
Fire Standpipe System

15A-11.11 Temporary Standpipe System

Furnish, install and maintain a temporary standpipe system during construction of any structure for which a standpipe system is required. Temporary standpipe system shall be for use by the Fire Department and shall be in accordance with the provision of Sections C26-1703.3 and C26-1900.8 of the New York City Building Code, latest edition.

15A-22.12 Fire Standpipe Tests and Inspections

Refer to Section 15A-18.

Section 15A-22
Fire Standpipe System

SECTION 15A-23

SWIMMING POOL EQUIPMENT

15A-23.01 Recharging of Filters - Removals

- A. Removals - Remove the entire filtering materials and including piping manifolds, laterals and strainers from each filter tank. Remove the cement bottoms down to the inner surface. The entire interior surface of each filter tank shall be scraped and cleaned with a wire brush.
- B. Debris - All filtering materials, manifolds and laterals, etc., removed from filter tanks shall be immediately removed from the premises.

15A-23.02 Recharging of Filters - Installations

- A. Install Schedule 80 PVC piping including supports and nipples as manufactured by G & R Sloane Manufacturing Co. or approved equal. PVC laterals must be welded to the header with PVC filler rod.
- B. Manifolds shall be made up of 4-inch pipe and fittings to receive the new laterals and air relief valves. The manifolds shall extend the diameter of the filters, and fitted with caps at the ends and fibre bushings where the same enter the shell flanges. The manifolds shall be fitted at the top side with new air relief valves, one at each end, for venting air from the manifolds and laterals. The laterals shall be made up of 1-1/4 inch pipe attached to the manifolds 6 inches on centers; laterals shall extend to within 2 inches of the shell of the filters and be fitted with caps at the ends. The laterals shall have 1/2 inch diameter perforations at the underside drilled 6 inches on centers for the collection of filtered water and the distribution of wash water over the entire area of filter beds.
- C. The entire area of the bottom of the filters shall be surfaced with the cement mortar, composed of one part Portland cement and two parts clean sharp sand, applied in even plane to within 1-1/2 inch of the bottoms of the laterals. Each lateral shall be supported on a hanger and 1/4-inch PVC nipple set into the cement base.
- D. The top supply, inside each filter, shall be modified and installed, as follows:

In lieu of the top supply piping turning down and deflecting the water off the baffle plate; the top supply shall extend to the center of the filter and shall turn up (90° elbow) and terminate (approximately) four (4) inches from the inside head of the filter.

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15A-23.03 Filtering Beds

- A. New filtering beds, in each of the filters, shall be composed of anthracite and/or anthracite materials, washed, graded and installed as follows:
- B. First layer (bottom) 8 inches 13/16" x 1 5/8", Sizes #6
Second layer 5 inches 5/16" x 9/16", Sizes #4
Third layer 2 inches 3/32" x 3/16", Sizes #2
Fourth layer (top) 27 inches of effective size approximately .70 M.M. and a uniformity coefficient less than 1.6.
- C. All layers shall be installed perfectly level. Samples of the aforementioned materials shall be submitted for approval before proceeding with any of the hereinbefore specified work.
- D. The filtering materials shall be delivered to the job sites in separate sealed and tagged containers and shall be placed directly into filters from the containers.
- E. The charging of the filters shall be done in the presence of a Board of Education inspector.

15A-23.04 Relief Valves at Filters

Shall be 3/4 inch automatic air relief valves similar and equal to American Water Softener Co., Model Marsh No. 50, installed in top of a tee fitting at top of filter heads. Extend from tee fitting with 1/2 inch pipe to within 6 inches of floor. Install in 1/2 inch pipe a globe valve at 5'-0" above floor for manual air relief.

15A-23.05 Pool Heater

- A. Based on pool capacity (in gallons of water) the minimum pool heater capacity, in gallons per hour and lineal feet of coil, shall be in accordance with chart below.

| B. | Heater | Steam Coil |
|------------------------------|--------------------------|--------------------|
| <u>Pool Capacity (Gals.)</u> | <u>Capacity - G.P.H.</u> | <u>Lineal Feet</u> |
| 20,000 - 40,000 | 5,000 | 70 |
| 41,000 - 60,000 | 7,500 | 85 |
| 61,000 - 80,000 | 10,000 | 125 |
| 81,000 - 100,000 | 12,500 | 150 |

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15A-23.05 Pool Heater Cont.

- C. Coil shall be 3/4 inch No. 18 B.W.G. copper tubing mill tested to 1,000 pounds hydrostatic pressure per square inch.
- D. Temperature range shall be 50° to 80° F. per hour, with steam pressure at 0° pounds per square inch, guage.
- E. Heater shall be two pass type, as per Patterson Kelly Co., Lindy Hydrotherm, or approved equal.

15A-23.06 Pool Circulating Pump

- A. Shall be end suction close coupled to a 3 phase, 208 volt, 60 cycle, 1750 RPM drip proof motor. Casing shall be extra heavy cast iron, impellers shall be enclosed, single piece, cast bronze. Pumps shall be at least of the capacities as follows:

| Pool Capacity (Gals.) | Dump Capacity - G.P.H. | Motor H.P. |
|-----------------------|------------------------|------------|
| 20,000 - 39,000 | 75 | 2 |
| 40,000 - 59,000 | 125 | 3 |
| 60,000 - 79,000 | 150 | 5 |
| 80,000 - 99,000 | 200 | 5 |
| 100,000 - 150,000 | 250 | 7-1/2 |

- C. Pump shall be capable of circulating the entire contents of the pool within an eight (8) hour period, against a minimum of a 50 foot head.
- D. Pump shall not overload, when emptying the pool, with a head varying from 9 to 20 feet.
- E. Pump shall be Federal type ck or approved equal.

15A-23.07 Chemical Feeder Pump Unit

- A. Chemical feed pump shall be of the positive displacement diaphragm type in which the chemical solution may be drawn from either tank and forced into the pool circulation pipe at the fitting provided through foot valve, plastic or chemical resistant solution hose, pump check valve, injector and nozzles to operate against a pressure of 85 P.S.I.
- B. Diaphragm assembly shall be preformed to a special shape and reinforced to insure freedom from strain and to insure accuracy of measurement under all operating conditions.
- C. The pump shall be equipped with threaded valve type air vent for the purpose of priming and eliminating air without stopping the pump.

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15A-23.07 Chemical Feeder Pump Unit (Cont.)

- D. All parts which come in contact with the chemical solution shall be chemcially resistant plastic or hard rubber. The pump and valve assemblies shall be removable for easy cleaning or replacement.
- E. Provide sight glass or transparent pumping head so that operation may be checked at a glance.
- F. Feeding rate shall be adjustable from 4 to 68 gallons per 24 hours while unit is operating.
- G. Pump shall have oil bath lubrication. All rotating shafts shall have roller or ball bearings.
- H. Motor drive shall be standard fractional horsepower motor of size recommended by the feeder manufacturer, of 115 volt, 60 cycle A.C.
- I. Unit shall be provided with outlet box for rigid conduit wiring (plug-in not acceptable).
- J. Chemical feeder shall be Wallace & Tiernan Model A-747P (simplex), A-746P (duplex), B.I.F. Div. of N.Y. Air Brake Co., Model 1210-04 (simplex), 1210-05 (duplex) or approved equal.
- K. Provide a labeled package of spare parts as follows:

For Wallace & Tiernan Feeder provide:

- 1 complete set of gaskets
- 1 diaphragm assembly
- 2 poppet valve seats

For B.I.F. Feeder provide:

- 1 Reagent Diaphragm
- 2 check valves
- 3 washers

15A-23.08 Supervision and Instruction

- A. A fully trained and competent factory representative shall supervise the installation of the chemical feeder and upon completion shall instruct the Custodian in the proper use, disassembly and repair of the unit together with conducting a trial run to determine the proper solutions of chemicals to be used in this pool.

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- B. The pump shall be guaranteed to be free from defects in workmanship and materials and any part proving to be defective within one year after installation shall be replaced by the manufacturer at no cost to the Board of Education of The City of New York.

15A-23.09 Mounting Stand

The chemical feeder shall be securely mounted on a steel plate and angle iron mounting stand of welded or bolted construction. The stand shall be approximately 21 inches x 16 inches x 48 inches high, with one intermediate shelf. The stand shall be securely bolted to the concrete floor with 1/4 inch x 2 inch machine screws and expansion bolts. Stand shall be Wallace & Tiernan, B.I.F., or approved equal.

15A-23.10 Solution Containers

- A. Container shall be of polyethylene, with open top, cover, steel overpack, with approximate capacity of 55 gallons and approximate size of 22 inches O.D. by 32 inches high.
- B. Each container shall be provided with a tapped outlet, near bottom, with plug for draining.
- C. Each container shall be mounted on a circular metal stand constructed of 1 1/2-inch angle iron formed to suit the diameter of tank and provided with 1 1/2-inch angle iron legs (four) welded to the circular angle, stand shall be of height to raise tank to a height of 8 inches above floor.
- D. Overpack shall be painted with one coat of zinc chromate primer paint and two coats of oil paint of grey color. Stencil on the exterior of overpack, in letters three inches high, the words "CHLORINE", "ALUM" or "SODA-ASH", as required.
- E. Solution containers shall be as manufactured by Wallace & Tiernan, B.I.F., or approved.

15A-23.11 Water Supply for Chemical Solution Tanks

- A. Connect to nearest domestic cold water supply pipe and extend therefrom with 1/2 inch brass piping and drop at the soda and alum tanks and terminate at a height of 6 inches above the soda and alum tanks with a 1/2 inch swing spout single faucet (compression) with a spout of sufficient length to reach the two tanks.

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15A-23.11 Water Supply of Chemical Solution Tanks (Cont.)

- B. Support the pipe to column or wall at two points in the vertical section with solid ring hangers and 1/4 inch expansion bolts.
- C. Provide a gate valve at connection to domestic water supply.

15A-23.12 Make-up Tank

- A. Shall be 5/16 inch welded steel construction continuously welded and provided with the required welded flanges, braces and brackets for pipe supports, etc. Tank size and beams for supporting tanks shall be in accordance with Standard Detail, and Schedule Specification.
- B. Provide a new full size bronze or brass float valve, copper rod and copper ball float as per No. 8400 of Kieley & Mueller Inc., "Ford" No. 10 or "Schade" No. 7.
- C. The entire insides of the tank shall receive two coats of non-toxic protective material, designed for potable water tank use, the equal of Dampney Co. of American Apexior #3, Koppers Coke Co. "Bitumastic Tank Solution", Pittsburg Coke and Chemical Co. #104. Coating shall be applied and tank flushed clean, in accordance with manufacturer's recommendations.
- D. Paint the entire outside of tank, supports and beams with one coat of zinc chromate primer paint and one coat of grey oil paint.

15A-23.13 Strainers (Simplex)

- A. Shall be rated at 50 PSI working pressure, flanged cast iron, basket-type strainers.
- B. Strainers shall have easy to open yoke type cover and perforated 5/32" nominal (actual 0.150) service stainless steel strainer basket with free area equal to at least four times the cross sectional basket: 1/8" petcock in cover. Furnish one spare stainless steel basket.
- C. Strainers shall be as manufactured by Neptune Benson or approved equal.

15A-23.14 Sight Glass

Shall be elbow or straight type of sizes specified.

15A-23.15 Cement Lining

Filter tanks shall be cement lined in accordance with the Standard Specifications, Sections 15-12, Tanks.

Section 15A-23
Swimming Pool Equipment

15A-23.16 Color Code

Pool piping system shall be color coded with identification bands, approximately 2 inches wide, space every five feet, in accordance with the following color chart:

potable (fresh) water lines - green
recirculating water lines - blue
backwash water lines - gray
chlorine lines - yellow

15A-23.17 Flow Meter

- A. Install in pool recirculating piping, after filters, a ratameter which shall indicate the rate of flow of water in gallons per minute.
- B. Meter shall be 1/2 inch, with by-pass piping, glass tube type, 10 inch scale, fixed orifices and complete with main line orifice and companion flanges.
- C. Rate of flow shall be based on capacity of pool circulating pump in G.P.M.
- D. Size of main line pipe, main line orifice differential and range shall be as specified in Schedule Specification.
- E. Flow meter shall be Wallace & Tiernan Vreameter, or approved equal.

15A-23.18 Tests

- A. After all the hereinbefore specified work has been completed, the water shall be turned on into the filters and the filters thoroughly back-washed in the presence of the Board of Education's inspector; the properly chemically treated and filtered water shall be bright, clear and free from suspended matter visible to the unaided eye after passing through the filters.
- B. Not more than one filter shall be shut down and overhauled at one time; arrangement shall be made with the Custodian-Engineer in charge of the building in order to keep the pool in service at all times during the progress of the work.
- C. All sections of ventilating ducts of other equipment which interfere in any way with the recharging or removal and installation of the filters, shall be taken down and shall be reset and connected after all filter work has been tested and accepted.

Section 15A-23
Swimming Pool Equipment

HEAVY KITCHEN EQUIPMENT

15A-24.01 Workmanship, General

A. It is the intention of these specifications to cover equipment of the highest standard of workmanship. The materials and workmanship shall be first-class in every respect and the work throughout shall be performed in a thorough workmanlike manner, accurately fitted in place substantially constructed, properly framed and thoroughly reinforced and shall be in perfect condition when installed in building. All equipment shall as far as practicable, be fabricated at the factory.

B. Setting Equipment

Unless otherwise herein specified or shown on the drawings, all equipment shall be lined up square with the adjacent walls and shall be set level and even, particularly the counters, sinks, cabinets, shelving, etc.

C. Radius Corners, Brakes, Miters, Joints, Etc.

The Contractor is cautioned that all radius corners or edges must be geometrically regular and consistent and that, unless otherwise specified or shown on the drawings, all square breaks of metals must be made with the smallest possible radius where the break occurs (except in refrigerators, and sink drain boards) and be continuous and regular from the ends toward the center and that the edges of the miters and points must be even and flush, and finished smooth.

15A-24.02 Shop Joints

Where required by sheet sizes, shop joints shall be butt welded with joints ground smooth, presenting a uniform one-piece construction. Butt joints made by spot welding or riveting straps under seams filled with solder and then ground will not be acceptable.

15A-24.03 Field Joints

Field joints where required shall be carefully ground to a hair line fit and reinforced with a metal strip of the same material and gauge as the parts joined. The strip shall be welded to one section of the part. For field fastening the parts shall be placed in perfect alignment and tack welded in position. After making final adjustments, if required joint shall be finish welded, ground smooth and polished.

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Heavy Kitchen Equipment

15A-24.04 Welds and Grinding

Unless otherwise herein specified, all welded corners, joints and connections shall be electrically welded, seamless with the joints invisible, finished smooth to match the adjoining surface. Parts welded are to be made homogenous and free from imperfections. All joints shall be strong and ductile with exposed excess metal ground off so as not to show points of concentration or deflection at points of grind and the finished surface will simulate one-piece construction. All sharp edges shall be ground smooth and polished.

15A-24.05 Soldering/Tinning

- A. Unless otherwise specified herein, solder shall not be used to fill in pits or crevices in stainless steel or to fill in the corners of same.
- B. Whenever tinning is required or specified, the surfaces or parts to be tinned shall be carefully prepared in the best possible manner, and be heavily and thoroughly coated with pure block tin or heavy washed tin as herein specified.

Refrigeration

15A-24.06 Refrigeration Equipment, General

- A. This Contractor shall furnish and install complete the items listed in the Equipment Schedule in the Amendments, shown on plans, Detail Drawings, and as herein specified. All equipment listed in this section shall meet the following requirements:
 - . The equipment shall be similar to the model number specified in the Equipment Schedule complete with the Standard accessories except as otherwise noted for the particular item. Extra accessories when required will be specified in the Equipment Schedule or hereinafter described.
- C. The refrigeration equipment shall be serviced for one year by an authorized agency of the manufacturer. See General Conditions for Guarantees. Finish of the equipment shall be first class in every respect. Equipment shall be of rigid construction, quiet in operation and shall be free from objectionable vibration. All parts requiring adjustment or lubrication shall be readily accessible. Machine parts shall be accurately made to insure complete interchangeability and parts subject to wear shall be readily replaceable. All parts of equipment subject to corrosion shall be protected until ready for use.

Section 15A-24
Heavy Kitchen Equipment

- D. Refrigeration equipment shall comply with the requirements of the Underwriters Laboratories, Inc., and meet the approval the Department of Water Supply, Bureau of Electric Controls, Bureau of Fire Prevention, Underwriter's Lab (UL), National Sanitary Foundation (NSF) and have approval of the N.Y.C. Bureau of Standards and Appeals (BS of A) or Material and Equipment Acceptance (MEA) of the N.Y.C. Department of Buildings.
- E. All material constructed of stainless steel shall be polished to a satin finish. All portions of the machine made of sheet metal or castings shall be finished in the manufacturer's standard finish.
- F. Cuts and complete description for all mechanical equipment shall be submitted in quintuplicate for Executive Director's approval together with five (5) copies of motor data on proper form before installation.

15A-24.0" Walk-in Refrigerator, Prefabricated, with Shelving

A. General

Walk-in refrigerator shall be a prefabricated, all metal clad unit of sectional construction, designed for easy, accurate field assembly. Nominal size shall be as indicated on Equipment Schedule. Unit shall have one door, one or more side mounted refrigeration units designed to maintain an interior temperature of plus 35°F., and be installed complete with shelving. Air flow exhaust shall be in direction shown on drawing. Unit shall be NSF No. 7 and UL approved. No wood shall be permitted anywhere in the construction of refrigerator.

B. Section Construction

1. Design

Sections shall be made in 23" or multiple widths thereof, each having precision formed interior and exterior metal wall pans, gauge checked for uniformity. Interior rigid urethane insulation shall be tightly bonded to wall pans so as to form a strong structural wall member. Section edges shall be of tongue and groove design for correct panel alignment on assembly and be provided with plastic gaskets on exterior and interior edges to assure an air-tight, vaporproof joint without use of caulking agents or sealants. All section joints of final refrigerator assembly shall show fully and uniformly squeezed gaskets. All sections including door shall be 4" thick. Overall height shall be 8'-6" except if indicated otherwise.

Section 15A-24
Heavy Kitchen Equipment

2. Insulation

Insulation shall be rigid, Freon frothed "foamed-in-place" polyurethane with a thermal conductivity (K) of not more than 0.14 BTU/hr. (sq. ft.) (°F/in). Insulation shall be rated as self-extinguishing according to ASTM-D-1962 test and have a UL flame spread rating of 25 according to ASTM-D (UL Tunnel Test). Submit affidavit attesting to compliance.

3. Panel Facing

a. Roof Section

Interior and exterior panel facing roof section shall be .040" (min.) smooth aluminum.

b. Wall Sections

Exterior panel facing of all wall sections, except door section shall be .040" (min.) stucco embossed aluminum. Interior panel facing all wall sections, except door section shall be .040" (min.) smooth aluminum.

c. Door Section

Interior and exterior panel facing of entire door section shall be 20 gauge smooth (min.) stainless steel with line polish.

d. Floor Section

Interior floor shall be 16 gauge (min.) smooth stainless steel. Exterior of floor section shall be .040" (min.) smooth aluminum.

4. Section Fasteners

Walk-in refrigerator sections shall be assembled with cam-action, hook-and-pin type locking arms capable of maintaining correct section alignment and tight joints under all service conditions. Section fasteners shall be no more than 32" apart, except if fastener-to-fastener steel connecting straps through the section are employed, in which case a 48" separation will be permitted. Section locks shall be actuated from inside freezer through access ports in wall panel by means of a locking wrench which shall be supplied as part of installation. Each access port will be equipped with an easily removable and replaceable seal plug.

Section 15A-24
Heavy Kitchen Equipment

5. Door Section

a. Design

Door section entrance opening shall be not less than 34" wide and 78" high. Door shall be of the infitting, flush mounted type with full structural or other approved framing. Provide portable metal roll-in ramp for refrigerators 12' in depth or deeper. Ramp shall be of reinforced stainless steel construction with incline 8° or less. Door shall be mounted on riser type hinges.

b. Hardware

All door hardware shall be line polished aluminum or chrome plated brass. Door shall have two heavy duty hinges of the self-closing type with stainless steel pivot pins and spring, and nylon cam bearing. Door latch shall be of the heavy duty, safety inside release type designed to prevent entrapment of persons inside. Refrigerator latch shall have integral cylinder type lock supplied with 3 keys and tags. Door section shall contain a compact foot treadle to facilitate easy opening of door with foot pressure. Door shall have positive action door closer.

c. Door Gaskets

Door gaskets shall be approved plastic, resistant to temperature extremes, oils, fats, water and sunlight, and shall be easily replaceable. Door gasket shall be mounted on top and sides of door and shall be of the magnetic core type, forming a positive air-tight seal when door is closed. Magnetic pull-in strip on door jamb shall be stainless steel. Bottom edge of door shall contain an adjustable rubber wiper gasket.

d. Door Jamb Anti-Sweat Heaters

Anti-sweat heater wires shall be concealed in door jamb on all four sides. Heater shall have sufficient heating power to prevent condensation or frost formation at these locations under all service conditions.

e. Interior Lighting

Door section shall be provided with incandescent vapor-proof lamp on interior controlled by an exterior mounted light switch with pilot light.

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Heavy Kitchen Equipment

C. Refrigeration Unit.

1. General

Refrigeration Unit shall be self-contained, easily replaceable, factory pre-piped and pre-wired unit of the Walk-in refrigerator manufacturer's standard recommended horsepower and manufacture. System shall be designed for use with R12 or R502 refrigerant, fully automatic in operation and complying where applicable, with Pars. .06 and .07 of this Specification.

2. Condensing Unit

All components of the condensing unit shall be of the semi-hermetic, air cooled type mounted on approved vibration absorbers. The condenser shall be a semi-static type, provided with a perforated aluminum protective housing (16 gauge min.), easily removable for servicing unit at site. Provide housing with louvered bottom, or otherwise approved equal, for ventilation.

3. Evaporator

The forced-air evaporator shall have plastic coated coils and be designed so that cooled air is discharged parallel to ceiling. Air circulation motors, multi-fin and tube type coil, and heat exchanger shall be assembled within a protective housing.

4. Defrost System

The condensing unit shall be equipped with an automatic cycling defrost timer system for the evaporator which shall include provision for connection of heater wires from the condensate pan and tubing to prevent freezing of condensate during defrost. These heater wires shall energize only during the defrost cycle.

Condensate piping shall exit from unit as close to evaporator as possible. This contractor shall furnish and install complete condensate removal system and be responsible for its proper operation. Condensate shall be conducted to floor drain with copper pipe, or approved equal, run exposed and secured to box wall. Provide check flap at external end of condensate drain. Automatic defrost system shall be an integral part of the cooler and be a type "L" Kramer hot gas, Bally Electric, Bunham-Bush hot gas or other approved equal.

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Heavy Kitchen Equipment

B. Refrigeration Unit Support

Saddle type side mounted refrigeration unit shall be supported in a steel structure designed to eliminate all weight loading of wall panels as shown in Fig. 7 & 8 of Bally Walk-In Operating and Installation Manual #53-67 and further defined as follows:

- a. Compressor and evaporator shall each be supported in close fitting 1.5" (min.) angle iron frames.
- b. Each angle frame shall be securely bolted to 2'-2" (min.) angle iron vertical legs extending from floor to ceiling slab, as close as possible to refrigerator wall. Legs shall be securely anchored at each end into concrete.
- c. No attachment of unit support structure to refrigerator panels permitted.
- d. Condenser unit support shall provide at least 6'-9" of clearance space underneath measured from finished floor. Diagonal bracing interfering with clearance space not permitted.
- e. Support structure to be given 2 coats of aluminum rust resistant enamel.

NOTE: Alternate construction with compressor support built interior to the wall panel as shown on Bally Co. Drawing V-41 dated 2/18/76, also acceptable.

D. Thermometer

Furnish and install on exterior wall a 6" surface mounted dial or digital remote thermometer, with flexible tubing and bulb with bulb supporting bracket extending to interior of refrigerator. Tubing shall be removable for replacement and shall be installed as direct as possible without coiling. The thermometer shall be calibrated for temperature reading between minus 40°F and plus 110°F. The thermometer shall be chrome-plated brass case, mercury activated with armored stainless steel tubing and stainless steel bulb 12" long, similar to Weksler No. 60-MBI-WR, Moeller No. D-15, Taylor Instrument Co., or other approved equal. Plus 35°F calibration to be prominently red lined.

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Heavy Kitchen Equipment

E. Temperature Rise Alarm System

Furnish and install on the exterior of the refrigerator a signal device to indicate an above average temperature rise. The controller or signal device shall be similar to Minneapolis-Honeywell, Model T-414A which shall make contact on the rise of the temperature. Controller shall consist of 1/2" x 1/4" liquid filled, remote bulb with 5 feet of copper tubing, and shall operate on 120-volt, single phase circuit (range shall be -25°F. to +85°F.).

Unit shall be mounted on front wall near refrigerator with bulb fastened to the inside lining with stainless steel perforated guard, straps and screws.

Opening in insulated wall of refrigerator where capillary tube passes through shall be caulked tight.

The housing for the controller shall have a knock-out in the back to allow for electric connection by others.

Electric Contractor will provide audio and visual alarm and make all connections to the temperature controller.

F. Shelving Units

1. General

Each Walk-In refrigerator shall be provided with four tiers of shelving around interior walls, except under unit cooler where three tiers of shelving will be provided. The sizes and location of shelving shall be as indicated on drawing. Units must have NSF approval.

2. Material

Shelving units shall be of 16 gauge (min.) type 302 or 304 stainless steel construction with all parts line polished.

3. Construction

Shelves shall be die-formed, channel shape in section, approx. 1.25" deep, with multiple slots for air circulation. Sheet metal shall be folded back on itself at vertical edges to produce a double thickness of material at periphery. Corners shall be welded and ground smooth and all raw edges deburred. Post mounting members at shelf corners shall be equipped with set screws to allow setting shelves at any desired spacing. Posts shall be 6' long (except under cooler), 1.25" diameter (min.) with 2.5" (min.) flanged feet at the bottom and press fit ball glides at the top. Unit shall be of sanitary, crevice-free, vermin proof construction.

Section 15A-24
Heavy Kitchen Equipment

I. Floor Packing

Floor racking shall be of the grease proof, bacteria resistant composition rubber type furnished in individual interlocking tiles. Entire center area (between shelving) shall be covered. Matting shall be approximately .75" thick with beveled edge section installed at entry.

H. Electrical Requirements

Compressor motor complete with magnetic starter and approve thermal protection shall be of the manufacturer's recommended horsepower, 208 volts, 60 HZ, 3 phase. Cooling unit, including blower motor, timer, solenoid valve, defrost unit to be of manufacturer's recommended rating, 208 volts, 60 HZ, single phase. Light and door heater shall be 120 volts, 60 HZ, single phase, 375 watts.

I. Information Plate

Each Walk-in refrigerator shall have a plate or plates located in a readily accessible location showing the manufacturer's name and address, model, serial number of cabinet, condensing unit, manufacturer's model and serial number, electrical characteristics, including horsepower, voltage, current, cycles, and phase, the amount and type of refrigerant and factory test pressures, and the UL label. Removal of manufacturer's plate or identification label is forbidden. A nameplate with manufacturer's name shall also be firmly fixed in a conspicuous place in front of refrigerator. Installation shall carry the seal of both UL and NSF to indicate compliance.

J. Installation Requirements

1. Erection Area

Bottom of refrigerator shall rest on finished floor, except if indicated otherwise, at location shown on drawing. Installer shall provide a screed coat or other approved method to attain a fully leveled base under refrigerator. Installer shall submit an affidavit attesting to the fact that the area upon which the refrigerator was erected walk level as witnessed by use of a six foot level.

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Heavy Kitchen Equipment

1. Erection Certificate

The erection of the refrigerator shall be under the supervision of a manufacturer's regular factory employee representative who shall submit an affidavit at the conclusion of the erection attesting to the fact that the installation meets all factory quality standards.

3. Caulking at Floor

Exterior edges of refrigerator which come in contact with floor shall be evenly and completely caulked with approved caulking compound. Provide complete operating instruction/parts manual with electrical schematic installation.

K. Electrical Connections

1. This contractor shall make complete electrical connections of the following:

- a. Condensate defrost system.
- b. Light, switch, and door jamb heater wiring internal to door section.

2. Electrical Contractor shall connect the following to electrical service junction boxes:

- a. Refrigeration Unit.
- b. Door section heater, light and switch.
- c. Temperature rise audio and visual alarm system.

L. Warranty

The manufacturer shall warrant that the installed Walk-in and all related accessories are free from defects in material or workmanship under normal use and service, and shall be obligated to repair or replace any part of this equipment which proves defective within the period of at least five years from the date of original installation. Contractor will furnish and warranty/service contracts in accordance with guarantee section of this specification.

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Heavy Kitchen Equipment

M. Shop Drawings

Shop drawings and factory cuts of refrigerator, refrigeration unit, defrost unit, compressor support, shelving and controls together with wiring diagram, schematic diagram with sizes of all piping, etc., for installation shall be submitted in quintuplicate for approval of the Executive Director before erection.

15A-24.08 Walk-In Freezer Prefabricated, with Shelving

A. General

Walk-In Freezer shall be a prefabricated, all metal clad unit of sectional construction, designed for easy, accurate field assembly. Nominal size shall be as indicated on Equipment Schedule. Unit shall have one door, one or more side mounted refrigeration units designed to maintain an interior temperature of minus 10°F., and be installed complete with shelving. Air flow exhaust shall be in direction shown on drawing. Unit shall be NSF No. 7 and UL approved. No wood shall be permitted anywhere in the the construction of the freezer.

B. Section Construction

1. Design

Sections shall be made in 23" or multiple widths thereof, each having precision formed interior and exterior metal wall pans, gauge checked for uniformity. Interior rigid urethane insulation shall be tightly bonded to wall pans so as to form a strong structural wall member. Section edges shall be of tongue and groove design for correct panel alignment on assembly and be provided with plastic gaskets on exterior and interior edges to assure an air-tight, vapor proof joint without use of caulking agents or sealants. All section joints of final freezer assembly shall show fully and uniformly squeezed gaskets. All sections including door shall be 4" thick. Overall height shall be 8'-6" except if indicated otherwise.

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Heavy Kitchen Equipment

2. Insulation

Insulation shall be rigid, Freon frothed "foamed-in-place" polyurethane with a thermal conductivity (K) of not more than 0.14 BTU/hr. (sq. ft.) (°F/in). Insulation shall be rated as self-extinguishing according to ASTM-D-1962 test and have a UL flame spread rating of 25 according to ASTM-D (UL Tunnel Test). Submit affidavit attesting to compliance.

3. Panel Facing

a. Roof Section

Interior and exterior panel facing roof section shall be .040" (min.) smooth aluminum.

b. Wall Sections

Exterior panel facing of all wall sections, except door section shall be .040" (min.) stucco embossed aluminum. Interior panel facing all wall sections, except door section shall be .040" (min.) smooth aluminum.

c. Door Section

Interior and exterior panel facing of entire door section shall be 20 gauge smooth (min.) stainless steel with line polish.

d. Floor Section

Interior floor shall be 16 gauge (min.) smooth stainless steel. Exterior of floor section shall be .040" (min.) smooth aluminum.

4. Section Fasteners

Walk-in freezer sections shall be assembled with cam-action, hook-and-pin type locking arms capable of maintaining correct section alignment and tight joints under all service conditions. Section fasteners shall be no more than 32" apart, except if fastener-to-fastener steel connecting straps through the section are employed, in which case a 48" separation will be permitted. Section locks shall be actuated from inside freezer through access ports in wall panel by means of a locking wrench which shall be supplied as part of installation. Each access port will be equipped with an easily removable and replaceable seal plug.

Section 15A-24
Heavy Kitchen Equipment

5. Door Section

a. Design

Door section entrance opening shall be not less than 34" wide and 78" high. Door shall be of the infitting, flush mounted type with full structural or other approved framing. Provide portable metal roll-in ramp for freezers 12' in depth or deeper. Ramp shall be of reinforced stainless steel construction with incline 8° or less. Door shall be mounted on riser type hinges.

b. Hardware

All door hardware shall be line polished aluminum or chrome plated brass. Door shall have two heavy duty hinges of the self-closing type with stainless steel pivot pins and spring, and nylon cam bearing. Door latch shall be of the heavy duty, safety inside release type designed to prevent entrapment of persons inside. Freezer latch shall have integral cylinder type lock supplied with 3 keys and tags. Door section shall contain a compact foot treadle to facilitate easy opening of door with foot pressure. Door shall have positive action door closer.

c. Door Gaskets

Door gaskets shall be approved plastic, resistant to temperature extremes, oils, fats, water and sunlight, and shall be easily replaceable. Door gasket shall be mounted on top and sides of door and shall be of the magnetic core type, forming a positive air-tight seal when door is closed. Magnetic pull-in strip on door jamb shall be stainless steel. Bottom edge of door shall contain an adjustable rubber wiper gasket.

d. Door Jamb Anti-Sweat Heaters

Anti-sweat heater wires shall be concealed in door jamb on all four sides. Heater shall have sufficient heating power to prevent condensation or frost formation at these locations under all service conditions.

e. Interior Lighting

Door section shall be provided with incandescent vapor-proof lamp on interior controlled by an exterior mounted light switch with pilot light.

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Heavy Kitchen Equipment

C. Refrigeration Unit.

1. General

Refrigerator unit shall be self-contained, easily replaceable, factory pre-piped and pre-wired unit of the Walk-in freezer manufacturer's standard recommended horsepower and manufacture. System shall be designed for use with R12 or R502 refrigerant, fully automatic in operation and complying where applicable, with Pars. .06 and .07 of this Specification.

2. Condensing Unit

All components of the condensing unit shall be of the semi-hermetic, air cooled type mounted on approved vibration absorbers. The condenser shall be a semi-static type, provided with a perforated aluminum protective housing (16 gauge min.), easily removable for servicing unit at site. Provide housing with louvered bottom, or otherwise approved equal, for ventilation.

3. Evaporator

The forced-air evaporator shall have plastic coated coils and be designed so that cooled air is discharged parallel to ceiling. Air circulation motors, multi-fin and tube type coil, and heat exchanger shall be assembled within a protective housing.

4. Defrost System

The condensing unit shall be equipped with an automatic cycling defrost timer system for the evaporator which shall include provision for connection of heater wires from the condensate pan and tubing to prevent freezing of condensate during defrost. These heater wires shall energize only during the defrost cycle.

Condensate piping shall exit from freezer as close to evaporator as possible. This contractor shall furnish and install complete condensate removal system and be responsible for its proper operation. Condensate shall be conducted to floor drain with copper pipe, or approved equal, run exposed and secured to box wall. Provide check flap at external end of condensate drain. Automatic defrost system shall be an integral part of the cooler and be a type "L" Kramer hot gas, Bally Electric, Bunham-Bush hot gas or other approved equal.

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C. Refrigeration Unit Support

Saddle type side mounted refrigeration unit shall be supported in a steel structure designed to eliminate all weight loading of wall panels as shown in Fig. 7 & 8 of Bally Walk-In Operating and Installation Manual #53-67 and further defined as follows:

- a. Compressor and evaporator shall each be supported in close fitting 1.5" (min.) angle iron frames.
- b. Each angle frame shall be securely bolted to 2'-2" (min.) angle iron vertical legs extending from floor to ceiling slab, as close as possible to freezer wall. Legs shall be securely anchored at each end into concrete.
- c. No attachment of unit support structure to freezer panels permitted.
- d. Condenser unit support shall provide at least 6'-9" of clearance space underneath measured from finished floor. Diagonal bracing interfering with clearance space not permitted.
- e. Support structure to be given 2 coats of aluminum rust resistant enamel.

NOTE: Alternate construction with compressor support built interior to the wall panel as shown on Bally Co. Drawing V-41 dated 2/18/76, also acceptable.

D. Thermometer

Furnish and install on exterior wall a 6" surface mounted dial or digital remote thermometer, with flexible tubing and bulb with bulb supporting bracket extending to interior of refrigerator. Tubing shall be removable for replacement and shall be installed as direct as possible without coiling. The thermometer shall be calibrated for temperature reading between minus 40°F and plus 110°F. The thermometer shall be chrome-plated brass case, mercury activated with armored stainless steel tubing and stainless steel bulb 12" long, similar to Weksler No. 60-MBI-WR, Moeller No. D-15, Taylor Instrument Co., or other approved equal. Minus 10°F calibration to be prominently red lined.

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Heavy Kitchen Equipment

E. Temperature Rise Alarm System

Furnish and install on the exterior of the freezer a signal device to indicate an above average temperature rise. The controller or signal device shall be similar to Minneapolis-Honeywell, Model T-414A which shall make contact on the rise of the temperature. Controller shall consist of 1/2" x 1/4" liquid filled, remote bulb with 5 feet of copper tubing, and shall operate on 120-volt, single phase circuit (range shall be -10°F. to +60°F.).

Unit shall be mounted on front wall near freezer with bulb fastened to the inside lining with stainless steel perforated guard, straps and screws.

Opening in insulated wall of REFRIGERATOR/FREEZER where capillary tube passes through shall be caulked tight.

The housing for the controller shall have a knock-out in the back to allow for electric connection by others.

Electric Contractor will provide audio and visual alarm and make all connections to the temperature controller.

F Shelving Units

1. General

Each Walk-In freezer shall be provided with four tiers of shelving around interior walls, except under unit cooler where three tiers of shelving will be provided. The sizes and location of shelving shall be as indicated on drawing. Units must have NSF approval.

2. Material

Shelving units shall be of 16 gauge (min.) type 302 or 304 stainless steel construction with all parts line polished.

3. Construction

Shelves shall be die-formed, channel shape in section, approx 1.25" deep, with multiple slots for air circulation. Sheet metal shall be folded back on itself at vertical edges to produce a double thickness of material at periphery. Corners shall be welded and ground smooth and all raw edges deburred. Post mounting members at shelf corners shall be equipped with set screws to allow setting shelves at any desired spacing. Posts shall be 6' long (except under cooler), 1.25" diameter (min.) with 2.5" (min.) flanged feet at the bottom and press fit ball glides at the top. Unit shall be of sanitary, crevice-free, vermin proof construction.

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G. Floor Racking

Floor racking shall be of the grease proof, bacteria resistant composition rubber type in individual interlocking tiles. Entire center area (between shelving) shall be covered. Matting shall be approximately .75" thick with beveled edge section installed at entry.

H. Electrical Requirements

Compressor motor complete with magnetic starter and approved thermal protection shall be of the manufacturer's recommended horsepower, 208 volts, 60 HZ, 3 phase. Cooling unit, including blower motor, timer, solenoid valve, defrost unit to be of manufacturer's recommended rating, 208 volts, 60 HZ, single phase. Light and door heater shall be 120 volts, 60 HZ, single phase, 375 watts.

I. Information Plate

Each Walk-in freezer shall have a plate or plates located in a readily accessible location showing the manufacturer's name and address, model, serial number of cabinet, condensing unit, manufacturer's model and serial number, electrical characteristics, including horsepower, voltage, current, cycles, and phase, the amount and type of refrigerant and factory test pressures, and the UL label. Removal of manufacturer's plate or identification label is forbidden. A nameplate with manufacturer's name shall also be firmly fixed in a conspicuous place in front of freezer. Installation shall carry the seal of both UL and NSF to indicate compliance.

J. Installation Requirements

1. Erection Area

Bottom of freezer shall rest on finished floor, except if indicated otherwise, at location shown on drawing. Installer shall provide a screed coat or other approved method to attain a fully leveled base under freezer. Installer shall submit an affidavit attesting to the fact that the area upon which the freezer was erected walk level as witnessed by use of a six foot level.

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2. Erection Certificate

The erection of the freezer shall be under the supervision of a manufacturer's regular factory employee representative who shall submit an affidavit at the conclusion of the erection attesting to the fact that the installation meets all factory quality standards.

3. Caulking at Floor

Exterior edges of freezer which come in contact with floor shall be evenly and completely caulked with approved caulking compound. Provide complete operating instruction/parts manual with electrical schematic installation.

K. Electrical Connections

1. This contractor shall make complete electrical connections of the following:

- a. Condensate defrost system.
- b. Light, switch, and door jamb heater wiring internal to door section.
- c. Drain Heater.
- d. Temperature controls.

2. Electrical Contractor shall connect the following to electrical service junction boxes:

- a. Refrigeration Unit.
- b. Door section heater, light and switch.
- c. Temperature rise audio and visual alarm system.
- d. Drain heater.

L. Warranty

The manufacturer shall warrant that the installed Walk-in and all related accessories are free from defects in material or workmanship under normal use and service, and shall be obligated to repair or replace any part of this equipment which proves defective within the period of at least five years from the date of original installation. Contractor will furnish and warranty/service contracts in accordance with guarantee section of this specification.

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A. General

Walk-in refrigerator/freezer shall be a prefabricated, all metal clad unit of sectional construction having separate refrigerator and freezer compartments, designed for easy, accurate field assembly. Nominal size shall be as indicated on Equipment Schedule. Unit shall have two or more doors, side mounted refrigeration units designed to maintain an interior temperature of plus 35°F., in the refrigerator section and minus 10°F. in the freezer section and be installed complete with shelving. Air flow exhaust shall be in direction shown on drawing. Unit shall be NSF No. 7 and UL approved. No wood shall be permitted anywhere in the construction of the unit.

B. Section Construction

1. Design

Sections shall be made in 23" or multiple widths thereof, each having precision formed interior and exterior metal wall pans, gauge checked for uniformity. Interior rigid urethane insulation shall be tightly bonded to wall pans so as to form a strong structural wall member. Section edges shall be of tongue and groove design for correct panel alignment on assembly and be provided with plastic gaskets on exterior and interior edges to assure an air-tight, vaporproof joint without use of caulking agents or sealants. All section joints of final refrigerator/freezer assembly shall show fully and uniformly squeezed gaskets. All sections including door shall be 4" thick. Common walls between refrigerator and freezer sections shall be single thickness, except if indicated otherwise. Overall height shall be 8'-6" except if indicated otherwise.

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2. Insulation

Insulation shall be rigid, Freon frothed "foamed-in-place" polyurethane with a thermal conductivity (K) of not more than 0.14 BTU/hr. (sq. ft.) (°F/in). Insulation shall be rated as self-extinguishing according to ASTM-D-1962 test and have a UL flame spread rating of 25 according to ASTM-D (UL Tunnel Test). Submit affidavit attesting to compliance.

3. Panel Facing

a. Roof Section

Interior and exterior panel facing roof section shall be .040" (min.) smooth aluminum.

b. Wall Sections

Exterior panel facing of all wall sections, except door section shall be .040" (min.) stucco embossed aluminum. Interior panel facing all wall sections, except door section shall be .040" (min.) smooth aluminum.

c. Door Section

Interior and exterior panel facing of entire door section shall be 20 gauge smooth (min.) stainless steel with line polish.

d. Floor Section

Interior floor shall be 16 gauge (min.) smooth stainless steel. Exterior of floor section shall be .040" (min.) smooth aluminum.

4. Section Fasteners

Walk-in refrigerator/freezer sections shall be assembled with cam-action, hook-and-pin type locking arms capable of maintaining correct section alignment and tight joints under all service conditions. Section fasteners shall be no more than 32" apart, except if fastener-to-fastener steel connecting straps through the section are employed, in which case a 48" separation will be permitted. Section locks shall be actuated from inside freezer through access ports in wall panel by means of a locking wrench which shall be supplied as part of installation. Each access port will be equipped with an easily removable and replaceable seal plug.

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5. Door Section

a. Design

Door section entrance opening shall be not less than 34" wide and 78" high. Door shall be of the infitting, flush mounted type with full structural or other approved framing. Provide portable metal roll-in ramp for refrigerators 12' in depth or deeper. Ramp shall be of reinforced stainless steel construction with incline 8° or less. Door shall be mounted on riser type hinges.

b. Hardware

All door hardware shall be line polished aluminum or chrome plated brass. Door shall have two heavy duty hinges of the self-closing type with stainless steel pivot pins and spring, and nylon cam bearing. Door latch shall be of the heavy duty, safety inside release type designed to prevent entrapment of persons inside. Refrigerator/freezer latch shall have integral cylinder type lock supplied with 3 keys and tags. Door section shall contain a compact foot treadle to facilitate easy opening of door with foot pressure. Door shall have positive action door closer.

c. Door Gaskets

Door gaskets shall be approved plastic, resistant to temperature extremes, oils, fats, water and sunlight, and shall be easily replaceable. Door gasket shall be mounted on top and sides of door and shall be of the magnetic core type, forming a positive air-tight seal when door is closed. Magnetic pull-in strip on door jamb shall be stainless steel. Bottom edge of door shall contain an adjustable rubber wiper gasket.

d. Door Jamb Anti-Sweat Heaters

Anti-sweat heater wires shall be concealed in door jamb on all four sides. Heater shall have sufficient heating power to prevent condensation or frost formation at these locations under all service conditions.

e. Interior Lighting

Door section shall be provided with incandescent vapor-proof lamp on interior controlled by an exterior mounted light switch with pilot light.

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C. Refrigeration Units.

1. General

Refrigeration Units shall be self-contained, easily replaceable, factory pre-piped and pre-wired unit of the Walk-in refrigerator/freezer manufacturer's standard recommended horsepower and manufacture. System shall be designed for use with R12 or R502 refrigerant, fully automatic in operation and complying where applicable, with Pars. .06 and .07 of this Specification.

2. Condensing Unit

All components of the condensing unit shall be of the hermetic, air cooled type mounted on approved vibration absorbers. The condenser shall be a semi-static type, provided with a perforated aluminum protective housing (16 gauge min.), easily removable for servicing unit at site. Provide housing with louvered bottom, or otherwise approved equal, for ventilation.

3. Evaporator

The forced-air evaporator shall have plastic coated coils and be designed so that cooled air is discharged parallel to ceiling. Air circulation motors, multi-fin and tube type coil, and heat exchanger shall be assembled within a protective housing.

4. Defrost System

The condensing unit shall be equipped with an automatic cycling defrost timer system for the evaporator which shall include provision for connection of heater wires from the condensate pan and tubing to prevent freezing of condensate during defrost. These heater wires shall energize only during the defrost cycle.

Condensate piping shall exit from unit as close to evaporator as possible. This contractor shall furnish and install complete condensate removal system and be responsible for its proper operation. Condensate shall be conducted to floor drain with copper pipe, or approved equal, run exposed and secured to box wall. Provide check flap at external end of condensate drain. Automatic defrost system shall be an integral part of the cooler and be a type "L" Kramer hot gas, Bally Electric, Bunham-Bush hot gas or other approved equal.

B. Refrigeration Unit Support

Saddle type side mounted refrigeration unit shall be supported in a steel structure designed to eliminate all weight loading of wall panels as shown in Fig. 7 & 8 of Bally Walk-In Operating and Installation Manual #53-67 and further defined as follows:

- a. Compressor and evaporator shall each be supported in close fitting 1.5" (min.) angle iron frames.
- b. Each angle frame shall be securely bolted to 2'-2" (min.) angle iron vertical legs extending from floor to ceiling slab, as close as possible to refrigerator/freezer wall. Legs shall be securely anchored at each end into concrete.
- c. No attachment of unit support structure to refrigerator/freezer panels permitted.
- d. Condenser unit support shall provide at least 6'-9" of clearance space underneath measured from finished floor. Diagonal bracing interfering with clearance space not permitted.
- e. Support structure to be given 2 coats of aluminum rust resistant enamel.

NOTE: Alternate construction with compressor support built interior to the wall panel as shown on Bally Co. Drawing V-41 dated 2/18/76, also acceptable.

D. Thermometers

Furnish and install on exterior wall 6" surface mounted dial or digital remote thermometers, with flexible tubing and bulb with bulb supporting bracket extending to interior of refrigerator/freezer. Tubing shall be removable for replacement and shall be installed as direct as possible without coiling. The thermometers shall be calibrated for temperature reading between minus 40°F and plus 110°F. The thermometers shall be chrome-plated brass case, mercury activated with armored stainless steel tubing and stainless steel bulb 12" long, similar to Weksler No. 60-MBI-WR, Moeller No. D-15, Taylor Instrument Co., or other approved equal. Plus 35°F and minus 10°F calibration to be prominently red lined.

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E. Temperature Rise Alarm System

Furnish and install on the exterior of the refrigerator/freezer signal device to indicate an above average temperature rises. The controller or signal device shall be similar to Minneapolis-Honeywell, Model T-414A which shall make contact on the rise of the temperature. Controller shall consist of 1/2" x 1/4" liquid filled, remote bulb with 5 feet of copper tubing, and shall operate on 120-volt, single phase circuit (range shall be -25°F. to +85°F.).

Unit shall be mounted on front wall near refrigerator/freezer with bulbs fastened to the inside lining with stainless steel perforated guard, straps and screws.

Opening in insulated wall of REFRIGERATOR/FREEZER where capillary tubes passes through shall be caulked tight.

The housing for the controllers shall have a knock-outs in the back to allow for electric connection by others.

Electric Contractor will provide audio and visual alarm and make all connections to the temperature controller.

F Shelving Units

1. General

Each Walk-In refrigerator/freezer shall be provided with four tiers of shelving around interior walls of each compartment, except under unit coolers where three tiers of shelving will be provided. The sizes and location of shelving shall be as indicated on drawing. Units must have NSF approval.

2. Material

Shelving units shall be of 16 gauge (min.) type 302 or 304 stainless steel construction with all parts line polished.

3. Construction

Shelves shall be die-formed, channel shape in section, approx. 1.25" deep, with multiple slots for air circulation. Sheet metal shall be folded back on itself at vertical edges to produce a double thickness of material at periphery. Corners shall be welded and ground smooth and all raw edges deburred. Post mounting members at shelf corners shall be equipped with set screws to allow setting shelves at any desired spacing. Posts shall be 6' long (except under cooler), 1.25" diameter (min.) with 2.5" (min.) flanged feet at the bottom and press fit ball glides at the top. Unit shall be of sanitary, crevice-free, vermin proof construction.

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G. Floor Packing

Floor packing shall be of the grease proof, bacteria resistant composition rubber type furnished in individual interlocking tiles. Entire center area (between shelving) shall be covered. Matting shall be approximately .75" thick with beveled edge section installed at entry.

H. Electrical Requirements

Compressor motor complete with magnetic starter and approved thermal protection shall be of the manufacturer's recommended horsepower, 208 volts, 60 HZ, 3 phase. Cooling unit, including blower motor, timer, solenoid valve, defrost unit to be of manufacturer's recommended rating, 208 volts, 60 HZ, single phase. Light and door heater shall be 120 volts, 60 HZ, single phase, 375 watts.

I. Information Plate

Each Walk-in refrigerator/freezer shall have a plate or plates located in a readily accessible location showing the manufacturer's name and address, model, serial number of cabinet, condensing unit, manufacturer's model and serial number, electrical characteristics, including horsepower, voltage, current, cycles, and phase, the amount and type of refrigerant and factory test pressures, and the UL label. Removal of manufacturer's plate or identification label is forbidden. A nameplate with manufacturer's name shall also be firmly fixed in a conspicuous place in front of refrigerator/freezer. Installation shall carry the seal of both UL and NSF to indicate compliance.

J. Installation Requirements

1. Erection Area

Bottom of refrigerator/freezer shall rest on finished floor, except if indicated otherwise, at location shown on drawing. Installer shall provide a screed coat or other approved method to attain a fully leveled base under refrigerator. Installer shall submit an affidavit attesting to the fact that the area upon which the refrigerator was erected walk level as witnessed by use of a six foot level.

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2. Erection Certificate

The erection of the refrigerator/freezer shall be under the supervision of a manufacturer's regular factory employee representative who shall submit an affidavit at the conclusion of the erection attesting to the fact that the installation meets all factory quality standards.

3. Caulking at Floor

Exterior edges of refrigerator which come in contact with floor shall be evenly and completely caulked with approved caulking compound. Provide complete operating instruction/parts manual with electrical schematic installation.

K. Electrical Connections

1. This contractor shall make complete electrical connections of the following:
 - a. Condensate defrost system.
 - b. Light, switch, and door jamb heater wiring internal to door section.
 - c. Separate disconnects Refrigerator/Freezer section
2. Electrical Contractor shall connect the following to electrical service junction boxes:
 - a. Refrigeration Units.
 - b. Door section heater, light and switch.
 - c. Temperature rise audio and visual alarm system.

L. Warranty

The manufacturer shall warrant that the installed Walk-in and all related accessories are free from defects in material or workmanship under normal use and service, and shall be obligated to repair or replace any part of this equipment which proves defective within the period of at least five years from the date of original installation. Contractor will furnish and warranty/service contracts in accordance with guarantee section of this specification.

V. Shop Drawings

Shop drawings and factory cuts of refrigeration/freezer, unit, defrost unit, compressor support, shelving and controls together with wiring diagram, schematic diagram with sizes of all piping, etc., for installation shall be submitted in quintuplicate for approval of the Executive Director before erection.

15A-24.09 Refrigerators, Freezers, Milk Storage Cabinets and Compressor Units

A. Refrigerating Unit

Units shall be of the air-cooled hermetically sealed type unless otherwise indicated in the Equipment Schedule or detailed drawings; complete with compressor, condensing unit, cooling coil, evaporator, starter, liquid line, metering device accumulator, dryer, strainer, heat exchange, thermostatic expansion valve or temperature control, vibration dampers, approved pressure switch, suction line, etc.

The unit shall be supplied with the necessary charge of Freon 12 for refrigerators and Freon 12 or 22 for freezers, milk cabinets, etc., and shall be of sufficient capacity to maintain an average temperature of +35°F. in the food compartment of the refrigerator; 0°F. in Freezer, with a room temperature of 100°F. and the unit operating not more than 16 hours in each 24 hours. The use of the box shall be considered heavy. The refrigerator unit shall be installed to meet the requirements and the rules and regulations of the Fire Department, Bureau of Combustibles or any applicable code or ordinance of the City of New York.

B. Condensing Unit

The Condensing Unit shall be of the hermetically sealed type and shall consist of a motor, compressor, receiver, condenser, condenser fan, fan motor and high-low pressure control. The pressure control shall be completely wired and installed.

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C. Cooling Unit (Plate Type) (Freezer)

The cooling coils for the freezer shall be of the plate type unless otherwise indicated in Equipment Schedule. Plates shall be smooth, sanitary construction designed for low temperature requirements, easily cleaned and free of pockets or crevices where dirt may collect. Plates shall be constructed of aluminum or stainless steel on upper surface, bottom surface may be made of zinc metalized plate; baked enamel on steel will not be accepted.

D. Automatic Defrost Unit

When blower type cooling unit is installed in a reach-in freezer it shall be equipped with an automatic hot gas defrost unit similar to the Thermobank type and be of the size recommended by the manufacturer. The unit shall be completely installed and wired by the Contractor ready for final connection by Electrical Contractor. Provision shall be made to carry off condensate from top of box on the event of an evaporator heater failure.

E. Unit Cooler, Blower Type

When blower unit is specified the motor shall be of manufacturers recommend H.P. designed for continuous operation, and may be of the shaded pole type. The fan motor shall be connected from compressor compartment by means of a two (2) wire rubber covered cord; wire shall be run in metal moulding, conduit or Greenfield. Where the wire penetrates the inside lining of refrigerator, an approved waterproof sleeve shall be provided. The unit shall be provided with an enclosed stainless steel pan type electric evaporator, completely wired into the electric system.

F. Vibration Dampers

The legs or base of the compressor unit shall be mounted on four vibration dampers, or the unit shall have internal type dampers.

G. Electric Requirements (for Reach-In Refrigerators and Freezers)

1. All motors shall be of the capacitor type; sizes as recommended by the manufacturer. for up to 3/4 H.P., 120 volts, single phase. 3/4 H.P. and over shall be 208 volts, single phase; all provided with automatic overload protection. Provide an outlet box in motor compressor space and furnish and install all wiring from blower motor, heater cable and light and terminate in this box. Twist-lock plug and two wire cord may be used to connect compressor to receptacle installed in compressor space. Provide rear mounted junction box for electrical connection.

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1. Other Contractor shall furnish and install 120 volt or 208 volt, single phase circuit as required, from source of supply to a flush wall disconnect switch and from switch to a flush wall outlet.

Box shall be complete with extension ring and cover. All wiring between outlet box in wall and outlet box on refrigerator shall be run in 3/4 inch flexible liquid-tight conduit of proper minimum length.

15A-24.10 Refrigerator (Reach-In Type)

A. General

All refrigerators herein mentioned to be of a commercial type, listed by Underwriters' Laboratories and the National Sanitation Foundation to insure the maximum in safety, performance and sanitation. They are to carry the appropriate seals to indicate compliance. To avoid possibility of persons being accidentally trapped inside units, all cabinets shall include doors that can be opened from inside with a pressure of 10 lbs. or less.

- B. The manufacturer of the equipment shall be an established one who has manufactured commercial equipment of this type for a period of not less than ten (10) years on a production line basis employing modern methods. The manufacturer shall have a complete modern up-to-date laboratory and testing equipment with competent engineering and quality-control personnel to insure a quality product.
- C. All refrigerators shall be furnished with instruction manuals, packaged with each item. This booklet is to have pertinent information required for installation, operation and proper maintenance.
- D. The manufacturer shall guarantee the equipment against all defective components and workmanship for a period of one year from date of acceptance.

In addition, all hermetically or semi-hermetically sealed compressor units for refrigerators, freezers, ice cream cabinets, dessert cabinets, cold pans, water coolers or any other equipment mechanically refrigerated, shall have a five-year warranty. This warranty shall consist of replacing the hermetically or semi-hermetically sealed compressor unit if it shall become defective within five (5) years from date of acceptance. It shall be replaced free of charge, by the manufacturer, to the Board of Education exclusive of transportation and labor charges. The warranty shall be delivered to the Executive Director, prior to final acceptance and payment for this equipment. The apparatus, specialties, etc., as a whole shall be erected under the direction and supervision of the manufacturers thereof.

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- E. The Contractor, Sub-Contractor, dealer or jobber furnishing bids on this equipment shall include installation, start up and service for a one year period from the date of rquipment demonstration.

Refrigerator service contractor shall be approved by the Executive Director for the particular school for which service is to be rendered and a decal shall be permanently affixed indicating name, address and emergency telephone number of the service company.

- F. In the event that a bidder submits for approval an item other than the model specified, he shall furnish a complete set of specifications, detail drawings and photographs indicating that the substitution is equal in all respects to the specified model and be capable of all functions of the specified item. Evidence of satisfactory commercial/institutional use of the submitted item is also required. If this information is not furnished or if the substitution is disapproved, the original specification must be adhered to. Any deviation from these specifications without the expressed consent of the proper authorities (Executive Director and Approvals Committee of the Bureau of Design) will be deemed for cause for the rejection of the items furnished.

G. Material

All materials shall be tested and approved by the National Sanitation Foundation Testing Laboratories (N.S.F.). They shall be odorless, nontoxic and resistant to fungus, rot and vermin. No wood or wood products are to be used whatsoever, due to its inability to resist moisture, fungus and termites.

H. Cabinet Construction

Cabinet to be framed and formed entirely of metal using all welded and sealed construction. Entire cabinet to be degreased, jig assembled and insulated with polyurethane, foamed in place, to provide maximum vapor barrier, rigidity, strength and insulating efficiencies. See Equipment Schedule for metal and finish to be used.

1. Legs: Unless otherwise specified all models shall be furnished with sturdy 6" high adjustable, removable, sanitary, stainless steel legs. Single and two section cabinets (4) legs. They are to be of stainless steel construction approved by the National Sanitary Foundation. They shall be adjustable with a minimum of bearing on floor surface for ease of cleaning. Legs to allow a minimum of 6" unobstructed height under cabinet. They shall not have any exposed threads or unnecessary embellishments. Each leg shall be easily bolted to the base (thread gusset) with corrosion resistant Hex. Hd. machine bolts.

2. Exterior: Doors, front and sides to be stainless steel with fine polish finish.

Exterior top, bottom and rear to be of heavy gauge galvanized steel, aluminum, or baked enamel.

Materials:

Stainless steel: Shall be #20 gauge, type 304, with #4 finish.

Aluminum: #18 gauge, type 3003-H14, corrosion resistant, natural finish.

Steel enamel finish: #20 gauge cold rolled steel, specially prepared for enamel finish.

3. Interior: Lining to be either polished 20 gauge stainless steel, .040 aluminum or approved plastic as indicated in Equipment Schedule and shall meet N.S.F. Standard No. 7 requirements in regard to flush, smooth readily cleanable interiors. Interior to be sanitary coved corner, vapor tight construction with 5/16" min. radius bends. Interior bottom to be one piece with non-spill front to prevent interior spillage from contaminating door gaskets or cabinet face.

4. Insulation - All Models: All cabinets and all doors to be insulated with a minimum of 2" thick extra-rigid, self extinguishing polyurethane insulation, foamed in place.

Manufacturer shall certify that insulation be foamed in place to completely fill voids and create a permanent bond between inner and outer panels, and to certify that insulation has a test density of 2.5 lbs./cu. ft., a vapor transmission of less than 3 perms/inch, a compressive strength of at least 25 lbs./sq. inch and a K-factor of at least .14. Pre-foamed or pre-fabricated blocks or sheet of polyurethane are not acceptable as due to its inability to meet the foamed in place qualifications.

1. Door Openings, Mullions and Breaker Strips, Etc.

All door openings to have full perimeter high impact vinyl or styrene breaker strips suitable for low temperature use.

1. Strips to have built-in vapor tight raceway for all interior wiring. Outside breaker pieces to be removable to allow inspection or wiring, etc. All openings are to be provided anti-condensate heater with "On-Off" control located on instrument panel.

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2. Doors - Number and size of doors to be as model specified.

All metal 20GA 18-8 polished stainless steel face with full perimeter stainless steel raised edges and safety guard or rub rails.

Silent finger-tip action self-closing doors full face type, but designed to remain stationary when open 90° or more.

All doors provided with safety stops to prevent possibility of damage to adjacent equipment.

Doors to swing within confines of cabinet proper to allow butting or banking with adjacent equipment.

Door liner or inside pans to be one piece, die formed, fabricated of the same metal as interior cabinet lining.

Inner and outer door pans to be completely isolated from each other by means of a hard vinyl thermo-breaker integral cylindrical lock as standard. All locks keyed alike.

3. Door Gaskets - Magnetic: Gaskets are to be one piece magnetic, odorless, non-toxic, sure-seal, formed vinyl. Open corners, open miters or open joints not acceptable. Gasket is to be keyed into hard, vinyl thermo-breaker retaining frame. Gasket to have 100% retention around entire perimeter of door without employing screw, clips or other fasteners. Gaskets are to be easily removable for replacement.

4. Hardware:

Hinges shall be heavy duty, self-closing, semi-concealed, four way adjustable bronze, chrome plated type or stainless steel with stainless steel pivots and nylon bearings.

Handle - All handles to be heavy duty stainless steel, chrome plated brass or aluminum alloy complete with internal cylinder locks (keyed alike). All hinges and handles to be under warranty for a period of 5 years from date of shipping from factory.

- * Note: All keys shall be Chrome Plated Brass. A total of six (6) keys shall be provided. They shall each have an aluminum tag stamped with the letters "Ref" (for Refrigerator) or "Frz" (for Freezer), as required.

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J. Machine Compartment

Machine compartment is to be located on cabinet top. It is to be the full length and depth of the cabinet and enclosed on front and both ends by removable 18-8 stainless steel or aluminum louvered grills similar in appearance to cabinet design.

Stainless steel or aluminum louvers are to be formed in such a manner to allow full ventilation yet restrict the visibility of all components located behind the same.

Machine compartment to contain illuminated control panel and complete refrigeration assembly including all components.

All grilles and structural supports shall be readily removable for low clearance installation areas.

K. Control Panel

One illuminated control panel to be provided on each refrigerator or storage freezer. All panels are to be clearly marked in a permanent fashion designating whether unit is a refrigerator or storage freezer.

L. Refrigerator or Freezer Control Panel

To include visual internal high temperature warning device with red light which automatically flashes upon deviation from preset design temperature and interior temperature indicator (thermometer) which reads exact inside temperature, visual power failure warning signal, air filter light, dew point compensation control and automatic electric adjustable thermostat control. Thermometer shall be 2 1/2" diameter, dial or digital type.

M. Refrigeration Unit Assembly

The entire refrigeration system, compressor, condenser, evaporator coil, diffuser plenum chamber, motors, fans, filter, condensate evaporator, controls and control panel shall be fabricated and assembled as a self-contained integral power pack or cabinet top which can be easily removed and replaced if required for ease of installation in minimum clearance locations.

Removing or remounting plenum chamber and assembly shall not require disconnecting, evacuating, recharging or disturbing the refrigeration system.

N. Complete diffuser plenum chamber and assembly shall be mounted above the interior of the cabinet in the machinery compartment out of the product zone, and shall be of same material as interior lining.

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Access to plenum air distribution system shall be readily obtained by removal of required panels without the use of tools.

The full flow forced air distribution system shall be designed for maximum efficiency. The air shall be pulled in at the top of the ceiling above the product zone and forced through the evaporator coil and filter, then evenly divided and diverted to both sides of the cabinet and discharges down along the side walls to insure maximum circulation and even temperature throughout the entire interior, with minimum velocity, for maximum product preservation.

Those parts of the diffuser plenum in the machinery compartment are to be completely insulated and sealed with foamed-in-place polyurethane as indicated in H-4 of this paragraph.

Fan motor or motors shall be noiseless, totally enclosed, shaded pole, lifetime lubricated type with built-in high impedance protection. Motors to be for operation in temperatures ranging from +120°F. to -40°F. Fan blade or blades to be of aluminum alloy.

Fans or motors to be mounted to prevent any possible vibration, noise and fully protected from interior spillage.

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O. Lighting - Automatic

Each refrigerator or freezer to be equipped with interior recessed lighting. Receptacle, bulb, etc. to be located out of the product zone and recessed into interior ceiling of unit and completely shielded and protected with a high-impact resistant, translucent plastic diffuser for maximum light and protection from contact or bulb breakage.

One (1) light assembly required in one and two section units.

All light bulbs to be readily replaceable. Light switch is to be provided at each door opening and shall operate automatically by opening or closing any door. Light or lights to be extinguished only if all doors are in a closed position. Bulbs must be of the 120 volt rating type.

P. Interior Accessories

Refrigerators, Freezers, Dual & Multi-Temperature Units - All interiors to be multi-purpose and interchangeable. They shall be designed to accommodate standard anodized aluminum shelving, stainless steel rod shelving, tray and pan slides, roll out drawers or any combination of the same. All to be readily installed or changed in the field. None of the aforementioned shall require factory installation.

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1. Shelves

Each section of the refrigerator or freezer shall be provided with 18" x 26" pans in the amount as indicated in the Equipment Schedule.

2. Tray Slides Stainless Steel

Each section of refrigerator shall be furnished with #16 gauge stainless steel angles, spaced on 2" centers to suit 18" x 26" pans supported on the bottom.

3. Pilasters

Shelf and Interior Accessory Support: All interiors to be furnished with 16GA, pilasters. They shall be readily removable for cleaning by snapping off. They shall be capable of being replaced in position in the same manner. The pilaster shall be channel shaped and to have a series of holes on 2" centers along its entire length.

Q. Information Plate

Each refrigerator shall have a plate or plates located in a readily accessible location showing the manufacturer's name and address, model, serial number, electrical characteristics, including voltage, current cycles, amps, and phase, the amount and type of refrigerant and factory test pressures, and the U.L. Label. Removal of manufacturer's plate or identification label is forbidden.

Each cabinet shall carry the seal of both the U.L. and N.S.F. to indicate compliance.

15A-24.11 Refrigerator (Roll-In Type) with Racks

Refrigerators shall be of the size, type and Model No. specified in the Equipment Schedule and shall be similar to reach-in refrigerators except case shall be designed for housing portable racks, carrying 18" x 26" pans in the amount as indicated in the Equipment Schedule.

Bottom of refrigerator shall be set on floor. The bottom shall be of the same material as the lining of box, insulated and provided with ramp or tracks to permit entry of portable racks.

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Portable angle racks shall be as specified in the Equipment Schedule and shall be designed specially to fit refrigerator and use full height of cabinet. The racks shall be constructed of aluminum alloy throughout and consist of 1 1/2" shelf angles, on 3" centers, welded or riveted to outer frame and be mounted on four (4) recessed 5" diameter swivel ball bearing wheels with replaceable neoprene tires. Two of the wheels (on 18" side) shall be equipped with locks.

15A-24.12 Freezer (Reach-In Type)

The freezer shall be of the size, type and model number specified in the Equipment Schedule. The construction, finish and electric requirement shall be similar to those of commercial refrigerators, except a low temperature type gasket shall be installed on doors and refrigerating unit shall be of the blower type equipped with hot gas Thermo bank type Automatic defrost. The freezer shall be provided with legs, thermometer, name plate, locks (same combination as refrigerators) as specified for refrigerators.

15A-24.13 Freezer (Roll-Type) with Racks

Freezers shall be of the size, type and Model No. specified in the Equipment Schedule and shall be similar to reach-in freezers except case shall be designed for housing portable racks, carrying 18" x 26" pans in the amount as indicated in the Equipment Schedule.

Bottom of freezer shall be set on floor. The bottom shall be of the same material as the lining of box, insulated and provided with ramp or tracks to permit entry of portable racks.

Portable angle racks shall be as specified in the Equipment Schedule and shall be designed specially to fit freezer and use full height of cabinet. The racks shall be constructed of aluminum alloy throughout and consist of 1 1/2" shelf angles, on 3" centers, welded or riveted to outer frame and be mounted on four (4) recessed 5" diameter swivel ball bearing wheels with replaceable neoprene tires. Two of the wheels (on 18" side) shall be equipped with locks.

15A-24.14 Combination Refrigerator and Freezer (Reach-In Type)

- A. The combination refrigerator and freezer shall be of the size, type and model number specified in the Equipment Schedule, and shall comply with specifications for Reach-in Refrigerators and Freezers.
- B. Provide separate refrigeration units and outlet boxes with 3/4" knockout in the compressor space for each motor, and terminate all wiring therein as specified for refrigerators.

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15A-24.15 Refrigerated Cold Pan

A. Refrigerating Unit

Refrigeration unit shall be as hereinbefore specified. Operation shall be based on not more than 15°F. temperature differential between cold pan temperature of 32°F. and refrigerant temperature, with an ambient temperature of 100°F. Compressor shall be provided with thermostatic expansion valve and shall be thermostatically controlled to operated between the temperatures of 32°F. and 36°F. of the inside pan of the cold pan.

B. Cooling Coils or Cold Plates

Cooling coils or cold plates shall be furnished and installed as indicated on detail drawing and shall meet thermal requirements to control the temperature of the inside pan of cold pan between temperatures of 32°F. and 36°F. See Par. .73 (R), this section.

C. Electric Requirements

1. This contractor shall furnish and install switch box including switch and signal light, on rear panel or pipe space. Outlet box on motor shall be tapped for 3/4" conduit.
2. Other contractor shall furnish and install a 120 volt, single phase circuit from the source of supply to switch box and connect switch and signal light to outlet box on compressor motor.

15A-24.16 Milk Shake Machine

- A. Machine shall be of the size, type and model number specified in the Equipment Schedule.
- B. Unit shall be of stainless steel construction with refrigeration unit(s) designed to freeze milk shake mixture which is delivered to spigot(s) by internal pressurization pump(s). Machine shall have hot and cold water hose bibb inlet connections and top mounted swing-spout faucet to facilitate reservoir cleaning.
- C. Machine shall be mounted on four (4) heavy duty casters (two with locks) with polyurethane tires.
- D. Machine shall be designed to operate on 208 volts, three phase and be provided with eight (8) foot heavy duty four conductor (one grounding) line cord(s) with plug to match receptacle.

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15A-24.17 Cold Cabinet, Insulated, Refrigerated

- A. The cabinet shall be of the size, type and model number specified in the Equipment Schedule, complete with self contained refrigerating unit, removable tray slides for 18" x 26" trays and 5" swiveling casters (2 with locks) with polyurethane tires.
- B. The entire body of the cabinet, including door, shall be fabricated of aluminum, and insulated with foamed in place polyurethane.

The frame shall consist of special extruded shapes. Door and back shall be reinforced with heavy aluminum bar or channel. Pan support angles shall be of special alloy aluminum, and spaced 3" on centers. Door hinges and door latches shall be of nickel plated steel. No lock required.

- C. The refrigerator unit shall occupy the bottom of the cabinet cavity within an enclosed housing. Unit shall have controls with pilot light on front panel and be designed for 120 volt single phase operation. Provide eight (8) foot heavy duty three conductor (one grounding) line cord with non-twist lock plug to match receptacle.

.. 15A-24.18 Refrigerated Milk Storage Cabinet (Commercial Type for Racked Container Storage)

- A. The cabinet shall be of the size, design, material and construction as the model listed in the Equipment Schedule.
- B. The cabinet shall be provided with easily readable thermometer, mounted integral to cabinet walls.
- C. The cabinet shall be mechanically refrigerated with hermetically sealed condensing unit and cooling coil or plate coil cooling unit as specified in Par. .07 of this section. The tubing shall be secured to the cabinet liner sides, back, front and top with stainless steel strips and filled on both sides by a commercially acceptable conductive mastic for heat transfer purposes.
- D. Both exterior shell and inner lining shall be of the material and gauge as specified in the Equipment Schedule. The cabinet shall be supported on an angle frame base with channels or gussets for caster supports. The interior bottom shall slope 1" toward cabinet back to prevent carton from tipping during self-service. Opening to be provided in back for ventilation of access to refrigeration unit.
- E. The cabinet shall be equipped with 1'/2 top "Upper Door" and "Drop Down" front door full width of cabinet. Door to be provided with locking mechanism with two brass master keys and tags.

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Note: All cabinets shall have locks of the same combination.

Instruction plate made from .040" brass, measuring 3" x 5" black background, raised letters, chrome plate, shall be fastened to door front center.

Instructions to read:

MILK REFRIGERATION CABINET
Board of Education City of New York

INSTRUCTIONS FOR OPERATION AND CARE

1. Keep plugged into 120 volt, 60 cycle, A.C. receptacle continuously, except when cleaning.
2. Clean cabinet thoroughly inside and outside daily.
3. Lubricate caster every three months.

MANUFACTURED BY:
NAME

DISTRIBUTOR:
NAME

REFRIGERANT--Less than 5 lbs. of F-12.

- F. Sides, bottom, back, front (except door), shall be insulated with not less than 1 1/2" of urethane foamed in place insulation. Top shall be insulated with same type insulation not less than 1 1/2" throughout panel section or 1" at seams. Metal liner surface next to insulation shall be sprayed with Minnesota Mining Type 3M sealer after all fabrication or fastening of tubing to liner walls has been completed. Both door surfaces in contact with insulation shall be sprayed with same sealer before assembly.
- G. The refrigeration unit shall be hermetically sealed, capillary tube type, with fan cooled condenser, Freon 12 refrigerant, Tecumseh or equal, conforming to Par. .07 of this section. Provide (8) feet heavy duty three conductor (one grounding) line cord with Hubbell No. 5276 plug.
- H. The wire racks are to be supplied with bottom and upright center partitions made from Type-302 stainless steel wire. Center partitions and one bottom rack shall be combined into one assembly. Outside frame of racks and two intermediate supports shall be made from 7/32" stainless wire., Cross rods of 5/32" diameter spaced on 1" centers with each fourth or fifth cross wire made from 7/32" diameter stainless wire. Height of center partition shall be as large as permitted by door opening.

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- I. Two swivel and two rigid casters with 3" ball-bearing wheels with polyurethane tires (and ball-bearing swivel) shall be assembled to each cabinet with 1/4" zinc plated hex head bolts and nuts with lock washers.

15A-24.19 Cold Cart, Small

- A. Cart shall be of the size, type and model number specified in the Equipment Schedule.
- B. Unit shall be of stainless steel construction with foamed-in-place polyurethane insulation. Unit shall be mounted on four (4) heavy duty casters, two with locks.
- C. Refrigeration unit shall be of the hermetically sealed type of the manufacturers standard horsepower of sufficient capacity to maintain individual milk shake containers at approximately +25°F. Supply a total of twenty (20) aluminum trays to suit size of lowerated capacity(s).
- D. Cart shall have integrally mounted dial thermometer in wall of cabinet covering at least a range of 0°F. to +120°F.
- E. Machine shall be designed for 120 volt single phase operation. Provide eight (8) foot heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.20 Cold Cart, Large

- A. Cart shall be of the size, type and model number specified in the Equipment Schedule.
- B. Unit shall be of stainless steel construction with foamed-in-place polyurethane insulation. Unit shall be mounted on four (4) heavy duty casters, two with locks.
- C. Refrigeration unit shall be of the hermetically sealed type of the manufacturers standard horsepower of sufficient capacity to maintain individual milk shake containers at approximately +25°F. Supply a total of thirty (30) aluminum trays to suit size of lowerated capacity(s).
- D. Cart shall have integrally mounted dial thermometer in wall of cabinet covering at least a range of 0°F. to +120°F.
- E. Machine shall be designed for 120 volt single phase operation. Provide eight (8) foot heavy duty three conductor (one grounding) line cord with plug to match receptacle.

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15A-24.21 Ice Cream Cabinet

- A. Cabinet shall be of the size, type and model number specified in the Equipment Schedule.
- B. Cabinet shall be of baked white enamel on steel construction with top lift up covers. Unit shall have integrally mounted dial type thermometer in cabinet wall covering the -30°F. to +120°F. range. Insulation shall be of the foamed-in-place polyurethane type.
- C. Where sub-base is perforated, install a 1/4-inch galvanized wire mesh the full height of the sub-base and fasten to inside surface thereof so that cabinet will be rodent proof.
- D. For locking all covers provide stainless steel frame as shown on detail, a C.P. brass lock and 3 keys with C.P. brass ring and tag, stamped "B. of E." and "PIC" for Pupils Serving unit and "TIC" for Teachers Serving unit.
- E. Refrigeration unit shall be of the hermetically sealed type, of the manufacturers standard horsepower designed for storage of individual ice cream servings.
- F. Cabinet shall be designed to operate on 120 volt single phase and be equipped with eight (8) foot heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.22 Undercounter Refrigerator

- A. Refrigerator shall be of the size, type and model number as specified in the Equipment Schedule. The construction, finish and electric requirements shall be similar to those of commercial refrigerators, except where noted. Entire refrigerator shall be insulated with foamed-in-place polyurethane. The refrigerator shall comply with Par. .06 of this section, for warranties, etc.
- B. Electric requirements: 120 volt single phase with eight (8) foot Solid electrical connection by other contractor.

15A-24.23 Ice Cream/Milk Cabinet

- A. Cabinet shall be of the size, type and model number specified in the Equipment Schedule.
- B. Cabinet shall be of stainless steel construction with foamed-in-place polyurethane insulation. Unit shall be designed with two storage cavities, one for milk and one for ice cream.

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- C. Provide lift-up type doors with locking mechanism. Locks shall be provided with two (2) master keys with tags. Each cavity shall have integrally mounted thermometer in cabinet wall indicating interior temperature. Thermometer shall cover -10°F. to +120°F. range.
- D. Refrigeration unit(s) shall be of the hermetically sealed type of the manufacturers standard horsepower. Electric requirements shall be 120 volt, single phase. Provide eight (8) foot heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.24 REFRIGERATED BASE TABLE

- A. Table shall have refrigerated base unit of the hermetically sealed type and of the model and capacity specified in the Equipment Schedule, complete with all accessories. Door swing shall be to hand as indicated on drawing or as noted in Equipment Schedule.
- B. The refrigerating system shall comply with general conditions, Par. .06 of this section.
- C. Unit shall be designed for 120 volt single phase operation. Solid Electrical connection by other contractor. Compressor (s) shall be of the manufacturers standard horsepower.

GAS AND ELECTRIC HEATED EQUIPMENT

15A-24.25 Heavy Duty Gas and Electric Heated Equipment - General

- A. This Contractor shall furnish and install the equipment complete, listed in the Equipment Schedule in the Amendments shown on the plans and Standard Details. All equipment listed in this section shall be furnished in accordance with the following requirements.
- B. Where available, all gas heated equipment shall be provided with electric ignition. When electric ignition is not available safety type pilots will be furnished.
- C. All cooking equipment under the exhaust hood shall be interlocked with the exhaust fan so the equipment cannot be used without the exhaust fan being on, per N.Y.C. Building Code. (Electrical Contractor) This is done as follows: For pilot ignited equipment, the equipment shall be procured with a factory installed solenoid in the input gas line, downstream from the pilots, that shall be interlocked with the exhaust fan. For Par. 15A-24.29 - Gas Hot Plate, this contractor shall procure this unit without factory installed solenoid, but shall be furnish and install a solenoid (ASCO 803A17-120V-60HZ) for interlocking the input gas line with the fan, place solenoid as close to the wall as possible.

For Par. 15A-24.37 Bake Oven, if this unit is not available with electric ignition, the internal circulating oven fans(s) shall be interlocked with the hood exhaust fan. For electrically ignited equipment, the ignition shall be interlocked directly with exhaust fan.

- D. The equipment shall be of the model number specified in the Equipment Schedule, complete with the standard accessories, except as otherwise noted. Extra accessories, when required will be noted in the Equipment Schedule, after the model number or hereinafter specified.
- E. Equipment shall be thoroughly tested in the presence of a representative of the Executive Director and shall be approved by him before same will be accepted.
- F. Equipment, burners, valves, safety pilots and thermostats shall have "American Gas Association" approval. All electrically heated equipment shall comply with the requirements of the Underwriters Laboratory and the Bureau of Electric Controls. All equipment shall have N.Y.C. Bureau of Standards (BS of A) or N.Y.C. Dept. of Buildings material and equipment acceptance. (MEA)
- G. Cuts and complete description of all equipment shall be submitted in quintuplicate for Executive Director's approval, before installation.
- H. Safety Pilots
 - 1. Safety pilots shall be of the 100% safety type that will prevent the escape of unburned gases in the event of accidental pilot outage, and shut off gas to main burner and pilot. The safety pilot lighter button shall be located above the oven door and be easily accessible for lighting.
 - 2. The Contractor shall consult with the Gas Company as to the type of gas to be furnished and shall arrange for inspection and adjustment of burners, nozzles, etc., of appliances, so that they will operate properly and safely with the type of gas supplied.
- I. The finish shall be the manufacturers standard finish, unless otherwise specified in Equipment Schedule. All parts subject to corrosion shall be protected until ready for use.
- J. All gas or electric fired equipment shall be properly insulated so that when fired at maximum heat no outside surfaces handles, etc., are sufficiently hot so as to produce burns when touched.
- K. All equipment fixed in place requiring electrical input connections shall be provided with integral junction box in rear for solid electrical connection by Electrical Contractor per N.Y.C. Electrical Code.

L. All electrically heated kitchen equipment shall be of the thermostatically temperature controlled type with fully sheathed heater elements designed to be easily serviced or replaced.

15A-24.26 Range Heavy Duty (Gas)

Range shall be of the design, size and type specified in Equipment Schedule, and shall set on 6" high adjustable stainless steel legs similar to Par. .10(H) this section. All openings in base and vents in rear shall be covered with 1/4" wire mesh. Range oven shall be provided with automatic pilot and thermostatic control. Provide with solenoid valve per Par. 25.

15A-24.27 Range, Hot Top, Gas

The range shall be of the model number and type specified in the Equipment Schedule, complete with standard accessories except as otherwise noted. Extra accessories when required are noted in the Schedule of Equipment. Provide solenoid valve per Par. 25.

15A-24.28 Stock Pot Range

The range shall be of the same manufacture type and model number as specified in the Equipment Schedule, complete with all standard accessories except if otherwise indicated provide unit with solenoid valve per Par. 25.

15A-24.29 Gas Hot Plate

The hot plate shall be similar to the Model Number specified in the Equipment Schedule and with legs cut so that top is 27" above floor, the bottom shelf shall be a minimum of 6" above floor. The legs shall be secured to the floor with 1/4" galvanized steel expansion bolts and lead shields. Provide and install gas line solenoid per par. 25. Number of burners shall be as indicated on drawing.

15A-24.30 Expando Unit (Gas)

The expando unit shall be of the size and design noted in the Equipment Schedule and shall be set on 6" high adj. stainless steel legs similar to Par. .10(H) this section and screened as specified in Par. 26 of this section.

15A-24.31 Expando Unit (Electric)

The Expando Unit shall be similar to the model number specified in the Equipment Schedule. The unit shall be set in an angle stand mounted on adjustable tubular legs which shall be secured to the floor. The height of the angle stand shall be such that the working surface of the Expando Unit shall be 27" above the floor.

Frame: Shall be proper size to accommodate Expando Unit of model number specified in the Equipment Schedule. It shall be constructed of 1 1/2" X 1 1/2" X 12ga. stainless steel angles and braced in all (4) corners by 6" X 6" X 12 ga. stainless steel gusset plates welded to angle frame. Sanitary bell shaped sockets shall be welded to frame in each corner.

Legs: Shall be made of 1 5/8" dia. X 16ga. S.S. tubing inserted in sockets (aforementioned), and fixed in place with set screws.

Feet shall be provided for legs and these in turn shall be anchored to floor with stainless steel expansion bolts.

15A-24.32 Deep Fat Fryer, (Gas)

- A. The fryer shall be of the design and size specified in Equipment Schedule and shall match assembly of ranges, where noted.
- B. Fryer shall be provided with stainless steel fat container with stainless steel cover and automatic heat control.
- C. Gang units flash together when more than one unit is specified. Provide rear gas connection on fryers to avoid front manifold pipe connection where indicated.
- D. Fryers must be separated by at least 16" from any open flame kitchen equipment per N.Y.C. Fire Department regulations.

15A-24.33 Elevated Ceramic Broiler (Gas)

- A. The broiler shall be of the type and design specified in the Equipment Schedule.
- B. The broiler shall have heavy oval pattern grid bars and removable ceramic broiler and shall be equipped with an easily operated raising and lowering device.

15A-24.34 Griddle (Gas)

- A. Griddle shall be of the type, size and design specified in the Equipment Schedule. Unit shall be gas fired with electric ignition.
- B. Griddle shall have 0.75" thick highly polished steel cooking surface with thermostatic controls. Provide lower shelf and adjustable leg stand. Install rear and side stainless steel splash protectors at least 12" in height per detail shown on drawing.
- C. Griddle shall be provided with rear mounted junction box for solid connection of electric ignition by electrical contractor.

15A-24.25 Oven, Sectional (Gas)

- A. The oven shall be of the type specified in the Equipment Schedule. Provide number and type of sections as specified. Each section shall have ceramic hearths and separate thermostatic controls except if indicated otherwise. Provide hood fan interlock means per Par. 25.
- B. Provide with stainless steel adjustable legs, or as otherwise noted, and a vent flue with diverter.

15A-24.36 Oven, Sectional, (Electric)

- A. The oven shall be of the type specified in the Equipment Schedule. Provide number and type of sections as specified. Each section shall have ceramic hearths and separate thermostatic controls, except if indicated otherwise. Provide hood fan interlock means per Par. 25.
- B. Provide with stainless steel adjustable legs, or otherwise noted, and a vent flue.

15A-24.37 Bake Oven (Gas)

- A. Oven shall be of the type and model specified in the Equipment Schedule consisting of insulated gas heated cavities, number as shown in Equipment Schedule, with blower fan, motor and controls. Each cavity shall be equipped with a full complement of wire racks. Provide with electric ignition to meet hood fan interlocking requirements of Par. 25.
- B. Provide stainless steel adjustable legs, or as otherwise noted and vent flue with diverter.

15A-24.38 Bake Oven (Electric)

- A. Oven shall be of the type and model specified in the Equipment Schedule consisting of insulated electrically heated cavities, number as shown in Equipment Schedule with blower fan, motor and controls. Each cavity shall be equipped with a full complement of wire racks. Controls shall be interlocked with hood exhaust fan to meet requirements of Par. 25.
- B. Provide stainless steel adjustable legs, or as otherwise noted and a vent flue.

15A-24.39 Reconstituting Oven (Gas)

- A. Oven shall be of the type and model specified in the Equipment Scheduled with one large insulated gas heated cavity designed to rapidly reconstitute frozen foods to proper serving temperature. Unit shall be equipped with blower fan, motor, and single rack carriers in quantity one more than total number of ovens supplied.

- B. Oven shall be mounted on sturdy welded steel stand, securely lagged to floor, that maintains a oven floor height equal to that of the oven cart Par. 41. Provide one (1) rack removal hook per oven. Provide means to interlock with hood exhaust fan per Par. 25.

15A-24.40 Reconstituting Oven (Electric)

- A. Oven shall be of the type and model specified in the Equipment Scheduled with one large insulated electrically heated cavity designed to rapidly reconstitute frozen foods to proper serving temperature. Unit shall be equipped with blower fan, motor, and single rack carriers in quantity one more than total number of oven supplied.
- B. Oven shall be mounted on sturdy welded steel stand, securely lagged to floor, that maintains a oven floor height equal to that of the oven cart Par. 41. Provide one (1) rack removal hook per oven. Provide means to interlock with hood exhaust fan per Par. 25.

15A-24.41 Oven Cart

- A. Oven cart shall be designed for use with reconstituting ovens to receive single rack carrier from oven.
- B. Provide with 5" (min.) dia ball bearing heavy duty swiveling type caster with polyurethane thiner. Two rear casters nearest handle bar shall be lockable. Cart shall locking latch with control near handle bar.

15A-24.42 Microwave Oven

- A. Oven shall be of the type and model specified in the Equipment Schedule designed for 120/208 volt single phase, 60 cycle service. Provide proper plug to match electric receptacle. Line cord to be six (6) ft. long of the three conductor line (grounding) type.
- B. Unit shall be counter on table mounted, air cooled with push button or dial control. Door swing direction shall be as noted in Equipment Schedule.
- C. Oven shall meet all applicable safety codes for microwave leakage. Operation shall only be possible with door securely closed.

15A-24.43 Kettle (Gas)

- A. The kettle shall be of the type, size, design and model specified in the Equipment Schedule. It shall be a fully jacketed, insulated, gas fired, self generating steam cooker of min. #4 finish stainless steel with sanitary tangent (1 1/2" Min) draw-off faucet. Kettle shall be set on adjustable stainless steel legs.

- B. Inner kettle shall be of 14 gauge, 18-8 type 304 stainless steel, and welded to stainless steel outer jacket. The unit shall have (3) tubular s.s. legs and adjustable feet which shall be fastened to floor with stainless bolts. The assembly shall have a dome shaped hinged cover of stainless steel made to fit the top rim of the unit. A heavy handle with plastic ball knob at the end shall be provided and so positioned on the cover to prevent vapor burn of operator's arm when opening. Cover shall open to approx. 10° beyond vertical.
- C. The unit shall be equipped with a thermostatic control, low-water safety cutoff, water gauge, emergency shutoff, pressure gauge, gas pressure control, gas Solenoid valve, manual gas valve, safety pilot and electric ignition.
- D. Unit shall have rear mounted junction box for 120v single phase electric ignition and controls ready for solid connection by electrical contractor.
- E. Kettle shall have gas burner rated no less than 100,000 btu/hr. Provide rear mounted stainless steel flue with diverter.

15A-24.44 Kettle (Electric)

- A. The kettle shall be of the type, size, design and model specified in the Equipment Schedule. It shall be fully jacketed, insulated, electric fired, self generating steam cooker of polished stainless steel construction with sanitary tangent (1 1/2" min) draw-off faucet:
- B. Inner kettle shall be of 14 gauge, 18-8 type 304 stainless steel, and welded to stainless steel outer jacket. The unit shall have (3) tubular s.s. legs and adjustable feet which shall be fastened to floor with stainless bolts. The assembly shall have a dome shaped hinged cover of stainless steel made to fit the top rim of the unit. A heavy handle with plastic ball knob at the end shall be provided and so positioned on the cover to prevent vapor burn of operator's arm when opening. Cover shall open to approx. 10° beyond vertical. Kettle shall be equipped with side mounted swing spout funnel assembly. Unit shall be fully equipped all standard accessories including thermostatic control, low water safety cut-off, water gauge, emergency shutoff and pressure gauge.

C. Electric Requirements - The kettle shall be furnished with electric heating elements, thermostatically controlled for 208 Volt, three-phase operation. The thermostat shall be of the limit control type and provided with low water cutout feature, the equal of the Robertshaw Thermostat Co., Model No. H-1 with Type "N" dial temperature adjustment with "OFF" position, pilot light, stuffing box and manual reset. The kettle shall be fully equipped with all necessary electrical accessories completely wired for satisfactory operation. Furnish a wiring diagram for approval of the Superintendent. Relay shall be mounted on side of kettle and shall be protected by means of stainless-steel housing and removable cover. If relay is not mounted on kettle, This Contractor shall furnish relay to Electrical Contractor for mounting on wall in back of kettle. Provide kettle complete with rear mounted junction box ready for solid connection by Electric Contractor.

15A-24.45 Steamer, Sectional (Gas)

- A. General - Steamer shall be of the type and model No. specified in the Equipment Schedule, and of the design, construction and material herein specified.
- B. Compartments
1. Steamer shall have two cooking compartments. Compartment shall be fabricated and welded to form a rigid one piece body, having back and both side walls constructed as one continuous piece of equipment. Body shall be made of 3/16-inch stainless steel interior and exterior. Each compartment shall have the capacity as indicated by Model number listed in the Equipment Schedule.
 2. Each compartment shall be supplied with steam by a quick opening safety throttle valve conveniently located at the front. Steam valves shall be arranged so that doors cannot be opened until the steam is shut off. Each compartment shall have separate outlet with valves arranged to prevent intermingling of odors.
- C. Door - Compartment doors shall be suspended on supporting arms which are hinged to compartment; hinges shall be equipped with pins and graphited bronze bushings (both removable). Doors shall be full floating type, not directly hinged but flexibly supported. Doors shall be sealed by wheel operated ball bearing pressure screws located at the center on door arms, which shall drive doors against compartment faces exerting equalized pressure. Doors shall always seat properly without adjustment, regardless of wear on gaskets or hinges. Gaskets shall be special and securely fitted into recesses in doors without the use of cement. Doors shall be cast aluminum fitted and stainless metal liners. Doors may be secured by an approved hinge cam lever locking device.

- D. Supports - Compartments shall be supplied with supports for steaming baskets consisting of non automatic pull-out shelves of stainless steel, reinforced with heavy welded bar frames or die formed 14 gauge stainless steel. Shelves shall be mounted on bronze rollers, all as indicated in Equipment Schedule.
- E. Steaming Baskets - Provide stainless steel seamless perforated or solid steaming baskets as specified in Equipment Schedule.
- F. Heating
1. Steamers of the full automatic gas operated type shall be provided with gas, water supply and steam pressure automatically controlled as hereinafter described.
 2. The steam shall be supplied from an ASME tubeless type boiler located in the base of steamer enclosed by stainless steel panels.
 3. The boiler shall be heated by cast-iron gas burners connected to a concealed manifold.
 4. Steamer shall be equipped with automatic controls. Outlet valves shall be connected to steam valves and operate simultaneously with them. Each compartment shall be fitted with thermostatic air vent. Provide specially designed regulator to control fuel consumption automatically, also line strainer automatic water regulator or feeder low water cut-off, timer, 100% safety pilot, electric controls and automatic boiler blowdown actuated by each use. Cutting off of electric power shall cut off gas supply to boiler but not affect pilot. Boiler safety valve handle shall be located in a frontal position in base cabinet clearly visible with identifying tag and readily actuated without danger.
- G. Base - Steamer shall be mounted on adjustable feet of the same material as the steamer, and be secured to floor by means of stainless steel bolts and lead shields. Provide rear mounted junction box for solid connection of electric power for controls by Electric Contractor.

15A-24.46 Combination Steamer and Kettle (Gas)

- A. The combination steamer and kettle shall be similar to the type and model number specified in the Equipment Schedule complete with all accessories as herein specified.
- B. Steamer - Shall comply with Par. 45 except for boiler which shall be as specified, below.
- C. Kettle - The kettle shall be self generating steam jacketed type constructed of 14-gauge stainless steel. The kettle shall be of welded seamless construction complying with Par. 43 this section except for boiler which shall be as specified below.

- D. Steam Generator - One boiler shall supply steam to either or both units of the combination. The boiler shall comply with the requirements of the ASME code and shall be furnished with gas burner, 100% safety pilot, automatic gas control valve, pressure gauge, safety valve, water gauge, line strainer automatic water feeder, low water cut-off, timer, and automatic boiler blowdown actuated by each use. Cutting off electric power shall cut off gas supply to boiler, but not affect pilot.
- E. Provide adjustable stainless steel legs and leg unit securely to floor by means of stainless steel bolts.

15A-24.47 Combination Steamer and Kettle (Electric)

- A. The combination unit shall be similar to the model number specified in the Equipment Schedule, complete with all accessories as hereinafter specified and listed in the Equipment Schedule.
- B. Steamer - Shall comply with Par. 45 except for boiler which shall be as specified, below.
- C. Kettle - The kettle shall be two-third steam jacketed type constructed of 14 gauge stainless steel. The kettle shall be of welded seamless construction complying with Par. 43 except for boiler which shall be as specified below.
- D. Steam Generator - One boiler shall supply steam to either or both units of the combination. The boiler shall comply with the requirements of the ASME code and shall be furnished with pressure gauge, safety valve, water gauge, line strainer, automatic water feeder, low water cut-off, timer and automatic boiler blowdown actuated by each use. Boiler safety valve handle shall be located in a frontal position in base cabinet, clearly visible with identifying tag and readily actuated without danger.
- E. Base - Steamer shall be mounted on adjustable feet of the same material as the steamer, and be secured to floor by means of stainless steel bolts and lead shields. Provide rear mounted junction box for solid connection of electric power by electric contractor.

15A-24.48 Braising Pan, Tilting (Gas)

- A. Braising Pan shall be of the type size, design and model specified in the Equipment Schedule Unit shall be gas heated, of heavy duty all polished stainless steel construction with sanitary seamless tilting pan with center spout, tilt mechanism, cabinet stand, uniformly heated. .500" (min.) thickness cooking surface, counterbalanced pan cover, fully enclosed burner assembly and tilt mechanism, timer and thermostatic control.

- B. Gas burner shall be of the safety type electrically ignited, with automatic tilt shutoff. Cutting off electric power to ignition shall not affect pilot provide rear mounted junction box for solid connection of ignition electric power by electric contractor.
- C. Provide pan rack steamer insert with three 12"X20"X4"D perforated pans with covers and lift handler and food receiving pan support.
- D. Base shall be of the open type (without cabinet) constructed of stainless steel. Lag base securely to floor with stainless steel bolts. Furnish swing spout filler faucet (T&S B-592 or equal) floor or wall mounted as indicted, for installation by other contractor as shown on drawing. Install with spout centralized over floor drain.

15A-24.49 Braising Pan, Tilting (Electric)

- A. Braising Pan shall be of the type size, design and model specified in the Equipment Schedule Unit shall be electrically heated, of heavy duty all polished stainless steel construction having sanitary seamless tilting pan with center spout, tilting mechanism, cabinet stand, uniformly heated. .500" (min.) thickness cooking surface, counterbalanced pan cover, fully enclosed burner assembly and tilt mechanism, timer and thermostatic control.
- B. Electrical Heater shall be of the fully shielded type, easily service with automatic tilt shutoff. Provide rear mounted junction box for soid connection.
- C. Provide pan rack steamer insert with three 12"X20"X4"D perforated pans with covers and lift handler and food receiving pan support.
- D. Base shall be of the open type (without cabinet) constructed of stainless steel. Lag base securely to floor with stainless steel bolts. Furnish swing spout filler faucet (T&S B-592 or Equal) floor or wall mounted as indicated for installation by other contractor as shown on drawing. Install with spout centralized over floor drain.

15A-24.50 Convection Oven - Steamer Combination (Gas)

- A. Unit shall be the type and model specified in the Equipment Schedule. Oven-steamer shall consist of a gas heated insulated cabinet with thermostatically and fan controlled steam generator and fan. Provide full front mounted controls including timer.
- B. Unit shall be supported on a sturdy steel frame with adjustable legs holding hearth 37" above floor except if otherwise noted on drawing.

15A-24.51 Combination Twin Automatic Coffee Urn (Electric)

- A. The urn shall be similar to the model specified in the Equipment schedule, shall have the capacities specified, and shall be thermostatically controlled.
- B. The unit shall be constructed of stainless steel with stainless steel housing enclosing the controls. This unit shall consist of two 2 1/2 gal. stainless steel liners with removable covers, enclosed in a jacket and heated by electricity. The draw off faucets shall be for single or double service as indicated in the Equipment Schedule.
- C. The unit shall have, thermostat (with low water cut off) thermometer, signal light, automatic water feeder, push button control and spray head for brewing the Coffee. Filter basket and filters shall be provided as specified.
- D. The heating elements shall be of the size indicated in the Equipment Schedule and shall be suitable for operation on a 208 volt, single phase circuit and all wiring shall terminate in a 4" junction box mounted on urn.

15A-24.52 Single Automatic Coffee Urn (Electric)

- A. The urn shall be similar to the model specified in the Equipment Schedule, shall have the capacities specified, and shall be thermostatically controlled.
- B. The unit shall be constructed of stainless steel with stainless steel housing enclosing the controls. This unit shall consist of a 2 1/2 gal. stainless steel liner with removable cover, enclosed in a jacket and heated by electricity. The draw off faucets shall be for single or double service as indicated in the Equipment Schedule.
- C. The unit shall have, thermostat (with low water cut off) thermometer, signal light, automatic water feeder, push button control and spray head for brewing the Coffee. Filter basket and filters shall be provided as specified.
- D. The heating elements shall be of the size indicated in the Equipment Schedule and shall be suitable for operation on a 208 volt, single phase circuit and all wiring shall terminate in a 4" junction box mounted on urn.

15A-24.53 Coffee Warmer (Electric)

- A. The unit shall be similar to the model number specified in the Equipment Schedule, and shall consist of an electric stove equipped with two heating elements and the coffee making equipment hereinafter described.

B. The body of the stove shall be of die formed stainless steel polished to satin finish.

C. Coffee making equipment shall consist of two (2) 12 cup semi-wide Pyrex glass decanters with pour-over upper. Furnish and deliver 100 extra and one (1) extra decanter with pour-over upper. Furnish and deliver 100 extra and one (1) extra decanter to the dietitian at the school.

D. Electric Requirements

1. The coffee maker shall be wired to operate on a 120-volt, single phase circuit and shall be provided with six feet of approved three-wire cord (Grounding type) with plug to match receptacle.

2. Each of the heating elements shall be of a heavy duty type, provided with an individual three heat switch with a maximum wattage of approx. 1700 watts.

15A-24.54. Dish Dispenser, Portable.

- A. The dispenser shall be similar to the model number specified in the Equipment Schedule and of the design and construction indicated for built-in type, Par. 73(K) this section, except the cabinet shall be of standard size and mounted on four all swivel rubber tired casters (two with brakes) and wrap around bumper. The outside top and sides shall be of stainless steel.

15A-24.55. Food Warmer, Mobile

The food warmer shall be of the manufacture and model number specified in Equipment Schedule.

- A. **Body.**-The body shall be constructed of heavy stainless steel exterior on extra heavy angle iron frame to support body construction and drawer suspension frame. The heating chamber liner shall be made of rust proof steel. The entire cabinet shall be insulated by means of fiberglass or polyurethane foam.
- B. **Drawers.**-The drawers and their tops shall be made of heavy gauge stainless steel. Each drawer shall be mounted on individual suspension arm with roller bearings. Each drawer handle shall have an automatic self-locking latch to keep drawer closed air tight. Drawers shall be equipped with adjustable damper that will permit individual control of humidity. Drawer handles, latches and damper knobs shall be chrome plated. Number of drawers as shown on drawings.
- C. **Electric Requirements.**
1. The temperature shall be controlled by means of a thermostat with signal light and relay switch, adjustable within a range of 100° to 300° Fahr. If individual "Off" "On" switch is used it shall be equipped with a pilot light.
 2. The heating element shall be of the capacity indicated in the Equipment Schedule similar to Chromolox, and suitable for operation on 120 volt, single phase circuit. Heater shall be equipped with 6'-0" of 3 wire (grounding type), rubber covered cord, and plug similar to Hubbell No. 5264, or approved equal.

15A-24.56. Food Warmer (Built-In)

The food warmer shall be of the manufacturer and model number specified in the Equipment Schedule. The specifications for the body, drawers and electric requirements shall be the same as those specified in Paragraph .55 this section-food warmer, except that the electric cord shall be omitted, and the unit quipped with a knock-out box for 3/4" Greenfield Connection. (Connection will be made by other Contractors). Trim strip and fillers of stainless steel shall be provided so that the cabinet may be built into the counter or as indicated on drawings.

15A-24.57. Hot Cabinet, Insulated, Moist Heat. (Electric)

- A. The cabinet shall be similar to the model number specified in the Equipment Schedule complete with thermostatically controlled heating unit, removable tray slides for 18" x 26" trays, heat distribution tunnel, and 5" dia. full swivel casters with non-marking polyurethane tires.
- B. The entire body of the cabinet, including door, shall be fabricated of aluminum, and insulated with high density fiberglass.

The frame shall consist of special extruded shapes. Door and back shall be reinforced with heavy aluminum bar or channel. Pan support angles shall be of special alloy aluminum, and space 3" on centers. Door hinges and door latches shall be of nickel plated steel. No lock required.

- C. The heating unit shall be mounted at the bottom of the cabinet and shall consist of a formed tubular water-proof element and a lifetime lubricated fan assembly. The unit shall have "UL" approval, with thermostat, and pilot light, mounted on front panel. The Unit shall operate on a 120 volt, single phase circuit and shall be equipped with non-twist-lock Receptacle, 3 wire connector, 8 ft. of 3-wire cord and plug. Wattage shall be 2000 watts (approximately).

FABRICATED EQUIPMENT

15A-24.58. Board of Education, Standard Equipment.-General.

- A. The type, size, and quantity of all equipment listed hereinafter is noted on the drawing unless specified herein. The material and gauge is noted on the detail drawing unless herein specified.

- B. The exact over-all dimensions of serving counters, dishwasher tables, hoods, etc., shall be obtained at the Building before Contractor starts fabrication.
- C. This Contractor shall furnish and install complete all the fabricated items listed in the Equipment Schedule in the Amendments and as shown on the General Arrangement drawing. The equipment shall be as herein specified and as indicated on detail drawings.
- D. Equipment operated by electricity shall comply with the requirements of the Underwriters Laboratories Inc., and the Bureau of Electric Controls.
- E. Samples of all hardware properly tagged shall be submitted to the Executive Director for approval before fabrication of the item.
- F. The Executive Director shall select the color for the finish of all items not constructed of stainless steel or plated. Three samples of the finish on the same material used in the fabrication of the item shall be submitted for the Executive Director's approval. Size of sample 3" x 6" with hole in center of short edge. Back of sample shall have a sticker with the following data typed in:
 SCHOOLTYPE OF.....
FINISH
 MF'D BY
- G. Shop drawings will be required for all work included in this Section and shall show plan, elevation and sectional views, including materials and dimensions. The typical details shown on the Standard Detail drawings need not be repeated. drawings shall be submitted in quintuplicate for the Executive Director's approval. If it should be necessary to deviate from the drawings due to job conditions, such modifications must be included and noted on the shop drawings. This Contractor shall check door openings, etc., at the building before fabrication of the equipment so that some can be moved into the building and installed without difficulty. Items such as hoods, counters, etc., shall be fabricated in sections if necessary.
- H. Equipment constructed of stainless steel shall have a satin finish except as noted otherwise on detail drawings. Material other than stainless steel shall be finished as specified for the item.

- I. Where equipment is attached to walls provide expansion bolts and shields in solid material, and toggle bolts in hollow material.

15A-24.59

Exhaust Hood - Filter Type

A. General

The dimension of the hood and flues shall be checked at the building before fabrication. The hood shall be recessed into the dropped ceiling (see Para. 58) or be provided with removeable aluminum enclosure panels at the sides and front in cases where the hood is below the dropped ceiling.

B. Construction

Construction shall be as shown on the Board of Education Kitchen Standard Details. All joints shall be made airtight. If rivets are used they shall be spaced as noted on detail drawing. The joints may be welded with the welding done on the outside top and sides of the sheets.

C. Grease Filter

Filters shall be of the removeable type, 20"x20x2" thick in size, installed in leak tight holding frames permanently attached to hood at an angle not less than 45°. Filter holding frames shall be equipped with an easily actuated latching device providing for readily removal of filter. Filter shall be of the baffle type, constructed of stainless steel and carry BS of A or MEA approval. Provide two (2) full sets of approval filters for each hood installation.

- D. Light Reflector Panel.- Light reflector panel shall be provided at the lower outside edge of the hood in the location shown on drawings. This Contractor shall obtain templates of the electrical boxes from Electrical Contractor and provide openings with sufficient clearance to clear these boxes. Seal opening with gaskets after lights are installed. Provide angle clips for supporting the electrical boxes in the location shown on the drawings.

- E. Angles, Clips and Supports.- The hoods shall be supported by means of clips projecting from front frame angles as shown on detail and bolted to curtain wall angle support furnished and installed by the General Construction Contractor.

- F. **Flues.**-The hood shall be provided with flue flanges in the locations shown on drawings and shall be connected by means of a flue connecting piece to the flue outlets provided by Heating and Ventilating Contractor unless otherwise noted. Kitchen contractor shall make final connection to duct roughing provided by other.
- G. **Finish.**-All portions of the hood constructed of stainless steel shall be polished to a satin finish. All angles and flats not of stainless steel shall be painted two coats of red rust resistant enamel.

Note: This contractor shall check opening in dropped ceiling for range and dishwasher hoods and shall inform Heating and Ventilating Contractor of the exact location for his hood flue before fabrication and make necessary adjustments so that hoods will be properly secured.

15A-24.59A

Exhaust Hood - Non Filter Type

A. **General**

The dimension of the hood and flues shall be checked at the building before fabrication. The hood shall be recessed into the dropped ceiling per Sec. 58 or provided with a removable aluminum enclosure panels at the sides and front in cases where the hood is below the dropped ceiling.

B. **Construction**

Construction shall be as shown on the Board of Education Kitchen Standard Details. All joints shall be made airtight. If rivets are used they shall be spaced as noted on detail drawing. The joints may be welded with the welding done on the outside top and sides of the sheets.

- C. **Light Reflector Panel.**-Light reflector panel shall be provided at the lower outside edge of the hood in the location shown on drawings. This Contractor shall obtain templates of the electrical boxes from Electrical Contractor and provide openings with sufficient clearance to clear these boxes. Seal opening with gaskets after lights are installed. Provided angle clips for supporting the electrical boxes in the location shown on the drawings.

- D. Angles, Clips and Support. The hoods shall be supported by means of clips projecting from front frame angles as shown on drawings and bolted to curtain wall angle support furnished and installed by the General Construction Contractor.
- E. Flues.-The hood shall be provided with flue flanges in the locations shown on drawings and shall be connected by means of a flue connecting piece to the flue outlets provided by Heating & Ventilating contractor unless otherwise noted.
- G. Finish.-All portions of the hood constructed of stainless steel shall be polished to a satin finish. All angles and flats not of stainless steel shall be painted two coats of red rust resisting enamel.

Note: This Contractor shall check opening in dropped ceiling for range and dishwasher hoods and shall inform Heating and Ventilating Contractor of the exact location for his hood flue before fabrication and make necessary adjustments so that hoods will be properly secured. This contractor shall make final hood connection to duct roughing provided by others.

15A-24.59B Exhaust Hood, Self Washing Type

- A. Exhaust hood shall be designed to extract grease by passing exhaust air over a series of fixed baffler that entrap grease. These baffles are cleaned of grease by a sprayed mixture of hot water and detergent controlled by a automatic cycle control which can also be manually actuated.
- B. Unit shall be constructed of all 18 gauge (min) type 304 stainless steel (line polish finish) with all welds ground and polished. Front access panels to check functioning of spray nozzles shall be provided. Ventilator clearance to floor shall be 7'-2" (min).
- C. Control panel shall consist of solid state controller, manual gate valve, line strainer, solenoid, check valve, detergent pump and, reservoir pressure gauge, vacuum braker and all other required parts. Panel shall be 18 ga stainless steel, located as shown on drawing. Control buttons shall be 5'-0" above floor.
- D. Provide lights within hood to be connected by electrical contractor. Hot water and indirect drain connections by P & D contractor. Installation of fire control system be coordinated with hood installation. Ventilator shall have BS of A, NFPA, NSF and all other required approvals. Kitchen Contractor to make all

required connections between Hood and control panel. Provide Shop Drawings. Kitchen contractor shall make all required connections to duct roughing provided by others.

15A-24.60

Dishwasher Hood

A. Dimensions for the hood shall be checked at the building before fabrication. The hood shall be recessed into the dropped ceiling per Sec. 58 or provided with removeable aluminum enclosure panels at the sider and front in cases where the hood is below dropped ceiling.

B. Construction

Construction shall be as shown on the Board of Education Kitchen Standard Detail. The interior of the hood shall be rounded at the front and sides as detailed on drawing. All joints shall be airtight and of lock-seam type. Hood shall have mitered corners (welded, ground smooth and made airtight); a full back secured at bottom to the wall with expansion bolts (for brick) or toggle bolts (for terracotta), the bottom edge turned in on all four sides to form a condensation drip gutter (and provided with a drain connection welded to the underside), as shown on standard Details. The front edge shall be secured to curtain wall support angles.

C. Connection.

The flue shall be provided with a flue flange or flanges as shown on the Standard Details and when necessary shall be connected by means of a flue connecting piece to existing duct by the kitchen contractor.

D. Finish.-All portions of the hood constructed of stainless steel shall be polished to a satin finish. All angles and flats not of stainless steel shall be painted two coats of red rust resistant enamel.

Note: This Contractor shall check opening in dropped ceiling for range and dishwasher hoods and shall inform Heating and Ventilating Contractor of the exact location for his hood flue before fabrication and make necessary adjustments so that hoods will be properly secured.

15A-21.61.

Sinks.

A. The same gauge of metal shall be used throughout for all portions of the sink. All joints shall be a

continuous weld, ground smooth and polished so that all portions of the sink will form a continuous unit to simulate one piece construction. The top and ends of the splash back shall be flanged back to form a 90° angle. The top edge of the sink and drain boards shall

have an integral continuous channel or rolled shaped edge as shown on detail drawing. Drain boards shall be pitched to sink and sink bottom shall be scored and pitched to waste outlet. The top of splash back shall be secured to a continuous angle (approximately the same length as splashes) fastened to the wall. When the end of sink or drain boards are adjacent to a wall or a pilaster that portion shall be turned up to form a splash back, and welded to form a continuous integral back. The top of end splasher shall be secured to continuous angle same as back splasher.

B. Double compartment sinks shall have a double partition. Where the horizontal and vertical edges of partition meet the sink they shall be coved to a radius. The space between partition at bottom, front and back shall be enclosed to simulate one-piece construction.

C. Waste Connection.-Each sink compartment shall be fitted with a quick opening lever handle waste with screw top outlet with overflow. The strainer plate shall be set to insure proper drainage of the sink bottom. Bottom shall be depressed at an angle of 30° and 3/4" deep to receive waste outlet. The area of openings in the strainer plate shall not be less than the inside area of the waste pipe. The waste outlet shall be connected to the sink bottom as shown on detail drawing.

D. Support

Sinks shall be supported at front by 2" diameter, 16ga stainless steel legs and supported at the rear by means of angles and brackets fastened to wall as showing on Standard Details. Legs shall be secured at the top by stainless steel sockets welded to the sink. The bottom of the legs shall be provided with adjustable feet.

15A-24.62. Tables, Heavy Duty--Work and Preparation--General.

A. The tables shall be of the construction herein specified. For size, material and gauges, see Heavy Kitchen Equipment Standard Details drawings. Table shall be constructed with metal, wood or plastic tops, as specified and provided, with drawer where noted on

drawing. Supported on stainless steel tubing frame and provided with metal under shelving. Metal or wood tops and provided with drawer where noted on drawing. Metal upper shelving shall be provided where indicated on detail.

B. Metal Top.

1. Metal table top shall be constructed of a single sheet of stainless steel where possible with outside edges rolled to a radius as shown on drawing. The corners of top shall be rounded to form a bullnose and made integral with the top and rolled edges, ground smooth and polished. Welded filler pieces may be used for forming these corners. The tops shall be reinforced along the longitudinal center line with channels of the same gauge and material as the top and welded to the underside of the top.
2. Transverse angles or channels of same gauge and materials as top shall be provided for attaching tubing leg sockets. These angles or channels shall be spot welded to table top.

- C. Metal Baffles.**-Metal top where indicated on drawings shall be flanged up 2" above top, back 1" and down 1/2" at rear, down 4" at side as indicated on detail. The ends of baffle shall be flanged back to form a 90 degree angle and welded. All corner joints shall be provided when tables adjoin wall and when tables are installed back to back.

D. Wood or Plastic Tops.

1. Wood top shall be select edge grain kiln dried to a moisture content of not more than 4% by weight. The top shall be fabricated of 2 1/4" strips glued with waterproof case in glue. Top shall be reinforced with rods of the diameter and spacing shown on detail drawings; the top bored (not channeled) for tie rods. tie rod holes concealed with hard wood plugs. Plastic Tops shall be of Board of Health approved plastic.

E. Metal Drawer.

1. The body of the drawer shall be die drawn or formed out of one piece Stainless Steel Sheet by turning up the two sides and the back and double seaming and soldering the vertical seams at the back. The top edges at the sides shall be hemmed back on the outside and on the back. The body of the drawer where it is fastened to the front shall be flanged out on the sides and bottom and spot welded and flood soldered to the drawer front

as indicated on detail drawing. The drawer front shall have all corner edges rounded. The top edge of the drawer front may be hemmed or flanged back 1/2" to the inside of the drawer to stiffen the top edge. All joints shall be made sanitary and vermin proof. The drawer shall be removable and non-tilting when completely open. The drawer shall be provided with a set of channel slides set in suspension channel guides. Each guide shall be fitted with ball bearing sheaves, a combination drawer bumper and automatic stop. The stop shall be positive acting and accessible for releasing the drawer.

2. The drawer shall be provided with approved type drawer pull and C.P. brass pin tumbler cabinet type lock. All locks shall have the same combination and provide a total of 6 C.P. brass keys with metal tags, stamped "B. of E." and also with the following letters "KT" for Kitchen Tables, and for Pupils' Serving Unit Tables. Provide three keys and tags marked CT-1, 2, etc., "CT" for each Cashiers Table, which shall all be different. The combination for each Cashiers' Table shall be different.

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- F. Guides and channels shall be rigidly secured. Drawer shall operate smoothly and easily without sagging, side play, sticking, or binding. Drawer guides shall be designed to permit adjustment for proper alignment at top, bottom and sides of drawer. The space between guides at rear shall be sealed with stainless steel sheet extending from rear of drawer to underside of table top to prevent vandalism.
- G. Metal Undershelving.-The table shall be provided with a removable lower shelf extending from table leg to table leg. The shelves shall be flanged down as shown on Standard Detail. All shelves shall be reinforced along the longitudinal center line with a channel of the same gauge and material as the shelf, welded to the underside.
- H. Metal Upper Shelf or Shelving.-The sides and back edge shall be flanged up and front edge flanged down to form a 90° angle; corners shall be rounded, welded, ground smooth and polished. Shelf shall be welded to metal angle uprights and the uprights securely attached to the wood or metal tops as indicated on detail.
- I. Metal Upper Shelving (two tiers high).-Metal upper shelving shall have all outside edges flanged down at right angles, with corners rounded, welded and ground smooth. Shelves shall be supported on standards and fittings secured to the table tops, as indicated on drawing.

- J. Tubing Frame Work.-The frame work shall be constructed as shown on Standard Detail. Legs shall be welded in metal sockets at the top. The gussets shall be welded to the transverse channels of the table top

and secured to the legs with stainless steel "Tee" bolts (head bent to suit radius of gusset), nuts and washers, as shown on detail drawing. The legs shall be provided with adjustable feet.

15A-24.63.

Preparation Table, Heavy Duty, with Tray Slides.

General Construction similar to Par..62 this section with one section, between shelf and table top, of 14 gas. stainless steel pan slides spaced on two (2) inch centers, eleven (11) tiers high and designed to hold 16" x 26" pans. See Equipment Schedule for quantity or pans required.

The slides are to be welded to four (4) vertical 2" x 2" stainless steel angles. Angles to be bolted to bottom shelf and top fastened with blind bolts to underside of table.

15A-24.63A.

Preparation Table, Portable.

- A. General construction shall be entirely of stainless steel, except where noted. Top shall be one piece die stamped construction of 14 gauge stainless steel with channel reinforcement around perimeter; or as per Kitchen Standard Details.
- B. Legs shall be round stainless steel tubing of 16 gauge of seamless construction of diameter, not less than 2". Provide cross braces, or bottom rail, of 16 gauge wall stainless steel round tubing between the legs at the ends and front. No rail shall be required between the two rear legs.

Note: All welds shall be ground smooth and polished.

- C. Table shall be portable with 5" dia. Swivel wheels, similar to Colson No. 2-5067-65-9, with replaceable Polyurethane tires. The two rear wheels shall be equipped with brakes.

15A-24.64.

Cook's Table and Pan Rack (Type CTR).

The cook's table shall be constructed with a metal top, metal drawer and supported on tubing frame, provided with metal undershelving an pan rack. The top, drawer,

pipe frame and undershelving shall be of the construction and finish specified in Par..62 this section under "Tables- Heavy Duty." The pan rack shall be constructed of stainless steel tubing supporting the rack shall be secured to the underbody of the table as detailed. The stainless steel shapes forming the rack shall be welded to the vertical pipe standard and be provided with small stainless steel hooks.

15A-24.65.

Baker's Table (Type BTWS).

- A. **General.**-The baker's table shall be constructed with wood or approved plastic top and metal angle baffle screwed to wood top, a metal cabinet enclosed upper shelf, metal drawers, three (3) portable plastic ingredient bins with covers and a portable shortening container dolly as shown on detail drawings and as herein specified.
- B. **Wood and Plastic Tops.**-Table tops and frame work shall be constructed as specified in Par..62 this section, with additional railing as indicated on drawing.
- C. **Metal Drawers.**-The metal drawers shall be constructed and finished as specified in paragraph .62 (F) this section under "Metal Drawer", except as herein noted. The edges of the drawer front shall be flanged back 1/2" and corners rounded, welded, ground smooth and polished.
- D. **Ingredient Bins.**-The bins shall be removable, mounted on casters and provided with handles. The body of the bins shall be of one piece plastic construction with all corners coved to a radius. Provide a sliding cover for bin top, with handle.
- E. **Metal Upper Shelf.**-The metal cabinet enclosed upper shelf shall be constructed as shown on detail drawing.
- F. **Support.**-The table shall be supported on stainless steel tubing legs and railing as indicated on drawing.

15A-24.66.

Cashier's Table.

- A. The table shall consist of a metal top with drawer, mounted on stainless steel tubing frame with adjustable legs and secured to floor with stainless steel bolts.
- B. **Metal Top.**-The top shall be of the construction, material and finish as specified in Par..62(B) this section (Metal Top) except to shall be turned down at 90° angle instead of having rolled edge. Drawer shall be

similar to that specified under Par..62(F) this section (Metal Drawer) and be of the size noted on drawing and shall be provided with a lock, keys with metal tags, and removable cash drawer with lock combination and partition as indicated on detail drawing.

- C. Support.-Frame shall be constructed of 16ga. stainless steel tubing legs (frame-work for table), with adjustable flanged feet for attaching to floor

15A-24.67.

French Fry Bagging Unit

- 1. Unit shall be of all stainless steel construction, with french fry holding tray, bag holders, rear mirror, heat lights as specified in Kitchen Standard Details.
- 2. All electric wiring shall be in accordance with the N.Y.C. Electrical code. Provide a light (8) ft heavy duty three conductor (one grounding) line cord with heavy duty plug for connection to 120V, 1 ph, 60HZ, 15 amps receptacle.
- 3. Unit shall be supported on four (4) heavy duty 5" dia caster with polyurethane tires and locks.

15A-24.68.

Hot Food Holding Table

- A. Unit shall consist of a table of construction similar to that specified in Sec. 62, with two electrically heated food display levels.
- B. Holding table shall be of all stainless steel construction as shown on Standard Details, equipped with four (4) heavy duty 5" polyurethane casters with locks.
- C. All electric wiring shall be in accordance with N.Y.C. Electrical Code. Bring out two (2) eight (8) ft heavy duty three conductor (one grounding) line cords with heavy duty plugs for connection to two (2) 120V, 1 ph. 60HZ 15 amps. receptacle.

15A-24.69.

Utility Table, Portable, Type "UTP"

- 1. Table shall be of all stainless steel construction with top and frame as specified under par..62.
- 2. Unit shall provided with four (4) - 3" heavy duty casters having polyurethane tires and locks.

15A-24.70.

Condiment Stand (mobile)

1. Condiment stand shall be of all stainless steel construction with sliding door under cabinet and top cut to take catsup, etc pumps and trays for condiments etc. Construction shall be as shown on Kitchen Standard Details.
2. Unit shall be provided with four (4) - 3" neavy duty casters having polyurethane tires and locks.

15A-24.71.

Slicer/Mixer Table.

1. Slicer/Mixer Table shall be of all stainless steel fabrication constructed as specified under par.62.
2. Table shall follow the designs of Table Type "UTP" except be 24" x 30" x 32" H in size intended for use with slicers and mixers.
3. Provide table with four (4) - 3" dia heavy duty casters with polyurethane tires and locks. Lag slicer or mixer to table with approved stainless steel fasteners.

15A-24.72.

Service Shelves

1. Service shelves shall be of 14 gauge stainless steel construction of size, location and number of tiers as shown on drawing.
2. Shelves shall be supported by metal brackets of shape and spacing as shown in Standard Details. The angle supports are to be supported with approved toggle bolts in hollow material and approved expansion bolts in solid material.
3. Shelves shall be fabricated with as few sheets as possible (84" length or longer preferred). Transverse joints shall be butt welded, ground smooth and polished. The front and side edges shall be turned down with corners rounded and welded, attached to the brackets by spot welding or with concealed fastenings and secured with nuts and washers. Shelves shall be flanged up to form a splash back, crimped and secured to the wall. The underside of all shelves and back of the splash back shall be finished with an approved composition of sound deadening material.

15A-24.73

Serving Counter (Fixed)

A. General

Counter shall be supported by six inch adjustable legs

and consist of hot wells, cold wells, salad unit, sandwich unit, open counter section, milk well, ice cream section plate/silver dispenser, cashier section, and other required units as indicated on drawing. All opening in counter for piping wiring, etc shall be made by the kitchen contractor with all final connection made by other contractor. Kitchen contractor shall extend all drain lines to indirect connection to floor drains. Construction shall be as per Kitchen Standard Details.

- B. **Frame Work.**-The counter body, including all the units as herein described, shall be built over a framework of angles, as detailed. All corners shall be mitered and welded. All shop joints shall be welded and field joints bolted, unless other wise noted. The frame shall be strong and rigid with exposed joints ground smooth.
- C. **Intermediate Bracing.**-Intermediate angle bracing shall be provided in the General Counter Section at the vertical front, back and transversely across the top and bottom of the frame, spaced approximately 5'-0" on centers, unless otherwise indicated on drawings.
- D. **General Counter Body.**-This unit shall be provided with a bottom shelf, upper shelf and a partition, where unit adjoins a hot well or cold pan unit. Provide sliding doors the full height and length of counter, unless otherwise indicated on drawings.
- E. **Bottom Shelf.**-The bottom shelf shall be constructed with side and front edges flanged down at a 90° angle. The back edge shall be flanged down and hemmed back over the framework. Weld all edges to frame work. The longitudinal center line of shelf shall be reinforced with a channel shaped stiffener of the same material and gauge, welded to the underside.
- F. **Upper Shelves.**-The upper shelf shall be made in removable sections, each section not to exceed 30" in length unless otherwise indicated. All outside edges shall be flanged down to a 90° angle and turned in and edges hemmed to form a channel shaped edge, corners welded and ground smooth. Longitudinal center line shall be reinforced with a channel shaped stiffener of the same material and gauge, welded to the underside. Shelving shall rest on an angle frame with corners mitered and welded. Weld angle frame to body framework.
- G. **Doors and Guides.**-See drawing for the number of doors required for each unit. Doors shall not be less than 5/8" thick, constructed of an outer panel and inner liner flanged on all four sides, corners welded and

ground smooth. (The inner liner telescoping the outer panel and welded.) The outer panel shall be stiffened at the vertical center line with a channel shaped section and welded. Doors shall be provided with reinforcement plate welded to back of outer panel for attaching door handles. Sheaves shall be mortised into door bottoms and shall be heavy duty ball-bearing type. Each door shall run on the bottom as shown on detail drawing and guide in a channel at top. Guides at top to run full length of the counter. Doors shall not exceed 36" in length. Doors shall be removable without the use of tools and provided with stops to keep doors from bumping into door handles. Doors covering compressor compartment of cold pan body shall not be louvered. Louvers shall be provided in fixed panel above doors as shown on standard detail. Door handles shall be of the offset type and secured with Phillips stainless steel oval head machine screws tapped into the door handle reinforcing plate. Overhead type suspension sheaves may be submitted for approval.

H. Hot Wells and Cold Pan Body.-These units shall be provided with a bottom shelf. Provide sliding doors the full length of unit (where indicated) of the height noted on drawing. The ends of each unit shall be provided with metal partitions. Provide a metal panel over the doors of the steam table unit as indicated on drawing. Bottom shelf, doors and guides shall be constructed as specified under "General Counter Body." Provide a towel ring secured to the panel at the location indicated on drawing. The compressor shall be mounted in the pipe space under the counter and be supported on angles or channels secured to counter frame angles or as otherwise shown on drawings. The space for the compressor shall be separated from the cold pan body by means of a partition.

I. Electric and Other Requirements for Hot Wells

1. The type and number of hot food receptacles shall be as indicated on standard detail. Each receptacle shall contain one or two calrod heating elements controlled by a infinite heat control mounted on the rear panel at back of hot wells. The thermostat shall have an integral or separate pilot light mounted as indicated on standard detail.
2. A trough with removable panel shall be provided in rear upper section of steam table for installing wiring and thermostats shall be recessed into the removable panel so that individual thermostats may be removed without affecting the others. A ventilated switch box with removable cover shall be

provided in the upper rear section of the pipe space for installing switches, signal light, bus bars, etc. Openings shall be provided where required for wiring connections from bus bars to thermostats, dish dispensers, service connection to switch box; also cold pan compressor connections. The switch box and cover shall be as indicated on detail. Signs shall be provided to identify disconnect switches and receptacles.

3. This Contractor shall furnish and install all switches, bus bars, receptacles, signal lights, etc., in switch box, together with all wiring to and including three pole disconnect switches. All wiring shall be tinned copper with water and heat resisting insulation. The elements for each hot food receptacle shall be wired for 208V single phase operation and installed in accordance with manufacturer's recommendations.
4. The Electric Contractor will furnish and install a 208 volt circuit to switch box in pipe space, and extend and connect to disconnect switch for steam table.

J. Electric Requirements for Cold Pan.

1. Furnish and install cold pan switch box in pipe space an operating switch with pilot light as indicated on detail drawing. Compressor Unit including pressure switch shall be completely wired, ready for final outlet box on motor by others.
2. Other Contractor will furnish and install a 120 volt, single phase circuit from source of supply to switch box, in pipe space and extend circuit from switch box on compressor and connect to motor.

K. Dish Dispensers (Built In Type) Electrically Heated.-The automatic dispenser shall be of the model number specified in Equipment Schedule and of the design and construction herein specified. The heater cabinet shall consist of an angle frame with exterior and interior panels of not less than 20 gauge stainless steel. The space between these panels shall be filled with sheet rock or glass wool insulation. The cabinet shall be supported on 1 1/2" x 1/8" transverse frame angles welded to counter frame angles so that bottom of cabinet is approximately 5 3/4" above floor. The upper part of heater cabinet shall be secured to counter frame angles with stainless steel sheet metal screws. The heater cabinets shall be of special size to be built into the counter. The top of

the counter shall be cut out to receive the dispensers. The dispensers shall be calibrated to the size and weight of the dishes to be used.

- L. **Electric Requirements for Dish dispenser.**-Each heater cabinet shall be equipped with three approx. 265 watt, 220 volt, single phase strip heaters thermostatically controlled and fully wired. All wires shall terminate in a junction box mounted on side of cabinet and extended into wiring space of steam tables. Wiring shall be connected to steam table circuit as shown on Standard Details and comply with Section 15-6.
- M. **Open Counter Section.**-Open counter section shall be of size indicated on drawing, and shall be formed by omitting sliding doors, bottom, and upper shelves. Partitions shall be provided at each end of open counter section.
- N. **Pipe Space.**-A pipe space shall be provided between the steam table and cold pan units, where indicated on drawing. Provide a door fitted with semiconcealed type hinges, door handle and catch. The pipe space shall be left open at bottom. The door shall be constructed as specified under Par..73(G) this section, doors and slides except as herein above amended.
- O. **Panels and Trim.**-The front and exposed ends of the serving counters shall be finished with panels. These panels shall be made of a single sheet from top to bottom and bottom edges shall be straight and true. The panels

shall be of equal lengths and cover the entire length of the counter front. The vertical joints of panels shall be trimmed with flats and secured to panels or frame invisible fasteners. The vertical strips shall be spaced as shown on drawing.

- P. **Counter Tops.**-Tops shall be fabricated if maximum possible size 14 ga stainless steel sheets (96" length or longer preferred). No longitudinal joints will be permitted. The front and back edges and the ends shall be flanged down to a 90° angle with corners mitered, welded, ground smooth and polished. Shop transverse joints shall be butt welded, ground smooth and polished. Field transverse joints where necessary, shall be reinforced with a strap of the same gauge and material as the top. This strap shall be welded to one section of the top and the field fastening shall be made by means of invisible flush head countersunk bolts, bolted to a perfect alignment, welded, ground smooth and polished. No solder will be permitted in transverse field joints. Tops shall be secured to

framework with concealed stainless steel fastening. Where the counter top abuts a wall or column the top shall be flanged up to a 90° angle and an angle scribe cap of the same material shall be fitted over this edge, and flush against the wall or column, welded, ground smooth and polished.

Q. Hot Wells Section Top

Hot wells top shall be of the length, design and number of wells as shown on drawing. Top shall be one piece of 14 gauge stainless steel sheet cut out to take 12" x 26" x 6" deep pans with 1/2" (min) radius corners, and a 1" deep fold-down all around each well, including corner. All corners shall be rounded and polished and if welded ground smooth and polished. Heated well units shall be of seamless construction with rounded corners. Wells shall be of the insulated type. Provide two (2) sets of stainless steel pans, with covers for each hot well section.

R. Cold Pan Top and Cold Pan.

1. The top shall be cut out and flanged down to suit the cold pan insert.
2. The cold pan shall be of the length, width and inside dimensions shown on drawings. The pan shall be formed out of one sheet by turning up the sides, front and back and welding all vertical seams watertight. The pan be secured to the counter top, provided with breaker strips and supported in approved manner. The bottom of the pans shall be pitched to a waste outlet located at the end of the pan adjacent to the pipe space; and shall be provided with removable false bottom as shown on detail. The waste outlet shall silver soldered to the bottom of the pan.
3. Cold plates shall be welded or tubing soldered to sides and underside of cold pan and insulated with glasswool as indicated on drawings. The casing enclosing the insulation shall be supported from cold pan top as shown on detail.

S. Combination Cold Pan and Sandwich Unit.

1. The combination unit shall consist of a refrigerated cold pan removable false bottom and sliding cover together with sandwich pans and covers, as indicated on drawing.
2. The rear portion shall be provided with a carving board, plate storage shelf, scrap chute and scrap box.

3. The general construction of the cold pan body shall include sliding doors and be as shown on standard detail.

T. Milk Well

1. Milk well shall be with cavity thermostatically controlled at 35°F. of dimensions shown on drawing, with construction equivalent to that specified in sub-paragraph R and electrical requirements as specified in Paragraph J.
2. Equip cavity with removable lowerator mechanism of all stainless steel construction.
3. Cover shall be of the sliding type, insulated stainless steel, equipped with locks.

U. Ice Cream Well

1. Ice cream well shall be with cavity thermostatically controlled at + 20°F. of dimensions shown on drawing, with construction equivalent to that specified in sub-paragraph R and electrical requirements as specified in Paragraph J.
2. Equip cavity with removable lowerator mechanism of all stainless steel construction.
3. Cover shall be of the sliding type, insulated stainless steel, equipped with locks."

V. Tray Stand/Silver Dispenser

1. Provide tray stand/silver dispenser section shall be of stainless steel construction and size as shown on drawing.
2. Silver dispenser shall be of the elevated type with eight (8) removable plastic cylinders of construction equivalent to Shelly Model TS or approved equal.
3. Provide sliding door under-cabinet.

- W. Counter Legs.-**The counter at the front and rear (unless otherwise indicated on drawings) shall be mounted on approved stainless steel legs. No. 4 Finish. The adjustment bolt may be made of carbon steel which shall be enclosed in stainless steel. Legs shall be provided with ledge at top for securing to the counter body. The legs shall be adjustable at the top portion for leveling and rest solidly on the floor. The legs shall be designed to provide a space of 6"

from finished floor to the bottom edge of the counter when the adjustment on the leg is screwed all the way into the end of the thread. The legs shall be bolted to counter body and shall be spaced as indicated on drawing.

X. Protector Case and Display Case.

1. General.-A protector case consisting of a single shield and one shelf shall be provided over steam table section as indicated on drawing. A display case consisting of three shields and triple shelf shall be provided over the cold pan section and balance of General Counter as indicated on plans.
2. The vertical and obtuse angle uprights shall be made of stainless steel square tubing. At the base provide a square flange with rounded corners. The base shall be tapped for a round head machine screw, screwed into the base from the underside of the counter top. At the top provide a formed cap and weld base to the upright.
3. The upright, front and rear, shall be equally spaced along the length of the counter top not more than 3'6" on centers except where the rear upright interferes with the cold pan or steam table section; that upright shall be omitted, and an additional horizontal rail shall be provided to reinforce the horizontal rail above it. This span shall be braced from the front upright. The horizontal rails shall extend and be welded to each upright both longitudinally and transversely.
4. All glass shall be of the finest quality of 1/4" polished plate glass with all edges ground true to insure a snug fit. The glass shelves shall be supported on the horizontal rails by means of supporting clips. The clips shall be secured with machine screws tapped into the rails or by welding. The top, ends and lower edges of all glass shields shall be set in channels. Edges shall be puttied in the channels. All joints in the glass section shall occur at the vertical uprights. The glass sections shall be removable for replacement purposes.

- Y. Finish.-All portions of the counter not constructed of stainless steel including angles or channels shall be finished with two coats of rust resistant primer. All tubing shall be polished to a satin finish.

2. Samples.-Submit samples of material and finish before fabrication. Samples of tray slide brackets and tubing, counter legs, glass and tubing for protector cases and display cases shall be submitted for Executive Director's approval before fabrication.

15A-24.74

Serving Counters, Mobile, Modular Type.

A. General

Counter shall consist of separate mobile, modular units provided with side latches so all units may be latched together to form a continuous line up. All units shall be of stainless steel construction with 16 gauge top, supported by four (4) - 5" heavy duty casters with polyurethane tires, the two at the service side equipped with locks. Serving units shall be designed for single or double side service, as noted on drawings, and electrically heated or cooled, as required, from a 120V, 1 phase 60 HZ, 15 amp power source. Connection to electric receptacle shall be by a light (8) ft heavy duty three conductor (one grounding) line cord with heavy duty plug to match receptacle.

B. Design

Mobile units shall be of the type and size shown on drawing. Units shall be provided without work shelf or tray slide except if indicated otherwise on drawing. All transparent panels shall be polished 1/4" plate glass framed in a 20 gauge stainless steel channel member. All refrigerated units shall be provided with a compressor of the manufacturers recommended horsepower meeting the requirements of Par. 09.

15A-24.75

Hot Wells Server

1. Server shall be of the construction specified in Par. 74, of size and number of wells as shown on drawing. Unit shall be of the type, manufacture and model number as shown in the equipment schedule.
2. Provide with stainless steel full length oversnelf having glass sneeze guarded at front and sides except if indicated otherwise on drawing. Supply 12" x 20" x 6" D stainless steel pans with covers in an amount double the number of hot wells.

3. For five (5) or more wells bring out power on two (2) electrical line cords with plugs suitable for 120 volt, 1 phase, 60 HZ, 15 amp use.

15A-24.76

Cold Pan Server

1. Server shall be if construction specified in Par. 74 with size if cold pan as shown on drawing. Unit shall have refrigerated cold pan and be of the type, manufacture and model number shown in the equipment schedule.
2. Refrigeration compressor unit shall meet all requirements of Pars. 06 and .09.

15A-24.77

Salad Server

1. Solid Server shall be if construction specified on Par. 74, of a size shown on drawing. Unit shall refrigerated cold pan and be of the type, manufacture and model number as shown in the equipment schedule.
2. Provide full length canopy of the double sloped (non-curved) non-illuminated type, with 1/4" thick one piece plexiglas transparent panels having stainless steel U member framed edges and 1/2" (min). radius corners. Supply with two (2) sets of salad bowls and salad pans with covers.
3. Refrigerator compressor shall meet all requirements of Par .06 and .09 and be of the manufacturers standard horsepower, 120 volts 60HZ, 1Ph. Provides six (6) ft. heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.78

Cashier's Section.

1. Cashier's section shall be of the construction specified in Par. 74 of a size as shown on drawing. Unit shall be of type, manufacture, and model number as shown in the equipment schedule.
2. Unit shall be provided with cash drawer, front panel and front rest bar.

15A-24.79

Flat top Section

1. Flat top section shall be if the construction specified in Par. 74 of a size as shown on drawing. Unit model number as shown in the equipment schedule.

2. Supply unit with frontal plastic decorative panel, color as selected by architect or, as called for on drawing.

15A-24.80

Milk Section

1. Milk section shall be a refrigerated, lowerated well type unit of construction as specified on Par. 74. of size as shown on drawing. Unit shall be of type, manufacture and model number as shown in the equipment schedule.
2. Provide with full length glass display shelves if shown on drawing. Refrigeration compressor unit shall meet all requirements of Sec. 06 and. 09. Unit shall be provided with thermometer and locking cover as indicated in Par. 18.

15A-24.81

Ice Cream Section

1. Ice cream section shall be a refrigerated, lowerated well type unit of construction as specified in Par. 74. of size as shown on drawings. Unit shall be of type, manufacture and model number as shown in the equipment schedule.
2. Provide with full length glass display shelves if so shown on drawing. Refrigeration compressor unit shall meet all requirements of Sec. 06 and. 09. Unit shall be provided with thermometer and locking cover as indicated in Par.18.

15A-24.82

Combination Milk/Ice Cream Section

1. Combination milk/ice cream section shall be a refrigerated, lowerated wells type unit with separate milk and ice cream compartments. Construction shall be as specified in Par. 74, of size shown on drawings.
2. Provide with full length glass display shelves if so shown on drawing. Refrigeration compressors maintaining proper temperative in each well shall meet all requirements of Sec. 06 and .09. Unit shall be provided with thermometers and locking covers as indicated in Par .18.

15A-24.83

Tray/silver Dispenser Section

1. Tray/silver dispenser shall be of construction specified in Par. 74, of size as shown on drawing. Unit shall be of type, manufacture, and model number as shown in the equipment schedule.

2. Provide two (2) sets if of plastic silverware containers.

AUXILIARY KITCHEN EQUIPMENT

15A-24.84. Mixer, Floor Type

- A. The mixer shall be as specified in the Equipment Schedule complete with the accessories listed herein. This item shall be attached to floor by means of stainless steel bolts and expansion shield.
- B. Electric Requirements.-Motor shall be enclosed and ventilated and not less than H.P. specified in Equipment Schedule, 3 phase, 208 volt. Provide magnetic type starter completely wired to outlet box on motor. Electric contractor to supply solid connection.

15A-24.85 Mixer, Table type (Large and Small)

- A. The Mixers shall be as specified in the Equipment Schedule and shall be set on table at location shown on drawing and shall be provided with the accessories listed in the Equipment Schedule. Mixers shall be secured to table top with stainless steel bolts or screws.
- B. Electric Requirements.-The motor shall be single phase, 120 volt of enclosed type design, furnished with built-in operation switch and 6 feet of flexible rubber covered 3-wire cord (one for grounding frame of machine) with plug to match receptacle.

15A-24.86 Food Cutter.

- A. General.-The food cutter shall be as specified in Equipment Schedule and shall be set on table at location shown on drawings and shall be provided with accessories listed in the Equipment Schedule.
- B. The machine shall have a built-in safety device that will positively prevent raising the bowl guard while the motor is in operation, or starting the motor unless the bowl guard is securely locked in place.
- C. Electric Requirements.-Motor shall be single phase, 120-volt of enclosed type design, furnished with safety control, operating switch and 6' of approved rubber covered flexible 3-wire cord (one for grounding frame of machine) with plug to match receptacle.

15A-24.87 Slicing Machine, Table Type

A. General

Slicing machine shall be of the manufacture and model number specified in the equipment schedule, and shall be lagged to table as shown on drawings. The machine shall be of the manufacturers standard finish except if specified otherwise.

B. Mechanical Requirements

The motor shall be of the fully enclosed type, lubricated for life. Mechanism shall be of the all gear type fully enclosed, containing lifetime lubrication.

C. Electrical Requirements

Motor shall be single phase 120 volts, 60Hz, furnished with built-in on-off switch, power indicator light, and a six (6) ft of heavy duty three conductor (one grounding) power cord with a plug to match receptacle.

15A-24.88 Dishwashers, General

A. Dishwashers shall be of the heavy duty commercial type of a manufacture and model number as specified in the equipment schedule. Machine shall be fully automatic, of size, design, construction and material as hereinafter specified. Dishwasher installation shall include clean and dirty dish tables.

B. Dishwashers shall be classified as follows:

- Type A - Door Type, Single Tank
- Type B - Conveyor Type, Single Tank
- Type C - Conveyor Type, Two Tank

C. Dishwasher Tables.

1. A. Soiled and clean dish tables of the size and shape indicated on drawing shall be furnished. Tables shall be constructed with a stainless steel top, supported on a stainless steel tubing frame and provide with metal undershelfing as herein specified and shown on standard details.

2. Top.-Table tops shall be fabricated with as few sheets as possible (84" lengths or longer preferred). No longitudinal joints will be permitted. All outside edges shall be constructed with integral rolled or channel shaped edge. All horizontal and vertical corners shall be rounded, welded, ground smooth and polished.

3. All shop transverse joints shall be butt welded, ground smooth and polished. Field transverse joints where necessary shall be carefully aligned and reinforced with a strap of the same gauge and material as the top. Final welding of joint shall be as specified in Par. 03 .
4. The table top shall be reinforced along the longitudinal center line with channels of the same gauge and material as the top and shall be welded to the underside of the top. Transverse channels of the same gauge and material as the top shall be provided for attaching tubing leg sockets. These channels shall be spot welded to table top.
5. The soiled dish table top shall be provided with a splash back along the rear of the height noted on drawing and with pre-wash or soak sink bowl with quick opening lever handle waste as indicated on drawing. The table shall be pitched to the sink bowl. The soiled dish table shall also be provided with a large angled plastic scrap block as shown on the drawings. When a pass through window is provided, this Contractor shall secure end of soiled dish table to window sill as shown on detail.
6. Clean dish table.-"EL" shaped portion with radius corner shall be depressed 2" x 27" wide inside, with square corners. This section shall be fitted with a 1 1/2" I.P.S. chrome Plated Brass waste outlet with 4" long chrome plated tailpiece where indicated on drawing and extended to spill into floor drain.
7. Provide removable splasher guards, front and back where tables adjoin conveyor type dishwashing machine approx. 10" long by 13 inches high of 12 gauge stainless steel. Guards shall be provided with clips or guides to fit curvature of table edge, and exposed corner shall be rounded to a 3 inch radius. When back splasher is indicated the guard shall be omitted at that point.
8. The soiled and clean dish table top shall be constructed with a flange or lip of the correct width and shape to make a neat and watertight connection to the dishwashing machine.
9. Metal Undershelving.-The clean dish table shall be provided with shelves in sections the full length of each table as indicated on the drawing. No shelves shall be provided under the soiled dish table unless otherwise indicated on drawing.

10. Table Supports.

- a. The frame work shall be constructed as shown on Standard Detail. Legs shall be provided with stainless steel sockets at the top. The sockets shall be welded to the transverse channels of the table top and secured to the legs by welding. The legs shall be provided with adjustable stainless steel feet spaced not more than 5'-0" on centers.
- b. The soiled dish table top shall be supported on brackets similar to sink and with front legs secured to floor with stainless steel bolts as indicated on drawings.

11. Dishwash table, prewash sink shelving and racks shall be provided as part of dishwashing machine installation unless indicated otherwise. Machine shall be right hand, left hand feed direction, corner type or straight, as shown on drawing.

12. Scrape Sink

- A. Scrape sink shall be built into dirty dish table and be of a size and construction as shown on Standard Details and drawing. All joints welded and ground.
- B. Provide and install behind sink, a pre-rinse faucet with wall bracket and flexible spray head, T&S or approved equal.

13. Wall Shelves

- A. Provide and install on wall behind clean and dirty tables two (2) sloped walled shelves with 1" turned up edges.
- B. Shelves shall be of stainless steel construction, 22" deep x 42" wide except if specified otherwise on drawings.
- C. Shelves shall be securely lagged to the wall and have bent angle supports on each and all corners shall be wall rounded and polished.

14. Racks

- A. Racks shall be provided of heavy duty high impact resistant polypropylene plastic construction of a quantity, type, and manufacture as shown on drawings.
- B. Racks shall be 20" x 20" in size, of stacking design, except if indicated otherwise on drawing.

15. Approvals.

All dishwasher machines must be UL and NSF approved and carry N.Y.C. MEA or BSA acceptance seal.

15A-24.89 Dishwasher, Door, (Type A)

- A. Dishwasher installation shall be as specified in Par. 88, of right hand, or left hand feed, straight or corner design as shown on drawing machine shall be of rigid construction, quiet in operation and shall be free from objectionable vibration. All parts requiring adjustment or lubrication shall be readily accessible from the front of the machine. Machine parts shall be accurately made to insure complete interchangeability and parts subject to wear shall be readily replaceable. All machine parts exposed to water shall be of stainless steel or equivalent non-corrosive material. Machine shall be designed to provide circulating wash and fresh water rinse, the final rinse using outside water supply.
- B. Pump shall be of the horizontal, non-clogging centrifugal type with non-overloading characteristics and mounted below the wash tank. The pump casing shall be of cast iron and provided with removable clean-out plate accessible from the front or end of the machine for access to the interior parts. The impeller shall be made of monel metal or stainless steel, hydraulically and mechanically balanced, and shall be mounted on and keyed to a motor shaft of non-corrosive metal, and turn in ball bearings. Suitable means shall be provided for maintaining the impeller in proper lateral position relative to the casing. The packless seal (or stuffing box, glands and renewable packing) shall include a renewable bronze or stainless steel sleeve mounted on the pump shaft. The pump casing shall be provided with a drain unless of self-draining type.
- C. Pump and Motor Connections.-The pump and motor shall be directly connected with impeller mounted on the extended shaft of the motor, or by other method approved by the Executive Director. The pump and motor shall be placed under the wash chamber and the front enclosed with a stainless steel panel removable without the use of tools.
- D. Base and Supports. Base and supports shall be of iron or steel or rigid construction and machine shall be mounted on four stainless steel adjustable sanitary legs.
- E. Wash Chamber (Housing).-These members shall be constructed of stainless steel, welded and braced with stainless steel angles on the inside, and of the gauges noted hereafter. The wash-chamber shall be made of stainless steel not less than 18 gauge (.050").

F. Sliding Doors.-Doors of wash chamber shall be of one piece construction, and doors shall slide vertically in grooves. Doors shall be constructed of not less than 20 gauge (.037) stainless steel or monel metal and shall be splash proof and counter-balanced. Each door shall be equipped with unbreakable handles made of heat and water resisting material. The chains and pulleys for doors shall be made of bronze or other material approved by the Executive Director.

G. Tank.-The tank shall be constructed of not less than 16 gauge (.0625") stainless steel. The tank shall be equipped with an overflow and a waste outlet provided with a drain valve operated from the outside of the machine. Drain valve shall be brass or non-corrosive material. The waste outlet and the overflow shall be connected together to provide a combination waste and overflow mounted on the exterior of the tank. The tank shall be fitted with suitable metal strainers and lift handles. Strainers shall be constructed with Stainless Steel frame and shall have a perforated or woven stainless steel mesh.

H. Wash Spray System.

1. Wash spray system shall consist of pipes, arms and manifolds, which shall be of Stainless Steel, Ni-Resist or bronze and arranged to properly spray from above and below. The slotted portion of wash spray piping shall be stainless steel. The wash spray piping shall be provided with accessible clean-out caps, removable without the use of tools. The wash spray shall cover the entire area of the dish rack. Provide wire brush for cleaning tubes.

2. Inlet for water supply shall be located at least 1" above the rim of the dish table, or through air-gap and suds trap and supplied with a shut-off valve at inlet connection of machine, for filling tank. The rinse piping shall include check valve and vacuum breaker with extended overflow discharge pipe and discharge extended into wash chamber housing.

I. Control Valves.-The final rinse water shall be controlled by a self-closing or solenoid bronze valve having removable nickel alloy or a stainless steel seat operated by means of a timer. A separate valve or switch shall be provided to fill the wash tank.

J. Thermometers.-A thermometer shall be provided on the hot water supply to show the temperature of the rinse water. There shall also be a thermometer of either the dial or straight or angle type installed in the wash tank. Thermometers shall have a range of from 50 to 212 degrees F. and shall be installed in such location as to be easily read.

K. Automatic Timer Control.

1. The machine shall be fully automatically time controlled, timing device shall include an interlock of the doors to prevent opening until finish of complete cycle, and a signal light to indicate when the cycle is in operation.
2. The automatic time control shall be provided with a manually operated auxiliary circuit, which can be used in case of automatic timer failure.
3. The wash, pause, and rinse, shall automatically operate through synchronous timers (electrically or mechanically operated by means of cams) for periods that comply with the requirements of the New York City Health Department.

L. Electric Requirements for Automatic Time Control.-The electric timing device apparatus shall be designed for 208 volts, the phase operation. Furnish and install on or near machine a time control switch box with a timing device complete with magnetic starter and overload protection and necessary length of approved waterproof cable in flexible conduit between control switch box and motor outlet box; also to electrically controlled rinse valve. Control switch box shall be provided with opening for 3/4" conduit connection.

M. Tank Heating.-Tank shall be provided with electric or gas heating as specified on drawing. Electrically heated tanks shall be furnished with a thermostatically controlled electric heater composed of three elements, for 208 volt, three phase, three wire circuit operation. Furnish and install a combined thermostat and limit control. The electric heater shall not be less than the capacity specified in the Equipment Schedule and of the type herein specified, and shall thermostatically maintain the temperature of the wash water at 150° F. The heating elements shall be of the immersion type with stainless steel pheths and shall be the equal of "Chromolox," manufactured by Edwin L. Wiegand Co., Pittsburgh, Pa. The combined thermostat and limit control shall be double pole, sinile throw, 25 amp. 250 volt A.C. set for 150° F. at factory, the equal of the Robertshaw Thermostat Co., Model No. H-14 with signal light, stuffing box, manual reset, pointer temperature indicator (not Bezel type) with Type "S" temperature adjustment and mounted in an enameled steel box. The thermostat and heating element shall be completely wired with wires terminating in an outlet box on heater or thermostat.

2. Electrical Contractor will furnish a separate 208 volt, three phase, three wire, heater circuit from source of supply to a flush mounted disconnect

switch with signal light, and through the wall outlet box in back of dishwasher, connect this switch to heater outlet box installed on dishwasher. All circuits to be run in conduit.

3. Gas type tank heater shall be of the safety pilot type, with rear mounted flue, AGA approved and fully in accordance with Par. 25.

N. Electric Requirement for Motors.-Motors shall be 208V, 3 phase of ball bearing fully grease packed design.

This Contractor shall terminate all wiring for motor, heater, timer and solenoid rinse valve in outlet boxes tapped for 3/4" conduit.

Note: Motor starter shall be included with Automatic Time Controller. Other Contractor will furnish and install a 208 volt, three-phase circuit from source of supply to a flush wall disconnect switch with signal light for motor and a separate circuit for heater and extend and connect to timer control switch box and outlet box on heater.

- A. Dishwasher installation shall be as specified in Par. 88. of right hand or left hand feed, straight or corner design as shown on drawing, machine shall be of rigid construction, quiet in operation and shall be free from objectionable vibration. All parts requiring adjustment or lubrication shall be readily accessible from the front of the machine. Machine parts shall be accurately made to insure complete interchangeability and parts subject to wear shall be readily replaceable. All machine parts exposed to water shall be of stainless steel, or equivalent non-corrosive material. Machine shall be designed to provide circulating wash and fresh water rinse, the final rinse using outside water supply.
- B. Pump shall be of the horizontal, non-clogging centrifugal type with non-overloading characteristics and mounted below the wash tank. The pump casing shall be of cast iron and provided with removable clean-out plate accessible from the front or end of the machine for access to the interior parts. The impeller shall be made of monel metal or stainless steel, gydraulically and mechanically balanced, and shall be mounted on and keyed to a motor shaft of non-corrosive metal, and turn in ball bearings. Suitable means shall be provided for maintaining the impeller in proper lateral position relative to the casing. The packless seal (or stuffing box, glands and renewable packing) shall include a renewable bronze or stainless steel sleeve mounted on the pump shaft. The pump casing shall be provided with a drain unless of self-draining type.
- C. Pump and Motor Connections.-The pump and motor shall be directly connected with impeller mounted on the extended shaft of the motor, or by other method approved by the Executive Director. The pump and motor shall be placed under the wash chamber and the front enclosed with a stainless steel panel removable without the use of tools.
- D. Base and Supports.-Base and supports shall be of iron or steel or rigid construction and machine shall be mounted on four stainless steel adjustable sanitary legs.
- E. Wash Chamber (Housing). Shall be provided with curtains front and back, inspection and clean-out doors, made of not less than 16 gauge stainless steel.
- F. Conveyor.-The conveyor shall be operated by lever or motor operated by independent switch, and have normal and neutral speed, allowing racks to remain in machine as

- G. Control Valve.-Separate hot and cold water control valves may be provided on pre-wash tank supplies for manual mixing of prewash water.
- H. Tank.-The tank shall be constructed of not less than 16 gauge (.0625") stainless steel. The tanks shall be equipped with an overflow and a waste outlet provided with a drain valve operated from the outside of the machine. Drain valve shall be brass or non-corrosive material. The waste outlet and the overflow shall be connected together to provide a combination waste and overflow mounted on the exterior of the tank. The tank shall be fitted with suitable metal strainers and lift handles. Strainers shall be constructed with Stainless Steel frame and shall have a perforated or woven stainless steel mesh.
- I. Wash Spray System.
1. Wash spray system shall consist of pipes arms and manifolds, which shall be of Stainless Steel, Monel or bronze and arranged to properly spray from above and below. The slotted portion of wash spray piping shall be stainless steel. The wash spray piping shall be provided with accessible clean-out caps, removable without the use of tools. The wash spray shall cover the entire area of the dish rack. Provide wire brush for cleaning tubes.
 2. Inlet for water supply shall be located at least 1" above the rim of the dish table, or through air-gap and suds trap and supplied with a shut-off valve at inlet connection of machine, for filling tank. The rinse piping shall include check valve and vacuum breaker with extended overflow discharge pipe and discharge extended into wash chamber housing.
- J. Control Valves.-The final rinse water shall be controlled by a self-closing or solenoid bronze valve having removable nickel alloy or a stainless steel seat operated by means of a timer. A separate valve or switch shall be provided to fill the wash tank.
- K. Thermometers.-A thermometer shall be provided on the hot water supply to show the temperature of the rinse water. There shall also be a thermometer of either the dial or straight or angle type installed in the wash tank. Thermometers shall have a range of from +50°F to +212°F degrees F. and shall be installed in such location as to be easily read.

L. Automatic Timer Control.

1. The machine shall be fully automatically time controlled, timing device shall include an interlock of the doors to prevent opening until finish of complete cycle, and a signal light to indicate when the cycle is in operation.
2. The automatic time control shall be provided with a manually operated auxiliary circuit, which can be used in case of automatic timer failure.
3. The wash, pause, and rinse, shall automatically operate through synchronous timers (electrically or mechanically operated by means of cams) for periods that comply with the requirements of the New York City Health Department.

M. Electric Requirements for Automatic Timer Control.-The electric timing device apparatus shall be designed for 208 volts, three phase operation. Furnish and install on or near machine a time control switch box with a timing device complete with magnetic starter and overload protection and necessary length of approved waterproof cable in flexible conduit between control switch box and motor outlet box; also to electrically controlled rinse valve. Control switch box shall be provided with opening for 3/4" conduit connection.

N. Tank Heating

Tank shall be provided with electric or gas heater as specified on drawing. Electrically heated tank shall be furnished with a thermostatically controlled electric heater composed of three elements, for 208 volt, three phase, three wire circuit operation. Furnish and install a combined thermostat and limit control. The electric heater shall not be less than the capacity specified in the Equipment Schedule and of the type herein specified, and shall thermostatically maintain the temperature of the wash water at 150° F. The heating elements shall be of the immersion type with stainless steel sheaths and shall be the equal of "Chromolox," manufactured by Edwin L. Wiegand Co., Pittsburgh, Pa. The combined thermostat and limit control shall be double pole, single throw, 25 amp. 250 volt A.C. set for 150° F. at factor, the equal of the Robertshaw Thermostat Co., Model No. H-14 with signal light, stuffing box, manual reset, pointer temperature indicator (not Bezel type) with Type "S" temperature adjustment and mounted in an enameled steel box. The thermostat and heating element shall be completely wired with wires terminating in an outlet box on heater or thermostat.

2. Electrical Contractor will furnish a separate 208 volt, three phase, three wire, heater circuit from source of supply to a flush mounted disconnect switch with signal light, and through the wall outlet box in back of dishwasher, connect this switch to heater outlet box installed on dishwasher. All circuits to be run in conduit.
 3. Gas type tank heater shall be of the safety pilot type with rear mounted flue, AGA approved and fully in accordance with Par. 25.
- O. Electric Requirement for Motors.-1. Motors shall be 208v, 3 phase, of ball bearing, fully grease packed design.
2. This Contractor shall terminate all wiring for motor, heater, timer and solenoid rinse valve in outlet boxes tapped for 3/4" conduit. When a separate conveyor motor is provided it shall be designed for 208V-3 phase operation machine shall be furnished completely wired including solenoid valve, (if required) and all operating switches, terminating in rear mounted junction box.
 3. Electric Contractor will furnish two 208 volt, three phase circuits (one for motors and solenoid valve, and the other for wash tank heater if used) to wall disconnect switches and from switches to junction box in wall at back of Dishwasher and extend and connect to outlet boxes mounted on machine.

15A-24.91 Dishwasher, Two Tank, (Type C)

- A. Dishwasher installation shall be in specification in Par. 88. of right hand or left hand feed, straight or corner design as shown on drawing, machine shall be of rigid construction, quiet in operation and shall be free from objectionable vibration. All parts requiring adjustment or lubrication shall be readily accessible from the front of the machine. Machine parts shall be accurately made to insure complete interchangeability and parts subject to wear shall be readily replaceable. all machine parts exposed to water shall be of stainless steel, or equivalent non-corrosive material. Machine shall be designed to provide circulating wash and fresh water rinse, the final rinse using outside water supply.
- B. Pump shall be of the horizontal, non-clogging centrifugal type with non-overloading characteristics and mounted below the wash tank. The pump casing shall be of cast iron and provided with removable cleanout plate accessible from the front or end of the machine for access to the interior parts. The impeller shall be made of monel metal or stainless steel, hydraulically and mechanically balanced, and shall be mounted on and keyed to a motor shaft of

non-corrosive metal, and turn in ball bearings. Suitable means shall be provided for maintaining the impeller in proper lateral position relative to the casing. The packless seal (or stuffing box, glands and renewable packing) shall include a renewable bronze or stainless steel sleeve mounted on the pump shaft. The pump casing shall be provided with a drain unless of self-draining type.

- C. **Pump and Motor Connections.**-The pump and motor shall be directly connected with impeller mounted on the extended shaft of the motor, or by other method approved by the Executive Director. The pump and motor shall be placed under the wash chamber and the front enclosed with a stainless steel panel removable without the use of tools.
- D. **Base and Supports.**-Base and supports shall be of iron or steel of rigid construction and machine shall be mounted on four stainless steel adjustable sanitary legs.
- E. **Wash Chamber (Housing).**-Shall be provided with curtains in and inspection and cleanout doors, made of not less than 16 gauge stainless steel.
- F. **Conveyor.**-The conveyor shall be operated by lever or motor operated by independent switch, and have normal and neutral speed, allowing racks to remain in machine as required. there shall be an automatic release to stop conveyor if racks accumulate. All parts of conveyor within the hood shall be non-corrosive materials.
- G. **Control Valve.**-Separate hot and cold water control valves may be provided on pre-wash tank supplies for manual mixing of pre-wash water.

Provide separate valves for filling wash and pre-wash tank.

- H. **Tanks-Machine** shall be of the two tank type with tanks constructed of not less than 16 gauge (.0625") stainless steel, equipped with an overflow and a waste outlet provided with a drain valve operated from the outside of the machine. Drain valve shall be brass or non-corrosive material. The waste outlet and the overflow shall be connected together to provide a combination waste and overflow mounted on the exterior of the tank. The tank shall be fitted with suitable metal strainers and lift handles. Strainers shall be constructed with Stainless Steel frame and shall have a perforated or woven stainless steel mesh.

I. Wash Spray System.

- 1. Wash spray system shall consist of pipes arms and manifolds, which shall be of Stainless Steel, or bronze and arranged to properly spray from above and below.

The slotted portion of wash spray piping shall be stainless steel. The wash spray piping shall be provided with accessible clean-out caps, removable without the use of tools. The wash spray shall cover the entire area of the dish rack. Provide wire brush for cleaning tubes.

2. Inlet for water supply shall be located at least 1" above the rim of the dish table, or through air-gap and suds trap and supplied with a shut-off valve at inlet connection of machine, for filling tank. The rinse piping shall include check valve and vacuum breaker with extended overflow discharge pipe and discharge extended into wash chamber housing.

J. Control Valves.-The final rinse water shall be controlled by a self-closing or solenoid bronze valve having removable nickel alloy or a stainless steel seat operated by means of a timer. A separate valve or switch shall be provided to fill the wash tank.

K. Thermometers.-A thermometer shall be provided on the hot water supply to show the temperature of the rinse waters. There shall also be a thermometer of either the dial or straight or angle type installed in the wash tanks. Thermometers shall have a range of from +50°F to +212°F degrees F. and shall be installed in such location as to be easily read.

L. Automatic Timer Control.

1. The machine shall be fully automatically time controlled, timing device shall include an interlock of the doors to prevent opening until finish of complete cycle, and a signal light to indicate when the cycle is in operation.

2. The automatic time control shall be provided with a manually operated auxiliary circuit, which can be used in case of automatic timer failure.

3. The wash, pause, and rinse, shall automatically operate through synchronous timers (electrically or mechanically operated by means of cams) for periods that comply with the requirements of the New York City Health Department.

M. Electric Requirements for Automatic timer Control.-The electric timing device apparatus shall be designed for 208 volts, three phase operation. Furnish and install on or near machine a time control switch box with a timing device complete with magnetic starter and overload protection and necessary length of approved waterproof cable in flexible

conduit between control switch box and motor outlet box; also to electrically controlled rinse valve. Control switch box shall be provided with opening for 3/4" conduit connection.

N. Tank Heating.

1. Tanks shall be provided with electric or gas heater as specified on drawing. Electrically heated tanks shall be furnished with a thermostatically controlled electric heater composed of three elements, for 208 volt, three phase, three wire circuit operation. Furnish and install a combined thermostat and limit control. The electric heater shall not be less than the capacity specified in the Equipment Schedule and of the type herein specified, and shall thermostatically maintain the temperature of the wash water at 150° F. The heating elements shall be of the immersion type with stainless steel sheaths and shall be the equal of "Chromolox," manufactured by Edwin L. Wiegand Co., Pittsburgh, Pa. The combined thermostat and limit control shall be double pole, single throw, 25 amp. 250 volt A.C. set for 150° F. at factory, the equal of the Robertshaw Thermostat Co., Model No. H-14 with signal light, stuffing box, manual reset, pointer temperature indicator (not Bezel type) with Type "S" temperature adjustment and mounted in an enameled steel box. The thermostat and heating element shall be completely wired with wires terminating in an outlet box on heater or thermostat.
 2. Electric Contractor will furnish a separate 208 volt, three phase three wire, heater circuit from source of supply to a flush mounted disconnect switch with signal light, and through the wall outlet box in back of dishwasher, connect this switch to heater outlet box installed on dishwasher. All circuits to be run in conduit.
 3. Gas type tank heater shall be of the safety pilot type, with rear mounted flue, AGA approved and fully in accordance with Par. 25.
- O. Electric Requirement for Motors.-Motors shall be 208V, 3 phase of ball bearing fully grease packed design.
2. This Contractor shall terminate all wiring for motor, heater, timer and solenoid rinse valve in outlet boxes tapped for 3/4" conduit. When a separate conveyor motor is provided it shall be designed for 208 V-3 phase operation machine shall be furnished completely wired, including solenoid valve, (if required) and all operating switches, terminating in new mounted junction box.

3. Electric Contractor will furnish two 208 volt, three phase circuits (one for motors and solenoid valve, and the other for wash tank heater (if used) to wall disconnect switches and from switches to junction box in wall at back of Dishwasher and extend and connect to outlet boxes mounted on machine.

15A-24.92 Dishwasher, Undercounter, Heavy Duty

- A. Unit shall be of the commercial heavy duty type, make and model as specified in Equipment schedule, designed for use as an undercounter component.
- B. Machine shall be of stainless steel construction with internal electric rinse water temperature booster and vacuum breaker.
- C. Motors shall be of manufacturers standard recommended horsepower 120V, 60HZ, single phase. Provide rear mounted electrical junction box for connection by others.

15A-24.93 Hood Fire Control System

1. System shall be of the fixed nozzle, dry chemical type, designed to extinguish cooking equipment fires under exhaust hood. System shall be all mechanically operated with operation initiated by a fusible link temperature detector which on temperature rise, causes a CO² propellant tank to puncture, forcing dry chemical thru distribution piping to nozzles located in exhaust duct, plenum and over cooking appliances.
2. System shall be fully installed by the kitchen contractor with the exception of the installation of the cable actuated gas main valve which shall be supplied to the plumbing contractor by the kitchen contractor for his installation.
3. System shall have full NYC B.S. of A or MEA approvals and be so marked. Installation of system shall include a three (3) year service/inspection contract that shall commence on day of Fire Dept acceptance testing. All exposed piping shall be chrome sleeved.
4. Contractor shall file for and procure all N.Y.C. approvals required for use of fire system. Contractor shall provide Architect of Record with a fire system schematic which the architect will enter on the kitchen drawings and file with the Building Dept. Upon approval, a stamped and approved copy of the amended kitchen drawing will be delivered to the contractor for purposes of scheduling and acceptance test with the Fire Dept.

5. Contractor shall provide and/or install the following with fire control system:

A. Two (2) demountable metal frames, 8 1/2" x 11" in size, with glass faces, to be secured to the wall outside of main entrance to kitchen. Frames to be mounted with 11" side in vertical, approx. 60" above floor. Contractor shall insert notices in these frames supplied by the Board of Education concerning hood use.

B. One (1) fire extinguisher with 40 BC rating-capacity 10 lbs. to be mounted on wall in kitchen at a suitable location, 60" above floor. Fire extinguisher shall be a Badger Mod B 10A or other of equal rating and capacity.

15A-24.94 **Toaster, Two Slice.**

A. Unit shall be of the make and model specified in the equipment schedule. Toaster shall be of two slice capacity, fully enclosed with guide wires, timer, color selector, crumb tray and automatic ejection/operating lever.

B. Toaster shall be of the manufacturers standard kilowattage, 120 Volts, 60HZ, 1 phase. Provide six (6) foot heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.95 **Bun Toaster, Portable**

A. Unit shall be of the make and model specified in the equipment schedule, designed to toast hamburger buns in quantity, Toaster shall be equipped with vertical conveyor belt, speed control, manual advance knob, and heated drop pan.

B. Toaster shall have manufacturer standards 120V, 60HZ, 1 phase motor and 120/208 volt, 60HZ 1 phase heater. Provide six (6) ft. heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.96 **Warmer, French Fry (Portable)**

A. Unit shall be of the manufacture and model specified in the Equipment Schedule, designed to maintain temperature of french fries awaiting serving. Unit shall have overhead glow rod heater, infinite heat control, heated base, and be sized to accept 12" x 20" pans.

B. Unit shall be of the manufacturers standard kilowattage, 120 Volts, 60HZ, 1 phase. Provide six (6) ft. heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.97 Corn Popper on Base (Mobile)

- A. Unit shall be of the manufacture and model specified in the Equipment Schedule designed to pop corn and display it for sale. Corn Popper shall have plexiglass cabinet with door, illuminated sign, heat lamp, stainless steel corn popping pan and storage cabinet base supported on four (4) heavy duty casters.
- B. Popper shall be of the manufacturers standard kilowattage, 120 Volts, 60HZ, 1 phase. Provide six (6) ft. heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.98 Hot Display Cabinet on Base (Mobile)

- A. Unit shall be of the manufacture and model specified in the Equipment Schedule designed to keep food items hot and display for sale. Hot cabinet shall have plexiglass cabinet with door, three shelves, light, heater with controls and storage cabinet base supported on four (4) heavy duty casters with locks.
- B. Hot cabinet shall be of the manufacturers standard kilowattage, 120 volts, 60HZ, 1 phase. Provide six (6) ft. heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.99 Salad Bar (Mobile)

- A. Unit shall be of manufacture, model number and size as specified on Equipment Schedule designed to hold various salad items to facilitate salad self-service. Server shall be of stainless steel construction with refrigerated cold pan intended for two side service.
- B. Provide full length canopy of double sloped (non-curved) 1/4" thick plexiglass panels framed in stainless steel "U" edges with 1/2" (min) radii at each corner. Supply complete with two (2) complete sets of salad bowls and salad ingredient pans with corners.
- C. Refrigerator shall meet all requirements of Pars. 06 and .09 and be of the manufacturers standard horsepower, 120 volts 60HZ 1 ph. Provide six (6) ft. heavy duty three conductor (one grounding) line cord with plug to match receptacle.

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15A-24.100 Sandwich Unit

- A. Sandwich Unit shall be of stainless steel construction, similar to the model number specified in the Equipment Schedule. Size as shown on drawings.
- B. Unit shall have mechanically refrigerated pan per Par. 07 of this section, with polyurethane insulation. Provide with ingredient pan top, carving board, sliding door cabinet base and full length rotating pan cover. Supply two (2) full sets of pans.
- C. Unit shall be designed for 120 volt single phase operation; motor horsepower as recommended by manufacturer. Provide six (6) ft. heavy duty three conductor (one grounding) line cord with plug to match receptacle.

15A-24.101 Proofer

- A. The cabinet shall be similar to the model number specified in the Equipment Schedule complete with thermostatically controlled heating unit, removable tray slides for 18" x 26" trays, moisturizer, and 5" dia. full swivel casters with non-marking polyurethane tires.
- B. The entire body of the cabinet, including door, shall be fabricated of aluminum, and insulated with high density fiberglass.

The frame shall consist of special extruded shapes. Door and back shall be reinforced with heavy aluminum bar or channel. Pan support angles shall be of special alloy aluminum, and spaced 3" on centers. Door hinges and door latches shall be of nickel plated steel. No. lock required.

- C. The heating unit shall be mounted at the bottom of the cabinet and shall consist of a formed tubular water-proof element and a lifetime lubricated fan assembly. the unit shall have "UL" approval, with thermostat, and pilot light, mounted on front panel. The Unit shall operate on a 120 volt, single phase circuit and shall be equipped with a non-twist lock Receptacle, 3 wire connector, 8 ft. of 3-wire cord and plug. Wattage to be 600 Watts (approximately).

15A-24.102 Mobile Truck

- A. The truck shall be similar to the model number specified in the Equipment Schedule and shall be of stainless steel construction with two superstructure shelves, and two bottom shelves.
- B. Work surface to have back edge raised 1 1/4 inches. Bottom two shelves to have a 10 inch and 12 inch clearance, respectively, and shall have all edges turned down 1 inch. Shelves shall be supported by one piece angle steel "U" frames. All shelf edges to be hemmed.

C. Truck shall be mounted on two 5 inch heavy duty double-ball bearing swivel casters and two 8 inch double-ball bearing stationary wheels, two with brakes and removable polyurethane tires.

15A-24.103 Tray Truck

- A. Truck shall be similar to model specified in Equipment Schedule. Unit shall be of all stainless steel construction with five (5) shelves. Top shelf shall have all edges turned up and have "H" type reinforcement. Other four (4) shelves shall be turned up on one (1) side and both ends. The other side shall be turned down.
- B. Trucks shall have four (4) wheels; two (2) 5" diam. swivel casters with brakes. The other two (2) wheels shall be 8" in diam., and fixed. All caster and wheels shall have removeable Polyurethane tires. Handle shall have donut bumpers; and encircling rubber bumper shall be provided.

15A-24.104 Dish Truck

- A. Truck shall be of all stainless steel tubular construction. Similar to model specified in the equipment schedule. All joints shall be welded & ground.
- B. Unit shall be of the open shelf type, number of shelves as specified on drawing. Truck shall have two (2) handle bars and wrap around bumpers.
- C. Unit shall have four (4) - 5" Diameter swivel casters two with brakes. Casters shall have heavy duty polyurethane tires.

15A-24.105 Roll Warmer

- A. Warmer shall be of stainless steel construction similar to model number specified in Equipment Schedule.
- B. Unit shall contain the number of electrically heated drawers shown on drawing. Each drawer shall be equipped with a thermostatic control with red pilot light.
- C. Roll Warmer shall be 208 volts, single phase, provided with solid electrical connection by other contractor.

15A-24.106 Silverware Dispenser

- A. Dispenser shall be of stainless steel construction similar to the model number specified in the Equipment Schedule.
- B. Unit shall be separate or built in to counter top as shown on drawings. A separate unit shall be provided with four (4) heavy duty casters, all with locks. Casters shall be 5" dia. (minimum) provided with polyurethane tires.
- C. Provide two (2) full sets of perforated nylon plastic silverware holding cylinders with each dispenser.

15A-24.107 Tray Dispenser

- A. Tray dispenser shall be of stainless steel construction similar to model number specified in Equipment Schedule.
- B. Dispenser shall be of open tubular stainless steel construction with all joints welded and ground smooth. Unit shall be mounted on four (4) all swivel polyurethane tired casters (two with brakes) and have wrap around bumper. Self leveling types shall have springs calibrated to suit size and weight of trays used.

15A-24.108 Combination Tray/ Silverware Dispensers

- A. Tray/Silverware Dispenser shall be of stainless steel construction similar to the model number specified in the Equipment Schedule.
- B. Dispenser shall be of open tubular stainless steel construction with all joints welded and ground smooth. Unit shall be mounted on four (4) all swivel polyurethane tired casters (two with brakes) and have a wrap around bumper.
- C. Provide two (2) full sets of perforated nylon plastic silverware holding cylinder with each dispenser.

15A-24.109 CABINET UNIT WITH SINK

A. General

- 1. The required work under this paragraph shall consist of furnishing all the labor and materials necessary to provide a cabinet unit with sink top and all required accessories of a size, type and location as shown on drawings.
- 2. Base of cabinet unit shall be made up of undercounter units of manufacture, type and size as specified in the Equipment Schedule. Cabinets shall be of 24" in depth and 34 1/2" high.
- 3. Contractor shall visit the premises before cabinets are installed to verify all dimensions and job conditions as soon as rough partition walls are fully erected.
- 4. Contractor shall erect cabinets while tile is being installed or as soon as possible after finish has been applied to walls.

B. Attachment

This Contractor shall furnish and install furring strips of wood or metal for attaching cabinets to the wall. These grounds shall be secured to the wall with toggle bolts in hollow material and expansion bolts in solid material.

C. Cabinets

1. Cabinets shall be of the size and style indicated in the Equipment Schedule. The entire front frame of the cabinets shall be constructed of channel shaped stiles (top, bottom and sides) and all corners mitered, welded and ground flush to furnish a rigid frame without visible lips, seams, joints, screws or bolt heads. Door and drawer heads shall fit flush or completely overlap, frame members to provide a flush smooth sanitary vermin-tight cabinet front.
2. Each base cabinet shall be enclosed (back, bottom and sides) and reinforced with gusset plates at corners and laterally braced at top. The inside of cabinets shall be smooth sanitary construction without seams, cracks or crevices where dirt might lodge or vermin enter.
3. All furniture steel used in the construction of the cabinets, etc., shall be prime cold-rolled stretcher-leveled, resquared and oiled sheets not less than 22 gauge (.03125") free of defects, scale and rust. Rack panels may be fabricated of reinforced 24 gauge sheets.

All stainless steel to be cold rolled alloy designated by the trade name, Stainless Steel, 18-8. (Type 304). The finish of cabinets shall be manufacturer's standard finish and shall be protected against corrosion until ready for use.

When one or both ends of cabinets unit is free standing provide cabinet side closure panel (s) and stainless steel top edging continuing around corner. Cabinet doors and siding shall contain sound deadeners. Cabinet color shall be white except if indicated otherwise on drawing.

- D. Handles, Catches, Etc.- Cabinets shall be provided with heavy duty chrome plated steel rounded type handles all cabinet doors shall have magnetic catches.
- E. Drawer - All drawers are to be furnished with heavy duty type roller supports. Top edges if drawers shall be folded over a minimum of 1/2".
- F. Tops - Tops shall be of one piece 14 gauge stainless steel with 6" integral backsplash and center portion sloped to sink. Size as shown on drawing. Provide 1 1/2" folded over front edge with all joints welded and ground smooth. Unless indicated otherwise on drawing sink shall have 17"x22"x7" deep bowl welded in place with all joints welded and ground.

G. Plumbing and Electrical Work

1. This contractor will furnish and install, sink, swing faucet with areators and lever controls, American Standard, T&S or equal, and drain with tailpiece. Connection to hot and cold water lines, drain and vent shall be by P&D Contractor. This contractor shall do all cutting of opening required for the proper installation of all plumbing and electrical connections.
2. Unless otherwise noted the connections for electrical work will be furnished by electrical contractor.

H. Shop Drawings, Etc.-Shop drawings and samples of material, finish and hardware shall be submitted for the approval of the Executive Director prior to the starting of all work. Shop drawings and material properly labeled shall be submitted in quintuplicate. If it should be necessary due to job conditions to deviate from the contract drawings, modifications must be included in the shop drawings.

I. Inspection-All items shall be completely erected and left in perfect working order before final inspection by the Superintendent and acceptance by him. All items shall be thoroughly adjusted, cleaned, polished, oiled or otherwise finished as required. Equipment shall exhibit no blemishes or imperfections that would either affect the appearance or show defects in construction or in operation of equipment.

15A-24.110 ANGLE RACK

- A. The rack shall be similar to the model number specified in the Equipment Schedule, complete with all accessories and pans as noted. The unit shall be constructed of aluminum alloy with riveted or welded joints and shall be mounted on 5" dia. all swivel double-ball bearing casters, two with brakes, and removeable polyurethane tires.
- B. Unless indicated otherwise pan supports shall be set up for 3" spacing and have a 19 pan (approx.) capacity. Provide five (5) 18"x26" aluminum pans with each rack, Wearever No. 5312, or approved equal.

15A-24.111 POT RACK

- A. Rack shall be of heavy duty 16 gauge all stainless steel construction similar to model number specified in the Equipment Schedule. Size as shown on drawings.
- B. Each shelf shall be die stamped from Type 304 stainless steel sheet with 1 1/2" turned down edges. Corners shall be welded, ground and polished smooth. Lower edge shall be turned up to the inside at least one inch. Center area of shelf shall have full length louvers with large upper corner radii. Shelves shall be adjustable, supported on four (4) 1.625" dia. (min.) 16 gauge polished stainless steel tubing.

- C. Shelves shall be completely deburred. Provide unit with five shelves unless indicated otherwise on drawing, and four (4) heavy duty casters, two with locks.

DOMESTIC TYPE KITCHEN EQUIPMENT

15A-24.112 **General**

- A. This Contractor shall furnish and install the equipment complete, as listed in the Equipment Schedule in the Amendments and as shown on the plans. All equipment listed in this section shall be furnished in accordance with the following requirements.
- B. Where available, all gas heated equipment shall be provided with electric ignition. When electric ignition is not available safety type pilots will be furnished.
- C. The equipment shall be the latest model of the current year in design, material and workmanship and shall be the model specified in the Equipment Schedule. If the model specified in the Equipment Schedule has been superseded by a later model, the later model shall be submitted for approval.
- D. The equipment shall be of the model number specified in the Equipment Schedule, complete with all standard accessories, except as otherwise noted. Extra accessories, when required will be noted in the Equipment Schedule, after the model number or hereinafter specified.
- E. Each piece of equipment installed shall be fully demonstrated to the instructor of the room by an authorized representative of the manufacturer or dealer. Provide a full set of instructional manuals with each piece of equipment.
- F. Equipment, burners, valves, safety pilots and thermostats shall have "American Gas Association" approval. All electrically heated equipment shall comply with the requirements of the Underwriters Laboratory and the Bureau of Electric Controls. All equipment shall have N.Y.C. Bureau of Standards (BS of A) or equipment shall have N.Y.C. Dept. of Buildings material and equipment acceptance. (MEA)
- G. Cuts and complete description of all equipment shall be submitted in quintuplicate for Executive Director's approval, before installation.
- H. The finish shall be the manufacturers standard finish, unless otherwise specified in Equipment Schedule. All parts subject to corrosion shall be protected until ready for use. Color shall be white.

- I. All equipment fixed in place requiring electrical input connections shall be provided with integral junction box in rear for solid electrical connection by Electrical Contractor per N.Y.C. Electrical Code.
- J. All plumbing connections shall be provided by plumbing contractor.

15A-24.113 WASHER-DRYER COMBINATION

- A. Washer Dryer shall be of the stacked type, similar to the make and model specified in the Equipment Schedule. The machines shall automatically wash, rinse, and dry controlled by preset cycles of operation. Provide and install stacking rack to position machines vertically as supplied by the manufacturer of the machines.
- B. Provide special angle or elbow hose adapter and heavy flexible rubber hose for water connections so that machine may be set flush with enclosure panel. Provide heavy flexible hose with hooked end for waste water discharge.
- C. Electric Requirements-The machine shall be suitable for operation on a 120-volt single phase, three wire-circuit. Provide junction or outlet box on machine for 3/4" flexible conduit connection. Connection will be made by others.

15A-24.114 CLOTHES WASHER

- A. The machine shall be of the model number specified in the Equipment Schedule. The machine shall automatically wash rinse and damp-dry during a pre-set cycle of operation.
- B. Provide special angle or elbow hose adapter and heavy flexible rubber hose for water connections so that machine may be set flush with enclosure panel. Provide heavy flexible hose with hooded end for waste water discharge.
- C. Electric Requirements-The machine shall be suitable for operation on a 120-volt, single phase circuit. Provide six-feet of approved rubber covered flexible 3-wire cord (one for grounding frame of machine) and plug to match receptacle.

15A-24.115 CLOTHES DRYER, ELECTRIC

- A. The machine shall be of the model number specified in the Equipment Schedule. The machine shall automatically dry during a pre-selected cycle of operation.
- B. Electric Requirements-The machine shall be suitable for operation on a 120-208 volt, single phase, three wire circuit. Provide junction or outlet box on machine for 3/4" flexible conduit connection. Solid connection to be made by others.

15A-24.116 DISHWASHER (UNDER-COUNTER TYPE)

- A. The dishwasher shall be of the size, type, and Model number specified in the Equipment Schedule, complete with dish racks and silverware basket.
- B. When unit is installed free standing provide and install plastic laminate top section and side closure panels. When unit is installed with one side exposed provide and install proper plastic laminate side closure panel.
- C. Electric Requirements-Motor shall be of manufacturers recommended H.P. 120 volts 60Hz, single phase. Heater shall be approx. 1.5 KW, 120 volts, 60 Hz single phase. Provide junction box for solid electrical connection by other contractors.

15A-24.117 DISHWASHER, (UNDERCOUNTER TYPE)

- A. Dishwasher shall be of stainless steel construction similar to the model specified in the Equipment Schedule complete with dish racks and silverware basket.
- B. When unit is installed free standing provide and install plastic laminate top section and side closure panels. When unit is installed with one side exposed provide and install proper plastic laminate side closure panel.
- C. Electric Requirements-Motor shall be of manufacturers recommended HP 120 volts 60 Hz, single phase. Heater shall be approx. 7.5 kw, 120/208 volts, 60 Hz, single phase. Provide junction box for solid electrical connection by other contractors.

15A-24.118 REFRIGERATOR 10 CU. FT.

- A. Refrigerator shall be of approx. 10 cu. ft. capacity with single door, freezer compartment and automatic defrost, similar to the model number specified in the Equipment Schedule.
- B. Motor shall be of the manufacturers recommended HP, 120 volts, 60 Hz, single phase. Provide six (6) ft. three conductor (one grounding) line cord with plug to match receptacle

15A-24.119 REFRIGERATOR, 20 CU. FT.

- A. Refrigerator shall be of approx. 20 CU. FT. capacity with single door, freezer compartment and automatic defrost, similar to the model number specified in the Equipment Schedule.
- B. Motor shall be of the manufacturers recommended HP, 120 volts, 60 Hz, single phase. Provide six (6) ft. three conductor (one grounding) line cord with plug to match receptacle.

15A-24.121 REFRIGERATOR, UNDERCOUNTER

- A. Refrigerator, under counter shall be of approx. seven cu. ft. capacity with single door, freezer compartment, and automatic defrost.. Unit shall be similar to the model number specified in the Equipment Schedule.
- B. When refrigerator is installed free standing or with sides exposed, provide and install proper plastic laminate work top and side closure panels.
- C. Motor shall be of the manufacturers recommended HP, 120 volts, 60 Hz, single phase. Provide six (6) ft. three conductor (one grounding) line cord with plug to match receptacle.

15A-24.121 REFRIGERATOR-FREEZER COMBINATION

- A. Refrigerator-Freezer shall be of approx. 20 cu. ft. capacity with tow side by side doors, automatic defrost and mounted on four (4) casters, two with brakes. Unit shall be similar to the model number specified in the Equipment Schedule.
- B. Motor shall be of the manufacturers recommended HP, 120 volts, 60 Hz, single phase. Provide six (6) ft. three conductor (one grounding) line cord with plug to match receptacle.

15A-24.122 RANGE, GAS, 20"

- A. Range shall be 20" wide, similar to model number specified in the Equipment Schedule. Oven shall be provided with lower, full widthn oven, oven light and safety pilot, electric timer and four (4) open type top burners.
- B. Electric requirements shall be 120 volts, 60 hz, single phase. Provide six (6) ft. three conductor (one grounding) line cord with plug to match receptacle.

15A-24.123 RANGE, GAS 30"

- A. Range shall be 30" wide, similar to model number specified in the Equipment Schedule. Oven shall be provided with lower full widthn oven, oven light and safety pilot, electric timer and four (4) open type top burners.
- B. Electric requirements shall be 120 volts, 60 Hz, single phase. Provide six (6) ft. three conductor (one grounding) line cord with plug to match receptacle.

15A-24.124 RANGE, GAS 36"

- A. Range shall be 30" wide, similar to model number specified in the Equipment Schedule. Oven shall be provided with lower 30" wide oven, pot compartment, oven light and safety pilot, electric timer and four (4) open type top burners.

- B. Electric requirements shall be 120 volts, 60 Hz, single phase. Provide six (6) ft. three conductor (one grounding) line cord with plug to match receptacle.

15A-24.125 COOK TOP (GAS)

- A. Cook top shall have four (4) gas burners, size as shown on drawing, to be built into existing kitchen countertop unit by this contractor. Installation to be complete, including finishing of countertops if accommodating alterations are required.
- B. Electric requirements shall be 120 volts, 60 Hz, single phase. Solid electric connection to be provided by other contractor.

15A-24.126 RANGE, ELECTRIC, 20"

- A. Range shall be 20" wide, similar to model number specified in the Equipment Schedule. Provide with full width lower oven, oven light, control panel and four (4) lift-up type electric burners with porcelain drip bowls.
- B. Electric requirements shall be 120/208 volts, 60 Hz, single phase, 7.0 KW. (approximately) Solid electric connection by other contractor.

15A-24.127 RANGE, ELECTRIC, 30"

- A. Range shall be 30" wide, similar to model number specified in the Equipment Schedule. Provide with full width lower oven, oven light, control panel and four (4) lift-up type electric burners with porcelain drip bowls.
- B. Electric requirements shall be 120/208 volts, 60 Hz, single phase, 7.0 KW. (approximately) Solid electric connection by other contractor.

15A-24.128 KITCHEN UNITS

A. General

Kitchen Units shall consist of a cabinet sink with integral gas or electric range, refrigerator and full width upper wall cabinets. Larger units shall have ovens, and additional top burner and more cabinetry. Where exposed sides of the unit occur, contractor shall procure and install proper side closure panels as supplied by manufacturer of unit. The requirement of this Paragraph shall apply to all kitchen units.

B. Sink

Sink and range top shall be continuous, one piece with no crack between sink and range. Top shall have integral back splasher, and when end of unit adjoins a wall the top shall be provided with integral end splasher of the same height as the back splasher. The top shall be of No. 14 gauge steel construction with acid-resisting porcelain finish. The bowl shall be of the Manufacturer's standard size, welded into the top and shall be provided with 3 1/2" diameter stainless steel crumb cup strainer; also deck type faucet with aerator.

C. Range

Range shall consist of two or more electric or gas burners as specified in the Equipment Schedule Electric top burners shall be of the monotube tilt-type, each equipped with stainless steel drip bowls. Gas burner units shall be of the removeable type, meeting all applicable requirements of Par. 112. Range shall be fully insulated throughout with a minimum of 2" of sealed in place polyurethane or fiberglass. A 120 volt, 15 amp. convenience electric receptacle shall be provided on the front control panel.

D. Refrigerator

1. The refrigerator shall be of all steel construction and shall be specially designed so that all service can be done from front, and the complete refrigeration system can be removed for repairs or replacement without removing the refrigerator or any part of the complete Kitchen Unit. The interior shall be finished in acid-resisting porcelain enamel. The entire refrigerator shall be insulated with polyurethane foam. Compressor shall be of the full hermetically sealed, air cooled type and shall have a 5 year warrantee. Refrigeration unit shall be provided with a separate cord and plug from compressor to grounding receptacle provided in separate refrigerator terminal box. Provide refrigerator interior light.

E. Electric Requirements

1. The range elements shall be wired for operation on a 120/208 volt, single phase three-wire circuit. The range shall be completely wired with wires terminating in an outlet box in rear of unit. Electric connections by others.

2. The refrigerator shall be provided with three wire cord (one for grounding frame of machine) and plug similar to Hubbell No. 5264. The motor shall be of the Manufacturer's recommended horsepower suitable for operation on 120 volt, single phase circuit. The circuit for the refrigerator section shall be separate from the range circuit.

F. Cabinets

1. The wall and base cabinets shall be of all texturized steel construction. The space between the underside of cabinets and top of splasher shall be covered with a panel of the same material as the back splasher of the top. When the end of the unit adjoins a wall, a side wall splasher of the same material shall be furnished. The underside of the cabinets shall be covered with an insulated heat deflector above the range unit. Provide a filler between top of cabinets and hung ceiling when ceiling is furred down over cabinets. No electric fixture is required under wall cabinets.
2. Provide a cutting board and cutlery drawer unit on the bottom shelf of the wall cabinet above the sink or range unit.

G. Finish

The unit including wall cabinets shall be finished in the Manufacturer's standard baked enamel finish and shall be protected against damage and corrosion until ready for use. Color shall be white.

15A-24.129 KITCHEN UNIT, 39" (ELECTRIC)

- A. Kitchen unit shall be 39" wide, of type and model number specified in the Equipment Schedule. Unit shall have two top burners, no oven and one 15 amp. convenience receptacle.
- B. Electric requirements shall be 120/208 volts, 60 Hz, single phase 4.5 kw. Provide junction boxes for solid connection by others.

15A-24.130 KITCHEN UNIT, 51" (ELECTRIC)

- A. Kitchen unit shall be 51" wide, of type and model number specified in the Equipment Schedule. Unit shall have two top burners, oven and one 15 amp. convenience receptacle.
- B. Electric requirements shall be 120/208 volts, 60 Hz, single phase 5.8 kw. Provide junction boxes for solid connection by others.

15A-24.131

KITCHEN UNIT, 60" (ELECTRIC)

- A. Kitchen unit shall be 60" wide, of type and model number specified in the Equipment Schedule. Unit shall have three top burners, oven and one 15 amp. convenience receptacle.
- B. Electric requirements shall be 120/208 volts, 60 Hz, single phase 7.9 kw. Provide junction boxes for solid connection by others.

15A-24.132

KITCHEN UNIT, 39" (GAS)

- A. Kitchen unit shall be 39" wide, of type and model number specified in the Equipment Schedule. Unit shall have two top burners, no oven and one 15 amp. convenience receptacle.
- B. Electric requirements shall be 120 volts, 60 Hz, single phase 2.0 kw. Provide junction boxes for solid connection by others.

15A-24.133

KITCHEN UNIT, 60" (GAS)

- A. Kitchen unit shall be 60" wide, of type and model number specified in the Equipment Schedule. Unit shall have three top burners, oven and one 15 amp. convenience receptacle.
- B. Electric requirements shall be 120 volts, 60 Hz, single phase 2.1 kw. Provide junction boxes for solid connection by others.

END OF SPECIFICATION

DATED: THE CITY OF NEW YORK
NOVEMBER 15, 1988
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WP#3663S

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