

Contract No. DPW-21-03
Replacement of Chiller at Joseph G. Caputo Community Center

**VILLAGE OF OSSINING
WESTCHESTER COUNTY, NEW YORK**

CONTRACT NO. DPW-21-03

Replacement of Chiller at Joseph G. Caputo Community Center



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November 2021

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Replacement of Chiller at Joseph G. Caputo Community Center

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VILLAGE OF OSSINING
WESTCHESTER COUNTY, NEW YORK

NOTICE TO BIDDERS

Notice is hereby given that sealed bids will be received by the Office of the Village Clerk, Municipal Building, 16 Croton Avenue, Ossining, N.Y. 10562 for the following contract(s):

CONTRACT NO. DPW-21-03: REPLACEMENT OF CHILLER AT JOSEPH G. CAPUTO COMMUNITY CENTER

The principal feature of the work to be performed is furnishing all labor and materials to replace the chiller, gymnasium storage room roofing, and other associated site work at the Joseph G. Caputo Community Center.

The bids shall be in accordance with the Specifications, Drawings and Terms of the proposed contract. These proposals will be received by Susanne Donnelly, Village Clerk, Village of Ossining, 16 Croton Avenue, Ossining, N.Y. 10562 until 10:00 a.m., Prevailing Time, on Thursday, November 18, 2021, at which time they will be publicly opened and read.

OBTAINING DOCUMENTS: The Contract Documents, including Drawings and Specifications, may be obtained at the Village Clerk's Office, 16 Croton Avenue, Ossining, N.Y. 10562, (914) 762-8428, between the hours of 9:00 AM and 4:30 PM beginning on the date of this publication. Said Documents may be obtained upon deposit of \$100.00 for each combined set of drawings and specifications. The deposit is refundable upon return of the specifications booklet within 30 days of the award of the contract in accordance with Section 102 of the General Municipal Law.

BID SECURITY: Each proposal must be accompanied by bid security in the amount of five percent (5%) of the bid, in the form and subject to the conditions stipulated in the bid documents.

PRE-BID MEETING: A pre-bid meeting is not scheduled. The Joseph G. Caputo Community Center is located at 95 Broadway, Ossining, N.Y. 10562. Prospective bidders may visit the sites by making arrangements with Mr. Andrew Tiess, 914-760-2423.

MINORITY PARTICIPATION POLICY: It is the policy of the Village of Ossining to include minority and women-owned businesses in our solicitations and to take affirmative steps to ensure that M/WBE's have full participation in our procurement process.

VILLAGE RIGHTS: The Village reserves the right to waive any informalities in any proposals, or to reject any or all proposals and to advertise for new proposals.

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By order of the Village Board of Trustees, Village of Ossining.

Susanne Donnelly, Village Clerk
Village of Ossining

Dated : November 3, 2021

SECTION I – INFORMATION FOR BIDDERS

A. CONTENTS

Attention of bidders is called to the contents of the Notice to Bidders, a copy of which is annexed hereto and made a part hereof. All the work in this contract is described in detail in the Plans and Specifications, Information for Bidders, Bidder's Proposal and Contract Documents, all of which are attached hereto and made a part hereof.

B. DATE AND TIME FOR FILING BIDS

Sealed bids will be received at the Office of the Village Clerk, Municipal Building, 16 Croton Avenue, Ossining, New York. All bids shall be received by **10:00 A.M., Local Prevailing Time, Thursday, November 18, 2021** for the work herein mentioned, at which place and after which time they will be publicly opened and read aloud. No bid shall be received or considered after the time stated herein.

All bids shall be enclosed in a sealed envelope and addressed as follows:

Bids for: **Replacement of Chiller at Joseph G. Caputo
Community Center
Contract No. DPW-21-03**

Attention: Susanne Donnelly, Village Clerk
Municipal Building
16 Croton Avenue
Ossining, N.Y. 10562

Opening: **Thursday, November 18, 2021
10:00 A.M. Local Prevailing Time**

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C. BID FORM

All bids must be upon the blank form for the proposal attached hereto, state the proposal price for each item of work both in words and in figures, and be signed by the bidder with his business address and place of residence. In case of any discrepancy, the written prices in words shall be considered the prices bid.

Bidders shall not remove or submit the proposal pages separately from the volume of contract documents, but shall submit their proposals bound in with the complete volume of documents, including all pages, correctly assembled.

All bids must be submitted to the Village Clerk in a sealed envelope endorsed with the name of the contract, the contract number, and the name of the person making the same.

D. INFORMAL BIDS

The Village Board of Trustees of the Village of Ossining may reject, as informal, bids which are incomplete, conditional, or obscure, or which contain additions not called for, erasures, alterations, or irregularities of any kind, or the Village Board may waive any such informality they may deem immaterial or non-prejudicial to the Village and other bidders.

The Village Board reserves the right to select the bid or proposal the acceptance of which will, in their judgment, best secure the sufficient performance of the work or to reject any or all bids.

E. ACCEPTANCE OF BIDS

No bid will be allowed to be withdrawn for any reason whatsoever after it has been deposited with the Village Clerk. No bid will be accepted from, or contract awarded to, any person who is in arrears with the Village of Ossining, upon debt or contract, nor who is in default, as surety or otherwise, upon any obligation to the Village of Ossining.

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F. BID SECURITY

A certified check, cashier's check, or bid bond in the amount of five percent (5%) of the proposal submitted must accompany each bid. Certified or cashier's checks shall be made payable to the Village of Ossining. Bid bonds must be issued by an approved bonding or insurance company, authorized to do business with the State of New York.

All bid deposits, whether check or bond, shall be held by the Village of Ossining, as security that the person or persons to whom the contract shall be awarded will enter into a contract therefore and give security for the performance thereof within ten (10) days after notice of such award. Such bid deposit must be enclosed in the sealed envelope containing the bid.

Bid deposits will be returned to all except the three (3) lowest responsive and responsible bidders within ten (10) business days after the formal opening of the bid.

Bid deposits will be returned to the three (3) lowest responsive and responsible bidders within ten (10) business days after the Village and the accepted bidder have executed the contract, or, if no contract has been so executed, within forty-five (45) days after the opening of the bids, or upon demand of the bidder at any time thereafter so long as he has not been notified of the acceptance of his bid.

If the bidder to whom the contract shall have been awarded shall refuse or neglect to execute and deliver the same and furnish the security required within ten (10) days after due notice that the contract has been awarded to him, the amount of the bid deposit made by him shall be retained by the Village of Ossining as liquidated damages for such neglect or refusal, not as a penalty, and shall be paid into the General Fund of the Village of Ossining. But if the said bidder to whom the contract is awarded shall execute and deliver the contract and furnish the said security within the time specified, the amount of the bid deposit will be returned to him.

The bidder by submission of this bid agrees with the Village of Ossining that the amount of said bid deposit represents the

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minimum amount of the damages the Village will suffer by reason of any default as aforesaid.

G. ATTENTION DIRECTED

The attention of the bidders is directed to those provisions of the Contract Agreement relative to:

- Compliance with Laws
- Labor Conditions
- Wage Rates
- Insurance Required
- Bonds Required

H. BIDDERS TO INVESTIGATE

Bidders are required to submit their proposals upon the following express conditions, which shall apply to and become part of every bid received:

Bidders must satisfy themselves by personal examination of the location of the proposed work and by such other means as they may desire as to actual conditions and requirements of the work.

I. QUESTIONS REGARDING CONTRACT DOCUMENTS

In general, no answer will be given in reply to an oral question, if the question involves an interpretation of the intent or meaning of the plans or contract documents or the equality of use of products or methods other than those definitely designated or described in the specifications. All information given to bidders other than by means of the plans or contract documents or by Addenda as described below, is given informally and shall not be used as the basis of a claim against the Village of Ossining or the Village Engineer.

To receive consideration, such question shall be submitted in writing to the Village Engineer at least fifteen (15) calendar days before the established date for receipt of bids.

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The Village Engineer will arrange as Addenda, which shall become a part of the contract, all questions received as above provided, with his decision regarding each. At least three (3) calendar days prior to the receipt of bids, he will send a copy of these Addenda to each of those who has taken out the contract documents.

PRE-BID CONFERENCE: The bidders are advised that a pre-bid conference will not be held.

J. SCOPE OF WORK

The principal feature of the work to be performed is furnishing all labor and materials to replace the chiller, gymnasium storage room roofing, and associated site work at the Joseph G. Caputo Community Center.

[Information for Bidders continues on following page.]

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K. TIME FOR COMPLETION

It is the purpose of the Village Engineer to build the works under his charge in the shortest period of time consistent with good construction. A complete and well-designed construction plan and effective organization will be insisted upon.

The attention of the prospective bidders is especially directed to the contract requirements as to the time of the beginning work, the rate of progress and the time allowed for construction and completing the work, as set forth herein and elsewhere in this contract.

All work shall be completed on or before one hundred eighty (180) calendar days after written Notice to Proceed.

TIME OF THE ESSENCE: The time in which the contract is to be completed is of the essence of this contract. The bidder must include with his bid at the time of submittal a detailed construction schedule, a listing of labor and equipment to be assigned to the contract including that of all proposed subcontractors, and the name and experience record of the superintendent to be assigned to the work who must be at the site during the full course of the work. If, in the opinion of the Village, any bidder fails to demonstrate that he has suitable capital, experience, labor and plant to complete the work within the prescribed time of completion, the Village will consider his bid informal and non-responsive and reject any such bid from further consideration.

[Information for Bidders continues on following page.]

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L. SEQUENCE OF CONSTRUCTION

The work shall be carried out in the order and sequence directed by the Village Engineer or his authorized representative. The order and sequence of work in this Contract is further specified as follows:

The Contractor shall than schedule all work to be performed in a timely manner. Any overtime costs incurred shall be included in the lump sum bid.

As noted earlier in this section, the bidder must submit a detailed construction plan with his proposal demonstrating his ability to complete the work in the time allotted. This plan shall include as a minimum:

1. Name and experience of the superintendent and crew foremen to be assigned to the work. Names and telephone numbers of Contractor's after-hours emergency contact personnel.
2. List of equipment to be assigned to the work including that of any proposed subcontractors. If equipment is not owned by the Contractor or subcontractor(s), the bidder shall submit a letter from the rental supplier stating that, should the bidder be awarded the contract, the equipment would be available for the duration of the work.
3. Number and classification of employees to be assigned to the work including those of any proposed subcontractors.
4. A detailed work schedule, by phase, with identifiable start and finish dates for the various items of work.

[Information for Bidders continues on following page.]

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M. EXISTING CONDITIONS

Bidders must satisfy themselves by a personal examination of the location of the proposed work and/or by such other means as they may prefer, as to the actual conditions and requirements of the work and shall not at any time after submission of a bid assert or claim that there was any misunderstanding in regard to the nature of the work or the conditions affecting the work.

N. ABILITY AND EXPERIENCE OF BIDDER

It is the purpose of the Village of Ossining not to award this contract to any bidder who does not furnish evidence satisfactory to the Village that he has ability and experience in this class of work, that he has sufficient capital and plans to enable him to prosecute the same successfully and to complete it in the time named.

The Village may make such investigations as it deems necessary to determine the ability of the bidders to perform the work. Information regarding experience, financial resources and facilities shall be submitted in the Bidder's Proposal. The Village Board of Trustees reserves the right to reject any proposal if the evidence submitted by or the investigations of such bidder fails to satisfy it that such bidder is properly qualified to carry out the work contemplated under this contract.

O. BONDS REQUIRED

For the performance of the contract, a performance bond and labor and materials payment bond will be required, each of which shall be in the amount of one hundred percent (100%) of the contract price, shall be in the annexed forms, shall be signed by the party to whom the work is awarded and by a solvent fidelity or surety company authorized by the laws of this State to transact such business, and must meet with the approval of the Village as to adequacy, form and correctness.

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The bidder to whom a contract is awarded shall be prepared to attend at the Office of the Village Clerk to execute the contract, to furnish all required bonds, and to furnish the required insurance or acceptable binders or certificates within ten (10) days after written notice from the Village Engineer that the contract has been awarded to him. In case of failure or neglect to do so he may be deemed to have abandoned the contract as in default to the Village under the provisions set for above.

If, at any time after the execution and approval of this contract and the performance and payment bonds required by the contract documents, the Village of Ossining shall deem any of the sureties upon such bond to be inadequate security for the Contract, the Contractor shall, within five (5) days after notice from the Village of Ossining, furnish a new or additional bond in form, sum and signed by such sureties as shall be satisfactory to the Village of Ossining. No further payment shall be deemed due nor shall any further payment be made to the Contractor unless and until such new or additional bond shall be furnished and approved. Premiums on such bonds will be paid for by the Contractor.

P. INSURANCE REQUIRED

The attention of bidders is called to the fact that the Contractor shall be required to take out and continue in effect during the life of the contract insurance with the provisions fully set forth elsewhere in this contract and in the amounts specified herein. If binders or certificates are accepted temporarily, bidders should note that policies must be furnished and approved before any payment will be made under a contract.

Q. LICENSING

All contractors must be properly licensed by all required municipal and/or other regulating entities to perform all matters of business required by this Contract prior to the execution of work.

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R. APPROVAL OF SUBCONTRACTORS

The Village of Ossining reserves the right of approval or disapproval of all Subcontractors.

S. TAXES

The Village of Ossining is exempt from payment of all State and local sales and compensating use taxes of the State of New York and of cities and counties on the purchase of all materials and supplies incorporated in and becoming an integral component part of the work, structures, buildings or real property. Such taxes shall not be included in the Price Bid. This exemption does not, however, apply to tools, machinery, equipment or other property purchased by or leased to the Contractor or a subcontractor or to supplies, machinery, equipment and materials which, even though they are consumed in the performance of the Contract, are not incorporated into the completed work. The Contractor and all subcontractors shall be responsible for and shall pay any and all applicable taxes, including sales and compensating use taxes, on such tools, machinery, equipment or other property and upon all such unincorporated supplies and materials.

The Village of Ossining will furnish the required certificates of tax exemption to the Contractor for use in the purchase of supplies and materials to be incorporated into the work.

The Contractor and all subcontractors and material suppliers shall be solely responsible for obtaining or delivering any and all exemption or other certificates and for furnishing a Contractor Exemption Purchase Certificate or other appropriate certificates to all persons, firms or corporations from whom they purchase supplies, materials and equipment for the performance of the work.

T. SUPPLEMENTARY DEFINITIONS

Wherever reference is made to any published standards, codes or standard specifications, it shall mean the latest standard, code, specification or tentative specification of the technical

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society, organization or body referred to, which is in effect at the date of the Notice to Bidders. Where specified articles, sections, paragraphs or other subdivisions of the referenced publications are not stated, the referenced publication shall apply in full.

The following is a partial list of typical abbreviations that may be used in the specifications and the organizations to which they refer:

AASHTO	American Association of State Highway and Transportation Officials
AIA	American Institute of Architects
ACI	American Concrete Institute
ACIFS	American Cast Iron Flange Standards
AGA	American Gas Association
AGMA	American Gear Manufacturer Association
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASME	American Society Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
API	American Petroleum Institute
EEI	Edison Electric Institute
Fed Spec	Federal Specifications
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
NBC	National Building Code
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NPC	National Plumbing Code
NSF	National Sanitation Foundation
NYSBCC	New York State Building Construction Code
OSHA	Occupational Safety and Health Administration

STANDARD SPECIFICATIONS - The STANDARD SPECIFICATIONS, CONSTRUCTION AND MATERIALS, latest version, and any ADDENDA as prepared by the New York State Department of Transportation.

The Contractor shall, when required, furnish evidence satisfactory to the Village Engineer that materials and methods are in accordance with such standards where so specified. Should

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any questions arise as to the application of these standards, the Contractor shall supply copies on site. The same procedure shall be followed in regard to manufacturers' instructions and recommendations.

U. SUBMITTAL OF PAYROLL RECORDS

The Contractor must submit certified transcripts of his or her payroll records and all subcontractor payroll records and transcripts with each request for payment. Said payroll transcripts must include all work performed under this Contract for the period of time covered on the accompanying payment request.

Pursuant to New York Labor Law section 220(3-1)(a)(iv) the Village of Ossining as the Department of Jurisdiction is required to maintain such original payroll records of transcripts thereof for five years from the date of completion of the work on the awarded contract. The Village of Ossining Department of Public Works shall designate in writing the employee responsible for the receipt, collection and review of the facial validity of payrolls.

V. OSHA REQUIRED TRAINING

OSHA 10-hour Construction Safety and Health Course:

This provision is an addition to the existing prevailing wage rate law, Labor Law §220, Section 220-h. It requires that on all public work projects of at least \$250,000, all laborers, workers and mechanics working on the site, be certified as having successfully completed the OSHA 10-hour construction safety and health course.

The General Contractor will submit certification of each on-site employee's OSHA-certified completion of this course to the Village Engineer, or his/her designated representative, prior to beginning work on site. These certifications will be randomly audited by the Village of Ossining against certified payroll records submitted with payment requests.

Any questions regarding this statute should be directed to the New York State Department of Labor, Bureau of Public Work, at 518-485-5696.

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W. MINORITY PARTICIPATION POLICY

It is the policy of the Village of Ossining to include minority and women-owned businesses in our solicitations and to take affirmative steps to ensure that M/WBE's have full participation in our procurement process. The Village of Ossining will use its best efforts to encourage, promote and increase participation of business enterprises owned and controlled by persons of color or women (MBE/WBE) in contracts and projects funded by the Village and to develop a policy to efficiently and effectively monitor such participation. Nothing herein shall be construed to authorize the Village of Ossining to award any contract in violation of the competitive bidding laws of New York State or the Charter and Local Laws of the Village of Ossining.

SECTION II – BIDDER’S PROPOSAL

A. STATEMENT AND CERTIFICATION OF NON-COLLUSION

COMPLIANCE WITH SECTION 103-d of GENERAL MUNICIPAL LAW

1. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of their knowledge and belief:
 - a) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any bidder or with any competitor;
 - b) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and
 - c) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.
2. A bid shall not be considered for award nor shall any award be made where (1) (a), (b) and (c) above have not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets further in detail the reasons therefor. Where (1) (a), (b) and (c) above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the Village of Ossining Corporation Counsel, or its designee, determines that disclosure was not made for the purpose of restricting competition.

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3. The fact that a bidder has published price lists, rates, or tariffs covering items being procured, has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of paragraph 1 above.
4. Any bid hereafter made hereunder by a corporate bidder for work or services performed or to be performed by, goods sold or to be sold, where competitive bidding is required by statute, rule regulation, or local law, and where such bid contains the certification referred to in paragraph 1 above, shall be deemed to have been authorized by the Board of Directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate to non-collusion as the act and deed of the corporation.

Dated _____
Legal Name of Person, Firm, or Corp.

(Seal of Corporation)

Business Address of Person, Firm or Corporation

By: _____
Signature

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NON-COLLUSIVE BIDDING CERTIFICATION BIDDER INFORMATION

Bidder to provide information listed below: (Please print)

Bidder Address: _____

Federal Identification No.: _____

Name of Contact Person: _____

Phone # of Contact Person: _____

If Bidder is a Corporation:

President's Name & Address: _____

Secretary's Name & Address: _____

Treasurer's Name & Address: _____

If Bidder is a Partnership:

Partner's Name & Address: _____

Partner's Name & Address: _____

If Bidder is a Sole Proprietorship:

Owner's Name & Address: _____

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B. BIDDER'S QUALIFICATIONS

The undersigned offers the following information as evidence of his or their facilities, ability and/or financial resources available for the fulfillment of the contract, if such be awarded to him or them:

FACILITIES - That he or they own and have available for immediate use on the proposed work, the following plant and equipment:

ABILITY - That he or they have experience in the performance of their trades in projects of similar scope and size.

REFERENCES - Provide references from projects of similar scope and magnitude.

PROJECT NAME	LOCATION	OWNER/TEL.#	CONTRACT \$

The contractor hereby authorizes the Village to contact the above people:

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SIGNED

DATE

FINANCIAL RESOURCES - That information relative to his or their financial resources can and may be obtained from the following (give, name, business and address; at least one must be a bank):

NAME

BUSINESS

ADDRESS

Upon request, the undersigned will amplify the foregoing statements as may be required and necessary to satisfy the Village concerning his or their ability to successfully perform the work in a satisfactory manner within the required time.

SUBCONTRACTOR(S) - List any subcontractor(s) you plan to use for any part of this work and provide details:

SUBCONTRACTOR NAME

DETAIL OF WORK TO BE SUBCONTRACTED

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The Bidder shall submit, with his/her bid, the above qualifications data for each of the listed subcontractors.

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BUSINESS ORGANIZATION AND QUALIFICATIONS SIGNATURE - State the true, exact, correct and complete name of the sole proprietorship, partnership, corporation or trade name under which you do business, and the address of the place of business. (If a corporation, state the name of the President and Secretary. If a partnership, state the names of the individuals who do business under the trade name.) It is absolutely necessary that the Bidder furnish this information.

Please fill-in completely and print unless signature required.

- a) Correct name of Bidder _____
- b) The business is a _____
- c) The principal place of business address is: _____

- d) The names of the corporate officers, or partners, or individual(s) doing business under a trade name, are as follows:

Bidder Signature _____

Bidder Title _____

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C. IRAN DIVESTMENT ACT OF 2012 CERTIFICATION

General Municipal Law section 103-g imposed requirements on local governments to ensure that public contracts are not awarded to entities invested in the Iranian energy sector. The statute also notes that, “a bid may not be considered for award nor may an award be made where the bidder has not submitted the statement of non-investment.” (Purchasing Goods and Services: A Guide to Competitive Bidding and Procurement, (NYCOM March, 2015)).

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the State Finance Law.

Affirmation:

Legal Name of Person, Firm or Corp.

Business Address of Person, Firm or Corp.

Signature

Print Name

Print Title

Date

BIDDER MUST COMPLETE AND SIGN

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D. MINORITY AND WOMEN-OWNED BUSINESS CERTIFICATIONS

In order to monitor minority and women-owned business enterprise (MWBE) participation in the Village of Ossining's solicitation and procurement processes, we request that you answer the questions below. If you do not answer the questions, we will assume that you do not wish to be considered a minority and/or women-owned business.

A minority-owned business is defined as a business that is 51% or more owned and controlled in a substantial and continuing manner by people who are eligible minorities or, in the case of a publicly owned business, where 51% or more of the voting shares of the corporation are owned by people who are eligible minorities.

Eligible minorities are defined as Blacks, Hispanics, Asians, American Indians, Eskimos and Aleuts.

A women-owned business is defined as a business that is 51% or more owned and controlled in a substantial and continuing manner by women, or in the case of a publicly owned business, where 51% or more of the voting shares of the corporation are owned by women.

Are you a Minority-Owned Business? Yes ☐ No ☐

Are you a Women-Owned Business? Yes ☐ No ☐

What Minority group(s) are you?

What percentage of ownership or voting power in shares of your business do Minorities and/or Women own?

Please identify, by name, Minority/Women owners of your business and ownership percentage of each:

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E. BIDDER'S ACKNOWLEDGMENT OF ADDENDA

The undersigned acknowledges receipt of Addenda as listed below and represents that any additions or modifications to, or deletions from the work called for in these Addenda, are included in the Base Bid Sum, if affected thereby.

<u>ADDENDA NO.</u>	<u>DATED</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Bidder Signature _____

Bidder Title _____

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VILLAGE OF OSSINING
WESTCHESTER COUNTY, NEW YORK

F. PROPOSAL PAGE(S)

For furnishing and installing free of Federal, State and Local Taxes:

DESCRIPTION

Replacement of Chiller at the Joseph G. Caputo Community Center

LUMP SUM / TOTAL BID PRICE (\$) _____

PRICE IN WORDS _____

In the event of a discrepancy or unclear bid, the price in words shall govern.

Dated: _____

Name of Company: _____

Address: _____

Signature: _____ Title: _____

Print Name: _____

Phone: _____ Fax: _____

Federal ID Number _____

NO PAGES ARE TO BE REMOVED FROM THIS CONTRACT

SECTION III – CONTRACT AGREEMENT

NOTE: The headings, titles, table of contents and indexes printed or written on the pages following, preceding or attached, are intended for the convenience of reference only, and do not form part of the contract or specifications.

A. PARTIES AND DEFINITIONS

This agreement dated as of the _____ day of _____, 20____ by and between the Village of Ossining, a municipal corporation of the State of New York, and hereinafter designated the Village, party of the first part, and

hereinafter designated the Contractor, party of the second part.

The parties to these present, each in consideration of the mutual promises, covenants and agreements herein contained, do hereby covenant, promise and agree each with other as follows:

NOTE: Whenever the words defined in this article or pronounced used in their stead occur in this contract and in the Notice to Bidders, Information for Bidders, Bidder's Proposal, Plans and Specifications hereto attached and made a part of this contract, they shall have the meaning here given:

A-1. Acceptance

Shall mean at the conclusion of the period of maintenance, as provided for herein, and shall be followed by the payment to the Contractor for all moneys retained by the Village and his release by it from all bond obligations.

A-2. Village

Shall mean the Village of Ossining.

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A-3. Village Manager

Shall mean the Village Manager of the Village of Ossining, or any officer duly authorized by the Village Manager to act in his or her absences for the Village in the execution of the work required by this contract.

A-4. Village Clerk

Shall mean the Village Clerk of the Village of Ossining, or any officer duly authorized by the Village Clerk of the Village of Ossining to act for the Village in the execution of the work required by this contract.

A-5. Completion

Shall mean the finishing of all work of a contract and its preparation for test by actual use otherwise and shall be certified to by the Village Engineer. During the maintenance period provided for herein, the Contractor without undue interference with such use, shall maintain his work without extra cost to the Village in the condition specified, and his bond and retained percentage shall be held for such performance, as provided herein.

A-6. Contract

"Contract" shall mean and include in their entirety any "Special Notice(s) to Bidders"; the "Notice to Bidders", "Information for Bidders", "Bidder's Proposal", and the "Contract Agreement"; any "General Requirement(s)" clauses, terms, conditions, and/or specifications referred to as such or in a like manner; and all Technical Specifications and Drawings listed, attached, annexed, included, and/or referenced herein. Said "Contract" shall also include any and all Addenda issued to this Bid/Contract as specified in Section I - INFORMATION FOR BIDDERS. All required forms, acknowledgments, and certifications included herein shall be construed as integral parts of the "Contract".

A-7. Contractor

Shall mean the party of the second part above designated entering into this contract for the performance of the work

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required by it, and the legal representative of said party of the agent appointed to act for said party in the performance of the work. In the Contract Documents it shall be understood to mean each and every Prime Contractor who has a Contract with the Owner except in cases where the term is used in the Technical Specification Sections identified as work of one particular Contractor.

A-8. Village Engineer

Shall mean the person holding the position or acting in the capacity of the Village Engineer of the Village of Ossining, acting either directly or through his properly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them. Whenever the aforesaid Village Engineer is unable to act in consequence of absence or other cause, then such person shall designate an assistant and that assistant shall perform all the duties and be vested with all the powers herein given the said Village Engineer.

A-9. Notice

Shall mean written notice. Written notice shall have been deemed to have been duly served when delivered in person to the person, firm or corporation for whom intended or to his, their or its duly authorized officer, agent or representative, or when delivered at the last know business address of such person, firm or corporation, or when enclosed in a postage prepaid sealed wrapper or envelope addressed to such person, firm or corporation, or when enclosed in a postage prepared sealed wrapper or envelope addressed to such person, firm or corporation at his, their or its last known business address, and deposited in the U.S. Mails in a receptacle regularly maintained for such purposes by the government.

A-10.Plans

Shall mean all the plans of the work accompanying this contract, which such subsequent details as the Village Engineer may give or approve from time to time.

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A-11.Site of Work

Shall mean the immediate locality of the work done or to be done under the contract, including all the land or easements thereto acquired or to be acquired by the Village, and the land, part of highway contiguous to the said work, land or easements, and all temporary or permanent storage place of equipment or material in the work.

A-12.Time

Year, month, week and day shall mean those respective calendar periods unless otherwise specified.

A-13.Terms of Authority

Unless the context clearly indicates the contrary, the words directed, required, permitted, ordered, designated, selected and prescribed, or words of like import used in the specifications or upon the plans shall mean, respectively, the direction, requirement, permission, order, designation, selection or prescription of the Village Engineer and similarly the words approved, acceptable, satisfactory, equal, and necessary, or words of like import shall mean respectively approved by or acceptable to, or satisfactory to or equal or necessary in the opinion of the Village Engineer.

A-14.Fiscal Officer

Shall mean the person holding the position of or acting in the capacity of the Treasurer of the Village of Ossining.

A-15.Engineer/Architect

Where the term "Engineer" or "Architect" appears in the Contract Documents, it shall be understood to mean LynStaar Engineering, P.C. or his or her authorized representatives.

A-16.Provide

Where the term "provide" appears in the Contract Documents it shall be understood to mean furnish and install.

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A-17.Furnish

Where the term "Furnish" appears in the Contract Documents, it shall be understood to mean furnish only.

A-18.Install

Where the term "Install" appears in the Contract Documents, it shall be understood to mean install only.

A-19.Owner

Shall mean the "Village of Ossining".

B. AUTHORITY OF VILLAGE ENGINEER

B-1. General

The Village Engineer will give all orders and direction contemplated under the contract; will determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for; will determine all questions in relation to said work and the construction thereof, and will decide every question which may arise relative to the fulfillment of the contract on the part of the Contractor. His estimates and decisions shall be final and conclusive upon said Contractor; and in case any question shall arise between the parties hereto, touching this contract, such estimate and decision shall be a condition precedent to the rights of the Contractor to receive any money under the contract.

The Village Engineer may stop any work under the contract if the method or conditions are such that unsatisfactory work might result, or if improper material or workmanship is being used.

The order or sequence of execution of the work and the general conduct of the work shall be subject to the approval of the Village Engineer who shall have authority to direct the order or sequence where public necessity or welfare shall require, which approval or direction shall, however, in no way affect the sole

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responsibility of the Contractor in the conduct of the work, nor shall any claim against the Village arise or be allowed by reason of any such direction by the Village Engineer.

B-2. Orders to Foreman

Whenever the Contractor is not present on any part of the work where it may be desired to give directions, orders may be given by the Village Engineer and shall be received and obeyed by the superintendent or foreman who may have charge of the particular work in reference to which orders are given. All superintendents and foreman shall be English speaking.

The superintendent or foreman in charge of the work shall have full authority to execute the orders or the directions of the Village Engineer without delay and to supply promptly such materials, equipment, tools, labor and incidentals as may be required.

B-3. Alterations or Deletions

The Village may make alterations or deletions in the line, grade, plan, form, dimensions, or materials or the work or any part thereof, either before or after the commencement of construction. If such deletions or alterations increase or diminish the quantity of work to be done, adjustment for such work under this contract, except that if unit prices are not stipulated for such work, compensation for increased work shall be under the item of Extra Work, and for decreased work the Contractor shall allow the Village a credit as determined by the Village Engineer. If such alteration or deletions diminish the quantity of work to be done, they shall not warrant any claim for damages or for anticipated profits on the work that is dispensed with, and the Contractor waives and releases any claim therefor.

B-4. Access to Work, Places of Manufacture and Accounts

The Village Engineer of the Village of Ossining, inspectors, agents or other employees, shall for any purpose, and other parties who may enter into contract with the Village of Ossining for doing work within the territory covered by this contract

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shall, for all purposes which may be required by the contract, have access to the work and the premises used by the Contractor and the Contractor shall provide safe and proper facilities therefor.

Furthermore, the Village Engineer and his inspectors and agents shall, at all times, have immediate access to all places of manufacture where materials are being made for under this contract and shall be given full facilities for determining that all such materials are being made strictly and in accordance with the specifications and plans.

The Contractor shall, whenever requested, provide scales and assistance for weighing, or assistance for measuring any of the materials, and shall give the Village's agents and employees access to invoices, bills of lading, payroll, accounts and memoranda relating to this contract or the work performed or to be performed hereunder.

B-5. Inspection

The Village Engineer shall be furnished with every reasonable facility for ascertaining whether the work is in accordance with the requirements and intentions of this contract.

B-6. Defective Work

The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill said contract as herein prescribed and defective work shall be made good and unsuitable materials may be rejected, notwithstanding that such work and materials have been previously overlooked by the Village Engineer and accepted or estimated for payment.

If the work, or any part thereof, shall be found defective before the final acceptance of the whole work, the Contractor shall forthwith make good such defects in a manner satisfactory to the Village Engineer, and if any materials brought upon the ground for use in the work or selected for the same shall be condemned by the Village Engineer as unsuitable or not in conformity with the specifications, the Contractor shall forthwith remove such materials to a satisfactory distance from the vicinity of the work.

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C. RESPONSIBILITY OF THE CONTRACTOR

C-1. General

The Contractor shall do all the work and shall furnish all the materials, tools, and appliances except as herein otherwise specified, necessary or proper for performing and completing the work required by this contract, in the manner and within the time hereinafter specified. The said Contractor shall complete the entire work to the satisfaction of the Village Engineer and in accordance with the specifications and drawings herein mentioned, at the prices herein agreed upon and affixed therefor. All the work, labor and materials to be done and furnished under this contract shall be done and furnished strictly pursuant to and in conformity with the attached specifications and the directions of the Village Engineer as may be given from time to time during the progress of the work under the terms of this contract and also in accordance with the Contract Plans, which said Specifications and Plans, together with the Notice to Bidders, the Information for Bidders and the Bidder's Proposal form parts of this agreement. The Contractor further agrees that all work done or materials furnished shall be of the best of their respective kinds and qualities.

C-2. Contractor's Obligation

The Contractor shall take all responsibility of the work of his respective trade, said Contractor shall bear all losses resulting to said contractor on account of the amount or character of work, or because the nature of the land in or on which the work is done is different from the assumed or expected, or on account of the weather, floods, or other causes; and the said contractor shall at said Contractor's own proper cost and expense assume the defense of and indemnify and save harmless the Village and the Village Engineer and their employees, officers, and agents from all claims of any kind arising from the performance of this contract, whether or not any active or passive or concurrent or negligent act or omission by the Village, the Village Engineer or any of their employees, officers or agents may have directly or indirectly caused or contributed thereto. Any expense necessarily incurred by the

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Village in any criminal action or proceedings against any person employed on any work constructed or in the suppression of riots among persons employed on said work, or in the prevention of the commission of crime by such persons, after being duly audited, as required by law, shall constitute a claim in favor of the Village of Ossining and an action may be maintained on such audit as for money paid to the use of the Village and said Contractor shall be responsible to the Village for any amount of expense incurred by reason of an upon the grounds set forth hereinabove.

C-3. Contractor to Provide Engineering

Unless otherwise specified in this Contract, the Contractor shall provide his own engineering and/or surveying services to give all lines and grades, including such changes as may be necessitated by unforeseen conditions, and as ordered by the Village Engineer, and other technical advice necessary for the satisfactory installation of the work. The Contractor shall furnish all stakes, forms, grade boards and templates and shall be responsible for the preservation of grade stakes and for the accurate setting, laying and execution of the work in all its parts. Said Contractor shall also provide the Village Engineer with all necessary assistance when required. All stakes set for lines or grades that may be disturbed by the Contractor or the employees of said Contractor shall be replaced at the expense of said Contractor.

C-4. Contractor to Give Personal Attention

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Village Engineer in every possible way.

The superintendent or foreman in charge of the work shall have full authority to execute the orders or the directions of the Village Engineer without delay and to supply promptly such materials, equipment, tools, labor, and incidentals as may be required.

C-5. Contractor's Mistakes

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The Contractor shall pay to the Village all expenses, losses and damages, as determined by the Village Engineer, incurred in consequences of any defect, omission or mistake of the Contractor or his employees, or the making good thereof.

C-6. Contractor to Employ Sufficient Labor and Equipment

The Contractor shall employ only competent and skillful personnel to do the work and whenever the Village Engineer shall notify the Contractor in writing that any person on the work is, in his opinion, incompetent, unfaithful, disorderly or otherwise, unsatisfactory, such person shall be discharged from the work and shall not again be employed in it, except with the consent of the Village Engineer.

If, in the opinion of the Village Engineer, the Contractor is not employing sufficient labor or sufficient equipment in good repair to complete this contract within the time specified, said Village Engineer may, after giving written notice, require said Contractor to employ such additional labor and equipment as may be necessary to enable said work to progress properly.

C-7. Patents and Brands

The Contractor shall be liable for any claims made against the Village of any infringements of patents by the use of patented articles in the construction and completion of the work, or any process connected with the work agreed to be performed under this contract or of any materials used upon the said work, and which the Village, the Village Engineer, their employees, officers or agents shall be obliged to pay by reason of any infringement of patents used in the construction and completion of the work.

C-8. Intoxicants

The Contractor shall not sell and shall neither permit nor suffer the introduction or use of intoxicating liquors or unlawful drugs upon or about the site of the work under this contract or allow any worker to be on site while that person may be under the influence of any of the above.

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C-9. Prevention of Dust Hazard

In accordance with New York State Labor Law, Section 222-a, the Contractor agrees that in the event a silica or other harmful dust hazard is created in the construction of his work herein contracted to be done and for which appliances or methods for the elimination of such silica dust or other harmful dust have been approved by the State and local authorities, said Contractor will install, maintain and keep in effective operation such appliances and methods for the elimination of such silica dust or other harmful dust hazard or hazards, and, in the event this provision is not complied with, this contract shall be void.

D. TIME

D-1. To Begin Work

The Contractor shall begin the work embraced in this contract within five (5) calendar days after the service of a written notice by the Village Engineer instructing the said Contractor to begin work. It is further agreed by the Contractor, however, that no work shall be begun by said Contractor and no liability incurred on the part of the Contractor or on the part of the Village until the Corporation Counsel of the Village of Ossining has first approved the payment and performance bonds and insurance required in the contract.

D-2. To Complete Work

The Contractor shall complete all work embraced in this contract as specified in Section I - INFORMATION FOR BIDDERS for the particular contract involved. The allotted time as specified in the INFORMATION FOR BIDDERS shall commence five (5) days after the Contractor is served with a notice to begin work or after the actual beginning of work by the Contractor, whichever shall occur first, as determined by the Village Engineer.

In the event the completion time specified in the INFORMATION FOR BIDDERS is set forth in calendar days, the Contractor agrees that a calendar day shall be any day, including Saturdays,

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Sundays and legal holidays, and that said completion time amply provides sufficient extra time to adjust for all delays caused by inclement weather conditions and other causes.

In the event the completion time specified in the INFORMATION FOR BIDDERS is set forth in working days, the Contractor agrees that each day except Saturdays, Sundays and legal holidays shall constitute a working day unless, in the opinion of the Village Engineer, weather conditions prevent the Contractor from carrying on the work embraced in this contract.

In the event the completion time specified in the INFORMATION FOR BIDDERS is set forth as a date of completion, the Contractor agrees that delays resulting from weather conditions or any other causes shall not be considered as justifiable reasons for extending the specified date of completion and acknowledges that the specified date of completion amply provides sufficient extra time for such delays. In the event of unusual or extraordinary causes delaying work progress, the Contractor agrees to employ sufficient extra shifts and employees to complete the work by the date fixed therefor.

The time in which the contract is to be completed is of the essence of this agreement.

D-3. Delay, Suspension and Extension

The Village Engineer reserves the right to suspend the whole or any part of the work herein contracted to be done, if he shall deem it in the best interest of the Village to do so.

The Contractor agrees to make no claim for damages for delay in the performance of this contract occasioned by any act or omission of any person, firm or corporation or any acts or omissions of the Village or any of its representatives, and agrees that any such claims shall be fully compensated for by an extension of time to complete performance of the work as provided herein.

No extension of time will be made for ordinary delays or accidents.

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D-4. Liquidated Damages

The Contractor shall, in addition to any other indemnification provided for elsewhere in this contract, pay to the Village all expenses, losses and damages, as determined by the Village Engineer, incurred in consequences of any negligence, defect, omission or mistake of the Contractor or his employees, or making good thereof.

As time is of the essence for this Contract, the Contractor shall also pay the sum of \$450.00 for each calendar day (Saturdays, Sundays and Legal Holidays included) that he shall be in default in substantially completing the entire work to be done under this Contract within one hundred eighty (180) calendar days after written Notice to Proceed, plus any extensions allowed in accordance with the terms of this Contract. Substantial completion of the work shall be defined as completing the work in all respects, including all parts thereof and any testing and startup required, except for final cleanup and minor punch list items. The Village Engineer or the Architect/Engineer, acting on behalf of the Village Engineer, shall certify substantial completion of the work as described in this Contract Agreement. If the Contractor subsequently fails to complete all the work on or before one hundred ninety-four (194) calendar days after written Notice to Proceed, plus any extensions allowed in accordance with the terms of this Contract, the Contractor shall further pay the sum of \$150.00 for each calendar day (Saturdays, Sundays and Legal Holidays included) of delay in completing the work.

The above sums are hereby expressly agreed upon, not as a penalty but as a reasonable estimate of liquidated damages, which the Village will suffer by reason of such default(s). The Village Engineer shall have the right to deduct the amount of any such damages from any moneys due or to become due the Contractor under this contract provided, however, that the Village Engineer shall have the right in his discretion to extend the time for completion as described below.

[Contract Agreement continues on following page.]

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D-5. Extension of Time for Completing the Work

If the Contractor is delayed in completion of the work, or phases of the work, under this Contract by any act or neglect of the Owner or of any other Contractor employed by the Owner, or by changes in the work, or by any priority or allocation order duly issued by the Federal government, or by any unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormally severe weather, or by delays of subcontractors or suppliers occasioned by any of the causes described above, or by a delay authorized by the Village Engineer for any cause which the Village Engineer shall deem justifiable, then:

For each day of delay in the completion of the work or a phase of the work so caused, the Contractor will be allowed one day additional to the time limitation specified in the Contract, it being understood and agreed that the allowance of same shall be solely at the discretion and approval of the Village Engineer.

No such extension of time will be made for any delay unless the Contractor, within three (3) days after the beginning of the delay, shall have informed the Village Engineer in writing of the nature of the delay, its cause, and its estimated duration. The Village Engineer will ascertain the facts regarding the delay and notify the Contractor within a reasonable time of his decision in the matter.

The Contractor shall use all honorable and reasonable means to prevent or settle strikes, to avoid violations of labor agreements or other actions calculated to create dissatisfaction with working conditions. Should strikes occur, the Contractor shall make all proper and reasonable efforts to effect early settlement and resumption of the work. Should collusion by the Contractor be proven in the case of strikes or lockouts, then no extension of time for completion of the Contract will be given. Burden of proof in this case shall rest entirely with the Contractor.

If adverse weather conditions are cited as the basis for a claim for additional time, such claim shall be documented by data

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substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that said weather conditions had an adverse effect on the scheduled construction.

No claim for damages or any claim other than for extensions of time as herein provided shall be made or asserted against the Owner by reason of any delays caused by the reasons hereinabove mentioned unless otherwise provided in the Contract Documents.

D-6. Abandonment and Suspension

If the work to be done under this contract shall be abandoned by the Contractor, or if this contract shall be assigned or the work sublet by said Contractor otherwise than as herein specified, or if at any time the Village Engineer shall be of the opinion and shall so certify in writing that the performance of this contract is unnecessarily delayed, or that the Contractor is violating any of the conditions or covenants of this contract or of the specifications or is executing the same in bad faith, or not in accordance with the terms thereof, or if the work is not fully completed within the time stated in this contract for its completion or started as specified for starting, or completed with the time to which completion of the contract may be extended by the Village in the manner herein provided, the Village may notify the Contractor to discontinue the work, or such part thereof, and may terminate the contract in whole or part. Village shall thereupon have the power to complete or contract for the completion of the contract in the manner prescribed by law or to place such and so many persons as the Village may deem advisable, by contract or otherwise, upon the work herein described, or such part thereof, and to take possession of and use any of the materials, plant, tools, equipment, supplies and property of every kind provided by the Contractor for the purposes of his work and to procure other materials for the completion of the same, and to charge the expense of such labor and materials to the Contractor. The expense so charged shall be deducted and paid by the village out of such moneys as may be due or may, at any time thereafter, become due to the Contractor under and by virtue of this contract, or any part thereof. And in case such expense shall exceed the amount which would have been payable under this contract if the same had been completed by the contractor, he

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shall be liable and responsible therefore; and, if less, he shall forfeit all claims to the difference; and when any particular part of the work is being carried on by the Village, by contract or otherwise under provisions of this article of the contract, the Contractor shall continue the remainder of the work in conformity with the terms of this contract, and in such manner as in no way to hinder or interfere with the persons or workmen employed, as above provided, by the Village by contract or otherwise, to do any part of the work or to complete the same under the provisions of this contract.

The Village shall, however, prior to taking possession for completion, notify the Contractor's surety of the Contractor's defaults hereunder and the surety may remedy the defaults by undertaking and commencing due performance within thirty (30) days after such notice, and by subsequent diligent performance and completion of the contract; and, if the surety shall not faithfully undertake and commence such performance within said period and thereafter diligently complete or perform at the surety's expense (not in excess of the bond amount) the Village may proceed as aforesaid.

However, if, in the Village's opinion, any conditions dangerous to life or property shall exist by reason of the Contractor's default, the Village may proceed forthwith without notice to the surety, but at the expense of the Contractor and surety, to remedy any such dangerous conditions.

E. INSURANCE AND INDEMNITY

E-1. General

The Contractor also shall take out and maintain during the life of the contract such contingent property damage, public liability insurance policies, automobile liability and umbrella coverages in amounts hereinafter specified, as will protect the Architect/Engineer and the Village of Ossining, its employees, officers and agents from any and all of the said hereinabove matters, including a contractual coverage clause.

The Contractor, before execution of this contract by the Village Manager or designee, shall file with the Village Engineer and Village Corporation Counsel for their approval, one copy of each

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and every insurance and indemnity policy required by the terms of this contract which contracts shall carry an endorsement to the effect that the insurance company shall provide at least thirty (30) days' written notice to the Village of Ossining Village Engineer and Corporation Counsel of any cancellation, modification and/or expiration of the insurance policies. Said insurance and indemnity policies, certificates or binders shall be subject to the approval of the Village of Ossining in regard to company, adequacy and form of protection as detailed below. The certified check or bid bond submitted with the Contractor's bid may be held for and until such approval has been given. Upon the failure of the Contractor to furnish, deliver, and maintain such acceptable binders, certificates or insurance and renewals as above provided, this contract may, at the option of the Village of Ossining, be held willfully violated by the Contractor and may be forthwith declared suspended, discontinued or terminated by the Village. The Contractor acknowledges that the failure to obtain the insurance detailed below constitutes a material breach of the contract and subjects the Contractor to liability for damages, indemnification and all other available legal remedies. The failure of the Village of Ossining to object to the contents of the Certificates of Insurance or absence of same shall not be deemed a waiver of any and all rights held by the Village of Ossining. Failure of the Contractor to take out and/or maintain any required insurance shall not relieve the Contractor from any responsibility or liability under this contract, nor shall the insurance requirements be constructed to conflict with the obligations of the Contractor concerning indemnification. **The cost of furnishing the below detailed insurance shall be borne by the Contractor. The cost for the insurance will be deemed to have been included in the price bid for the contract. All insurance companies listed on the Certificates of Insurance shall be A.M. Best Rated A VIII or better and be admitted in the State of New York.**

All required insurance must be in effect and continued during the life of the contract **in not less** than the following amounts

- **Worker's Compensation and Employer's Liability**- Shall include New York State Disability insurance coverage. Worker's Compensation shall have unlimited coverage. Policies to cover operations in New York State. Where applicable, U.S. Longshore and Harbor Workers Compensation Act Endorsement and Maritime Coverage Endorsement shall be

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attached to the policy. The Village of Ossining, its employees, elected officials, volunteers and agents and LynStaar Engineering, P.C. shall be included in a waiver of subrogation clause without the need for a contract or agreement.

- **Commercial General Liability-** \$1,000,000 per occurrence and \$2,000,000 general aggregate limits per location for Bodily Injury and Property Damage. Such coverage to include the following: a) Premises and Operations; b) Products/Completed Operations; c) Independent contractors; d) Personal and advertising injury; e) Blanket contractual liability; f) **The Village of Ossining, its assigns, elected officials, employees, volunteers and LynStaar Engineering, P.C. shall be named as "Additional Insureds" on the policy using ISO Additional Insured Endorsement CG 20 10 11/85 or an endorsement providing equivalent or broader coverage and shall apply on a primary and noncontributory basis, including any self-insured retentions without the need for a contract or agreement.** The Certificate of Insurance should show this requirement applies to the Commercial General Liability coverage and the Additional Insured Endorsement shall be attached to the certificate; g) to the extent permitted by New York law, the Contractor waives all rights of subrogation or similar rights against the Village of Ossining and LynStaar Engineering, P.C. without the need for a contract or agreement; h) Cross liability coverage (Commercial General Liability and Business Automobile Liability policies only); i) coverage to be written on an Occurrence Policy Form and j) coverage shall include Labor Law/third-party action over claims.
- **Comprehensive Business Automobile Liability-** \$1,000,000 per occurrence and \$2,000,000 general aggregate for bodily injury and property damage including coverage for owned, any auto non-owned, and hired private passenger and commercial vehicles. Such coverage to include the following: a) **the Village of Ossining, its assigns, elected officials, employees, volunteers, and LynStaar Engineering, P.C. shall be named as "Additional Insureds" on the policy without the need for a contract or agreement.** The Certificate of Insurance should show this applies to the

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Comprehensive Business Automobile coverage and the Additional Insured Endorsement shall be attached; b) to the extent permitted by New York law, the Contractor waives all rights of subrogation or similar rights against the Village of Ossining and LynStaar Engineering, P.C. without the need for a contract or agreement; and c) coverage shall apply on a primary and non-contributory basis.

- **Umbrella Liability-** \$1,000,000 per occurrence and \$2,000,000 general aggregate per location, including coverage for Commercial General Liability and Comprehensive Business Automobile Liability. Such coverage shall include the following: a) coverage shall be written on an Occurrence Policy Form; b) **the Village of Ossining, its assigns, elected officials, employees, and LynStaar Engineering, P.C. should be named as "Additional Insureds" on the policy using ISO Additional Insured Endorsement CG 20 10 11/85 or an endorsement providing equivalent or broader coverage and shall apply on a primary and noncontributory basis, including and self-insured retentions without the need for a contract or agreement;** c) to the extent permitted by New York law, the Contractor waives all rights of subrogation or similar rights against the Village of Ossining and LynStaar Engineering, P.C. without the need for a contract or agreement; and d) coverage shall include Labor Law/third-party over claims.
- **Owner's and Contractor's Protective Liability-** \$1,000,000 per occurrence and \$2,000,000 general aggregate limits per location for Bodily Injury and Property damage. Village of Ossining is the sole named insured.

The above referenced Certificates of Insurance shall provide that thirty (30) days written notice prior to cancellation, modification or expiration of the policies be given to the Village of Ossining Village Engineer and Corporation Counsel. Policies that lapse and/or expire during the term of the work shall be recertified and received by the Village of Ossining no less than thirty (30) days prior to policy expiration or cancellation. **Note: The above listed minimum insurance requirements may be increased upon review and determination by the Village of Ossining.**

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F. LABOR

F-1. No Discrimination in Employment

The Contractor agrees:

(a) That in the hiring of employees for the performance of work under this contract or any subcontract hereunder, no contractor, subcontractor, nor any persons acting on behalf of such Contractor or subcontractor, shall by reason of race, creed, color, national origin or gender discriminate against any citizen of the United States who is qualified and available to perform the work to which the employment relates,

(b) That no Contractor, subcontractor, or any person on his behalf shall in any manner discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, creed, color, national origin or gender.

(c) That there may be deducted from the amount payable to the Contractor by the Village of Ossining under this contract a penalty of five (\$5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of the contract; and

(d) That this contract may be canceled or terminated by the Village of Ossining and all moneys due to become due hereunder may be forfeited for a second or any subsequent violation of the terms or conditions of this section of the contract.

F-2. Hours of Work

The Contractor agrees that no laborers, workmen or mechanics in the employ of the Contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract shall be permitted or required to work more than eight (8) hours in any one calendar day or more than five (5) days in any one week, except in cases of extraordinary emergency, including fire, flood or danger to life and property. No such person shall be employed more than eight

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(8) hours in any day or more than five (5) days in any one (1) week except in such emergency.

F-3. Wage Rates and Supplements

The wages to be paid for a legal day's work, as hereinbefore defined, to laborers, workmen or mechanics upon such public work, shall be not less than the prevailing rate of wages as hereinafter defined. Serving laborers, helpers, assistants and apprentices shall not be less than the prevailing rate of wages as hereinafter defined. The wages to be paid for a legal day's work, as hereinbefore defined, to laborers, workmen or mechanics upon any material to be used upon or in connection therewith, shall be not less than the prevailing rate for a day's work in the same trade or occupation in the locality within the state where such public work on, about, or in connection with such labor is performed in its final or completed form is to be situated, erected or used and shall be paid in cash.

Such wages shall be paid promptly in cash and in lawful money of the United States, provided, however, that the Contractor may pay his employees by check upon a certificate of the Industrial Commissioner to be issued only after a hearing upon the application to pay by check, which hearing shall be with notice of at least five (5) days to be served personally or by mail on all interested persons, or, if not served as aforesaid, then to be published in a manner directed by the Industrial Commissioner, which shall afford interested persons the opportunity to appear and be heard at such hearing and after proof has been furnished satisfactorily to the Industrial Commissioner of the contractor's financial responsibility and the Contractor gives assurance that such checks may be cashed by employees without difficulty and for the full amount for which they are drawn.

The supplements, as hereinafter defined, to be provided to laborers, workmen or mechanics upon such public works, shall be in accordance with the prevailing practices in the locality, as hereinafter defined. Serving laborers, helpers, assistants and apprentices shall not be classified as common laborers and shall be provided supplements in accordance with the prevailing practices as hereinafter defined. The supplements, as hereinafter defined, to be provided to laborers, workmen or

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mechanics upon any material to be used or in connection therewith, shall be in accordance with the prevailing practices in the same trade or occupation in the locality within the state where such public work on, about, or in connection with which such labor is performed in its final or completed form is to be situated, erected or used.

"Supplements" means all enumeration for employment paid in any medium other than cash, or reimbursement for expenses, or any payments which are not "wages" within the meaning of the law, including but not limited to, health, welfare, non-occupational disability, retirement, vacations benefits, holiday pay and life insurance.

"Prevailing practices in the locality" shall be practice of providing supplements, as hereinabove defined, to the majority of workmen, laborers or mechanics in the same trade or occupation in the locality as hereinafter defined.

Where contracts are not awarded within ninety (90) days of the date of establishment of prevailing rate of wages by the fiscal officer, the department of jurisdiction shall request of the fiscal officer a re-determination of a schedule of wages and supplements.

The said Contractor agrees that any person or corporation that willfully pays or provides, after entering into such contract, less than such stipulated wage scale as established by the fiscal officer shall, in addition to the penalties provided in Section 220 and other applicable provisions of the Labor Law, be subject to forfeiture of the contract at the option of the Village Manager for a first offense; and no such person or corporation shall be entitled to receive any sum nor shall any officer, agent or employee of the Village pay the same or authorize its payments from the funds under his charge or control to any person or corporation for work done upon any such contract.

The said Contractor agrees that each such laborer, mechanic or workman employed in his/her performance of this contract, either by the Contractor, a subcontractor, or any other person doing or contracting to do the whole or a part of the work contemplated

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by the contract, shall be provided supplements of not less than prevailing supplements.

In order to comply with the provisions of the Labor Law of the State of New York the Contractor further agrees that not less than the schedules of wages and supplements (see New York State Department of Labor PRC # 2021010977) shall be paid and provided to laborers, workmen or mechanics in carrying out the work provided for under this contract.

G. LAWS AND REGULATIONS

G-1. General

The Contractor and his agents and employees shall at all times observe and comply with all existing and future laws, ordinances, regulations, orders and decrees that in any manner affect their work, including Federal permits and regulations, and shall defend, protect, indemnify and save harmless the Architect/Engineer and the Village of Ossining, its agents and employees against any claim or liability arising from or based on the violation of any such law, ordinance, regulations, order or decree, whether by himself or by his employees. If any discrepancy or inconsistency should be discovered in this contract, or in the plans or specifications herein referred to, in relation to any such law, ordinance, regulation, order or decree, he shall forthwith report the same in writing to the Village Engineer.

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein and if, through mistake or other wise, any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion.

G-2. Labor and Other Laws

The Contractor and his agents and employees shall at all times observe and comply with all the applicable provisions of the Labor Law, the Public Health Law, the Lien Law, the Worker's

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Compensation Law, the State Unemployment Insurance Law, the Federal Social Security Law, the Occupational Safety and Health Laws, Village of Ossining local laws, ordinances, resolutions or regulation and all amendments and additions thereto.

G-3. Refusal to Testify

Upon the refusal of a person when called before a grand jury to testify concerning any transaction or contract had with the State, any political subdivision thereof, a public authority or with any public department, agency or official of the State or of any political subdivision thereof or of a public authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant questions concerning such transaction or contract;

(a) Such person, and any firm, partnership or corporation of which he is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contract with any municipal corporation or any public department, agency or official thereof, for goods, work or services for a period of five (5) years after such refusal and also

(b) Any and all contracts made with any municipal corporation or any public department, agency official thereof, by such person, and by any firm partnership or corporation of which he is a member, partner, director or officer may be canceled or terminated by the municipal corporation for goods delivered or work done Municipal Law Section 103-a.

G-4. Permits

Unless otherwise specified in this Contract, the Contractor shall, at his own expense, obtain all necessary permits and licenses required by County, State or other public authorities; shall give all notices required by law or ordinances; and shall post all bonds and pay all fees and charges incidental to the due and lawful prosecution of the work covered by this contract. If any of the Contractor's work shall be done contrary to such laws, ordinances, rules and regulations, without such notice, he shall bear all cost arising therefrom.

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All fees for Village of Ossining permits shall be waived.

G-5. Notice to Consolidated Edison

The Contractor further agrees to comply with General Business Law, Article 36, and shall give prior written notice to the Consolidated Edison Company of New York, Inc., at least seventy-two (72) hours in advance before excavating in any street or public place and before a proposed discharge of explosives in any location.

G-6. Code 53 (16 NYCRR Part 753)

Under Industrial Code Rule 53 the Contractor will be required to notify the Central Registry prior to the start of his work and obtain a listing of the various underground utility operators to notify of impending work under this contract so that said utility operators may locate and mark the locations of their utilities upon the pavement. Notification of all operators must be made forty-eight (48) hours prior to the start of any construction. No work by the Contractor shall commence until all the operators have acknowledged being notified and their utilities have been located and marked.

H. EXTRA WORK

H-1. Modifications and Extra Work

The Contractor in entering into this Contract understands that the Owner reserves the right to modify the arrangement, character or size of the work or appurtenances whenever, in its opinion, it shall deem it necessary or advisable so to do. Minor changes in the work not involving extra cost and not inconsistent with the purposes of the work may be made by verbal order, but no modification involving extra work or material changes shall be made unless ordered in writing by the Village Engineer. The Contractor shall and will accept such modifications when ordered in writing by the Village as stated above and the same shall not vitiate or void this Contract. Any such modifications so made shall not, however, subject the Contractor to increased expense without equitable compensation,

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which shall be determined by the Village Engineer. If such modifications result in a decrease in the cost of work involved, an equitable deduction from the Contract price shall be made which shall be determined by the Village Engineer. The Village Engineer's determination of any such additional compensation or said deduction shall be based upon the bids submitted and accepted. In no event shall any modification in the work shown on the plans and specifications be made unless the nature and extent thereof has first been certified by the Village Engineer in writing and sent to the Contractor.

H-2. Payment for Extra Work

The Contractor shall and will do any work and furnish any materials not herein provided which, in the opinion of the Village Engineer, may be found necessary or advisable for the proper completion of the work, or the purposes thereof, to include any modifications or alterations. All extra work and materials shall be ordered in writing by the Village Engineer, and in no case will any work or materials in excess of the amount shown by said plans and specifications be paid for unless so ordered. The Contractor further agrees that he will accept as full compensation for such extra work and materials the unit prices bid in the case of items covered by unit prices in the proposal, and no more; and for such items as are not covered by a unit price, he will accept as full compensation the reasonable cost, as determined by the Village Engineer, of all necessary labor, including insurance and payroll taxes, equipment rental and materials, plus twenty percent (20%) for superintendence, the use of tools and plant, and other overhead expenses and profit.

The Contractor agrees to prosecute such extra work with all reasonable diligence, and to employ thereon competent personnel. The Contractor shall give the Village Engineer, or his authorized agent, access to all accounts, bills, payrolls, and vouchers relating to extra work, and he agrees that he shall have no claim for compensation for such extra work unless a statement in writing of the actual cost of the same, fully itemized as to labor and materials, is presented to the Village Engineer before the fifteenth (15th) day of the month following that during which each specific order was complied with by him.

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H-3. Records

If ordered by the Village Engineer, the Contractor shall submit daily records of all extra work. These daily records shall include the names of the men employed and hours worked, material incorporated into the work, machinery used and work actually accomplished. These daily records shall be signed by both the Contractor's authorized representative and the Village Engineer.

In addition to the daily records set forth in the paragraph immediately above, the Contractor may be required to submit certified copies, photocopies or photostats of his payrolls for the days worked, which payrolls shall show the hourly wage rate actually paid to each man.

The Contractor may also be required to submit photocopies or photostats of the original receipted bills showing the actual costs of all material incorporated in the work.

H-4. Subcontractors

The Contractor shall not be paid any allowance for profit or overhead on extra work done by subcontractors or others.

H-5. Failure to Perform Extra Work

If the Contractor shall decline or fail to perform such extra work or furnish such materials as authorized or ordered by the Village Engineer in writing, as aforesaid, the Village Engineer may then arrange for the performance of the extra work or the furnishing of the material in any manner as he may see fit, the same as if this contract had not been executed, and the Contractor shall not interfere with such performance of the extra work nor make any claim against the Village because of such performance.

H-6. Extension of Time

When extra work is ordered near the completion of the contract, or when extra work is ordered at any time during the progress of the extra work which requires, in the opinion of the Village Engineer, an unavoidable increase in time for the completion of

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the contract, a suitable extension of the item for completion shall be made, as may be determined by the Village Engineer.

H-7. Not to Affect Bonds

It is distinctly agreed and understood that any changes made in the plans and specifications for such extra work or otherwise (whether such changes increase or decrease the amount thereof) or any change in the manner or time of payments made by the Village to the Contractor, or extra work performed, shall in no way annul, release or effect the liability or surety on the bonds given by the Contractor.

I. PAYMENT

I-1. Premises for Payment

The Contractor shall not demand nor be entitled to receive payment for the work or materials, or any portion thereof, except in the manner set forth in this contract, nor unless each and everyone of the premises, agreements, stipulations, terms and conditions herein contained to be performed, kept, observed and fulfilled on the part of the contractor shall have been so performed, kept, observed and fulfilled on the part of the Contractor shall have been so performed, kept observed and fulfilled, and the Village Engineer shall have given his certificate to that effect and shall have been satisfied with and accepted the work. All requisition for payments and change orders shall be submitted on AIA Document Forms and as otherwise required by the Village.

The Contractor shall submit to the Village prior to the commencement of work a schedule of values of all work. Such schedule shall be reviewed and approved by the Village and will provide a basis of payment for all submittal if accepted by the Village.

I-2. Statements Showing Amounts Due Others

In accordance with Section 200-a of the Labor Law as amended, before payment is made by or on behalf of the Village of

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Ossining of any sum or sums due on account of this contract, it shall be the duty of the Village Treasurer of the Village of Ossining to require the Contractor and each and every subcontractor from the Contractor or a subcontractor to file a statement in writing in a form satisfactory to such comptroller certifying to the amounts then due and owing from such Contractor or subcontractor filing such statement to or on behalf of any and all laborers for daily or weekly wages or supplements on account of labor performed upon the work under the contract, setting forth therein the names of the persons whose wages or supplements are unpaid , and the amount due to each or on behalf of each respectively, which statement so to be filed shall be verified by the oath of the Contractor or subcontractor as the case may be that he has read such statement subscribed by him and knows the contents thereof, and that the same is true of his own knowledge.

I-3. Amounts Due for Wages May be Withheld

In accordance with Section 200-b of the Labor Law as amended, in case any interested person shall have previously filed a protest in writing objecting to the payment of any contractor or subcontractor to the extent of the amount or amounts due or to become due to him for daily or weekly wages or supplements for labor performed on the public improvement for which such contractor was entered into, or if for any other reason it may be deemed advisable, the Village Treasurer of the Village of Ossining may deduct from the whole amount of any payment on account thereof the sum or sums admitted by any Contractor or subcontractor in such statement or statements so filed to be due and owing by him on account of labor performed on such public improvements before making payment of the amount certified for payment in any estimate or voucher, and may withhold the amount so deducted for the benefit of the laborers whose wages or supplements are unpaid or not provided, as shown by the verified statements filed by any contractor or subcontractor, and may pay directly to any person the amount or amounts shown to be due to him or his duly authorized collective bargaining labor organization for such wages or supplements by the statements filed as hereinbefore required, thereby discharging the obligation of the Contractor or subcontractor to the person or his duly authorized collective bargaining labor organization receiving such payment to the extent of the amount thereof, or

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when any interested person shall file a written complaint with the Village Treasurer of the Village of Ossining alleging unpaid wages or supplements due for labor performed on a public improvement for which a contract has been entered into or if, on the said Village Treasurer's own initiative, unpaid wages or supplements appear to be due, the Village Treasurer of the Village of Ossining shall immediately so notify the financial officer of the civil division interested who shall withhold from any payment on account thereof, due the Contractor or subcontractor executing said public improvements, sufficient moneys to satisfy said wages and supplements pending a final determination as further set forth in said Section 220-a.

I-4. Liens

If, at any time before or within thirty (30) days after the whole work herein agreed to be performed, and all labor and materials herein agreed to be delivered to the Village of Ossining have been performed and delivered or completed and accepted by the Village, any person or persons claiming to have performed any labor or furnished any materials towards the performance or completion of this contract shall file with the Village Clerk any such notice as is described in the New York State Lien Law, the Village Treasurer shall retain until and for the discharge thereof, from the moneys under his control, so much of such moneys as shall be sufficient to satisfy and discharge the amount in such notice claimed to be due, together with the costs of any actions or proceedings brought to enforce such claim or lien by filing of such notice.

I-5. Money May Be Retained

The Village of Ossining may keep moneys which would otherwise be payable at any time hereunder, and apply the same or so much as may be necessary therefor to the payment of any expenses, losses, or damages incurred by the Village, as determined by the Village, and may retain until all claims shall have been satisfied and/or settled, so much of such moneys as the Village shall be of the opinion will be required to settle in full all claims, and the costs and expenses thereof, against the Village, its employees, officers and agents as described in this agreement and all claims for materials for the work, notice of which, signed and sworn to by the claimants, shall have been

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filed in the office of the Village Clerk, or the Village may make such settlement and apply thereto any moneys retained under this contract.

I-6. Prices for Work

The Village shall pay and the Contractor shall receive in full compensation for the furnishing all materials and labor and for performing and completing all work which is necessary or proper to be furnished or performed in order to complete the entire work in this contract as described and specified in such specifications and plans described and shown and also for all loss or damages arising out of the nature of work aforesaid or from the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work and for all risks of any description connected with the work and for all expenses incurred by or in consequence of the suspension or discontinuance of any work as herein specified, the lump sum and/or unit prices named in the Bidder's Proposals.

I-7. Partial Estimates

In order to assist the Contractor to prosecute the work advantageously, the Contractor, from time to time as the work progresses but not more than once a month, shall submit written estimates of the amount and value of the work done and materials incorporated in the work by the Contractor in the performance of this contract. Said written estimates shall be submitted on AIA Document Forms and as otherwise required by the Village.

The first estimate shall be of the amount and value of work done and materials incorporated in the work since the Contractor commenced the performance of this contract on his part, and every subsequent estimate, except the final estimate, shall be of the amount and value of the work done and materials incorporated in the work since the last preceding estimate was made; provided, however, that no such estimate shall be made when, in the judgment of the Village Engineer, the total value of the work done and materials incorporated in the work since the last preceding estimate amounts to less than TWO THOUSAND DOLLARS (\$2,000.00).

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Partial estimates shall not include any materials not incorporated in the work nor any of the Contractor's plan. Such estimates shall not be required to be made by precise measurements, but they may be made by measurement or by estimation or partly by one method and partly by the other, and it shall be sufficient if they are approximate only.

I-8. Partial Payment

Upon each estimate being made and certified by the Village Engineer in writing to the Village Treasurer, the Village shall, within forty - five (45) days after the date of the estimate, pay to the Contractor ninety - five percent (95%) of the amount stated in such estimate or certificate to be the value of the work done and materials furnished, retaining, however, in addition to the contract or by laws of the State of New York, the Village is or may be authorized. Such payment shall not be used as evidence against the Village that the work already done has been completed according to contract, nor shall it preclude the Village from contesting the claims of the Contractor that the work has been completed according to contract.

I-9. Withholding of Payments

The payments under an estimate provided for by this agreement may at any time be withheld or reduced if, in the opinion of the Village Engineer, the work is not proceeding in accordance with the contract; or if the required insurance policies have not been furnished and maintained by the Contractor.

If the Contractor fails to meet and pay all of his just obligations outstanding for labor, materials, and/or supplies at the time when an estimate for payment is due him, or if any liens, claims or demands arising out of or in connection with the work or its performance shall be outstanding at the time any payment may be due or is likely to be made thereafter, or if any claims arising out of or in connection with the Contractor's operations under this contract are made against the party of the first part by any other person other than the Contractor, or, if in the opinion of the Village Engineer, the Contractor is not proceeding with the work in accordance with the provisions of this contract, the Village shall have the right to withhold out of any payments, final or otherwise, such sums as the Village

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Engineer deems ample to protect the Village against delay or loss and/or to assure the payment of just claims of third persons and, at its option as agent for the Contractor, to apply such sums in such manner as the Village Engineer may deem proper to secure such protection and/or to satisfy such claims. The Village shall also have the right to withhold from the Contractor so much of the accrued payments as may be necessary to pay to laborers or mechanics employed on the difference between the rate of wages and supplements required by his contract to be paid laborers or mechanics on the work and the rate of wages and supplements actually paid to such laborers or mechanics. Such application shall be deemed payments for the Contractor's account. The Village Engineer may withhold payment to the Contractor on account of the failure of the Contractor to fully comply with any requirements of the contract.

I-10. Certificate of Substantial Completion

Upon substantial completion of all work under this Contract including any testing and startup required, but excluding final cleanup and minor punch list items, the Contractor shall submit a Substantial Completion Release as noted below and the Village Engineer or the Architect/Engineer, acting on behalf of the Village Engineer, will file a Certificate of Substantial Completion with the Contractor, certifying that essentially all work has been performed and materials and equipment supplied in full accordance with the terms of the Contract Documents.

The Contractor shall execute and deliver a Substantial Completion Release on forms specified elsewhere in this Contract, or absent such forms, in a manner deemed acceptable by the Village Engineer or the Architect/Engineer, acting on behalf of the Village Engineer.

If the Contractor wishes to reserve from the Release specific claims against the Owner, such claims excepted from the Release shall be specifically delineated by the Contractor.

I-11. Semi-Final Payment

Payment of the Contractor's semi-final estimate shall be made upon the Village Engineer's (or Architect/Engineer's) certification of Substantial Completion. Before semi-final

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payment is made, the Contractor must remove all surplus materials, falsework, temporary structures including foundations thereof, plant of any description, and refuse, rubbish and debris of every nature resulting from the Contractor's operations or workers and to put the site in a neat, orderly condition. Additionally, before semi-final payment is made, the Contractor must restore all areas that have been disturbed by the Contractor's operations to their original condition, or to a condition satisfactory to and approved by the Village Engineer.

I-12. Acceptance of Semi-Final Payment Constitutes Acceptance

Acceptance by the Contractor of the Semi-Final Payment shall be and shall operate as a release for all things done or furnished in connection with this work and for every act of the Owner and others relating to or arising out of this work. No payment, however, semi-final or otherwise, shall operate to release the Contractor or the Contractor's Sureties from any obligations under this Contract or the Performance and Payment Contract Bonds. As noted above, the Contractor shall submit the Release as therein described, prior to the Semi-Final Payment.

I-13. Final Completion and Final Estimate

Whenever, in the opinion of the Village Engineer, the Contractor shall have completely performed this contract, except maintenance, the Village Engineer shall so certify the Contractor's final estimate as to the whole amount of work performed by the Contractor and also the total value of such work performed under and according to the terms of this contract. All prior certificates upon which partial payments may have been made, being merely approximate estimates, shall be subject to correction in the final estimate, which final estimate may be made without notice to the Contractor thereof or of the measurements upon which it is based. Said written final estimate shall be submitted on AIA Document Forms and as otherwise required by the Village.

Before final payment is made, the Contractor must satisfy the Village that all bills for labor and materials have been paid.

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I-14. Correction of Estimate

The Village shall not, nor shall any department or officer thereof, be precluded or estopped, by any return or certificate made or given by the Village Engineer or any other officer, agent or employee of the Village under any provision of this contract, from at any time either before or after the final completion and acceptance of the work and payment therefor pursuant to any such return or certificate showing the true and correct amount and character of the work done and materials furnished by the Contractor or any other person under this agreement or from showing at any time that any such return or certificate is untrue and incorrect or improperly made in any particular, or that the work and materials or any part thereof do not in fact conform to the specifications, and the Village shall not be precluded or estopped, notwithstanding any such return or certificate and payment in accordance therewith, from demanding and recovering from the Contractor such damage as it may sustain by reason of his failure to comply with the specifications.

Neither the acceptance of the Village Engineer, or any of his agents, nor any other measurement or certificate of the Village Engineer or his agents, nor any order of the Village for payment of money, nor any payment for or acceptance of the whole or any part of the work by the Village of Ossining, nor any extension of time, nor any possession taken by the Village of Ossining or its employees, shall operate as a waiver of any right of the Village rights of the Village to damages as herein provided.

I-15. Five Percent to be Retained

On the expiration of thirty (30) days after the completion of the work agreed to be done by the Contractor and the filing of a certificate of such completion by the Village Engineer, the Village shall pay to the Contractor, by warrant or check of the Village, the amount remaining after deducting five percent (5%) from the total value of the work performed according to the terms of the contract. Said five percent (5%) of the total amount of work performed according to the terms of the contract shall be retained by the Village until the conclusion of the period of maintenance hereinafter described.

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It is agreed that the Village, without limiting any other right or remedy of the Village, may keep the whole or any portion of the sum retained, for settlement of all claims arising out of this contract against the Village, its officers or agents and for all expenses, losses or damages incurred by the Village by reason of said claims.

I-16. Final Estimate to End Liability

No person or corporation, other than the signer of this contract as Contractor, now has any interest hereunder, and no claim shall be made or filed by and such person or corporation and neither the Village nor any of its agents shall be liable or held to pay any moneys except as provided for hereinabove. The acceptance by the contractor of the final estimate aforesaid shall operate as, and shall be a release to the Village and its agents from all claims and liability from anything done or furnished for, or relating to the work, or for any act or neglect of the Village or of any agent, or relating to or affecting the work, excepting the claim against the Village for the remainder, if there be any, of the amounts kept or retained.

J. PERIOD OF MAINTENANCE

J-1. General

The Contractor shall be responsible for the entire work and shall keep, warranty, and maintain every portion of it in perfect order and repair for a period of twelve (12) months after the date upon which Substantial Completion is certified by the Village Engineer, excepting in regard to such damages as may be directly caused by the Village of Ossining, its agents or servants, and except as provided hereinafter.

J-2. Guarantee

The Contractor guarantees the work done under this Contract, and that the materials and equipment furnished by him and used in the construction of the same are free from defects or flaws, and the guarantee shall apply for the aforescribed period of

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maintenance. It is hereby agreed, however, and understood, that this guarantee shall not include any repairs made necessary by any cause or causes other than defective materials furnished by or defective work done by the Contractor.

J-3. Repairs

The Contractor agrees that within five (5) days of notification that repairs are required as guaranteed above, he will begin work necessary to make such repairs. He further agrees and understands that the Village will retain the previously described sum of five (5%) for the aforescribed maintenance period. If the Contractor does not begin work on the repairs within the time herein required, or if emergency repairs are required in the sole judgment of the Village, this work may be done by the Village and the cost thereof either deducted from the amount retained and/or, at the Village's sole option, claimed against any and all sureties held to guarantee performance under this Contract. The Village Engineer, whose determination shall be conclusive, shall resolve all questions or disputes in regard to repairs required during the period of maintenance.

J-4. Manufacturer's Equipment Certification

For all significant items of equipment and those items requested by the Village Engineer, the Contractor shall supply to the Village Engineer a certificate from each manufacturer of equipment, certifying that the equipment as installed and tested meets all requirements of the Contract Documents, that it is fully suitable and will function properly for the use intended and within the system called for by the Contract Documents, and that the guarantee or warranty required by the Contract Documents will be in full force and effect.

When the specifications call for "supervision, installation, adjustment, start-up", and words of similar intent, by the manufacturer's factory employed technicians, the Contractor shall provide a certificate co-signed by the manufacturer as to compliance with the stipulated requirements.

The Contractor is hereby put on notice that final acceptance of any equipment will be withheld, the Owner will retain

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appropriate amounts of money and the warranty maintenance period will not commence until such certifications are supplied.

J-5. Final Certificate and Final Payment

At the conclusion of the aforescribed period of maintenance, the Village Engineer will issue a Final Certificate for all work performed and equipment and materials supplied, provided it be then in good order and repair, that it conform entirely with the required lines, grades, dimensions, and specifications, and if all other obligations on the part of the contractor under this contract have been fulfilled. The Final Certificate shall state the amount retained. Upon certification and final acceptance by the Village Engineer to the above effect, the bonds retained shall be released and the aforementioned five (5%) retained shall be released.

Final payment, however, will not be released to the Contractor until:

1. The Contractor presents proof that all claims against the Contractor have been satisfied;
2. The Contractor executes and delivers a Final Completion Release Form on the forms provided elsewhere in this Contract or, absent such forms, in a manner deemed acceptable by the Village Engineer;
3. The Contractor furnishes the Village Engineer all Manufacturer's Equipment Certifications as heretofore described in this Contract Agreement;
4. The Contractor secures releases from highway officials and private property owners, as applicable, that they are fully satisfied with their property restoration(s);
5. The Contractor furnishes the Village Engineer an affidavit stating he has paid his employees the minimum wage required under the terms of the Contract Document;
6. The Contractor furnishes the Village Engineer notarized releases from all subcontractors and materialmen stating that they have been paid in full by the Contractor.

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K. MISCELLANEOUS CONTRACT DATA

K-1. Plans and Specifications Cooperative

The plans and specifications are intended to be explanatory of each other, but should any discrepancy appear or any misunderstanding arise as to the import of anything contained in either, the interpretation and decision of the Village shall be final and binding on the contractor.

The Village may make any correction of errors or omissions in plans and specifications when such correction is necessary for the proper fulfillment of their intention as construed by the Village. Where said correction of errors or omissions, except as provided in the next two paragraphs below, adds to the amount of work to be done by the contractor, compensation for said additional work shall be made under the item for Extra Work, except where the additional work may be classed under some item of work for which a unit price is included in the Proposal.

The fact that specific mention of a fixture or of any part of the work is omitted in the specifications, whether intentionally or otherwise, when the same is clearly indicated on the plans, or is usually and customarily required to complete fully in the matter of any claim for extra compensation, the said fixtures or work or both shall be installed or done the same as if called for both by the plans and the specifications.

All work indicated on the plans and not mentioned in the specifications, or vice versa, and all work and materials usual and necessary to make the work completed in all its parts, whether or not they are indicated on the plans or mentioned in the specifications, shall be furnished and executed the same as if they were called for both by the plans and specifications without additional compensation to the contractor.

K-2. Ownership of Materials

Nothing in this contract shall be considered as vesting in the Contractor any right or property in materials used after they shall have been attached or affixed to the work on the soil, but

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all such materials shall, upon being so attached or affixed, become the property of the Village.

K-3. Village's Representative Only

It is understood and agreed between the parties hereto, that the Village of Ossining, its officers, employees and other agents are acting in a representative capacity and not for their own benefit, and that nothing contained in this contract shall be deemed to vest in the Contractor or said Contractor's representative, successors, or assigns, or said Contractor's agent, servants, or employees, any claims against any of them as individuals.

K-4. Limitation of Waiver Clause

No waiver by the Village or the Village Engineer of any breach of this contract shall be held to be a waiver of any other or subsequent breach. Any illegality or error in one or more clauses compromising any part or parts of this contract will not make the remainder of the contract void.

K-5. Contract Binding on Successors

All of the stipulations and agreements aforesaid shall apply and bind the heirs, executors, administrators and successors of the respective parties hereto, but this clause shall not be deemed consent to any assignment of this contract.

K-6. Assignment Restricted

Said Contractor shall not assign, transfer, convey, sublet or otherwise dispose of this contract, or his rights, title or interest in or to the same or any part thereof, without the previous consent in writing of the Village Manager endorsed herein or annexed hereto, and said Contractor shall not assign by power of attorney or otherwise any of the moneys due or to become due and payable under this contract unless by and with said consent, signified in like manner. If the Contractor shall, without such previous written consent, assign, transfer convey, sublet or otherwise dispose of this contract, or if his right, title or interest herein or any of the moneys due or to become

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due under this contract to any such person, company or other corporation, this contract may, at the option of the Village of Ossining, be revoked and annulled and all liability and obligations of the Village of Ossining growing out of the same to the Contractor and to his assignee or transferee shall cease and be at an end as of the date and time of such assignment, transfer, conveyance, subletting or other disposition or this contract to hinder, prevent or affect an assignment of the Contractor's creditors, made pursuant to the Statutes of the State of New York; and no right under this contractor to any money due or to become due hereunder, shall be asserted against the Village by said persons who may acquire any interest in law or equity by reason of any so called assignment of this contract, or any part thereof of any moneys due or to grow due hereunder, unless authorized as aforesaid by written consent of the Village Manager.

K-7. Sub-letting

No part of the work embraced in this Contract shall be sub-let or in any way removed from the control of the Contractor except with the written consent of the Village, but this provision shall not apply to the purchase and delivery of materials necessarily manufactured and provided elsewhere.

K-8. Contractor's Address for Service

The business address given in the bid or proposal upon which the contract is founded is hereby designated as the place to which letters or other communications under this contract shall be mailed or delivered to the Contractor. Such address may be changed at any time by an instrument in writing executed and acknowledged by the Contractor and delivered to the Office of the Village Engineer and the Office of the Village Clerk. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter or other communication upon the Contractor personally at such address or any other place in this State.

[Contract Agreement continues on following page.]

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M. SAMPLE PERFORMANCE BOND AND ACKNOWLEDGMENTS

(Name of Bonding Company)

(Address)

KNOW ALL MEN BY THESE PRESENTS, THAT WE _____

(Insert name and address of Contractor)

hereinafter referred to as the principal, and _____

(Name and State of Incorporation of Surety)

hereinafter referred to as the Surety , and held and firmly bound unto THE VILLAGE OF Ossining, a municipal corporation located in the County of Westchester, New York, hereinafter referred to as the Village, in the sum of _____

(Words and Figures)

DOLLARS lawful money of the United States of America, to be paid to the Village of Ossining, or to its certain attorneys, successors, or assigns, for which payment will and truly be made, we bind ourselves and our several and respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Sealed with our seals. Dated this _____ day of _____
_____ in the year Two Thousand and _____
_____.

WHEREAS, the above bounden Principal, by an instrument in writing, signed by the Principal, as Contractor, and bearing even date with or date prior to these present, has contracted with the Village to perform all the work and furnished all the materials and plan called for in the said contract.

(Insert Full Description and Number of Contract)

which contract is by reference made a part hereof.

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NOW, THEREFORE, if the Principals shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Village, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then these obligations shall be void, otherwise to remain in full force and effect.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, deletion or alteration or addition to the terms of the contract or to the work to be performed thereunder or to the plans and specifications accompanying the same shall in any way affect or limit or release its obligation of this bond.

No right of action shall accrue on this bond to or from the use of any person or corporation other than the Village named herein or its successors.

(Name of Contractor) Principal

(Corporate Seals Required) By: _____
(Signature and Title)

(Name of Surety)

By: _____
(Signature and Title)

(Qualifications of Surety company and proper acknowledgments to be annexed thereto).

(Surety company must be authorized by the State of New York to transact business).

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ACKNOWLEDGMENT BY PRINCIPAL UNLESS IT BE A CORPORATION

STATE OF)
COUNTY OF) SS:

On this day of , 20 , before
me personally appeared, to me known and
known to be the person described in an who executed the
foregoing instrument and acknowledged that he executed the same.

Notary Public

ACKNOWLEDGMENT BY PRINCIPAL, IF A CORPORATION

STATE OF)
COUNTY OF) SS:

On this day of , 20 , before
me personally came to me known, who,
being by me duly sworn, did depose and say the he resides in
; that he is the of , the
corporation described in and which executed the within
instrument; that he knows the seal of said corporation; that the
seal affixed to said instrument is such corporate seal; that is
was so affixed by order of the Board of Directors of said
corporation, and the he signed his name thereto by like order.

Notary Public

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ACKNOWLEDGMENT BY SURETY COMPANY

STATE OF)
COUNTY OF) SS:

On this day of , 20 before
me personally came , to me
known, who, being by me duly sworn, did depose and say the he
resides in ; that he is the
of , the corporation described
in and which executed the within instrument; the he knows the
seal of said corporation; that the seal affixed to said
instrument is such corporate seal; that it was so affixed by
order of the Board of Directors of said corporation, and that he
signed his name thereto by like order; and that the liabilities
of said company do not exceed its assets as ascertained in the
manner provided by the Laws of the State of New York, and the
said further said that he is acquainted
with and knows him to be the
of said company, that the signature of the said
subscribed to the within the said instrument is the genuine
handwriting of the
said and was subscribed thereto by
like order of the Board of Directors, in the presence of him the
said.

Notary Public

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N. SAMPLE PAYMENT BOND (Labor and Materials) AND ACKNOWLEDGMENTS

(Name of Bonding Company)

(Address)

KNOW ALL MEN BY THOSE PRESENTS, THAT WE _____

(Name and Address of Contractor)
hereinafter referred to as the Principal, and _____

(Name and State of Incorporation of Surety)
hereinafter referred to as the Surety, are held and firmly bound
unto THE VILLAGE OF Ossining, a municipal corporation located in
the County of Westchester, New York, hereinafter referred to as the
Village, in the sum of _____

(Words and Figures)

DOLLARS lawful money of the United States of America, to be paid to
the Village of Ossining, or to its certain attorneys, successors,
or assigns for the use and benefit of claimants supplying labor
and/or materials for the work hereinafter specified, for which
payment will and truly be made, we bind ourselves and our several
and respective heirs, executors, administrators, successors, and
assigns, jointly and severally, firmly by these presents.

Sealed with our seals. Dated this _____ day of
_____ in the year Two Thousand
and _____.

WHEREAS, the above bounden Principal, by an instrument in writing,
signed by the Principal, as Contractor, and bearing even date with
or a date prior to these presents, has contracted with the Village
of Ossining to perform all the work and furnished all the materials
and plan called for in the said contract for

(Insert Full Description and Number of Contract)

which contract is by reference made a part hereof.

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NOW, THEREFORE, if the Principal shall promptly make payment to all claimants supplying labor and or material used or reasonably required for use in the prosecution and performance of the work provided for in said contract, and any and all duly authorized modification of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation shall be void, otherwise to remain in full force and effect, subject to the conditions specified below.

Any beneficiary-claimant hereunder who has not been paid in full within ninety (90) days after the date on which the last of such claimant's work or labor was done or performed or materials furnished, may sue the Surety and Principal in this bond for such sum as may be justly due, provided, however, that no such suite or action shall be commenced hereunder by such claimant after the expiration of one (1) year following the date on which the Principal ceased work on said contract nor other than in a State court or the United States District Court of competent jurisdiction in and for the County and District in which the contract work is situated. The amount of this bond shall be reduced by and to the extent of payments made in good faith hereunder, inclusive of the payment by Surety of any mechanics' liens which may be filed or received against said improvement pursuant to said contract, whether or not claim for the amount of such mechanics' liens be presented under and against this bond.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, deletion or alteration or addition to the terms of the contract or to the work to be performed thereunder or to the plans or specifications accompanying the same shall in any way discharge or limit or release its obligation on this bond.

(Name of Contractor) Principal

(Corporate Seals Required) By: _____
(Signature and Title)

(Name of Surety)

By: _____
(Signature and Title)

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(Qualifications of Surety company and proper acknowledgments to be annexed thereto. Surety company must be authorized by the State of New York to transact business).

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ACKNOWLEDGMENT BY PRINCIPAL UNLESS IT BE A CORPORATION

STATE OF)
COUNTY OF) SS:

On this day of , 20 , before me
personally appeared, to me known and
known to me to be the person described in and who executed the
foregoing instrument and acknowledged that he executed the same.

Notary Public

ACKNOWLEDGMENT BY PRINCIPAL, IF A CORPORATION

STATE OF)
COUNTY OF) SS:

On this day of , 20 ,
before me personally came to me known,
who, being by me duly sworn, did depose and say that he resides
in ; that he
is the of ,
the corporation described in and which executed the within
instrument; that he knows the seal of said corporation; that the
seal affixed to said instrument is such corporate seal; that it
was so affixed by order of the Board of Directors of said
corporation, and that he signed his name thereto by like order.

Notary Public

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ACKNOWLEDGMENT BY SURETY COMPANY

STATE OF)
COUNTY OF) SS:

On this day of , 20 , before me personally came to me known, who, being by me duly sworn, did depose and say that he resides in ; that he is the of , the corporation described in and which executed the within instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order; and that the liabilities of said company do not exceed its assets as ascertained in the manner provided by the Laws of the State of New York, and the said further said that he is acquainted with and knows him to be the of said company, that the signature of the said subscribed to the within the said instrument is the genuine handwriting of the said and was subscribed thereto by like order of the Board of Directors, in the presence of him the said.

Notary Public

SECTION IV – GENERAL REQUIREMENTS

A. SCOPE OF WORK

The Information for Bidders contains a general description of the work to be done. The Contractor shall provide all labor, superintendence, materials, and equipment necessary for properly performing and completing, within the time stipulated, the defined work.

B. LINES

Unless otherwise specified in the Special Clauses and Specifications of this Contract, the Contractor shall provide his own engineering and/or surveying services to give all lines and grades as required in the Contract Agreement. No separate payment will be made for this work and the cost thereof shall be included in various items of this Contract unless a separate payment item for survey stakeout appears in the itemized proposal.

C. REPRESENTATIVE ALWAYS PRESENT

The Contractor, in case of his absence from the work, shall have a competent representative or foreman present, who shall follow, without delay, all instructions of the Village Engineer or the Architect/Engineer, or their assistants or agents, in the prosecution and completion of the work in conformity with this Contract, and who shall have full authority to supply labor and materials immediately to prosecute and complete said work.

D. ALTERATIONS

The Village Engineer may make alterations in the line, grade, plan, form, dimensions, or materials of the work, or any part thereof, either before or after the commencement of the work. If such alterations increase the quantity of work, such extra work actually done will be paid for at the prices stipulated for such under unit price items of the Contract. In the case where

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no price is established, it shall be paid for as extra work as defined in the Contract Agreement.

E. INFORMATION ABOUT QUANTITIES OF MATERIALS

To aid the Village Engineer in determining quantities of materials to be paid for, the Contractor shall, when requested, give the Village Engineer access to the proper invoices, bills of lading, etc., and shall provide means and assistance for measuring any of the materials. He shall carry out the work in such manner that required measurements can be properly made.

F. CONTRACTOR'S SUBCONTRACT AND MATERIAL LISTS

Prior to beginning work, or at any time during the Contract period, the Village Engineer and/or the Architect/Engineer may, at either's option, request the Contractor to provide a complete list of subcontractors, materialmen, and/or materials that he plans to use in the performance of, or continued performance of, work under this Contract. The Village Engineer and/or the Architect/Engineer may also, at either's option and at any time during the Contract period, request the Contractor to provide a complete list of subcontractors, materialmen, and/or materials that were used by the Contractor for any work performed under this Contract.

G. EQUIVALENT QUALITY

Wherever in the Contract, an article, material, apparatus, product or process is called for by trade name or catalog reference, or by the name of the patentee, manufacturer or dealer, it shall be the basis of the bid and shall be furnished under the Contract unless otherwise permitted by the Village Engineer or the Architect/Engineer.

Should the Contractor desire to substitute other articles, materials, apparatus, products or processes, he shall apply to the Village Engineer or the Architect/Engineer, in writing, for approval of such substitution. With the application shall be furnished such information as required by the Village Engineer

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or the Architect/Engineer to demonstrate that the article, material, apparatus, product or process he wishes to use is the equal of that specified in quality, finish, design, efficiency, and durability and has been elsewhere demonstrated to be equally serviceable for the purpose for which it is intended. The Contractor shall set forth the reasons for desiring to make the substitution and shall further state what difference, if any, will be made in the contract price for such substitution should it be accepted; it being the intent hereunder that any savings shall accrue to the benefit of the Village of Ossining.

If the Village Engineer or the Architect/Engineer shall reject any such desired substitution as not being the equal of that specifically named in the contract, or if he shall determine that the adjustment in price in favor of the Village is insufficient, the Contractor shall immediately proceed to furnish the designated article, material, apparatus, product or process. Where two or more articles, materials, apparatus, products, or processes are listed as acceptable by reference to trade name or otherwise, the choice of these will be optional to the Contractor.

H. CARE AND PROTECTION OF WORK

From the commencement of work until the completion of the same, the Contractor shall be solely responsible for materials delivered at the site intended to be used in the work; and all injury, damage or loss of the same, from whatever cause, shall be made good at his expense before the final estimate is made. He shall provide suitable means of protection for all materials and for all work in progress of construction from damage by flood, freezing or inclement weather at any and all times. The methods used for this purpose shall be subject to approval.

I. EXPLOSIVES AND BLASTING

Explosives for blasting shall be stored, handled, and used in accordance with the laws, ordinances, and regulations of the State of New York and all Local Regulations as may pertain, and with such additional regulations as the Village Engineer may require. Blasting shall be conducted so as not to endanger

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person or property, and unless otherwise permitted, shall be covered or otherwise satisfactorily confined. The Contractor shall be responsible for and shall make good any damage of whatever nature caused by blasting or accidental explosions.

J. WORK IN BAD WEATHER

During freezing, stormy, or inclement weather, no work shall be done except such as can be done satisfactorily and in a manner to secure first-class construction throughout.

K. NIGHT AND SUNDAY WORK

Unless otherwise especially permitted, no work shall be done between the hours of 8:00 P.M. and 7:30 A.M., Monday thru Friday, and between the hours of 5:00 P.M. and 9:00 A.M. on Saturdays excluding holidays, nor on any Sunday or holiday, except as necessary for the proper care and protection of work already performed. If it shall become absolutely necessary to perform work at night, the Village Engineer shall be informed a reasonable time in advance of the beginning of performance of such work. Only such work shall be done at night as can be done satisfactorily and in a first-class manner. Good lighting and all other necessary facilities for carrying out and observing the work shall be provided and maintained at all points where such work is being done.

L. EXISTING UTILITIES: UTILITY SERVICE

The Contract Drawings do not show all pipes, conduits, cables, or structures believed to exist in the working area. No attempt has been made to locate or show all utility service connections. Obstructions other than those shown may be encountered. The Contractor shall understand that the Owner is not responsible for the correctness or sufficiency of the information given and that he shall have no claim for relief from any obligation or responsibility under the Contract because the extent, location, size, or character of any pipe, conduit, cable or other underground structure is incorrectly shown or has been omitted from the Contract Drawings. The Contractor shall notify all

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utility companies and authorities having buried utility service in the project area and file certificate(s) of same with the Village Engineer or the Architect/Engineer prior to beginning work.

The Contractor shall maintain service in main lines and service connections for all utilities encountered, regardless of the type of utility or the arrangements necessary to maintain service. Water lines and service connections exposed during cold weather shall be protected against freezing. Service connections may be cut only by permission of the Owner of the utility, and a temporary connection shall be installed immediately. The Contractor shall notify all utility customers before interrupting their service. A permanent, first-class replacement of the cutout portion of the original service connection shall be installed and observed by the Owner of the utility before backfilling.

The Contractor shall protect all utilities and subsurface structures encountered in the work. Because he may encounter some utilities and subsurface structures not shown on the Contract Drawings, the Contractor shall proceed with caution in executing his work. Insofar as feasible, the Contractor shall not disturb existing utilities but shall support and sustain them. The Contractor shall repair all damage to any utilities and pay all costs of protecting them and replacing them as necessary including service connections encountered in the course of the work, regardless of character, functions, conditions, size, location, materials, construction, ownership or interference with the alignment of pipeline to be built, whether such existing utilities, structures or service connections are shown or not shown.

The Contractor is held responsible for all damage to all utility or other underground or surface structures, whether or not they are shown on the Contract Drawings, and he shall pay all costs for protecting them or for repairing and/or replacing them if they are damaged.

The Contractor shall notify the Village Engineer or the Architect/Engineer of all exposed pipe crossings where the utilities will have a clearance of 18" or less as measured between the outside walls of the pipe. The Contractor shall

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construct a concrete support as directed by the Village Engineer or the Architect/Engineer and shall take all other measures he and/or the Village Engineer and/or the Architect/Engineer deem necessary to protect the existing and new pipes, sewers, and utilities.

M. NOTIFICATION OF UTILITIES

In addition to the general notification requirements referred to above and per the requirements of the Contract Agreement, the Contractor shall strictly adhere to General Business Law, Article 36, regarding prior notification of Consolidated Edison and with Industrial Code 53 regarding prior notification of the Central Registry for utilities.

N. SANITARY REGULATIONS

The Contractor shall obey and enforce such sanitary regulations and orders and shall take such precautions against infectious diseases as may be deemed necessary. The building of shanties or other structures for housing or facilitating the men, tools, machinery or supplies will be permitted only at approved places, and the sanitary condition of the grounds in and at such shanties or other structures must be at all times maintained in a satisfactory manner.

O. PREVENTION OF DUST HAZARD

The Contractor will strictly comply with all requirements of the Contract Agreement to prevent dust hazards in the construction or prosecution of his work.

P. MAINTENANCE AND PROTECTION OF TRAFFIC, OBTAINING PERMITS

The Contractor shall maintain and protect traffic within construction activity for the duration of the Contract and shall, at all times, protect the traveling public from damage to person and property in accordance with the plans and specifications and as directed by the Village Engineer.

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All work shall conform to the requirements of the New York State Manual of Uniform Traffic Control Devices and Section 619 of the Standard Specifications.

The Contractor shall meet with the Village Engineer and the Village of Ossining Police Dept. prior to starting this work to insure his methods for maintaining and protecting traffic are acceptable. If, in the opinion of the Village Engineer, uniformed police are required, the Contractor shall hire same for direction of traffic.

Unless otherwise specified in the Special Clauses and Specifications of this Contract, the Contractor shall take out all road permits as required in the Contract Agreement. The Contractor shall provide all flagmen, labor and materials necessary to meet permit requirements in force at the time of the work.

The Contractor shall maintain and protect traffic by so conducting his construction operations that the traveling public is subjected to a minimum of hazard and delay. In order to adequately maintain and protect traffic, the Contractor shall perform the following additional minimum requirements to comply with the provisions of this section and/or as directed by the Village Engineer:

1. Keep the surface of the traveled way free from mounds, depressions, and obstructions of any type which could present hazards or annoyance to pedestrians or traffic.
2. Keep the surface of all pavements used by the public free and clean of all dirt, debris, stone, timber or other obstructions to provide safe traveled ways.
3. Control dust and keep the traveled way free of materials spilled from hauling and construction equipment.
4. Conduct his operations to insure that one-half of the roadway be opened to traffic at all times unless otherwise authorized.

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5. Two-way traffic must be maintained at all times unless otherwise authorized.
6. Consult with the Village Engineer, Police, Fire and all other affected Public Services to ascertain requirements with respect to detouring and street closures. Their directions are to be fully complied with in all details.
7. Provide flagmen and watchmen as may be required for the guiding of traffic and/or for use as directed by the Village Engineer.
8. Provide all cones, barricades, signs and warning devices as may be required, and/or as ordered by the Village Engineer to safely carry out the foregoing. All such signs and devices shall be fabricated and placed in accordance with the latest version of the New York State Manual of Uniform Traffic Control Devices and Section 619 of the Standard Specifications. Use of open flame flares is prohibited.
9. Cover all open trenches with steel plates at the close of each workday. Such plates shall abut each other and be wedged at each end of the trench(s) to prevent plates from sliding open. Plates shall be secured in such a manner so as to reduce noise from traffic to an absolute minimum.
10. Provide and maintain, at all times, safe and adequate ingress and egress to and from homes, businesses, commercial establishments, and intersecting roadways using existing or new access points, consistent with the work, unless otherwise authorized by the Village Engineer.
 - a. When work is to be performed fronting a driveway, the Contractor must notify the resident and advise him of the situation, affording him ample time to relocate any vehicle which might be rendered inoperable because of said work.
 - b. The Contractor shall ascertain the evenings on which business establishments are open in the section where work under the Contract is being performed and he will be required to clean up and prepare the business section for the usual activities on these evenings.

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The Contractor and his personnel are cautioned against parking vehicles in the business zones for any extended period of time.

- c. On roadways on which motor bus service is maintained, the Contractor shall provide suitable areas or locations for the loading and unloading of passengers.

The existing pavement, at improved intersection streets, shall not be disturbed without prior consent of the Village Engineer.

Traffic laws are to be carefully observed and obeyed.

Withholding of Payment:

- a. For each calendar day, or part thereof, of unsatisfactory performance of the maintenance and protection of traffic requirements of this Contract, the Village will assess the Contractor liquidated damages in the amount of **\$200.00**.
- b. If, upon notification by the Village Engineer, the Contractor fails to correct any unsatisfactory condition within 24 hours of being so directed, the Village Engineer will immediately proceed with adequate forces to properly maintain the project, and the entire cost of such maintenance shall be deducted from any moneys due the Contractor.
- c. If the Contractor fails to maintain and protect traffic adequately and safely for a period of 24 hours, the Village Engineer shall correct the adverse condition(s) by any means he deems appropriate and shall deduct the cost of the corrective work from any moneys due the Contractor. Moneys withheld for corrective work shall be in addition to the liquidated damages and non-payment provisions stated above regarding non-performance of maintenance and protection of traffic requirements.
- d. Notwithstanding the above described provisions for withholding payment, where major nonconformance with the contract requirements for maintenance and protection of traffic is noted by the Village Engineer, and prompt Contractor compliance is deemed not to be obtainable, all

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contract work may be stopped by direct order of the Village Engineer, regardless of whether corrections are made by the Village Engineer as described above.

No separate payment will be made for any part of Maintenance and Protection of Traffic provisions or for obtaining required road permits and the cost thereof shall be included in various items of this Contract unless a separate payment item for this work appears in the itemized proposal.

Q. GROSS LOADS HAULED ON HIGHWAY

The Contractor shall at no time during the construction of this Contract haul gross loads exceeding the legal limit prescribed by the Highway Law over access highways to any work site or over the highway(s) included in this Contract.

R. CLEANING UP SITE

During the course of the work, the Contractor shall maintain a clean and safe site at all times.

Upon completion of the work and before acceptance and final payment shall be made, the Contractor shall, excepting as otherwise expressly directed or permitted in writing, clean and remove from the streets, sidewalks, and adjacent property all surplus and discarded materials, rubbish and temporary structures. The Contractor shall restore, in an acceptable manner, all property, both public and private, which has been damaged during the prosecution of work and shall leave the whole in a neat and presentable condition. The Contractor shall repair any adjacent, disturbed lawn areas with topsoil and seeding, and will maintain said area until a good growth of grass is obtained. All other disturbed areas shall be replaced in kind by the Contractor. No direct payment will be made to the Contractor for the work stipulated in this section, but compensation for the same is understood to be included within the Contract price(s). As the various portions of the work are completed, the site shall be cleaned. Debris and excess fill shall be removed from the site and shall be legally disposed off-site at the sole cost of the Contractor.

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S. NOT USED

T. CLAIMS FOR DAMAGES CAUSED BY THE OWNER OR ITS AGENTS

Unless otherwise provided in this Contract, no claims of any description for damages or delays caused by the work, negligence, or acts of the Owner or its agents will be allowed. Allowance will be made, in accordance with the Contract Agreement, for an extension of the time of completion, provided, in the opinion of the Village Engineer and/or the Architect/Engineer, the delays of the Owner or its agents have actually delayed the Contractor's completion, and further provided that the Contractor has complied with those sections of the Contract Documents governing progress of the work, time of completion, and extension of time.

U. QUALITY CONTROL

If quality control tests of materials are stipulated in the technical specifications, they shall be performed by an Owner-approved laboratory at the Owner's expense. The Contractor shall make all arrangements with the Owner-approved laboratory to have all required tests performed. Quality control tests shall only be performed by the Owner-approved laboratory inspector. No work requiring tests shall be performed by the Contractor except in the presence of the Owner approved laboratory inspector.

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SUBSTANTIAL COMPLETION RELEASE

This release, dated _____, 20____, is given

BY: The Releasor(s)

_____ ("Contractor")

TO: The Village of Ossining, New York ("Owner") and

LynStaar Engineering, P.C.

1. Release. The Contractor releases and gives up any and all claims and rights which it may have against the Owner, Engineer, and their agents, servants or employees. This releases all claims, including those of which Contractor is not aware and those not mentioned in this Release. This Release applies to claims resulting from anything which has happened up to now. Contractor specifically releases the following claims:

Any and all claims and liability of whatsoever nature for anything done or furnished or in any manner arising out of the performance of:

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2. Payment. Contractor has received payment in the amount of \$_____, in payment for the total value of work completed debiting prior payments and the value of \$_____ for Tentative List of Items to be Completed or Corrected for making this Release. The Contractor will receive the remaining payment due upon completion of the Tentative List Work.
3. Who is Bound. Contractor is bound by this Release. Anyone who succeeds to Contractor's rights and responsibilities is also bound. This Release is made for the benefit of Owner and engineer and all who succeed to their rights and responsibilities.
4. Signatures. Contractor understands and agrees to the terms of this Release. If this Release is made by a corporation, its proper corporate officers have signed and the corporate seal is affixed.

Witnessed or Attested By:

Affix Corporate Seal

STATE OF)
COUNTY OF) ss:

On this day of , 20 , before me personal
appeared, to me known, who, being by me
duly sworn, did depose and say:

that he resides at

that he is the _____ of _____

the corporation described in and which executed the within instrument; that he knows the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order

Notary Public

STATE OF)
COUNTY OF) SS:

On this day of , 20 , before me personally appeared, to me known and known to be the person described in and who executed the foregoing contract, and who acknowledged to me the execution thereof for the purpose therein mentioned.

Notary Public

STATE OF)
COUNTY) SS:

On this day of , 20 , before me personally
appeared, to me known and known to me to
be a member of

executed the foregoing contract, and he acknowledged to me that he subscribed the name of said firm thereto in behalf of said firm for the purpose therein mentioned

Notary Public

FINAL COMPLETION RELEASE

This release, dated _____, 20____, is given

BY: The Releasor(s)

_____ ("Contractor")

TO: The Village of Ossining, New York ("Owner") and

LynStaar Engineering, P.C.

1. Release. The Contractor releases and gives up any and all claims and rights which it may have against the Owner, Engineer, and their agents, servants or employees. This Release releases all claims, including those of which Contractor is not aware and those not mentioned in this Release. This Release applies to claims resulting from anything which has happened up to now. Contractor specifically releases the following claims:

Any and all claims and liability of whatsoever nature for anything done or furnished or in any manner arising out of the performance of:

Contract No. DPW-21-03

Replacement of Chiller at Joseph G. Caputo Community Center

2. Payment. Upon payment of the Contractor's final invoice #_____, dated _____, in the amount of \$_____, the Contractor will have received total payments in the amount of \$_____, in consideration for making this Release. Contractor agrees that it will not seek anything further, including any other payment, from Owner or Engineer.
3. Who is Bound. Contractor is bound by this Release. Anyone who succeeds to Contractor's rights and responsibilities is also bound. This Release is made for the benefit of Owner and engineer and all who succeed to their rights and responsibilities.
4. Signatures. Contractor understands and agrees to the terms of this Release. If this Release is made by a corporation, its proper corporate officers have signed and the corporate seal is affixed.

Witnessed or Attested By:

Affix Corporate Seal

ACKNOWLEDGMENT IF CONTRACTOR IS A CORPORATION

STATE OF)
COUNTY OF) ss:

On this _____ day of _____, 20_____, before me
personal appeared, _____ to me known, who,
being by me duly sworn, did depose and say:

that he resides at

that he is the _____ of _____

the corporation described in and which executed the within instrument; that he knows the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order

Notary Public

ACKNOWLEDGMENT IF THE CONTRACTOR IS AN INDIVIDUAL

STATE OF)
COUNTY OF) SS:

On this day of , 20 ,
before me personally appeared,
to me known and known to be the person described in and who
executed the foregoing contract, and who acknowledged to me the
execution thereof for the purpose therein mentioned.

Notary Public

ACKNOWLEDGMENT IF CONTRACTOR IS A PARTNERSHIP

STATE OF)
COUNTY) SS:

On this day of , 20 , before me
personally appeared, to me known
and known to me to be a member of

who executed the foregoing contract, and he acknowledged to me that he subscribed the name of said firm thereto in behalf of said firm for the purpose therein mentioned

Notary Public

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Davis Bacon Wage Rates and State Prevailing Wages to follow this section. Note that it is the Contractor's responsibility to pay the higher wage for the employee's job classification.

INTRODUCTION

COMPLIANCE INFORMATION WESTCHESTER URBAN COUNTY AND PARTICIPATING MUNICIPALITIES

This project is funded with a grant from the federal Community Development Block Grant program administered by Westchester County.

By submitting a bid for this project, a contractor and all subcontractors agree to comply with these federal requirements:

- Equal Employment Opportunity and Affirmative Action
(Pages 4 to 15)
- Minority and Women-Owned Business Enterprise Goals
(Page 6)
- Davis Bacon Labor Reporting Requirements and Section 3
Requirements
(Pages 16 to 26)

Bidders must sign pages 10, 11, 12, 17, 18, and 19 in order for their bids to be considered valid.

For more information regarding these materials, telephone:

John Estrow
Payroll Coordinator
Westchester County
Planning Department
(914) 995-2407

EQUAL EMPLOYMENT OPPORTUNITY AND AFFIRMATIVE ACTION

CERTIFICATION BY BIDDER

NOTE:

The attached document is from the U.S. Department of Housing and Urban Development. By signing this document, contractors and subcontractors agree to comply with the federal equal employment opportunity requirements. The attached document serves as the bidder's Affirmative Action Plan.

AFFIRMATIVE ACTION PLAN

FOR

**WESTCHESTER COUNTY COMMUNITY
DEVELOPMENT BLOCK GRANT PROJECTS**

BID CONDITIONS

AFFIRMATIVE ACTION REQUIREMENTS

EQUAL EMPLOYMENT OPPORTUNITY

**For All Non-Exempt Federal and Federally-
Assisted Construction Contracts to be
Awarded in Westchester County, New York**

Part I: The provisions of this Part I apply to bidders, contractors and subcontractors with respect to those construction trades for which they are parties to collective bargaining agreements with a labor organization or organizations and who together with such labor organizations have agreed to the Westchester County, New York Area Equal Employment Opportunity Agreement (but only as to those trades as to which there are commitments by labor organizations to specific goals of minority employee utilization) between the Building Trades Employers Association of Westchester County, the Builder's Institute of Westchester and Putnam Counties, various labor organizations, general and specialty contractors and their associations and the minority coalition, together with all implementing agreements that have been and may hereafter be developed pursuant thereto, all of which documents are incorporated herein by reference and are hereinafter cumulatively referred to as the Westchester County Plan.

Any bidder, contractor or subcontractor using one or more trades of construction employees must comply with either Part I or Part II of these Bid Conditions as to each such trade. Thus, a bidder, contractor or subcontractor may be in compliance with these conditions by its inclusion, with its union, in the Westchester Plan as to trade "A", provided there is set forth in the Westchester Plan a specific commitment by that union to a goal of minority employee utilization for such trade "A", thereby meeting the provisions of this Part I, and by its commitment to Part II in regard to trade "B" in the instance in which it is not included in the Westchester Plan and, therefore, cannot meet the provisions of this Part I.

To be eligible for award of a contract under Part I of this invitation, a bidder or subcontractor must execute the certification required by Part III hereof.

Part II: A. Coverage. The provisions of this Part II shall be applicable to those bidders, contractors and subcontractors, who, in regard to those construction trades to be utilized on the project to which these bid conditions pertain:

1. Are not or hereafter cease to be signatories to the Westchester County Plan referred to in Part I hereof;
2. Are signatories to the Westchester County Plan but are not parties to collective bargaining agreements;
3. Are signatories to the Westchester County Plan but are parties to collective bargaining agreements with labor organizations who are not or hereafter cease to be signatories to the Westchester County Plan;
4. Are signatories to the Westchester County Plan but as to which no specific commitment to goals of minority employee utilization by labor organization have been executed pursuant to the Westchester County Plan; or
5. Are no longer participating in an affirmative action plan acceptable to the Director, OFCC, including the Westchester County Plan.

B. Requirement - An Affirmative Action Plan. The bidders, contractors and subcontractors described in paragraphs 1 through 5 above will not be eligible for award of a contract under this Invitation for Bids, unless it certifies as prescribed in paragraph 2b of the certification specified in Part III hereof that it adopts the minimum goals and timetables of minority employee utilization ¹ and specific affirmative action steps set forth in Section B-1 and 2 of this Part II directed at increasing minority employee utilization by

¹ 1. "Minority" is defined as including Black (Non-Hispanic Origin), Hispanic, Asian or Pacific Islander, and American Indian or Alaskan Native, and includes both men and women.

means of applying good faith efforts to carrying out such steps; or is deemed to have adopted such a program pursuant to Section B.3 of this Part II.

1. Goals and Timetables. The goals of minority employee utilization required of the bidder and subcontractors are applicable to each trade not otherwise bound by the provisions of Part I hereof which will be used on the project in Westchester County New York (hereinafter referred to as the Westchester area):

Goals of Minority Employee Utilization Expressed in Percentage Terms

In accordance with the Westchester-Putnam Home Town Plan Agreement, the female goal which now pertains is 6.9%. The goal for minorities is 22.6%.

The percentage goals of minority employee utilization above are expressed in terms of hours of training and employment as a proportion of the total hours to be worked by the bidder's, contractor's and subcontractor's entire work force in that trade on all projects (both federal and non-federal in the Westchester County area during the performance of its contract or subcontract. The hours for minority work and training must be substantially uniform throughout the length of the contract, on all projects and for each of the trades. Further, the transfer of minority employees or trainees from employer-to-employer or from project-to-project for the sole purpose of meeting the contractor's or subcontractor's goal shall be a violation of these conditions. In reaching the goals of minority employee utilization required of bidders, contractors and subcontractors pursuant to this Part II, every effort shall be made to find and employ qualified journeymen. Provided, however, and pursuant to the requirements of Department of Labor regulations, 24 CFR 5a, apprentices or trainees shall be employed on all projects subject to the requirements of these Bid Conditions and, where feasible, 25 percent of apprentices or trainees employed on each project shall be in their first year of apprenticeship or training.

In order that the nonworking training hours of trainees may be counted in meeting this goal, such trainees must be employed by the contractor during the training period. The contractor must have made a commitment to employ the trainees at the completion of their training subject to the availability of

employment opportunities and the trainees must be trained pursuant to established training programs which must be the equivalent of the training programs now or hereafter provided for in the Westchester County Plan with respect to the nature, extent and duration of training offered.

A contractor or subcontractor shall be deemed to be in compliance with the terms and requirements of this Part II by the employment and training of minorities in the appropriate percentage of his aggregate work force in the Westchester County area for each trade for which it is committed to a goal under this Part II.

However, no contractor or subcontractor shall be found in noncompliance solely on account of its failure to meet its goals within its timetables, but such contractor shall be given the opportunity to demonstrate that it has instituted all of the specific affirmative action steps specified in this Part II and has made every good faith effort to make these steps work toward the attainment of its goals within its timetables, all to the purpose of expanding minority employee utilization on all of its projects in the Westchester County area.

In all cases, the compliance of a bidder, contractor or subcontractor will be determined in accordance with its respective obligations under the terms of these Bid Conditions. Therefore, contractors or subcontractors who are governed by the provisions of this Part II shall be subject to the requirements of that Part regardless of the obligations of its prime contractor or lower tier subcontractors.

All bidders and all contractors and subcontractors performing or to perform work on projects subject to these Bid Conditions hereby agree to inform their subcontractors of their respective obligations under the terms and requirements of these Bid Conditions, including the provisions relating to goals of minority employment and training.

2. Specific Affirmative Action Steps. Bidders, contractors and subcontractors subject to this Part II must engage in affirmative action directed at increasing minority employee utilization, which is at least as extensive and as specific as the following steps:

- a. The contractor shall notify community organizations that the contractor has employment

opportunities available and shall maintain records of the organizations' response.

b. The contractor shall maintain a file of the names and addresses of each minority worker referred to him and what action was taken with respect to each such referred worker, and if the worker was not employed, the reasons therefor. If such worker was not sent to the union hiring hall for referral or if such worker was not employed by the contractor, the contractor's file shall document this and the reasons therefor.

c. The contractor shall promptly notify the HUD New York Area Office (*agency*) when the union or unions with whom the contractor has a collective bargaining agreement has not referred to the contractor a minority worker sent by the contractor or the contractor has other information that the union referral process has impeded him in his efforts to meet his goal.

d. The contractor shall participate in training programs in the area, especially those funded by the Department of Labor.

e. The contractor shall disseminate his EEO policy within his own organization by including it in any policy manual; by publicizing it in his company newspapers, annual reports, etc.; by conducting staff, employee and union representatives' meetings to explain and discuss the policy; by posting of the policy; and by specific review of the policy with minority employees.

f. The contractor shall disseminate his EEO policy externally by informing and discussing it with all recruitment sources; by advertising in news media, specifically including minority news media; and by notifying and discussing it with all subcontractors and suppliers.

g. The contractor shall make specific and constant personal (both written and oral) recruitment efforts directed at all minority organizations, schools with minority students, minority recruitment organizations and minority training organizations, within the contractor's recruitment area.

h. The contractor shall make specific efforts to encourage present minority employees to recruit their friends and relatives.

i. The contractor shall validate all employee specifications, selection requirements, tests, etc.

j. The contractor shall make every effort to promote after-school, summer and vacation employment to minority youth.

k. The contractor shall develop on-the-job training opportunities and participate and assist in any association or employer-group training program relevant to the contractor's employee needs consistent with its obligations under this Part II.

l. The contractor shall continually inventory and evaluate all minority personnel for promotion opportunities and encourage minority employees to seek such opportunities.

m. The contractor shall make sure that seniority practices, job classifications, etc., do not have a discriminatory effect.

n. The contractor shall make certain that all facilities and company activities are non-segregated.

o. The contractor shall continually monitor all personnel activities to ensure that his EEO policy is being carried out.

p. The contractor shall solicit bids for subcontracts from available minority subcontractors engaged in the trades covered by these Bid Conditions.

3. Contractors and Subcontractors Deemed to be Bound by Part II. In the event that a contractor or subcontractor, who is at the time of bidding eligible under Part I of these Bid Conditions, is no longer participating in an affirmative action plan acceptable to the Director of the Office of Federal Compliance, including the Westchester County Plan, s/he shall be deemed to be committed to Part II of these Bid Conditions; s/he shall be considered to be committed to the minority employee utilization percentage goal of the minimum range for that trade for the appropriate year.

4. Subsequent Signatory to the Westchester County Plan. Any contractor or subcontractor

subject to the requirements of this Part II for any trade at the time of submission of a bid who together with the labor organization with whom it has a collective bargaining agreement subsequently becomes a signatory to the Westchester County Plan, either individually or through an association, may meet the requirements under these Bid Conditions for such trade, if such contractor or subcontractor executes and submits a new certification committing to Part I of these Bid Conditions. No contractor or subcontractors shall be deemed to be subject to the requirements of Part I until such certification is executed and submitted.

5. Non-discrimination. In no event may a contractor or subcontractor utilize the goals, timetables or affirmative action steps required by this Part II in such a manner as to cause or result in discrimination against any person on account of race, color, religion, sex or national origin.

Part III: Certifications.

A. Bidders' Certifications. A bidder will not be eligible for award of a contract under this Invitation for Bids unless such bidder has submitted as a part of the bid the following certification, which will be deemed a part of the resulting contract:

BIDDERS' CERTIFICATION

_____ (*Bidder*) certifies that:

1. It intends to use the following listed construction trades in the work under this contract: _____

_____.

2. (a) As to those trades set forth in the proceeding paragraph one hereof for which it is eligible under Part I of those Bid Conditions for participation in the Westchester County Plan, it will

comply with the Westchester County Plan on all construction work (both federal and non-federal) in the Westchester County area within the scope of coverage of that Plan, those trades being:

_____ and/or by these Bid Conditions to comply with Part II of these Bid Conditions, it adopts the minimum minority employee utilization goals and the specific affirmative action steps contained in said Part II, for all construction work (both federal and non-federal) in the Westchester County area subject to these Bid Conditions, those trades being:

_____, and

3. It will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these Bid Conditions.

(Date)

(Signature of Authorized Representative of Bidder)

Typed/Printed Signature

8. Subcontractors' Certifications. Prior to the award of any subcontract under this Invitation for Bids, regardless of tier, the prospective subcontractor must execute and submit to the Prime Contractor the following certification, which will be deemed a part of the resulting subcontract:

SUBCONTRACTORS' CERTIFICATION

_____ (*Subcontractor*) certifies that:

1. It intends to use the following listed construction trades in the work under the

subcontract: _____

_____;

2. (A) As to those trades set forth in the preceding paragraph one hereof for which it is eligible under Part I of these Bid Conditions for participation in the Westchester County Plan, it will comply with the Westchester County Plan on all construction work (both federal and non-federal) in the Westchester County area subject to these Bid Conditions, those trades being: _____
_____, and/or

(b) As to those trades for which it is required by these Bid Conditions to comply with Part II of these Bid Conditions, it adopts the minimum minority employee utilization goals and the specific affirmative action steps contained in said Part II for all construction work (both federal and non-federal) in the Westchester County area subject to these Bid Conditions, those trades being: _____
_____, and

3. It will obtain from each of its subcontractors prior to the award of any subcontract under this subcontract the subcontractor certification required by these Bid Conditions.

(Date)

(Signature of Authorized Representative of Bidder)

Typed/Printed Signature

The said subcontractors' certification must become a part of all subcontracts under the prime contract. Any subcontract executed without such incorporated certification shall be void.

C. Materiality and Responsiveness. The certifications required to be made by the bidder pursuant to these Bid Conditions is material, and will govern the bidder's performance on the project and will be a made a part of the bid. Failure to submit the certification will render the bid nonresponsive.

Part IV: Compliance and Enforcement. Contractors are responsible for informing their subcontractors (regardless of tier) as to their respective obligations under Parts I and II hereof (as applicable). Bidders, contractors and subcontractors hereby agree to refrain from entering into any contract or contract modification subject to Executive Order 11246, as amended of September 24, 1965, with a contractor debarred from, or who is determined not to be a "responsible" bidder for, Government contracts and federally-assisted construction contracts pursuant to the Executive Order. The bidder, contractor or subcontractor shall carry out such sanctions and penalties for violation of the equal opportunity clause including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered by the administering agency, the contracting agency or the Office of Federal Contract Compliance pursuant to the Executive Order. Any bidder, or contractor or subcontractor who shall fail to carry out such sanctions and penalties shall be deemed to be in noncompliance with these Bid Conditions and Executive Order 11246, as amended.

Nothing herein is intended to relieve any contractor or subcontractor during the term of its contract on this project from compliance with Executive Order 11246, as amended, and the Equal Opportunity Clause of its contract, with respect to matters not covered in the Westchester County Plan or in Part II of these Bid Conditions.

Violation of any substantial requirement in the Westchester County Plan by a contractor or subcontractor covered by Part I of these Bid Conditions including the failure of such contractor or subcontractor to make a good faith effort to meet its fair share of the trade's goals of minority employee utilization, or of the requirements of Part II hereof by a contractor or subcontractor who is covered by Part II shall be deemed to be noncompliance by such contractor or subcontractor with the Equal Opportunity Clause of the contract, and shall be grounds for imposition of the sanctions and penalties

provided at Section 209(a) of Executive Order 11246, as amended.

Each agency shall review its contractors' and subcontractors' employment practices during the performance of the contract. If the agency determines that the Westchester County Plan no longer represents effective affirmative action, it shall so notify the Office of Federal Contract Compliance which shall be solely responsible for any final determination of that question and the consequences thereof.

In regard to Part II of these conditions, if the contractor or subcontractor meets its goals or if the contractor or subcontractor can demonstrate that it has made every good faith effort to meet these goals, the contractor or subcontractor shall be presumed to be in compliance with Executive Order 11246, as amended, the implementing regulations and its obligations under these Bid Conditions and no formal sanctions or proceedings leading toward sanctions shall be instituted unless the agency otherwise determines that the contractor or subcontractor is not providing equal employment opportunities. In judging whether a contractor or subcontractor has met its goals, the agency will consider each contractor's or subcontractor's minority employee utilization and will not take into consideration the minority employee utilization of its subcontractors. Where the agency finds that the contractor or subcontractor has failed to comply with the requirements of Executive Order 11246, as amended, the implementing regulations and its obligations under these Bid Conditions, the agency shall take such action and impose such sanctions as may be appropriate under the Executive Order and the regulations. When the agency proceeds with such formal action it has the burden of proving that the contractor has not met the requirements of these Bid Conditions, but the contractor's failure to meet the goals shall shift to the contractor the requirement to come forward with evidence to show that he has met the "good faith" requirements of these Bid Conditions by instituting at least the Specific Affirmative Action steps listed above and by making every good faith effort to make those steps work toward the attainment of its goals within its timetables. The pendency of such formal proceedings shall be taken into consideration by Federal agencies in determining whether such contractor or subcontractor can comply with the requirements of Executive Order 11246, as amended, and is therefore a "responsible prospective

contractor” within the meaning of the Federal procurement regulations.

It shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.

The procedures set forth in these conditions shall not apply to any contract when the head of the contracting or administering agency determines that such contract is essential to the national security and that its award without following such procedures is necessary to the national security. Upon making such a determination, the agency head will notify, in writing, the Director of the Office of Federal Contract Compliance within thirty days.

Requests for exemptions from these Bid Conditions must be made in writing, with justification, to the Director, Office of Federal Contract Compliance, U.S. Department of Labor, Washington, DC 20210, and shall be forwarded through and with the endorsement of the agency head.

Contractors and subcontractors must keep such records and file such reports relating to the provisions of these Bid Conditions as shall be required by the contracting or administering agency or the office of Federal Contract Compliance.

For the information of bidders, a copy of the Westchester County Plan may be obtained from the contracting officer.

Section 3 Compliance

Certification by Bidder

NOTE:

The attached certification and Section 3 Plan must be signed by all bidders. This certificate indicates that the bidder will make every effort to follow the federal Section 3 requirements.

A fact sheet describing Section 3 is also attached.

Section 3 Bidders Certification

Training, Employment and Contracting Opportunities for Businesses and Lower Income Persons

A. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

COMPANY NAME: _____

ADDRESS: _____

OFFICIAL SIGNATURE: _____

TITLE _____

WAGE RATE CERTIFICATION

The project assisted under this agreement is subject to the requirements of the Davis-Bacon Act (the Act), 40 USC 276a. The Act requires that all construction employees of both contractors and subcontractors working on a federally-funded or assisted construction project be paid the current prevailing Davis-Bacon wages (wages).

The wages are those included in the bid package. By submitting a bid and by signing this form, a bidding contractor agrees to pay his/her construction employees the current prevailing Davis-Bacon wages as included in the bid package and to assure that any sub-contractors used on the project also pay their construction employees the wages included in the bid package.

Since this project is subject to the requirements of both Federal and State Labor Standards, the Contractor is required to pay the higher of the two rates for the job classification.

Company Name: _____

Federal ID #: _____

Address: _____

Signature of Authorized Representative: _____

Printed Name/Title of Authorized
Representative: _____

SECTION 3: PROVIDING ECONOMIC OPPORTUNITIES THROUGH HUD PROGRAMS

A FACT SHEET

What is Section 3?

Section 3 is a provision of the Housing and Urban Development Act of 1968 which requires that programs of direct financial assistance administered by the U.S. Department of Housing and Urban Development (HUD) provide, to the greatest extent feasible, opportunities for job training and employment to lower income residents in connection with projects in their neighborhoods. Further, to the greatest extent feasible, contracts in connection with these projects are to be awarded to local businesses. Section 3 is a tool for fostering local economic development, neighborhood economic improvement and individual self sufficiency.

Who Must Comply with Section 3 Requirements?

Section 3 applies to financial assistance awarded, provided or otherwise made available to a project or activity under a program administered by HUD in aid of housing, urban planning, redevelopment, development or renewal, public or community facilities and new community development. Section 3 does not apply to financial assistance made available solely in the form of insurance or guaranty or to tenant-based assistance. Recipients of Section 3 covered assistance include but are not limited to, states, units of local government, public housing agencies, Indian housing authorities, public and private nonprofit organizations, private agencies, developers, builders, community development housing organizations, resident management corporations and resident councils. Also, contractors who perform work in connection with projects funded under covered programs must comply with Section 3 requirements.

- ◆ Low Income Public Housing Programs
- ◆ Community Development Block Grant Programs
- ◆ Homeless Assistance Programs
- ◆ HOPE Programs
- ◆ HOME Programs
- ◆ National Affordable Housing Act Programs
- ◆ Fair Housing Initiatives Program
- ◆ Fair Housing Assistance Program

What Does Section 3 Require?

Recipients and contractors must make a good faith effort to utilize Section 3 area residents as trainees and employees in connection with the project. Targeted recruitment and the selection of Section 3 area residents for available positions are two examples of good faith efforts to meet this requirement.

Recipients and contractors must make a good faith effort to award contracts to Section 3 business concerns for work in connection with the project. An example of a good faith effort to meet this requirement is the implementation of an affirmative action plan which includes targets for the number and dollar value for awarding contracts to Section 3 business concerns.

Recipients and contractors must keep records and submit reports to HUD documenting the good faith efforts taken and the results of these actions. Examples of such documentation include letters to community organizations, employment development and business development centers; copies of solicitation for bids or proposals; and copies of affirmative action plans.

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section I(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part

of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been

communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who

is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by

the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be

awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable where the amount of the prime contract exceeds \$100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds \$100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

REQUIRED DISCLOSURE OF RELATIONSHIPS TO MUNICIPALITY
(Prior to execution of a contract by the Municipality, a potential Municipality contractor must complete, sign and return this form to the Municipality)

Contract Name and/or ID No.:

(To be filled in by Municipality)

Name of Contractor:

(To be filled in by Contractor)

A.) Related Employees:

1. Are any of the employees that you will use to carry out this contract with the Municipality also an officer or employee of the Municipality, or the spouse, or the child or dependent of such Municipality officer or employee?

Yes _____ No _____

If yes, please provide
details: _____

B.) Related Owners:

1. If you are the owner of the Contractor, are you or your spouse, an officer or employee of the Municipality?

Yes _____ No _____

If yes, please provide
details: _____

To answer the following question, the following definition of the word "interest" shall be used:

Interest means a direct or indirect pecuniary or material benefit accruing to a Municipality officer or employee, his or her spouse, child or dependent, whether as the result of a contract with the Municipality or otherwise. For the purpose of this chapter, a Municipality officer or employee shall be deemed to have an "interest" in the contract of:

- i. His/her spouse, children and dependents, except a contract of employment with the Municipality;
- ii. A firm, partnership or association of which such officer or employee is a member or employee;
- iii. A corporation of which such officer or employee is an officer, director or employee; and
- iv. A corporation of which more than five (5) percent of the outstanding capital stock is owned by any of the aforesaid parties.

2. Do any officers or employees of the Municipality have an **interest** in the Contractor or in any subcontractor that will be used for this contract?

Yes _____ No _____

If yes, please provide
details: _____

Authorized Company Official shall sign below and
type or print information below the signature line:

Name:

Title:

Date:

DAVIS BACON WAGE SCHEDULE

"General Decision Number: NY20210017 07/23/2021

Superseded General Decision Number: NY20200017

State: New York

Construction Types: Building, Heavy, Highway and Residential

County: Westchester County in New York.

BUILDING CONSTRUCTION PROJECTS, RESIDENTIAL CONSTRUCTIONPROJECTS (consisting of single family homes and apartments up to and including 4 stories), AND HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
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0	01/01/2021
1	03/12/2021
2	04/02/2021
3	04/16/2021
4	05/21/2021
5	06/04/2021
6	06/25/2021
7	07/02/2021
8	07/23/2021



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Village of Ossining

John Dulak, Sr. Electrical Engineer
LynStaar Engineering
12 Water Street
Suite 202
White Plains NY 10601

Schedule Year 2021 through 2022
Date Requested 10/21/2021
PRC# 2021010977

Location Joseph G Caputo Community Ctr
Project ID# VOO-21-03
Project Type Replacement of chiller, roofing and associated site work.

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2021 through June 2022. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission; a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion [online](#).

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

There are very few exceptions to this rule. Complete information regarding these exceptions is available on the ["Request for a dispensation to work overtime" form \(PW30\)](#) and ["4 Day / 10 Hour Work Schedule" form \(PW 30.1\)](#).

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12240; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid

or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment. Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed \$100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds \$25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers' compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeymen in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyman's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12240 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of \$50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Village of Ossining

John Dulak, Sr. Electrical Engineer
LynStaar Engineering
12 Water Street
Suite 202
White Plains NY 10601

Schedule Year 2021 through 2022
Date Requested 10/21/2021
PRC# 2021010977

Location Joseph G Caputo Community Ctr
Project ID# VOO-21-03
Project Type Replacement of chiller, roofing and associated site work.

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information

All information must be supplied

Federal Employer Identification Number: _____		
Name: _____		
Address: _____ _____		
City: _____	State: _____	Zip: _____
Amount of Contract: \$ _____	Contract Type:	
Approximate Starting Date: ____/____/____	<input type="checkbox"/> (01) General Construction	
Approximate Completion Date: ____/____/____	<input type="checkbox"/> (02) Heating/Ventilation	
	<input type="checkbox"/> (03) Electrical	
	<input type="checkbox"/> (04) Plumbing	
	<input type="checkbox"/> (05) Other : _____	

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

Social Security Numbers on Certified Payrolls:

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to \$1,500 for a first offense and up to \$5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, www.labor.ny.gov. <https://labor.ny.gov/formsdocs/ui/IA999.pdf>

If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov .

Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)

Effective June 23, 2020

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her job classification. The required notification will be provided with each wage schedule, may be downloaded from our website www.labor.ny.gov or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. *In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

**To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

**To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12240

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.



Required Notice under Article 25-B of the Labor Law

**Attention All Employees, Contractors and Subcontractors:
You are Covered by the Construction Industry Fair Play Act**

The law says that you are an employee unless:

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.

Employee Rights: If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor, **you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

Penalties for paying workers off the books or improperly treating employees as independent contractors:

- **Civil Penalty**
 - First offense: Up to \$2,500 per employee
 - Subsequent offense(s): Up to \$5,000 per employee
- **Criminal Penalty**
 - First offense: Misdemeanor - up to 30 days in jail, up to a \$25,000 fine and debarment from performing public work for up to one year.
 - Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a \$50,000 fine and debarment from performing public work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously. You can remain anonymous.

Employer Name:

IA 999 (09/16)

Attention Employees

THIS IS A: **PUBLIC WORK PROJECT**

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Chapter 629 of the Labor Laws of 2007:

These wages are set by law and must be posted at the work site. They can also be found at:
www.labor.ny.gov

If you feel that you have not received proper wages or benefits, please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5156		

* For New York City government agency construction projects, please contact the Office of the NYC Comptroller at (212) 669-4443, or www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is \$250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training "prior to the performing any work on the project."

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.*)
- Training roster, attendance record or other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

**A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is \$3 million in Bronx, Kings, New York, Queens and, Richmond counties; \$1.5 million in Nassau, Suffolk and Westchester counties; and \$500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirements on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Westchester County General Construction

Boilermaker

10/01/2021

JOB DESCRIPTION Boilermaker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2021

Boilermaker	\$ 63.38
Repairs & Renovations	63.38

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2021

Boilermaker	32% of hourly
Repair \$ Renovations	Wage Paid
	+ \$ 25.38

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

Repairs & Renovation see (B,E,Q)

HOLIDAY

Paid: See (8, 16, 23, 24) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 12, 15, 16, 22, 23, 24, 25) on HOLIDAY PAGE

NOTE: *Employee must work in pay week to receive Holiday Pay.

**Employee gets 4 times the hourly wage rate for working Labor Day.

REGISTERED APPRENTICES

Wage per hour:

(1/2) Year Terms at the following percentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

	07/01/2021
Apprentice(s)	32% of Hourly
	Wage Paid Plus
	Amount Below

1st Term	\$ 19.41
2nd Term	20.26
3rd Term	21.11
4th Term	21.96
5th Term	22.82
6th Term	23.68
7th Term	24.52

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Carpenter

10/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2021

Piledriver	\$ 56.93
Dockbuilder	\$ 56.93

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 53.33

OVERTIME PAY

See (B, E2, O) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.

Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour

(1)year terms:

1st	2nd	3rd	4th
\$23.37	\$28.97	\$37.35	\$45.74

Supplemental benefits per hour:

All Terms: \$ 35.33

8-1556 Db

Carpenter

10/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2021

Carpet/Resilient

Floor Coverer \$ 54.75

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

SUPPLEMENTAL BENEFITS

Per hour:

\$ 46.97

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE.

Paid for 1st & 2nd yr.

Apprentices See (5,6,11,13,16,18,19,25)

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wage per hour - (1) year terms:

1st	2nd	3rd	4th
\$ 24.55	\$ 27.55	\$ 31.80	\$ 39.68

Supplemental benefits per hour:

1st	2nd	3rd	4th
\$ 16.19	\$ 17.69	\$ 21.29	\$ 23.29

8-2287

Carpenter

10/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour: 07/01/2021

Marine Construction:

Marine Diver	\$ 71.80
Marine Tender	51.34

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 53.33

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 11, 13, 16, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms.

1st year	\$ 23.37
2nd year	28.97
3rd year	37.35
4th year	45.74

Supplemental Benefits

Per Hour:

All terms \$ 35.33

8-1456MC

Carpenter

10/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2021

Building	
Millwright	\$ 57.00

SUPPLEMENTAL BENEFITS

Per hour:

Millwright \$ 54.60

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18,19) on HOLIDAY PAGE.

Overtime See (5,6,8,11,13,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
\$30.74	\$36.19	\$41.64	\$52.54

Supplemental benefits per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
------	------	------	------

\$35.03 \$38.73 \$43.08 \$49.84

8-740.1

Carpenter

10/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:

07/01/2021

Timberman

\$ 52.05

SUPPLEMENTAL BENEFITS

Per Hour:

07/01/2021

\$ 52.78

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.

Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

1st	2nd	3rd	4th
\$21.42	\$26.53	\$34.18	\$41.84

Supplemental benefits per hour:

All terms \$ 35.06

8-1556 Tm

Carpenter

10/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Westchester

PARTIAL COUNTIES

Orange: South of but including the following, Waterloo Mills, Slate Hill, New Hampton, Goshen, Blooming Grove, Mountainville, east to the Hudson River.

Putnam: South of but including the following, Cold Spring, TompkinsCorner, Mahopac, Croton Falls, east to Connecticut border.

Suffolk: West of Port Jefferson and Patchogue Road to Route 112 to the Atlantic Ocean.

WAGES

Per hour: 07/01/2021 10/18/2021

Core Drilling:

Driller \$ 41.74 \$ 42.27

Driller Helper 32.92 33.47

Note: Hazardous Waste Pay Differential:

For Level C, an additional 10% above wage rate per hour

For Level B, an additional 10% above wage rate per hour

For Level A, an additional 10% above wage rate per hour

Note: When required to work on water: an additional \$ 0.50 per hour.

SUPPLEMENTAL BENEFITS

Per hour:

Driller and Helper \$ 29.40 \$ 30.60

OVERTIME PAY

OVERTIME: See (B,E,K*,P,R**) on OVERTIME PAGE.

HOLIDAY

Paid: See (5,6) on HOLIDAY PAGE.

Overtime: * See (5,6) on HOLIDAY PAGE.

** See (8,10,11,13) on HOLIDAY PAGE.

8-1536-CoreDriller

Carpenter - Building / Heavy&Highway

10/01/2021

JOB DESCRIPTION Carpenter - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

WAGES

WAGES:(per hour)

07/01/2021

BUILDING/HEAVY & HIGHWAY/TUNNEL:

Carpenter

Base Wage

\$ 37.69

+ \$7.63*

*For all hours paid straight or premium.

SHIFT DIFFERENTIAL: When it is mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen percent (15%) of wage plus applicable benefits.

NOTE: Carpenters employed in the removal or abatement of asbestos or any toxic or hazardous material or required to work near asbestos or any toxic or hazardous material and required to wear protective equipment shall receive two (2) hours extra pay per day, plus applicable supplemental benefits.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker

\$ 31.91

OVERTIME PAY

BUILDING:

See (B, E, Q) on OVERTIME PAGE.

HEAVY&HIGHWAY/TUNNEL:

See (B, E, P, *R, **T, X) on OVERTIME PAGE.

*R applies to Heavy&Highway/Tunnel Overtime Holiday Code 25 with benefits at straight time rate.

**T applies to Heavy&Highway/Tunnel Overtime Holiday Codes 5 & 6 with benefits at straight time rate.

HOLIDAY

BUILDING:

Paid: See (1) on HOLIDAY PAGE.

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE.

Holidays that fall on Sunday will be observed Monday.

HEAVY&HIGHWAY/TUNNEL:

Paid: See (5, 6, 25) on HOLIDAY PAGE including benefits.

Overtime: See (5, 6, 25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

1 year terms at the following wage rates:

Indentured before July 1 2016

1st	2nd	3rd	4th
\$ 18.85	\$ 22.61	\$ 26.38	\$ 30.15
+3.57*	+3.57*	+3.57*	+3.57*

Indentured after July 1 2016

1st	2nd	3rd	4th	5th
\$ 18.85	\$ 22.61	\$ 24.50	\$ 26.38	\$ 30.15
+3.57*	+3.57*	+3.57*	+3.57*	+3.57*

*For all hours paid straight or premium

SUPPLEMENTAL BENEFITS per hour:

All terms \$ 16.28

11-279.1B/HH

Electrician	10/01/2021
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JOB DESCRIPTION Electrician

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, New York, Queens, Richmond, Westchester

WAGES

Per hour: 07/01/2021

Service Technician \$ 34.40

Service and Maintenance on Alarm and Security Systems.

Maintenance, repair and /or replacement of defective (or damaged) equipment on, but not limited to, Burglar - Fire - Security - CCTV - Card Access - Life Safety Systems and associated devices. (Whether by service contract of T&M by customer request.)

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker: \$ 19.32

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 11, 15, 16, 17, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 17, 25, 26) on HOLIDAY PAGE

9-3H

Electrician	10/01/2021
--------------------	-------------------

JOB DESCRIPTION Electrician

DISTRICT 8

ENTIRE COUNTIES

Westchester

WAGES

Per hour: 07/01/2021 04/21/2022

*Electrician/A-Technician \$ 53.75 \$ 53.75

Teledata 53.75 53.75

*All new installations of wiring, conduit, junction boxes and light fixtures for projects with a base bid of more than \$325,000. For projects with a base bid of \$325,000 or less, see Maintenance and Repair rates.

Note: On a job where employees are required to work on bridges over navigable waters, transmission towers, light poles, bosun chairs, swinging scaffolds , etc. 40 feet or more above the water or ground or under compressed air, or tunnel projects under construction or where assisted breathing apparatus is required, they will be paid at the rate of time and one-half for such work except on normal pole line or building construction work.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 52.73 \$ 54.39

OVERTIME PAY

See (A, G, *J, P) on OVERTIME PAGE

*NOTE: Emergency work on Sunday and Holidays is at the time and one-half overtime rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wage rates:

	07/01/2021	01/01/2022	04/21/2022
1st term	\$ 14.00	\$ 15.00	\$ 15.00
2nd term	16.00	16.00	16.00
3rd term	18.00	18.00	18.00
4th term	20.00	20.00	20.00
MIJ 1-12 months	24.00	24.00	25.00
MIJ 13-18 months	27.50	27.50	28.50

Supplemental Benefits per hour:

	07/01/2021	04/21/2022
1st term	\$ 10.15	\$ 10.82
2nd term	13.05	13.05
3rd term	14.39	14.39
4th term	15.72	15.72
MIJ 1-12 months	13.39	13.49
MIJ 13-18 months	13.76	13.87

8-3/W

Electrician

10/01/2021

JOB DESCRIPTION Electrician

DISTRICT 8

ENTIRE COUNTIES

Westchester

WAGES

	07/01/2021	04/21/2022
Electrician -M	\$ 27.50	\$28.50
H - Telephone	\$ 27.50	\$28.50

All work with a base bid amount of \$325,000 or less. Including repairs and /or replacement of defective electrical and teledata equipment, all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls, and washing and cleaning of foregoing fixtures.

*If the project exceeds \$375,000 due to changes in the scope of work, an Electrician/A Technician must be part of the labor ratio.

SUPPLEMENTAL BENEFITS

	07/01/2021	04/21/2022
Electrician &		
H - Telephone	\$ 13.76	\$13.87

OVERTIME PAY

See (B, G, *J, P) on OVERTIME PAGE

*Note: Emergency work on Sunday and Holidays is at the time and one-half overtime rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

8-3m

Elevator Constructor

10/01/2021

JOB DESCRIPTION Elevator Constructor

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

PARTIAL COUNTIES

Rockland: Entire County except for the Township of Stony Point

Westchester: Entire County except for the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per hour:		
	07/01/2021	03/17/2022
Elevator Constructor	\$ 72.29	\$ 75.14
Modernization & Service/Repair	56.77	59.09

Four(4), ten(10) hour days may be worked at straight time during a week, Monday thru Friday.

NOTE- In order to use the '4 Day/10 Hour Work Schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 IS NOT SUBMITTED you will be liable for overtime payments for work over the allotted hours per day listed.

SUPPLEMENTAL BENEFITS

Per Hour:

Elevator Constructor	\$ 41.92	\$ 43.914
Modernization & Service/Repairs	41.082	42.787

OVERTIME PAY

Constructor See (D, M, T) on OVERTIME PAGE.

Modern/Service See (B, F, S) on OVERTIME PAGE.

HOLIDAY

Paid: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES PER HOUR:

*Note: 1st Term is based on Average wage of Constructor & Modernization.
Terms 2 thru 4 Based on Journeymans wage of classification Working in.

1 YEAR TERMS:

1st Term*	2nd Term	3rd Term	4th Term
50%	55%	65%	75%

SUPPLEMENTAL BENEFITS

Elevator Constructor		
1st Term	\$ 34.05	\$ 34.772
2nd Term	34.91	35.606
3rd Term	36.30	37.052
4th Term	37.70	38.497

Modernization & Service/Repair

1st Term	\$ 34.00	\$ 34.672
2nd Term	34.50	35.195
3rd Term	35.83	36.571
4th Term	37.15	37.938

4-1

Elevator Constructor

10/01/2021

JOB DESCRIPTION Elevator Constructor

DISTRICT 1

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

PARTIAL COUNTIES

Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford

Rockland: Only the Township of Stony Point.

Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per Hour	07/01/2021	01/01/2022
Mechanic	\$ 62.51	\$ 64.63
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

Four (4), ten (10) hour days may be worked for New Construction and Modernization Work at straight time during a week, Monday thru Thursday or Tuesday thru Friday.

***Four (4), ten (10) hour days are not permitted for Contract Work/Repair Work

NOTE - In order to use the '4 Day/10 Hour Work Schedule' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule', form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour	07/01/2021	01/01/2022
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Journeyman/Helper	\$ 35.825*	\$ 36.885*
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(*)Plus 6% of regular hourly if less than 5 years of service. Plus 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 16) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES

Wages per hour:

0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50 %	55 %	65 %	70 %	80 %

(*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits per hour worked:

Same as Journeyman/Helper

1-138

Glazier	10/01/2021
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JOB DESCRIPTION Glazier

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per hour:	7/01/2021	11/01/2021
Glazier	\$ 58.60	+ \$1.25
*Scaffolding	59.55	
Glass Tinting & Window Film	29.60	
**Repair & Maintenance	29.60	

*Scaffolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 24' or more, but not pipe scaffolding.

**Repair & Maintenance- All repair & maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$148,837. All Glass tinting, window film, regardless of material or intended use, and all affixing of decals to windows or glass.

SUPPLEMENTAL BENEFITS

Per hour:	7/01/2021
Journeyworker	\$ 36.04
Glass tinting & Window Film	21.19
Repair & Maintenance	21.19

OVERTIME PAY

See (B,H,V) on OVERTIME PAGE.

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' see (B, B2, I, S) on overtime page.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' Only

Paid: See(5, 6, 16, 25)

Overtime: See(5, 6, 16, 25)

REGISTERED APPRENTICES

Wage per hour:

(1) year terms at the following wage rates:

	7/01/2021
1st term	\$ 20.72

2nd term	28.66
3rd term	34.67
4th term	46.62

Supplemental Benefits:

(Per hour)

1st term	\$ 16.58
2nd term	23.57
3rd term	26.09
4th term	30.91

8-1087 (DC9 NYC)

Insulator - Heat & Frost

10/01/2021

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Westchester

WAGES

Per hour:	07/01/2021	05/31/2022
Insulator	\$ 56.25	+ \$ 2.00
Discomfort & Additional Training**	59.22	+ \$ 2.00
Fire Stop Work*	30.07	+ \$ 2.00

* Applies on all exclusive Fire Stop Work (When contract is for Fire Stop work only). No apprentices on these contracts only.

**Applies to work requiring: garb or equipment worn against the body not customarily worn by insulators; psychological evaluation; special training, including but not limited to "Yellow Badge" radiation training

Note: Additional \$0.50 per hour for work 30 feet or more above floor or ground level.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker	\$ 35.10
Discomfort & Additional Training	37.06
Fire Stop Work:	
Journeyworker	17.90

OVERTIME PAY

See (B, E, E2, Q, *T) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Note: Last working day preceding Christmas and New Years day, workers shall work no later than 12:00 noon and shall receive 8 hrs pay.

Overtime: See (2*, 4, 6, 16, 25) on HOLIDAY PAGE.

*Note: Labor Day triple time if worked.

REGISTERED APPRENTICES

(1) year terms:

Insulator Apprentices:

1st	2nd	3rd	4th
\$ 30.07	\$ 35.30	\$ 40.54	\$ 45.78

Discomfort & Additional Training Apprentices:

1st	2nd	3rd	4th
\$ 31.55	\$ 37.08	\$ 42.61	\$ 48.16

Supplemental Benefits paid per hour:

Insulator Apprentices:

1st term	\$ 17.90
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2nd term	21.35
3rd term	24.79
4th term	28.23

Discomfort & Additional Training Apprentices:

1st term	\$ 18.89
2nd term	22.52
3rd term	26.16
4th term	29.80

8-91

Ironworker

10/01/2021

JOB DESCRIPTION Ironworker

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour: 07/01/2021

Ironworker Rigger \$ 67.99

Ironworker Stone
Derrickman \$ 67.99

SUPPLEMENTAL BENEFITS

Per hour: \$ 41.44

OVERTIME PAY

See (B, D1, *E, Q, **V) on OVERTIME PAGE

*Time and one-half shall be paid for all work on Saturday up to eight (8) hours and double time shall be paid for all work thereafter.

** Benefits same premium as wages on Holidays only

HOLIDAY

Paid: See (18) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 25) on HOLIDAY PAGE

*Work stops at schedule lunch break with full day's pay.

REGISTERED APPRENTICES

Wage per hour:

1/2 year terms at the following hourly wage rate:

	1st	2nd	3rd	4th
07/01/2021	\$33.55	\$47.94	\$53.34	\$58.74

Supplemental benefits:

Per hour:				
07/01/2021	\$21.18	\$31.45	\$31.45	\$31.45

9-197D/R

Ironworker

10/01/2021

JOB DESCRIPTION Ironworker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:	07/01/2021	01/01/2022
		Additional
		\$ 1.25

Ornamental	\$ 46.15
Chain Link Fence	46.15
Guide Rail	46.15

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyworker:	\$ 60.05

OVERTIME PAY

See (B, B1, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Apprentices hired before 8/31/2018:

(1/2) year terms at the following percentage of Journeyman's wage.
5th Term 80%

Supplemental Benefits per hour:

5th Term 54.03

Apprentices Hired after 9/1/18:

1 year terms

1st Term	\$ 20.63
2nd Term	24.22
3rd Term	27.80
4th Term	31.38

Supplemental Benefits per hour:

1st Term	\$ 17.89
2nd Term	19.14
3rd Term	20.40
4th Term	21.66

4-580-Or

Ironworker**10/01/2021****JOB DESCRIPTION** Ironworker**DISTRICT 4****ENTIRE COUNTIES**

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

PER HOUR:

07/01/2021	01/01/2022
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Ironworker:

Structural	\$ 54.20	Additional \$ 1.75/Hr.
Bridges		
Machinery		

SUPPLEMENTAL BENEFITS

PER HOUR PAID:

Journeyman \$ 82.35

OVERTIME PAY

See (B, B1, Q, *V) on OVERTIME PAGE

*NOTE: Benefits are calculated for every hour paid

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES PER HOUR:

6 month terms at the following rate:

1st	\$28.21
2nd	\$28.81
3rd - 6th	\$29.42

Supplemental Benefits

PER HOUR PAID:

All Terms \$56.90

4-40/361-Str

Ironworker**10/01/2021****JOB DESCRIPTION** Ironworker**DISTRICT 4**

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES

Rockland: Southern section - south of Convent Road and east of Blue Hills Road.

WAGES

Per hour: 07/01/2021

Reinforcing &
Metal Lathing \$ 56.25

"Base" Wage \$ 54.70
plus \$ 1.55

"Base" Wage is used to calculate overtime hours only.

SUPPLEMENTAL BENEFITS

Per hour:
Reinforcing & Metal Lathing \$ 38.30

OVERTIME PAY

See (B, E, Q, *X) on OVERTIME PAGE

*Only \$22.00 per Hour for non worked hours

Supplemental Benefit Premiums for Overtime Hours worked:

Time & One Half \$ 45.08
Double Time \$ 51.33

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 13, 18, 19, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wage rates:

1st term	2nd term	3rd term	4th Term
Wage Per Hour: \$ 22.55	\$ 28.38	\$ 34.68	\$ 37.18
"Base" Wage \$ 21.00 plus \$1.55	\$ 26.80 plus \$1.58	\$ 33.10 plus \$1.58	\$ 35.60 plus \$1.58

"Base" Wage is used to calculate overtime hours ONLY.

SUPPLEMENTAL BENIFITS

Per Hour:

1st term	2nd term	3rd term	4th Term
\$ 18.17	\$ 21.34	\$ 22.00	\$ 20.50

4-46Reinf

Laborer - Building

10/01/2021

JOB DESCRIPTION Laborer - Building

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

07/01/2021

Laborer \$ 36.40
plus \$5.05**

Laborer - Asbestos & Hazardous
Materials Removal \$ 43.10*

* Abatement/Removal of:

- Lead based or lead containing paint on materials to be repainted is classified as Painter.
- Asbestos containing roofs and roofing material is classified as Roofer.

** This portion is not subject to overtime premium.

NOTE: Upgrade/Material condition work plan for work performed during non-outage under a wage formula of 90% wage/100% fringe benefits at nuclear power plants.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2021

Journeyworker \$ 27.50

OVERTIME PAY

See (B, E, E2, Q, *V) on OVERTIME PAGE

*Note: For Sundays and Holidays worked benefits are at the same premium as wages.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

LABORER ONLY

Hourly terms at the following wage:

Level A	Level B	Level C	Level D
0-1000	1001-2000	2001-3000	3001-4000
\$ 21.04	\$ 24.86	\$ 28.69	\$ 32.51

Supplemental Benefits per hour:

Apprentices
All terms \$ 21.15

8-235/B

Laborer - Heavy&Highway

10/01/2021

JOB DESCRIPTION Laborer - Heavy&Highway

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

PUTNAM: APPLIES TO ALL HEAVY & HIGHWAY WORK EXCLUDING HIGHWAYS, STREETS, AND BRIDGES

GROUP I: Blaster, Quarry Master, Curbs/Asphalt Screedman, Pipe Jacking and Boring Operations Operator, Qualified Dead Condition Pipe Fuser (B Mechanic)

GROUP II: Burner, Drillers(jumbo, joy, wagon, air track, hydraulic), Drill Operator, Self Contained Rotary Drill, Curbs, Raker, Bar Person, Concrete Finisher.

GROUP III: Pavement Breakers, Jeep Operator, Jack Hammer, Pneumatic Tools (all), Gas Driller, Guniting, Railroad Spike Puller, Pipelayer, Chain Saw, Deck winches on scows, Power Buggy Operator, Power Wheelbarrow Operator, Bar Person Helper, Compressed Air lance, Water Jet Lance.

GROUP IV: Concrete Laborers, Asph. Worker, Rock Scaler, Vibrator Oper., Bit Grinder, Air Tamper, Pumps, Epoxy (adhesives, fillers and troweled on), Barco Rammer, Concrete Grinder, Crack Router Operator, Guide Rail-digging holes and placing concrete and demolition when not to be replaced, distribution of materials and tightening of bolts.

GROUP V: Drillers Helpers, Common Laborer, Mason Tenders, Signal Person, Pit Person, Truck Spotter, Powder Person, Landscape/Nursery Person, Dump Person, Temp. Heat.

GROUP VIA: Asbestos/Toxic Waste Laborer-All removal (Roads, Tunnels, Landfills, etc.) Confined space laborer, Bio-remediation, Phyto-remediation, Lead or Hazardous material, Abatement Laborer.

Wages:(per hour) 07/01/2021

GROUP I	\$45.65*
GROUP II	44.30*
GROUP III	43.90*
GROUP IV	43.55*

GROUP V	43.20*
GROUP VIA	45.20*
Operator Qualified	
Gas Mechanic(A Mech)	55.65*
Flagperson	36.85*

*NOTE: To calculate overtime premiums, deduct \$0.10 from above wages

SHIFT WORK: A shift premium will be paid on Public Work contracts for off-shift or irregular shift work when mandated by the NYS D.O.T. or other Governmental Agency contracts. Employees shall receive an additional 15% per hour above current rate for all regular and irregular shift work. Premium pay shall be calculated using the 15% per hour differential as base rate.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:

First 40 Hours

Per Hour \$26.10

Over 40 Hours

Per Hour 19.85

OVERTIME PAY

See (B, E, P, R, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

NOTE: For Holiday Overtime: 5, 6 - Code 'S' applies

For Holiday Overtime: 8, 15, 25, 26 - Code 'R' applies

REGISTERED APPRENTICES

	1st term	2nd term	3rd term	4th term
	1-1000hrs	1001-2000hrs	2001-3000hrs	3001-4000hrs
07/01/2021	\$ 24.56	\$ 28.98	\$ 33.40	\$ 37.72

Supplemental Benefits per hour:

1st term	\$ 4.70 - After 40 hours: \$ 4.45
2nd term	\$ 4.80 - After 40 hours: \$ 4.45
3rd term	\$ 5.30 - After 40 hours: \$ 4.85
4th term	\$ 5.85 - After 40 hours: \$ 5.35

8-60H/H

Laborer - Tunnel

10/01/2021

JOB DESCRIPTION Laborer - Tunnel

DISTRICT 11

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Otsego, Putnam, Rockland, Sullivan, Ulster, Westchester

PARTIAL COUNTIES

Chenango: Townships of Columbus, Sherburne and New Berlin.

Delaware: Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Merideth and Davenport.

WAGES

Class 1: All support laborers/sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

WAGES: (per hour)

	07/01/2021	07/01/2022
Class 1	\$ 51.95	\$ 53.45
Class 2	54.10	55.60
Class 4	60.50	62.00
Class 5	43.50	44.80

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional \$ 3.00 an hour.

SHIFT DIFFERENTIAL...On all Government mandated irregular shift work:

- Employee shall be paid at time and one half the regular rate Monday through Friday.
- Saturday shall be paid at 1.65 times the regular rate.
- Sunday shall be paid at 2.15 times the regular rate.

SUPPLEMENTAL BENEFITS

Per hour:

Benefit 1	\$ 33.25	\$ 34.45
Benefit 2	49.81	51.60
Benefit 3	66.35	68.75

Benefit 1 applies to straight time hours, paid holidays not worked.

Benefit 2 applies to over 8 hours in a day (M-F), irregular shift work hours worked, and Saturday hours worked.

Benefit 3 applies to Sunday and Holiday hours worked.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

When a recognized Holidays falls on Saturday or Sunday, holidays falling on Saturday shall be recognized or observed on Friday and holidays falling on Sunday shall be recognized or observed on Monday. Employees ordered to work on the Saturday or Sunday of the holiday or on the recognized or the observed Friday or Monday for those holidays falling on Saturday or Sunday shall receive double time the established rate and benefits for the holiday.

REGISTERED APPRENTICES

FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and location where the work is to be performed.

11-17/60/235/754Tun

Lineman Electrician

10/01/2021

JOB DESCRIPTION Lineman Electrician

DISTRICT 6

ENTIRE COUNTIES

Westchester

WAGES

Below rates apply to electrical overhead and underground distribution and maintenance work and overhead and underground transmission line work, electrical substations, switching structures, continuous pipe-type underground fluid or gas filled transmission conduit and cable installations, maintenance jobs or projects, railroad catenary installations and maintenance, third rail installations, the bonding of rails and the installation of fiber optic cable. (Ref #14.04.01)

Includes Teledata Work performed within ten (10) feet of high voltage (600 volts or over) transmission lines.

Per hour:	07/01/2021	05/02/2022	05/01/2023	05/06/2024
Lineman, Tech, Welder	\$ 57.71	\$ 59.01	\$ 60.41	\$ 61.91
Crane, Crawler Backhoe	57.71	59.01	60.41	61.91
Cable Splicer-Pipe Type	63.48	64.91	66.45	68.10
Digging Mach Operator	51.94	53.11	54.37	55.72
Cert. Welder-Pipe Type	60.60	61.96	63.43	65.01
Tractor Trailer Driver	49.05	50.16	51.35	52.62
Groundman, Truck Driver	46.17	47.21	48.33	49.53
Equipment Mechanic	46.17	47.21	48.33	49.53
Flagman	34.63	35.41	36.25	37.15

Additional \$1.00 per hour for entire crew when a helicopter is used.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

	\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage
Journeyman Lineman or Equipment Operators with Crane License	\$ 26.40 *plus 7% of hourly wage	\$ 27.90 *plus 7% of hourly wage	\$ 29.40 *plus 7% of hourly wage	\$ 30.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q,) on OVERTIME PAGE. *Note* Double time for emergency work designated by the Dept of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked.
Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2021	05/02/2022	05/01/2023	05/06/2024
\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249aWest

Lineman Electrician - Teledata

10/01/2021

JOB DESCRIPTION Lineman Electrician - Teledata

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour:

For outside work, stopping at first point of attachment (demarcation).

07/01/2021

Cable Splicer	\$ 34.78
Installer, Repairman	\$ 33.01
Teledata Lineman	\$ 33.01
Tech., Equip. Operator	\$ 33.01
Groundman	\$ 17.50

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED:

1ST SHIFT

REGULAR RATE

2ND SHIFT REGULAR RATE PLUS 10%
3RD SHIFT REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman

\$ 5.14
*plus 3% of
wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked.
Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting

10/01/2021

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting

DISTRICT 6

ENTIRE COUNTIES

Westchester

WAGES

Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

A Groundman/Groundman Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.
(Ref #14.01.03)

Per hour:	07/01/2021	05/02/2022	05/01/2023	05/06/2024
Lineman, Technician	\$ 52.56	\$ 53.60	\$ 54.73	\$ 55.95
Crane, Crawler Backhoe	52.56	53.60	54.73	55.95
Certified Welder	55.19	56.28	57.47	58.75
Digging Machine	47.30	48.24	49.26	50.36
Tractor Trailer Driver	44.68	45.56	46.52	47.56
Groundman, Truck Driver	42.05	42.88	43.78	44.76
Equipment Mechanic	42.05	42.88	43.78	44.76
Flagman	31.54	32.16	32.84	33.57

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT 8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT 4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT 12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

	\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage
Journeyman Lineman or Equipment Operators with Crane License	\$ 26.40 *plus 7% of hourly wage	\$ 27.90 *plus 7% of hourly wage	\$ 29.40 *plus 7% of hourly wage	\$ 30.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE. *Note* Double time for emergency work designated by the Dept. of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked.

Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2021	05/02/2022	05/01/2023	05/06/2024
\$25.40 *plus 7% of hourly Wage	\$ 25.90 *plus 7% of hourly wage	\$ 26.40 *plus 7% of hourly wage	\$ 26.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249aWestLT

Mason - Building

10/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2021	12/06/2021	06/06/2022
		Additional	Additional
Tile Setters	\$ 61.07	\$ 0.48	\$ 0.72

SUPPLEMENTAL BENEFITS

Per Hour:	\$ 24.91*
	+ \$10.01

* This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

Work beyond 10 hours on Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:

Tile Setters:
(750 hour) term at the following wage rate:

Term:	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
	1-750	751-1500	1501-2250	2251-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6750	6501-7000
07/01/2021	\$20.84	\$25.66	\$32.68	\$37.50	\$40.99	\$44.30	\$47.82	\$52.63	\$55.35	\$59.34

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$12.55* +\$0.66	\$12.55* +\$0.71	\$15.16* +\$0.81	\$15.16* +\$0.85	\$16.16* +\$1.23	\$17.66* +\$1.28	\$18.66* +\$1.63	\$18.66* +\$1.68	\$16.66* +\$5.83	\$21.91* +\$6.32

* This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/52A

Mason - Building	10/01/2021
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JOB DESCRIPTION Mason - Building

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour:

	07/01/2021	06/01/2022 Additional	06/01/2023 Additional
Bricklayer	\$ 43.35	\$ 2.39	\$ 2.05
Cement Mason	43.35	2.39	2.05
Plasterer/Stone Mason	43.35	2.39	2.05
Pointer/Caulker	43.35	2.39	2.05

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:

Irregular work day requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 36.05.

OVERTIME PAY

OVERTIME:

Cement Mason See (B, E, Q, W) on OVERTIME PAGE.

All Others See (B, E, Q) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
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50% 55% 60% 65% 70% 75% 80% 85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5wp-b

Mason - Building

10/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Building

07/01/2021

01/01/2022

Wages per hour:

Mosaic & Terrazzo Mechanic

\$ 58.46

Additional
\$ 0.85

Mosaic & Terrazzo Finisher

\$ 56.86

SUPPLEMENTAL BENEFITS

Per hour:

Mosaic & Terrazzo Mechanic

\$ 26.11*
+ \$11.73

Mosaic & Terrazzo Finisher

\$ 26.11*
+ \$11.71

*This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (A, E, Q) on OVERTIME PAGE

Deduct \$6.80 from hourly wages before calculating overtime.

HOLIDAY

Paid:

See (1) on HOLIDAY PAGE

Overtime:

See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

Easter Sunday is an observed holiday. Holidays falling on a Saturday will be observed on that Saturday. Holidays falling on a Sunday will be celebrated on the Monday.

REGISTERED APPRENTICES

Wages per hour:

(750 Hour) terms at the following wage rate.

	1st	2nd	3rd	4th	5th	6th	7th	8th
07/01/2021	\$ 25.82	\$ 28.40	\$ 31.00	\$ 33.58	\$ 36.16	\$ 38.74	\$ 43.91	\$ 49.08

Supplemental benefits per hour:

	1st	2nd	3rd	4th	5th	6th	7th	8th
07/01/2021	\$13.06* +\$9.27	\$14.37* +\$10.19	\$15.67* +\$11.12	\$16.98* +\$12.04	\$18.28* +\$12.97	\$19.59* +\$13.90	\$22.20* +\$15.75	\$24.81* +\$17.60

Apprentices hired after 07/01/2017:

Wages Per hour:

1st	2nd	3rd	4th	5th	6th
0- 1500	1501- 3000	3001- 3750	3751- 4500	4501- 5250	5251- 6000

07/01/2021	\$ 22.63	\$ 29.10	\$ 31.00	\$ 36.16	\$ 41.32	\$ 46.48
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Supplemental Benefits per hour:

	1st	2nd	3rd	4th	5th	6th
07/01/2021	\$4.59*	\$5.90*	\$15.67*	\$18.28*	\$20.89*	\$23.50*
	+\$6.49	+\$8.34	+\$11.12	+\$12.97	+\$14.83	+\$16.67

*This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/3

Mason - Building	10/01/2021
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JOB DESCRIPTION Mason - Building	DISTRICT 9
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ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2021	01/01/2022
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Building-Marble Restoration:	Additional
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Marble, Stone & Terrazzo Polisher, etc	\$ 46.16	\$ 1.10
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SUPPLEMENTAL BENEFITS

Per Hour:
Journeyworker:

Building-Marble Restoration: Marble, Stone & Polisher	\$ 29.11
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OVERTIME PAY

See (B, *E, Q, V) on OVERTIME PAGE

*ON SATURDAYS, 8TH HOUR AND SUCCESSIVE HOURS PAID AT DOUBLE HOURLY RATE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
1ST TERM APPRENTICE GETS PAID FOR ALL OBSERVED HOLIDAYS.

REGISTERED APPRENTICES

WAGES per hour:

900 hour term at the following wage:

	1st 1- 900	2nd 901- 1800	3rd 1801- 2700	4th 2701
07/01/2021	\$32.28	\$36.91	\$41.51	\$46.16

Supplemental Benefits Per Hour:

07/01/2021	\$26.47	\$27.34	\$28.29	\$29.11
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9-7/24-MP

Mason - Building	10/01/2021
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JOB DESCRIPTION Mason - Building	DISTRICT 9
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ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Wages:	07/01/2021	01/03/2022
Marble Cutters & Setters	\$ 61.73	Additional \$ 0.95

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 37.76

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage Per Hour:

750 hour terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-750	751-1500	1501-2250	2251-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6751	6751-7500
\$ 24.70	\$ 27.77	\$ 30.87	\$ 33.94	\$ 37.03	\$ 40.11	\$ 43.20	\$ 46.29	\$ 52.46	\$ 58.64

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 20.01	\$ 21.43	\$ 22.83	\$ 24.25	\$ 25.65	\$ 27.07	\$ 28.47	\$ 29.88	\$ 32.70	\$ 35.51

9-7/4

Mason - Building 10/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2021	12/06/2021	06/06/2022
Tile Finisher	\$ 46.89	Additional \$ 0.39	Additional \$ 0.58

SUPPLEMENTAL BENEFITS

Per Hour:

\$ 21.91*
+ \$9.84

*This portion of benefits subject to same premium rate as shown for overtime wages

OVERTIME PAY

See (B, E, Q, *V) on OVERTIME PAGE

Work beyond 10 hours on a Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88A-tf

Mason - Building 10/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2021	01/01/2022
Marble, Stone, etc. Maintenance Finishers:	\$ 26.73	Additional \$ 0.68

Note 1: An additional \$2.00 per hour
for time spent grinding floor using
"60 grit" and below.

Note 2: Flaming equipment operator
shall be paid an additional \$25.00 per day.

SUPPLEMENTAL BENEFITS

Per Hour:

Marble, Stone, etc
Maintenance Finishers: \$ 14.00

OVERTIME PAY

See (B, *E, Q, V) on OVERTIME PAGE

*Double hourly rate after 8 hours on Saturday

HOLIDAY

Paid: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE

1st term apprentice gets paid for all observed holidays.

REGISTERED APPRENTICES

WAGES per hour:

07/01/2021

0-750	\$21.37
751-1500	\$22.09
1501-2250	\$22.81
2251-3000	\$23.52
3001-3750	\$24.61
3751-4500	\$26.04
4501+	\$26.73

Supplemental Benefits:

Per hour:

0-750	\$ 11.24
751-1500	\$ 11.60
1501-2250	\$ 11.97
2251-3000	\$ 12.35
3001-3750	\$ 12.84
3751-4500	\$ 13.63
4501+	\$ 14.00

9-7/24M-MF

Mason - Building / Heavy&Highway

10/01/2021

JOB DESCRIPTION Mason - Building / Heavy&Highway

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour: 07/01/2021 01/03/2022

Marble-Finisher	\$ 48.87	Additional \$ 0.61
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SUPPLEMENTAL BENEFITS

Journeyworker:
per hour

Marble- Finisher \$ 35.25

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

* Work beyond 8 hours on a Saturday shall be paid at double the rate.

** When an observed holiday falls on a Sunday, it will be observed the next day.

9-7/20-MF

Mason - Heavy&Highway

10/01/2021

JOB DESCRIPTION Mason - Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour:

	07/01/2021	06/01/2022 Additional	06/01/2023 Additional
Bricklayer	\$ 43.85	\$ 2.39	\$ 2.05
Cement Mason	43.85	2.39	2.05
Marble/Stone Mason	43.85	2.39	2.05
Plasterer	43.85	2.39	2.05
Pointer/Caulker	43.85	2.39	2.05

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Irregular work day requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 36.05

OVERTIME PAY

Cement Mason See (B, E, Q, W, X)

All Others See (B, E, Q, X)

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5WP-H/H

Operating Engineer - Building

10/01/2021

JOB DESCRIPTION Operating Engineer - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, New York, Putnam, Queens, Richmond, Westchester

PARTIAL COUNTIES

Dutchess: that part of Dutchess County lying south of the North City Line of the City of Poughkeepsie.

WAGES

NOTE:Construction surveying

Party Chief--One who directs a survey party

Instrument Man--One who runs the instrument and assists Party Chief.

Rodman--One who holds the rod and assists the Survey Crew

Wages:(Per Hour) 07/01/2021

Building Construction:

Party Chief	\$ 76.09
Instrument Man	\$ 60.41
Rodman	\$ 41.11

Steel Erection:

Party Chief	\$ 79.02
Instrument Man	\$ 62.89
Rodman	\$ 44.03

**Heavy Construction-NYC counties only:
(Foundation, Excavation.)**

Party Chief	\$ 84.60
Instrument man	\$ 63.79
Rodman	\$ 54.52

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2021
Building Construction	\$ 24.40* +\$ 7.15
Steel Erection	\$ 25.00* +\$ 7.15
Heavy Construction	\$ 25.25* +\$ 7.15

* This portion subject to same premium as wages

Non-Worked Holiday Supplemental Benefit:	\$ 16.45
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OVERTIME PAY

See (A, B, E, Q) on OVERTIME PAGE

Code "A" applies to Building Construction and has double the rate after 7 hours on Saturdays.

Code "B" applies to Heavy Construction and Steel Erection and had double the rate after 8 hours on Saturdays.

HOLIDAY

Paid:	See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE
Overtime:	See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE

9-15Db

Operating Engineer - Building

10/01/2021

JOB DESCRIPTION Operating Engineer - Building

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES

GROUP I:

Cranes (All Types up to 49 tons), Boom Trucks, Cherry Pickers (All Types), Clamshell Crane, Derrick (Stone and Steel), Dragline, Franki Pile Rig or similar, High Lift (Lull or similar) with crane attachment and winch used for hoisting or lifting, Hydraulic Cranes, Pile Drivers, Potain and similar.

Cranes (All types 50-99 tons), Drill Rig Casa Grande (CAT or similar), Franki Pile Rig or similar, Hydraulic Cranes (All types including Crawler Cranes- No specific boom length).

Cranes (All types 100 tons and over), All Tower Cranes, All Climbing Cranes irrespective of manufacturer and regardless of how the same is rigged, Franki Pile Rig or similar, Conventional Cranes (All types including Crawler Cranes-No specific boom length), Hydraulic Cranes.

GROUP I-A: Barber Green Loader-Euclid Loader, Bulldozer, Carrier-Trailer Horse, Concrete Cleaning Decontamination Machine Operator, Concrete-Portable Hoist, Conway or Similar Mucking Machines, Elevator & Cage, Excavators all types, Front End Loaders, Gradall, Shovel, Backhoe, etc. (Crawler or Truck), Heavy Equipment Robotics Operator/Mechanic, Hoist Engineer-Material, Hoist Portable Mobile Unit, Hoist (Single, Double or Triple Drum), Horizontal Directional Drill Locator, Horizontal Directional Drill Operator and Jersey Spreader, Letourneau or Tournapull (Scrapers over 20 yards Struck), Lift Slab Console, etc., Lull HiLift or Similar, Master Environmental Maintenance Mechanics, Mucking Machines Operator/Mechanic or Similar Type, Overhead Crane, Pavement Breaker (Air Ram), Paver (Concrete), Post Hole Digger, Power House Plant, Road Boring Machine, Road Mix Machine, Ross Carrier and Similar Machines, Rubber tire double end backhoes and similar machines, Scoopmobile Tractor-Shovel Over 1.5 yards, Shovel (Tunnels), Spreader (Asphalt) Telephie (Cableway), Tractor Type Demolition Equipment, Trenching Machines-Vermeer Concrete Saw Trencher and Similar, Ultra High Pressure Waterjet Cutting Tool System, Vacuum Blasting Machine operator/mechanic, Winch Truck A Frame.

GROUP I-B: Compressor (Steel Erection), Mechanic (Outside All Types), Negative Air Machine (Asbestos Removal), Push Button (Buzz Box) Elevator.

GROUP II: Compactor Self-Propelled, Concrete Pump, Crane Operator in Training (Over 100 Tons), Grader, Machines Pulling Sheep's Foot Roller, Roller (4 ton and over), Scrapers (20 yards Struck and Under), Vibratory Rollers, Welder.

GROUP III-A: Asphalt Plant, Concrete Mixing Plants, Forklift (All power sources), Joy Drill or similar, Tractor Drilling Machine, Loader (1 1/2 yards and under), Portable Asphalt Plant, Portable Batch Plant, Portable Crusher, Skid Steer (Bobcat or similar), Stone Crusher, Well Drilling Machine, Well Point System.

GROUP III-B: Compressor Over 125 cu. Feet, Conveyor Belt Machine regardless of size, Compressor Plant, Ladder Hoist, Stud Machine.

GROUP IV-A: Batch Plant, Concrete Breaker, Concrete Spreader, Curb Cutter Machine, Finishing Machine-Concrete, Fine Grading Machine, Hepa Vac Clean Air Machine, Material Hopper (sand, stone, cement), Mulching Grass Spreader, Pump Gypsum etc, Pump-Plaster-Grout-Fireproofing. Roller (Under 4 Ton), Spreading and Fine Grading Machine, Steel Cutting Machine, Siphon Pump, Tar Joint Machine, Television Cameras for Water, Sewer, Gas etc. Turbo Jet Burner or Similar Equipment, Vibrator (1 to 5).

GROUP IV-B: Compressor (all types), Heater (All Types), Fire Watchman, Lighting Unit (Portable & Generator) Pump, Pump Station (Water, Sewer, Portable, Temporary), Welding Machine (Steel Erection & Excavation).

GROUP V: Mechanics Helper, Motorized Roller (walk behind), Stock Attendant, Welder's Helper, Maintenance Engineer Crane (75 ton and over).

Group VI-A: Welder Certified

GROUP VI-B: Utility Man, Warehouse Man.

WAGES: (per hour)

	07/01/2021	3/7/2022	3/6/2023
GROUP I			
Cranes- up to 49 tons	\$ 63.86	\$ 65.03	\$ 66.23
Cranes- 50 tons to 99 tons	66.07	67.28	68.53
Cranes- 100 tons and over	75.37	76.77	78.21
GROUP I-A	55.96	56.97	58.01
GROUP I-B	51.60	52.52	53.48
GROUP II	54.00	54.98	55.70
GROUP III-A	52.04	52.97	53.94
GROUP III-B	49.56	50.44	51.35
GROUP IV-A	51.52	52.44	53.40
GROUP IV-B	43.62	44.38	45.17
GROUP V	47.00	47.83	48.69
Group VI-A	54.94	55.93	56.96
GROUP VI-B			
Utility Man	44.61	45.39	46.21
Warehouse Man	46.74	47.57	48.42

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects.

Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour.

Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour.

Loader operators over 5 cubic yard capacity additional .50 per hour.

Shovel operators over 4 cubic yard capacity additional \$1.00 per hour.

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2021	03/07/2022	03/06/2023
Journeyworker	\$ 29.17	\$ 29.87	\$ 30.57

OVERTIME PAY

See (B, E, Q, *V) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

8-137B

Operating Engineer - Heavy&Highway

10/01/2021

JOB DESCRIPTION Operating Engineer - Heavy&Highway

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES

GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane, (Crawler, Truck),
Dragline, Drill Rig (Casa Grande, Cat, or Similar), Floating Crane (Crane on Barges) under 100 tons, Gin Pole, Hoist Engineer-Concrete (Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger (Truck or Truck Mounted), Boat Captain, Bulldozer-All Sizes, Central Mix Plant Operator, Chipper (all types), Close Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader (Motor Grader), Elevator & Cage (Materials or Passenger), Excavator (and all attachments), Front End Loaders (1 1/2 yards and over), High Lift Lull and similar, Hoist (Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer (Material), Jack and Bore Machine, Log Skidders, Mill Machines, Mucking Machines, Overhead Crane, Paver (concrete), Post Pounder (of any type), Push Cats, Road Reclaimer, Robot Hammer (Brokk or similar), Robotic Equipment (Scope of Engineer Schedule), Ross Carrier and similar, Scrapers (20 yard struck and over), Side Boom, Slip Form Machine, Spreader (Asphalt), Trenching Machines (Telephies-Vermeer Concrete Saw), Tractor Type Demolition Equipment, Vacuum Truck. Vibratory Roller(Riding) or Roller used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver (Asphalt).

GROUP II-A: Ballast Regulators, Compactor Self Propelled, Fusion Machine, Rail Anchor Machines, Roller (4 ton and over), Scrapers (20 yard struck and under).

GROUP II-B: Mechanic (Outside) All Types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler (High Pressure), Concrete Breaker (Track or Rubber Tire), Concrete Pump, Concrete Spreader, Excavator Drill, Farm Tractor, Forklift (all types), Gas Tapping (Live), Hydroseeder, Loader (1 1/2 yards and under), Locomotive (all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher (Apprentice), Powerhouse Plant, Roller (under 4 ton), Sheer Excavator, Skid Steer/Bobcat, Stone Crusher, Sweeper (with seat), Well Drilling Machine.

GROUP IV: Service Person (Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine (Truck Mounted), Heater (all types), Lighting Unit (Portable), Maintenance Engineer (For Crane Only), Mechanics Helper, Pump (Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck (Sewer Jet or Similar), Welders Helper, Welding Machine (Steel Erection), Well Point System.

GROUP V: All Tower Cranes-All Climbing Cranes and all cranes of 100-ton capacity or greater (3900 Manitowac or similar) irrespective of manufacturer and regardless of how the same is rigged, Hoist Engineer (Steel), Engineer-Pile Driver, Jersey Spreader, Pavement Breaker/Post Hole Digger.

WAGES: Per hour:	07/01/2021	03/07/2022	03/06/2023
Group I	\$ 64.63	\$ 65.97	\$ 67.27
Group I-A	57.02	58.16	59.26
Group I-B	60.06	61.28	62.46
Group II-A	54.61	55.70	56.74
Group II-B	56.31	57.44	58.52
Group III	53.66	54.72	55.74
Group IV	48.80	49.74	50.63
Group IV-B	41.94	42.71	43.43
Group V			
Engineer All Tower, Climbing and			
Cranes of 100 Tons	73.18	74.73	76.24
Hoist Engineer(Steel)	66.29	67.67	69.01

Engineer(Pile Driver)	70.67	72.16	73.61
Jersey Spreader,Pavement Breaker (Air Ram)Post Hole Digger	55.87	56.99	58.06

SHIFT DIFFERENTIAL:

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts on all government mandated off-shift work

Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour over the rate listed in the Wage Schedule. Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour over the rate listed in the Wage Schedule. Loader and Excavator Operators: over 5 cubic yards capacity \$0.50 per hour over the rate listed in the Wage Schedule. Shovel Operators: over 4 cubic yards capacity \$1.00 per hour over the rate listed in the Wage Schedule.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday; Friday may be used as a make-up day.

NOTE - In order to use the 4 Day/10 Hour Work schedule Registration for Use of 4 Day/10 Hour Work Schedule,form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:	07/01/2021	03/07/2022	03/06/2023
	\$ 31.60 up to 40 Hours	\$ 32.60 up to 40 hours	\$ 33.75 up to 40 hours
	After 40 hours \$ 22.40* PLUS \$ 1.20 on all hours worked	After 40 hours \$ 23.40* PLUS \$ 1.20 on all hours worked	After 40 hours \$ 24.50* PLUS \$ 1.25 on all hours worked

*This amount is subject to premium

OVERTIME PAY

See (B, E, E2, P, *R, **U) on OVERTIME PAGE

HOLIDAY

Paid:..... See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime..... See (5, 6, 8, 15, 25, 26) on OVERTIME PAGE

* For Holiday codes 8,15,25,26 code R applies

** For Holiday Codes 5 & 6 code U applies

Note: If employees are required to work on Easter Sunday they shall be paid at the rate of triple time.

REGISTERED APPRENTICES

(1)year terms at the following rate.

	07/01/2021	03/07/2022	03/06/2023
1st term	\$ 28.51	\$ 29.08	\$ 29.63
2nd term	34.21	34.90	35.56
3rd term	39.91	40.71	41.48
4th term	45.61	46.53	47.41
Supplemental Benefits per hour:			
	23.60	24.55	25.70

8-137HH

Operating Engineer - Heavy&Highway

10/01/2021

JOB DESCRIPTION Operating Engineer - Heavy&Highway

DISTRICT 9

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: South of the North city line of Poughkeepsie

WAGES

Party Chief - One who directs a survey party

Instrument Man - One who runs the instrument and assists Party Chief

Rodman - One who holds the rod and in general, assists the Survey Crew

Catogories cover GPS & Underground Surveying

Per Hour: 07/01/2021

Party Chief \$ 81.72

Instrument Man 61.43
Rodman 52.40

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2021

All Catogories
Straight Time: \$ 25.25* plus \$7.15

Premium:
Time & 1/2 \$ 37.88* plus \$7.15

Double Time \$ 50.50* plus \$7.15

Non-Worked Holiday Supplemental Benefits:
\$ 16.45

OVERTIME PAY

See (B, *E, Q) on OVERTIME PAGE

* Doubletime paid on all hours in excess of 8 hours on Saturday

HOLIDAY

Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

9-15Dh

Operating Engineer - Heavy&Highway - Tunnel

10/01/2021

JOB DESCRIPTION Operating Engineer - Heavy&Highway - Tunnel

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES

GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane(Crawler,Truck), Dragline, Drill Rig Casa Grande(Cat or Similar), Floating Crane(Crane on Barge-Under 100 Tons), Hoist Engineer(Concrete/Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger(Truck or Truck Mounted), Boat Captain, Bull Dozer-all sizes, Central Mix Plant Operator, Chipper-all types, Close Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader(Motor Grader), Elevator & Cage(Materials or Passengers), Excavator(and all attachments), Front End Loaders(1 1/2 yards and over), High Lift Lull, Hoist(Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer(Material), Jack and Bore Machine, Log Skidder, Milling Machine, Moveable Concrete Barrier Transfer & Transport Vehicle, Mucking Machines. Overhead Crane, Paver(Concrete), Post Pounder of any type, Push Cats, Road Reclaimer, Robot Hammer(Brokk or similar), Robotic Equipment(Scope of Engineer Schedule), Ross Carrier and similar machines, Scrapers(20 yards struck and over), Side Boom, Slip Form Machine, Spreader(Asphalt), Trenching Machines, Telephies-Vermeer Concrete Saw, Tractor type demolition equipment, Vacuum Truck, Vibratory Roller (Riding) used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver(Asphalt).

GROUP II-A: Ballast Regulators, Compactor(Self-propelled), Fusion Machine, Rail Anchor Machines, Roller(4 ton and over), Scrapers(20 yard struck and under).

GROUP II-B: Mechanic(outside)all types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler(High Pressure), Concrete Breaker(Track or Rubber Tire), Concrete Pump, Concrete Spreader, Excavator Drill, Farm Tractor, Forklift(all types of power), Gas Tapping(Live), Hydroseeder, Loader(1 1/2 yards and under), Locomotive(all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher(Apprentice), Powerhouse Plant, Roller(under 4 ton), Sheer Excavator, Skidsteer/Bobcat, Stone Crusher, Sweeper(with seat), Well Drilling Machine.

GROUP IV-A: Service Person(Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine(Truck Mounted), Heater(all types), Lighting Unit(Portable), Maintenance Engineer(for Crane only), Mechanics Helper, Pump(Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck(Sewer Jet or similar), Welding Machine(Steel Erection), Welders Helper.

GROUP V-A: Engineer(all Tower Cranes, all Climbing Cranes & all Cranes of 100 ton capacity or greater),Hoist Engineer(Steel-Sub Structure), Engineer-Pile Driver, Jersey-Spreader, Pavement breaker, Post Hole Digger

WAGES: (per hour)

	07/01/2021	03/07/2022	03/06/2023
GROUP I	\$ 64.63	\$ 65.97	\$ 67.27
GROUP I-A	57.02	58.16	59.21
GROUP I-B	60.06	61.28	62.46
GROUP II-A	54.61	55.70	56.74
GROUP II-B	56.31	57.44	58.52
GROUP III	53.66	54.72	55.74
GROUP IV-A	48.80	49.74	50.63
GROUP IV-B	41.94	42.71	43.43
GROUP V-A			
Engineer-Cranes	73.18	74.73	76.24
Engineer-Pile Driver	70.67	72.16	73.61
Hoist Engineer	66.29	67.67	69.01
Jersey Spreader/Post Hole Digger	55.87	56.99	58.06

SHIFT DIFFERENTIAL:

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts
on all government mandated off-shift work

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects. Operators required to use two buckets pouring concrete on other than road pavement shall receive \$0.50 per hour over scale. Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour. Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour. Operators of shovels with a capacity over (4) cubic yards shall be paid an additional \$1.00 per hour. Operators of loaders with a capacity over (5) cubic yards shall be paid an additional \$0.50 per hour.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:

	07/01/2021	03/07/2022	03/06/2023
	\$ 23.60	\$ 24.55	\$ 25.70
	+ \$8.00	+ \$8.00	+ \$8.00
(Limited to first 40 hours)		(Limited to first 40 hours)	(Limited to first 40 hours)

OVERTIME PAY

See (D, O, *U, V) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

* Note: For Holiday codes 5 & 6, code U applies. For Holiday codes 8, 15, 25, 26, code R applies.

Note: If employees are required to work on Easter Sunday, they shall be paid at the rate of triple time.

REGISTERED APPRENTICES

(1)year terms at the following rates:

	07/01/2021	03/07/2022	03/06/2023
1st term	\$ 28.51	\$ 29.08	\$ 29.63
2nd term	34.21	34.90	35.56
3rd term	39.91	40.71	41.48
4th term	45.61	46.53	47.41

Supplemental Benefits per hour:

All terms	\$ 23.60	\$ 24.55	\$ 25.70
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Operating Engineer - Marine Dredging

10/01/2021

JOB DESCRIPTION Operating Engineer - Marine Dredging

DISTRICT 4

ENTIRE COUNTIES

Albany, Bronx, Cayuga, Clinton, Columbia, Dutchess, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Orange, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour:	07/01/2021	10/01/2021
CLASS A1 Deck Captain, Leverman Mechanical Dredge Operator Licensed Tug Operator 1000HP or more.	\$ 41.42	\$ 41.42
CLASS A2 Crane Operator (360 swing)	36.91	36.91
CLASS B Dozer, Front Loader Operator on Land	To conform to Operating Engineer Prevailing Wage in locality where work is being performed including benefits.	
CLASS B1 Derrick Operator (180 swing) Spider/Spill Barge Operator Operator II, Fill Placer, Engineer, Chief Mate, Electrician, Chief Welder, Maintenance Engineer Licensed Boat, Crew Boat Operator	35.82	35.82
CLASS B2 Certified Welder	33.72	33.72
CLASS C1 Drag Barge Operator, Steward, Mate, Assistant Fill Placer	32.80	32.80
CLASS C2 Boat Operator	30.89	31.74
CLASS D Shoreman, Deckhand, Oiler, Rodman, Scowman, Cook, Messman, Porter/Janitor	25.66	26.37

SUPPLEMENTAL BENEFITS

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B	07/01/2021 \$11.98 plus 8% of straight time wage, Overtime hours add \$ 0.63	10/01/2021 \$11.98 plus 8% of straight time wage, Overtime hours add \$ 0.63
All Class C	\$11.68 plus 8% of straight time wage, Overtime hours add \$ 0.48	11.68 plus 8% of straight time wage, Overtime hours add \$ 0.48
All Class D	\$11.38 plus 8%	11.38 plus 8%

of straight time
wage, Overtime hours
add \$ 0.33

of straight time
wage, Overtime hours
add \$ 0.33

OVERTIME PAY

See (B2, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

Operating Engineer - Survey Crew - Consulting Engineer

10/01/2021

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES

Dutchess: That part in Dutchess County lying South of the North City line of Poughkeepsie.

WAGES

Feasibility and preliminary design surveying, any line and grade surveying for inspection or supervision of construction.

Per hour: 07/01/2021
Survey Classifications

Party Chief \$ 45.83
Instrument Man 38.17
Rodman 33.34

SUPPLEMENTAL BENEFITS

Per Hour:

All Crew Members: \$ 20.60

OVERTIME PAY

OVERTIME:.... See (B, E*, Q, V) ON OVERTIME PAGE.

*Doubletime paid on the 9th hour on Saturday.

HOLIDAY

Paid: See (5, 6, 7, 11, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

9-15dconsult

Painter

10/01/2021

JOB DESCRIPTION Painter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour: 07/01/2021

Brush \$ 50.30*

Abatement/Removal of lead based
or lead containing paint on
materials to be repainted. 50.30*

Spray & Scaffold \$ 53.30*
Fire Escape 53.30*
Decorator 53.30*
Paperhanger/Wall Coverer 52.93*

*Subtract \$ 0.10 to calculate premium rate.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2021

Paperhanger \$ 31.83
All others 29.81
Premium 33.40**

**Applies only to "All others" category, not paperhanger journeyworker.

OVERTIME PAY

See (A, H) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rate.

Per hour:	07/01/2021
Appr 1st term...	\$ 19.56*
Appr 2nd term...	25.12*
Appr 3rd term...	30.42*
Appr 4th term...	40.65*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental benefits:

Per Hour:	07/01/2021
Appr 1st term...	\$ 14.72
Appr 2nd term...	18.23
Appr 3rd term...	21.06
Appr 4th term...	26.67

8-NYDC9-B/S

Painter

10/01/2021

JOB DESCRIPTION Painter

DISTRICT 8

ENTIRE COUNTIES

Putnam, Suffolk, Westchester

PARTIAL COUNTIES

Nassau: All of Nassau except the areas described below: Atlantic Beach, Ceadhurst, East Rockaway, Gibson, Hewlett, Hewlett Bay, Hewlett Neck, Hewlett Park, Inwood, Lawrence, Lido Beach, Long Beach, parts of Lynbrook, parts of Oceanside, parts of Valley Stream, and Woodmere. Starting on the South side of Sunrise Hwy in Valley Stream running east to Windsor and Rockaway Ave., Rockville Centre is the boundary line up to Lawson Blvd. turn right going west all the above territory. Starting at Union Turnpike and Lakeville Rd. going north to Northern Blvd. the west side of Lakeville road to Northern blvd. At Northern blvd. going east the district north of Northern blvd. to Port Washington Blvd. West of Port Washington blvd. to St. Francis Hospital then north of first traffic light to Port Washington and Sands Point, Manor HAVen, Harbour Acres.

WAGES

Per hour:	07/01/2021
Drywall Taper	\$ 50.30*

*Subtract \$ 0.10 to calculate premium rate.

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2021
Journeyman	\$ 29.81

OVERTIME PAY

See (A, H) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages - Per Hour:	07/01/2021
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1500 hour terms at the following wage rate:

1st term	\$ 19.56*
2nd term	25.12*
3rd term	30.42*
4th term	40.65*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental Benefits - Per hour:

One year term (1500 hours) at the following dollar amount.

1st year	\$ 14.72
2nd year	18.23
3rd year	21.06
4th year	26.67

8-NYDCT9-DWT

Painter - Bridge & Structural Steel

10/01/2021

JOB DESCRIPTION Painter - Bridge & Structural Steel

DISTRICT 8

ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per Hour:

STEEL:

Bridge Painting:	07/01/2021	10/01/2021
	\$ 51.50	\$ 53.00
	+ 8.63*	+ 9.63*

ADDITIONAL \$6.00 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

NOTE: All premium wages are to be calculated on base rate per hour only.

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SHIFT WORK:

When directly specified in public agency or authority contract documents for an employer to work a second shift and works the second shift with employees other than from the first shift, all employees who work the second shift will be paid 10% of the base wage shift differential in lieu of overtime for the first eight (8) hours worked after which the employees shall be paid at time and one half of the regular wage rate. When a single irregular work shift is mandated in the job specifications or by the contracting agency, wages shall be paid at time and one half for single shifts between the hours of 3pm-11pm or 11pm-7am.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker:	07/01/2021	10/01/2021
	\$ 10.90	\$ 10.90
	+ 30.00*	+ 30.60*

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage - Per hour:

Apprentices: (1) year terms	07/01/2021	10/01/2021
1st year	\$ 20.60	\$ 21.20
	+ 3.45*	+ 3.86*
2nd year	\$ 30.90	\$ 31.80
	+ 5.18*	+ 5.78*

3rd year	\$ 41.20 + 6.90*	\$ 42.40 + 7.70*
Supplemental Benefits - Per hour:		
1st year	\$.25 + 12.00*	\$.25 + 12.24*
2nd year	\$ 10.90 + 18.00*	\$ 10.90 + 18.36*
3rd year	\$ 10.20 + 24.00*	\$ 10.90 + 24.48*

NOTE: All premium wages are to be calculated on base rate per hour only.

8-DC-9/806/155-BrSS

Painter - Line Striping	10/01/2021
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JOB DESCRIPTION Painter - Line Striping

DISTRICT 8

ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per hour:

Painter (Striping-Highway):	07/01/2021	07/01/2022
Striping-Machine Operator*	\$ 30.32	\$ 31.53
Linerman Thermoplastic	36.93	38.34

Note: * Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour paid:	07/01/2021	07/01/2022
Journeyworker:		
Striping Machine Operator:	\$ 10.03	\$ 10.03
Linerman Thermoplastic:	10.03	10.03

OVERTIME PAY

See (B, B2, E2, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 20) on HOLIDAY PAGE
Overtime: See (5, 20) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rates:

	07/01/2021	12/31/2021	07/01/2022
1st Term*:	\$ 15.00	\$ 15.00	\$ 15.00
1st Term**:	14.00	15.00	15.00
1st Term***:	12.50	13.20	13.20
2nd Term:	18.19	18.19	18.92
3rd Term:	24.26	24.26	25.22

*Bronx, Kings, New York, Queens, Richmond, and Suffolk counties

**Nassau and Westchester counties

***All other counties

Supplemental Benefits per hour:

1st term:	\$ 9.16	\$ 9.16	\$ 9.16
2nd Term:	9.16	9.16	10.03
3rd Term:	9.16	9.16	10.03

8-1456-LS

Painter - Metal Polisher

10/01/2021

JOB DESCRIPTION Painter - Metal Polisher

DISTRICT 8

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2021
Metal Polisher	\$ 37.13
Metal Polisher*	38.23
Metal Polisher**	41.13

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2021
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Journeyworker:

All classification	\$ 10.64
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OVERTIME PAY

See (B, E, P, T) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year term at the following wage rates:

	07/01/2021
1st year	\$ 16.00
2nd year	17.00
3rd year	18.00
1st year*	\$ 16.39
2nd year*	17.44
3rd year*	18.54
1st year**	\$ 18.50
2nd year**	19.50
3rd year**	20.50

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:

Per hour:

1st year	\$ 7.39
2nd year	7.39
3rd year	7.39

8-8A/28A-MP

Plumber

10/01/2021

JOB DESCRIPTION Plumber

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

Per hour:

07/01/2021

Plumber and
Steamfitter

\$ 59.01

SHIFT WORK:

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker

\$ 39.26

OVERTIME PAY

See (B, E, E2, Q, V) on OVERTIME PAGE

OVERTIME:.... See on OVERTIME PAGE.

HOLIDAY

Paid:

See (1) on HOLIDAY PAGE

Overtime:

See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1)year terms at the following wages:

1st Term

\$ 21.89

2nd Term

25.13

3rd Term

29.01

4th Term

41.43

5th Term

44.45

Supplemental Benefits per hour:

1st term

\$ 16.25

2nd term

18.13

3rd term

21.57

4th term

28.41

5th term

30.11

8-21.1-ST

Plumber - HVAC / Service

10/01/2021

JOB DESCRIPTION Plumber - HVAC / Service

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Putnam, Westchester

PARTIAL COUNTIES

Delaware: Only the townships of Middletown and Roxbury

Ulster: Entire County(including Wallkill and Shawangunk Prisons) except for remainder of Town of Shawangunk and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour:

07/01/2021

HVAC Service

\$ 40.68

+ \$ 4.32*

*Note: This portion of wage is not subject to overtime premium.

SUPPLEMENTAL BENEFITS

Per hour:

07/01/2021

Journeyworker HVAC Service

\$ 26.54

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

HVAC SERVICE

(1) year terms at the following wages:

1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
\$ 18.50	\$ 21.88	\$ 27.31	\$ 33.56	\$ 36.36
+\$2.37*	+\$2.67*	+\$3.22*	+\$3.84*	+\$4.07*

*Note: This portion of wage is not subject to overtime premium.

Supplemental Benefits per hour:

Apprentices 07/01/2021

1st term	\$ 19.66
2nd term	20.86
3rd term	22.21
4th term	24.02
5th term	25.33

8-21.1&2-SF/Re/AC

Plumber - Jobbing & Alterations

10/01/2021

JOB DESCRIPTION Plumber - Jobbing & Alterations

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Putnam, Westchester

PARTIAL COUNTIES

Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour:	07/01/2021
Journeyworker:	\$ 45.83

Repairs, replacements and alteration work is any repair or replacement of a present plumbing system that does not change existing roughing or water supply lines.

SHIFT WORK:

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS

Per hour:
Journeyworker

\$ 32.96

OVERTIME PAY

See (B, *E, E2, Q, V) on OVERTIME PAGE

*When used as a make-up day, hours after 8 on Saturday shall be paid at time and one half.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wages:

1st year	\$ 19.88
2nd year	22.06
3rd year	23.90
4th year	33.57
5th year	35.46

Supplemental Benefits per hour:

1st year	\$ 10.74
2nd year	12.65
3rd year	16.58
4th year	22.39
5th year	24.32

8-21.3-J&A

Roofer

10/01/2021

JOB DESCRIPTION Roofer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2021

Roofer/Waterproofer \$ 45.25
+ \$7.00*

* This portion is not subjected to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

SUPPLEMENTAL BENEFITS

Per Hour: \$ 28.62

OVERTIME PAY

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year term

1st	2nd	3rd	4th
\$ 15.84	\$ 22.63	\$ 27.15	\$ 33.94
	+ 3.50*	+ 4.20*	+ 5.26*

Supplements:

1st	2nd	3rd	4th
\$ 3.72	\$ 14.47	\$ 17.30	\$ 21.55

9-8R

Sheetmetal Worker

10/01/2021

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

07/01/2021
SheetMetal Worker \$ 44.15
+ 3.37*

*This portion is not subject to overtime premiums.

SHIFT WORK

For all NYS D.O.T. and other Governmental mandated off-shift work:

10% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS

Journeyworker \$ 44.20

OVERTIME PAY

OVERTIME: See (B, E, Q,) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

REGISTERED APPRENTICES

1st	2nd	3rd	4th	5th	6th	7th	8th
\$ 16.36	\$ 18.41	\$ 20.46	\$ 22.51	\$ 24.54	\$ 26.60	\$ 29.12	\$ 31.65
+ 1.35*	+ 1.52*	+ 1.69*	+ 1.85*	+ 2.02*	+ 2.19*	+ 2.36*	+ 2.53*

*This portion is not subject to overtime premiums.

Supplemental Benefits per hour:

Apprentices

1st term	\$ 18.96
2nd term	21.34
3rd term	23.71
4th term	26.11
5th term	28.46
6th term	30.82
7th term	32.72
8th term	34.64

8-38

Sheetmetal Worker

10/01/2021

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour:	07/01/2021	8/01/2021
Sign Erector	\$ 52.29	\$ 53.97

NOTE: Structurally Supported Overhead Highway Signs(See STRUCTURAL IRON WORKER CLASS)

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2021	8/01/2021
Sign Erector	\$ 51.26	\$ 53.15

OVERTIME PAY

See (A, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Per Hour:
6 month Terms at the following percentage of Sign Erectors wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
35%	40%	45%	50%	55%	60%	65%	70%	75%	80%

SUPPLEMENTAL BENEFITS

Per Hour:

07/01/2021

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 14.34	\$ 16.26	\$ 18.17	\$ 20.10	\$ 28.02	\$ 30.47	\$ 33.72	\$ 36.27	\$ 38.77	\$ 41.29

8/01/2021

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ TBD	\$ TBD	\$ TBD	\$ TBD	\$ TBD	\$ TBD	\$ TBD	\$ TBD	\$ TBD	\$ TBD

4-137-SE

Sprinkler Fitter

10/01/2021

JOB DESCRIPTION Sprinkler Fitter

DISTRICT 1

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

Per hour 07/01/2021

Sprinkler \$ 47.19
Fitter

SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 28.09

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES

Wages per hour

One Half Year terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 22.67	\$ 25.19	\$ 27.46	\$ 29.98	\$ 32.50	\$ 35.02	\$ 37.54	\$ 40.05	\$ 42.57	\$ 45.09

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.27	\$ 8.27	\$ 19.22	\$ 19.22	\$ 19.47	\$ 19.47	\$ 19.47	\$ 19.47	\$ 19.47	\$ 19.47
									1-669.2

Teamster - Building / Heavy&Highway

10/01/2021

JOB DESCRIPTION Teamster - Building / Heavy&Highway

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

GROUP A: Straight Trucks (6-wheeler and 10-wheeler), A-frame, Winch, Dynamite Seeding, Mulching, Agitator, Water, Attenuator, Light Towers, Cement (all types), Suburban, Station Wagons, Cars, Pick Ups, any vehicle carrying materials of any kind.

GROUP AA: Tack Coat

GROUP B: Tractor & Trailers (all types).

GROUP BB: Tri-Axle, 14 Wheeler

GROUP C: Low Boy (carrying equipment).

GROUP D: Fuel Trucks, Tire Trucks.

GROUP E: Off-road Equipment (over 40 tons): Athey Wagons, Belly Dumps, Articulated Dumps, Trailer Wagons.

GROUP F: Off-road Equipment (over 40 tons) Euclid, DJB.

GROUP G: Off-road Equipment (under 40 tons) Athey Wagons, Belly Articulated Dumps, Trailer Wagons.

GROUP H: Off-road Equipment (under 40 tons), Euclid.

GROUP HH: Off-road Equipment (under 40 tons) D.J.B.

GROUP I: Off-road Equipment (under 40 tons) Darts.

GROUP II: Off-road Equipment (under 40 tons) RXS.

WAGES:(per hour)

07/01/2021

GROUP A	\$ 42.47*
GROUP AA	45.27*
GROUP B	43.09*
GROUP BB	42.59*
GROUP C	45.22*
GROUP D	42.92*
GROUP E	43.47*
GROUP F	44.47*
GROUP G	43.22*
GROUP H	43.84*
GROUP HH	44.22*
GROUP I	43.97*

GROUP II 44.34*

* To calculate premium wage, subtract \$.20 from the hourly wage.

Note: Fuel truck operators on construction sites addit. \$5.00 per day.
For work on hazardous/toxic waste site addit. 20% of hourly rate.

Shift Differential: NYS DOT or other Governmental Agency contracts shall receive a shift differential of Fifteen(15%)percent above the wage rate

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour:
Journeyworker

First 40 hours	\$ 33.64
41st-45th hours	15.18
Over 45 hours	0.26

OVERTIME PAY

See (B, E, P, R) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

8-456

Welder

10/01/2021

JOB DESCRIPTION Welder

DISTRICT 1

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour 07/01/2021

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

- (AA) Time and one half of the hourly rate after 7 and one half hours per day
- (A) Time and one half of the hourly rate after 7 hours per day
- (B) Time and one half of the hourly rate after 8 hours per day
- (B1) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.
Double the hourly rate for all additional hours
- (B2) Time and one half of the hourly rate after 40 hours per week
- (C) Double the hourly rate after 7 hours per day
- (C1) Double the hourly rate after 7 and one half hours per day
- (D) Double the hourly rate after 8 hours per day
- (D1) Double the hourly rate after 9 hours per day
- (E) Time and one half of the hourly rate on Saturday
- (E1) Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
- (E2) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E3) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
- (E4) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E5) Double time after 8 hours on Saturdays
- (F) Time and one half of the hourly rate on Saturday and Sunday
- (G) Time and one half of the hourly rate on Saturday and Holidays
- (H) Time and one half of the hourly rate on Saturday, Sunday, and Holidays
- (I) Time and one half of the hourly rate on Sunday
- (J) Time and one half of the hourly rate on Sunday and Holidays
- (K) Time and one half of the hourly rate on Holidays
- (L) Double the hourly rate on Saturday
- (M) Double the hourly rate on Saturday and Sunday
- (N) Double the hourly rate on Saturday and Holidays
- (O) Double the hourly rate on Saturday, Sunday, and Holidays
- (P) Double the hourly rate on Sunday
- (Q) Double the hourly rate on Sunday and Holidays
- (R) Double the hourly rate on Holidays
- (S) Two and one half times the hourly rate for Holidays

- (S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
- (T) Triple the hourly rate for Holidays
- (U) Four times the hourly rate for Holidays
- (V) Including benefits at SAME PREMIUM as shown for overtime
- (W) Time and one half for benefits on all overtime hours.
- (X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

- (1) None
- (2) Labor Day
- (3) Memorial Day and Labor Day
- (4) Memorial Day and July 4th
- (5) Memorial Day, July 4th, and Labor Day
- (6) New Year's, Thanksgiving, and Christmas
- (7) Lincoln's Birthday, Washington's Birthday, and Veterans Day
- (8) Good Friday
- (9) Lincoln's Birthday
- (10) Washington's Birthday
- (11) Columbus Day
- (12) Election Day
- (13) Presidential Election Day
- (14) 1/2 Day on Presidential Election Day
- (15) Veterans Day
- (16) Day after Thanksgiving
- (17) July 4th
- (18) 1/2 Day before Christmas
- (19) 1/2 Day before New Years
- (20) Thanksgiving
- (21) New Year's Day
- (22) Christmas
- (23) Day before Christmas
- (24) Day before New Year's
- (25) Presidents' Day
- (26) Martin Luther King, Jr. Day
- (27) Memorial Day
- (28) Easter Sunday

(29) Juneteenth



New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12240

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By:

(Check Only One)

☐

Contracting Agency

☐

Architect or Engineering Firm

☐

Public Work District Office

Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone: ()

Fax: ()

E-Mail:

2. NY State Units (see Item 5)

☐ 01 DOT

☐ 02 OGS

☐ 03 Dormitory Authority

☐ 04 State University
Construction Fund

☐ 05 Mental Hygiene
Facilities Corp.

☐ 06 OTHER N.Y. STATE UNIT

☐ 07 City

☐ 08 Local School District

☐ 09 Special Local District, i.e.,
Fire, Sewer, Water District

☐ 10 Village

☐ 11 Town

☐ 12 County

☐ 13 Other Non-N.Y. State
(Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone:()

Fax: ()

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR
THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title

Description of Work

Contract Identification Number

Note: For NYS units, the OSC Contract No.

6. Location of Project:

Location on Site

Route No/Street Address

Village or City

Town

County

7. Nature of Project - Check One:

☐ 1. New Building

☐ 2. Addition to Existing Structure

☐ 3. Heavy and Highway Construction (New and Repair)

☐ 4. New Sewer or Waterline

☐ 5. Other New Construction (Explain)

☐ 6. Other Reconstruction, Maintenance, Repair or Alteration

☐ 7. Demolition

☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

☐ Construction (Building, Heavy
Highway/Sewer/Water)

☐ Tunnel

☐ Residential

☐ Landscape Maintenance

☐ Elevator maintenance

☐ Exterminators, Fumigators

☐ Fire Safety Director, NYC Only

☐ Guards, Watchmen

☐ Janitors, Porters, Cleaners,
Elevator Operators

☐ Moving furniture and
equipment

☐ Trash and refuse removal

☐ Window cleaners

☐ Other (Describe)

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding?

YES ☐ NO ☐

10. Name and Title of Requester

Signature



NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

**LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE
AWARDED ANY PUBLIC WORK CONTRACT**

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: <https://applications.labor.ny.gov/EDList/searchPage.do>

For inquiries where WCB is listed as the "Agency", please call 1-866-546-9322

NYSDOL Bureau of Public Work Debarment List 10/15/2021

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	NYC	*****9839	A.J.S. PROJECT MANAGEMENT, INC.		149 FIFTH AVENUE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	*****6775	ADVENTURE MASONRY CORP.		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC		AGOSTINHO TOME		405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		AMJAD NAZIR		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	NYC		ANTHONY J SCLAFANI		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		ANTHONY PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10323	01/23/2017	01/23/2022
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	DOL		ARVINDER ATWAL		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****6683	ATLAS RESTORATION CORP.		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	NYC	*****5532	ATWAL MECHANICALS, INC		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****2591	AVI 212 INC.		260 CROSEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****0225	C&D LAFACE CONSTRUCTION, INC.		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****8809	C.B.E. CONTRACTING CORPORATION		310 MCGUINNESS BLVD GREENPOINT NY 11222	03/07/2017	03/07/2022
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026

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DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARMEN RACHETTA		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	02/03/2025
DOL	DOL		CARMENA RACHETTA		8531 OSWEGO ROAD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	*****1143	CARMODY BUILDING CORP	CARMODY CONTRACTIN G AND CARMODY CONTRACTIN G CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****8809	CBE CONTRACTING CORP		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG		CESAR J. AGUDELO		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL	*****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		CHRISTOPHER PAPASTEFANO A/K/A CHRIS PAPASTEFANO		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****3228	CROSS-COUNTY LANDSCAPING AND TREE SERVICE, INC.	ROCKLAND TREE SERVICE	26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	*****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		DALJIT KAUR BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL		DANICA IVANOSKI		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DEBBIE STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	AG		DEBRA MARTINEZ		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		DF CONTRACTORS OF ROCHESTER, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DF CONTRACTORS, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DIMITRIOS TSOUMAS		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	DOL		DOMENICO LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023

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DOL	DOL	*****3242	DONALD R. FORSAY	DF LAWN SERVICE	1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DONALD R. FORSAY		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DUARTE LOPES		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DOL	*****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		EAST COAST PAVING		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	NYC	*****4269	EAST PORT EXCAVATION & UTILITIES		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	NYC	*****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL	*****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	NYC		FRANK MAINI		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	NYC	*****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		GIOVANNI LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	NYC	*****3164	GLOBE GATES INC	GLOBAL OVERHEAD DOORS	405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		GREAT ESTATE CONSTRUCTION, INC.		327 STAGG ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	DOL		GREGORY S. OLSON		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	*****3228	HEIGHTS ELEVATOR CORP.		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	DOL	*****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.A. HIRES CADWALLADER		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024

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DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	AG		JOHN ANTHONY MASSINO		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JOHN F. CADWALLADER		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4612	JOHN F. CADWALLADER, INC.	THE GLASS COMPANY	P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN LUCIANO			05/14/2018	05/14/2023
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	AG	*****0600	JOHNCO CONTRACTING, INC.		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL		JORI PEDERSEN		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JOSEPH FOLEY		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	NYC		JOSEPH MARTINO		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		JOY MARTIN		2404 DELAWARE AVE NIGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL	*****5062	K R F SITE DEVELOPMENT INC		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	NYC		K.S. CONTRACTING CORP.		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KATIE BURDICK		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KENNETH FIORENTINO		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL	*****4505	LARAPINTA ASSOCIATES INC		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022

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DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	08/14/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	08/14/2017	08/14/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DA	****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023
DOL	AG	****4216	LOTUS-C CORP.		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL		M ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		M. ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL	****1784	MADISON AVE CONSTRUCTION CORP		39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC		MARTINE ALTER		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		MARVIN A STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		MATINA KARAGIANNIS		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2023
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		MCLEAN "MIKKI BEANE"		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN "MIKKI" DRAKE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN M DRAKE-BEANE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4YONKERS NY 10704	08/07/2018	08/07/2023
DOL	AG		MICHAEL RIGLIETTI		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL	****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024

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DOL	NYC	****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	NYC	****3826	MOVING MAVEN OF NY, INC.		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	NYC	****3550	MOVING MAVEN, INC		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	AG		MSR ELECTRICAL CONSTRUCTION CORP.		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DA	****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	DOL	****3684	NATIONAL LAWN SPRINKLERS, INC.		645 N BROADWAY WHITE PLAINS NY 10603	05/14/2018	05/14/2023
DOL	NYC		NICHOLAS FILIPAKIS		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTION, INC.	444 SCHANTZ ROAD ALLENTOWN PA 18104	09/17/2020	09/17/2025
DOL	DOL	****6966	NORTH COUNTRY DRYWALL AND PAINT		23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	****0065	NORTHEAST LANDSCAPE AND MASONRY ASSOC		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL	****1845	OC ERECTERS, LLC A/K/A OC ERECTERS OF NY INC.		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	NYC	****0818	ONE TEN RESTORATION, INC.		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		PARESH SHAH		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	NYC	****9422	PELIUM CONSTRUCTION, INC.		22-33 35TH ST. ASTORIA NY 11105	12/30/2016	12/30/2021
DOL	DOL		PETER M PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PIERRE LAPORT		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	DOL	****1543	PJ LAPORT FLOORING INC		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	NYC	****5771	PMJ ELECTRICAL CORP		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC	****4532	PROFESSIONAL PAVERS CORP.		66-05 WOODHAVEN BLVD. REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	****2633	RAW POWER ELECTRIC CORP		3 PARK CIRCLE MIDDLETOWN NY 10940	01/30/2018	01/30/2023
DOL	AG	****7015	RCM PAINTING INC.		69-06 GRAND AVENUE 2ND FLOORMASPETH NY 11378	02/07/2018	02/07/2023
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025

NYSDOL Bureau of Public Work Debarment List 10/15/2021

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DOL	DOL	****9148	RICHARD TIMIAN	RICH T CONSTRUCTI ON	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		3 GAYLORD ST AUBURN NY 13021	11/15/2016	11/15/2021
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	NYC		ROBERT HOHMAN		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL		RYAN ALBIE		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****3347	RYAN ALBIE CONTRACTING INC		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****7730	S C MARTIN GROUP INC.		2404 DELAWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	NYC	****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC		SANDEEP BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	****9751	SCW CONSTRUCTION		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	NYC	****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL	****1961	SHANE BURDICK	CENTRAL TRAFFIC CONTROL, LLC.	2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE BURDICK		2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL	****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	DOL	****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		STEFANOS PAPASTEFANO, JR. A/K/A STEVE PAPASTEFANO, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL	****9751	STEPHEN C WAGAR		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022

NYSDOL Bureau of Public Work Debarment List 10/15/2021

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DOL	DOL		STEVE TATE		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		STEVEN GOVERNALE		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL		STEVEN MARTIN		2404 DELWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		STEVEN TESTA		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	NYC	*****5863	SUKHMAN CONSTRUCTION, INC.		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TALAILA OCAMPA		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	*****6789	TEST1000		P.O BOX 123 ALBANY NY 12044	03/01/2021	03/01/2026
DOL	DOL	*****5570	TESTA CORP		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****8311	TRIPLE B FABRICATING, INC.		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL	*****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	*****7361	VIABLE HOLDINGS, INC.	MOVING MAVEN	1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		VIKTAR PATONICH		2630 CROSEY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC		VITO GARGANO		1535 RICHMOND AVE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC	*****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		WAYNE LIVINGSTON JR	NORTH COUNTRY DRYWALL AND PAINT	23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	*****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM C WATKINS		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		WILLIAM DEAK		C/O MADISON AVE CONSTR CO 39 PENNY STREETWEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	*****4043	WINDSHIELD INSTALLATION NETWORK, INC.		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		ZAKIR NASEEM		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	NYC	*****8277	ZHN CONTRACTING CORP		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022

ASBE0091-003 06/01/2020

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER (Duties limited to preparation, wetting, stripping, removal, scraping, vacuuming, bagging and disposing of all insulation materials whether they contain asbestos or not from mechanical systems).....	\$ 43.12	42.35
Insulator/asbestos worker (Includes application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical sytems).....	\$ 43.12	42.35

BOIL0005-001 01/01/2017

	Rates	Fringes
BOILERMAKER.....	\$ 55.23	33%+24.12+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Thanksgiving Day, Memorial Day, Independence Day, Labor Day and Good Friday, Friday after Thanksgiving, Christmas Eve Day and New Year's Eve

BRNY0001-003 06/01/2018

	Rates	Fringes
Pointer, cleaner and caulker.....	\$ 41.96	33.38

BRNY0004-001 07/01/2019

	Rates	Fringes
MARBLE MASON.....	\$ 59.44	36.88

BRNY0005-006 06/01/2018

HEAVY & HIGHWAY CONSTRUCTION

	Rates	Fringes
BRICKLAYER		
Bricklayers, Stone Masons, Cement Masons, Plasterers, Pointers, Caulkers and Cleaner.....	\$ 41.96	33.38

BRNY0005-007 06/01/2019

BUILDING/RESIDENTIAL CONSTRUCTION

	Rates	Fringes
Bricklayer, Cement Mason, Plasterer & Stonemason.....	\$ 42.09	34.50

BRNY0007-001 01/01/2021

	Rates	Fringes
TERRAZZO FINISHER.....	\$ 55.21	36.97
TERRAZZO WORKER/SETTER.....	\$ 57.92	37.78

BRNY0007-002 12/02/2019

	Rates	Fringes
TILE FINISHER.....	\$ 46.20	31.70

BRNY0020-001 07/01/2019

	Rates	Fringes
MARBLE FINISHER.....	\$ 47.41	34.64

BRNY0024-001 01/01/2018

	Rates	Fringes
BRICKLAYER		
MARBLE POLISHERS.....	\$ 40.89	26.69

BRNY0052-001 12/02/2019

	Rates	Fringes
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Tile Layer.....\$ 59.73 35.37

CARP0279-001 07/01/2021

Rates Fringes

Carpenters:

Building.....\$ 45.32 31.38

Heavy & Highway.....\$ 45.32 31.38

Residential.....\$ 29.48 20.41

* CARP0740-001 07/01/2021

Rates Fringes

MILLWRIGHT.....\$ 57.00 54.06

* CARP1556-007 07/01/2021

Rates Fringes

Diver Tender.....\$ 51.34 52.79

Diver.....\$ 71.80 52.79

* CARP1556-009 07/01/2021

Rates Fringes

Dock Builder & Piledrivermen.....\$ 56.93 52.79

* CARP1556-011 07/01/2021

Rates Fringes

Carpenters:

TIMBERMEN.....\$ 52.05 52.24

* CARP2287-001 07/01/2021

Rates Fringes

Carpenters:

Soft Floor Layers.....\$ 54.75 46.43

ELEC0003-003 04/28/2016

Rates Fringes

ELECTRICIAN (Teledata
Technician).....\$ 50.75 43.704

a. \$2.00 per hour not to exceed \$14.00 per day.

ELEC1249-001 05/03/2021

Rates Fringes

ELECTRICIAN (LIGHTING AND
TRAFFIC SIGNAL WORK Including
any and all Fiber Optic Cable
necessary for Traffic Signal
Systems, Traffic monitoring
systems and Road Weather
Information systems)

Flagman.....	\$ 28.29	7%+35.40
Ground Digging Machine Operator.....	\$ 42.44	7%+35.40
Ground Truck Driver.....	\$ 37.72	7%+35.40
Tractor, Trailer Unit.....	\$ 40.08	7%+35.40
Lineman & Technician.....	\$ 47.15	7%+35.40
Mechanic.....	\$ 37.72	7%+35.40

FOOTNOTE:

a. PAID HOLIDAYS: New Years Day, Memorial Day, Independence
Day, Labor Day, Thanksgiving Day, Christmas Day,
President's Day, Good Friday, Decoration Day, Election Day
for the President of the Untied States and Election Day for
the Governor of the State of New York provided the employee
works two days before and two days after the holiday

ELEC1249-006 05/03/2021

Rates Fringes

ELECTRICIAN (LINE
CONSTRUCTION)

Substation and switching
structures pipetype cable,
underground fuil and gas
filled transmission
conduit and cable
installation, fiber optic
ground wire, fiber optic
shield wire or any other

like product having ground protection or fiber optic capabilities, maintenance jobs or projects; rail-road catenary installation and maintenance bonding of rails; Overhead & underground distribution work & Maintenance; Overhead and under- ground transmission line work:

Cable Splicer.....	\$ 63.48	7%+35.40
Flagman.....	\$ 34.63	7%+34.40
Groundman digging machine operator.....	\$ 51.94	7%+34.40
Groundman truck driver (tractor trailer unit).....	\$ 49.05	7%+34.40
Groundman truck driver;....	\$ 46.17	7%+34.40
Lineman & Technician.....	\$ 57.71	7%+35.40
Mechanic.....	\$ 46.17	7%+34.40

PAID HOLIDAYS:

a. New Year's Day, President's Day, Memorial Day, Good Friday, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works two days before or two days after the holiday.

ELEC1249-009 01/01/2021

Rates Fringes

ELECTRICIAN (LINE CONSTRUCTION)

TELEPHONE, CATV

FIBEROPTICS CABLE AND EQUIPMENT

Cable Splicer.....	\$ 34.78	3%+5.14
Groundman.....	\$ 17.50	3%+5.14
Installer Repairman-Teledata		
Lineman/Technician-Equipment Operator.....	\$ 33.01	3%+5.14

ELEV0001-002 03/17/2018

Rates Fringes

ELEVATOR MECHANIC

Elevator Constructor.....\$ 64.48 36.21+a+b
Modernization and Repair....\$ 50.49 40.399+a+b

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Good Friday, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

b. PAID VACATION: An employee who has worked less than 5 years shall receive vacation pay credit on the basis of 4% of his hourly rate for all hours worked; an employee who has worked 5 to 15 years shall receive vacation pay credit on the basis of 6% of his hourly rate for all hours worked; an employee who has worked 15 or more years shall receive vacation pay credit on the basis of 8% of his hourly rate for all hours worked.

ELEV0138-003 01/01/2020

WESTCHESTER COUNTY (Towns of Bedford, Cortland, Lewisboro, Mt. Kisco, North Salem, Pound Ridge, Somers, and Yorktown)

Rates Fringes

ELEVATOR MECHANIC.....\$ 60.49 34.765+a+b

FOOTNOTE:

a. Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.

b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

ENGI0137-005 03/06/2017

BUILDING & RESIDENTIAL CONSTRUCTION

Rates Fringes

Power equipment operators:

GROUP 1-A.....	\$ 53.95	28.52+a
GROUP 1-B.....	\$ 49.68	28.52+a
GROUP 2-A.....	\$ 52.03	28.52+a
GROUP 3-A.....	\$ 50.11	28.52+a
GROUP 3-B.....	\$ 47.67	28.52+a
GROUP 4-A.....	\$ 49.60	28.52+a
GROUP 4-B.....	\$ 41.85	28.52+a
GROUP 5.....	\$ 45.17	28.52+a
GROUP 5-A.....	\$ 56.63	28.52+a
GROUP 5-B.....	\$ 42.83	28.52+a
GROUP 6.....	\$ 44.92	28.52+a

NOTES: Hazmat: 20% above regular rate

Pumping operation Premium .50

Crane Operators (100-149 ft) 2.00

Crane Operators (149 ft +) 3.00

Loader Operators (over 5 cu y) .50

Shovel Operators (over 4 cu yd) 1.00

FOOTNOTE:

a. New Years Day, Memorial Day, Independence Day, Labor Day
Thanksgiving Day, Christmas Day, plus Lincoln's Birthday,
Washington's Birthday, Good Friday, Columbus Day, November
Election Day, Veteran's Day.

POWER EQUIPMENT OPERATORS CLASSIFICATION

GROUP 1-A: Carrier- trailer horse; concret-portable hoist;
crane & hoist engineer-steel (concrete, material, super
structure sub- structure); derrick (stone-steel); elevator
& cage; hoist- single/double or triple drum; hoist-portable
mobile unit; hoist engineer-concert (crane-derrick-mine
hoist); hoist engineer- material; overhead crane; power
house plant; telephies (cableway); whirly; maintenance
engineer; Lull hlift or similar; hydraulic crane 25 ton
and over; cherry picker 25 tons and over; backhoe Oliver
88; fordson; dynahoe; dual purpose and similar machines;
Barber Green Loader-euclid loader or similar type; conway
or similar mucking macking machines; dragline; gradall;
shovel; backhoe etc. (crawler or truck); front end loaders;
hydraulic boom; jersey spreader; lift slab console;
letournequ or tounapull (scrapers over 20 yds struck);
mucking machines; pavement breaker (air ram); paver

(concrete); road boring machine; road mix machines; ross carrier and similar machines; post hole digger; shovel (tunnels); side boom; spreader (asphalt); scoopmobile-tractor-shovel over 1 1/2 yds. trenching machines vermeer concrete saw trencher and similar; tractor type demolition equipment; winch truck (a frame); hydraulic crane over 10 ton up to 25 ton); cherry picker over 10 ton up to 25 ton)

GROUP 1-B: Compressor (steel erection); pulse meter and push button buzz box; elevator; mechanic (outside) all types; welder; scrapers 20 yds struck and under; machine pulling sheep's foot roller; vibratory rollers; roller 4 tons and over.

GROUP 2-A: Compactor self-propelled; grader; bulldoze D7 and similar tractors with a draw bar horsepower of 100 or over; bulldozer D6 and under; welder; scraper 20 yds struck and under; machine pulling sheep's foot roller; vibratory rollers.

GROUP 3-A: Asphalt plant; boiler (high pressure); concrete mixing plants; concrete pump; firemen; forklift; forklift (electric); joy drill or similar tractor drilling machine; loader - 1 1/2 yards and under; locomotive (all sizes); mixer concrete - 21E and over; portable asphalt plant; portable batch plant; portable crusher; quarry master; stone crusher; well drilling machine and well point system; cherry picker under 10 tons; hydraulic crane under 10 tons; concert buffy; one yard an up ride on dumper (benford or similar).

GROUP 3-B: Compressor over 125 cu. feet; conveyor belt machine regardless of size; lighting unit (portable & generator); welding machine (steel erection and excavation); and compressor plant; stud machine; ladder hoist.

GROUP 4-A: Air tractor drill; batch plant; bending machine; concrete breaker; concrete spreader; curb cutter machine; farm tractor (all types); finishing machine-concrete; hepavac clean air machine (all similar types: removal of asbestos etc.); material hopper-sand-stone-cement; mixer-concrete-under 21E; mulching grass spreader; pump-gypsum, etc., pump-plaster-grout -fireproofing; shop mechanic (not employed on job site); roller under 4 ton; spreading and fine grading machine; steel cutting machine; syphon pump-air-steam; tar joint machine; turbo jet burner

or similar equipment; vibrator (1 to 5); fine grading machine; roof hoist (tugger hoist); television cameras-water- sewer-gas-etc.

GROUP 4-B: Compressor to 125 feet; dust; dust collector; heater all types; pump; pump station (water and sewer); steam jenny; sweeper; chipper; mulcher.

GROUP 5: Motorized roller (walk behind)

GROUP 5-A: Master Mechanic

GROUP 5-B: Utility Man

GROUP 6: Warehouse Man

ENGI0137-006 03/06/2017

HEAVY & HIGHWAY

	Rates	Fringes
Power equipment operators:		
GROUP 1.....	\$ 58.54	28.15+a
GROUP 1-A.....	\$ 51.68	28.15+a
GROUP 1-B.....	\$ 54.42	28.15+a
GROUP 2-A.....	\$ 49.52	28.15+a
GROUP 2-B.....	\$ 51.05	28.15+a
GROUP 3.....	\$ 48.67	28.15+a
GROUP 4-A.....	\$ 44.29	28.15+a
GROUP 4-B.....	\$ 38.13	28.15+a
GROUP 5.....	\$ 54.69	28.15+a
GROUP 5-A-1.....	\$ 54.69	28.15+a
GROUP 5-A-2.....	\$ 66.22	28.15+a
GROUP 5-A-3.....	\$ 63.97	28.15+a
GROUP 5-A-4.....	\$ 60.03	28.15+a
GROUP 5-A-5.....	\$ 50.65	28.15+a

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (HEAVY & HIGHWAY)

GROUP 1: Boom Truck; Cherry Picker; Clamshell; Crane, (Crawler, Truck); Dragline; Rough Terrain Crane

GROUP 1-A: Auger; Auto Grader; Dynahoe and Dual purpose and similar machines; Boat Captain; Boring Machine (all types); Bull Dozer-all sizes; Central Mix Plant Operator; Chipper-all types; Close circuit t.v.; Compactor with

Blade; Concrete Portable Hoist; C.M.I. or similar; Conway or similar mucking machines; Gradall, Shovel Backhoe, etc. Grader; Derrick, (Stone- Steel; Elevator & cage, materials or passengers; Front end loaders over 1 1/2 yds.; Hoist Single, Double, Triple Drum, Hoist Portable Mobile Unit; Hoist Engineer-Concrete (Crane-Derrick-Mine Hoist); Hoist Engineer-Material, Hydraulic Boom; Letourneau or Tournapull (Scrapers over 20 yds. struck); Log Skidder; Movable Concrete Barrier Transfer & Transport Vehicle; mucking machines; overhead crane; paver (concrete); pulsemeter; push button (buzz box) elevator; road mix machines; Robot Hammer (brock or similar), Ross carrier and similar machines; shovels (tunnels); side boom; Slip Form Machine; spreader (asphalt); scoopmobile-tractor-shovel over 1 1/2 yards; trenching machines; telephies- vermeer concrete saw trencher and/or similar; tractor-type demolition equipment, Whirly

GROUP 1-B: Road Paver, Asphalt

GROUP 2-A: Ballast Regulators; Compactor self-propelled; Cow Tracks; Fusion Machine; Rail Anchor Machines; Roller 4 ton and over; Scrapers - 20 yards struck; Switch Tampers; Vibratory roller, etc.

GROUP 2-B: Mechanic (outside) all types

GROUP 3-A: Air tractor drill; asphalt plant; batch plant; boiler (high pressure; concrete breaker; concrete pump concrete spreader; curb cutter machine; farm tractor (all types); finishing machine (concrete); fine grading machine; fireman; forklift; forklift (electric); joy drill or similar tractor drilling machine; loader - 1 1/2 yards and under; locomotive (all sizes), maintenance engineer; machine pulling sheeps foot roller; material hopper; mixer concrete - 21-E and over; mulching grass spreader; portable asphalt plant, portable batch plant, portable crusher; powerhouse plant; quarry master; roller under 4 ton; spreading and fine grading machine; steel cutting machine; stone crusher; sweeper; turbojet burner or similar; well drilling machine ; winch truck ""A"" frame. John Henry Drill or similar.

GROUP 4-A: Service men (fuel or grease truck).

GROUP 4-B: Oiler; Compressor - compressor plant; paint compressor-steel erection; conveyor belt machine; lighting unit (portable & generator); oiler; pumps - pump

station-water-sewer- gypsum- plaster, etc.;
roller-motorized (walk-behind); welding machine (steel
erection excavation); well point system; bending machine;
dust collector; mixer - concrete under 21-E; heater all
types; steam jenny; syphon pump-air-steam; tar joint
machine; vibrator (1 to 5); Compressor Truck Mounted (2-6)

GROUP 5: Oiler

GROUP 5-A-1: Master Mechanic

GROUP 5-A-2: Engineer - all tower cranes, all climbing
cranes and all cranes of 100 ton capacity or greater (3900
Manitowac or similar) irrespective of manufacturer and
regardless of how the same is rigged (except for pile rigs).

GROUP 5-A-3: Engineer-- Pile Driver

GROUP 5-A-4: Hoist Engineer- Steel -Sub Structure

GROUP 5-A-5: Jersey-spreader, pavement breaker (air ram);
Post Hole Digger

NOTES:

Loader Operator (over 5 cu yds) .50
Shoval Operators (over 4 cu yd) 1.00
Hazmat premium over regular rate 20%

CRANES:

100 ft- 149 ft: receive \$2.00 more than Group 1 rate
149 ft and over receive \$3.00 more than Group 1 rate

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day; Lincoln's Birthday; Good
Friday; Memorial Day; Independence Day; Labor Day; Veterans
Day; Columbus Day; November Election Day; Thanksgiving Day;
and Christmas Day

IRON0040-001 07/01/2020

WESTCHESTER COUNTY

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	\$ 52.70	80.24

IRON0046-003 07/01/2019

	Rates	Fringes
IRONWORKER		
METALLIC LATHERS AND		
REINFORCING IRONWORKERS.....	\$ 44.65	46.67
<hr/>		
IRON0197-001 07/01/2020		

	Rates	Fringes
IRONWORKER		
STONE DERRICKMAN.....	\$ 53.13	54.60
<hr/>		
IRON0580-001 07/01/2020		

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 45.65	57.62
<hr/>		
LABO0060-002 03/31/2019		

HEAVY/HIGHWAY

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 42.17	22.23+a
GROUP 2.....	\$ 40.82	22.23+a
GROUP 3.....	\$ 40.42	22.23+a
GROUP 4.....	\$ 40.07	22.23+a
GROUP 5.....	\$ 39.72	22.23+a
GROUP 6.....	\$ 33.37	22.23+a
GROUP 7.....	\$ 41.72	22.23+a
SHAFT AND TUNNEL IN FREE		
AIR		
GROUP 1.....	\$ 48.15	29.25+a
GROUP 2.....	\$ 50.30	29.25+a
GROUP 4.....	\$ 56.70	29.25+a

LABORERS CLASSIFICATIONS (HEAVY/HIGHWAY):

GROUP 1: Blasters.

GROUP 2: Burner, Jumbo Driller, Joy Driller, Wagon Driller,
Air Track Driller, Hydraulic Driller, Concrete Form
Aligner, Concrete Form and Curb Form Highway (Steel),
Asphalt Screedman, Asphalt Raker.

GROUP 3: Asphalt Curb Machine Operator, Jeep Operator,
Pavement Breaker Operator, Power Saw Operator, Jack Hammer

Driller. All types of pneumatic tools gasoline driller, concrete saw, gunniting, railroad spike puller and sandblasting, pipe layer, deck winches on scows, power buggy operator, power wheelbarrow operator.

GROUP 4: General concrete laborers-anything pertaining to concrete, aggregate or concrete material handling, puddlers, asphalt worker, rock scalers, vibrator operator, bit grinder, concrete grinder, air tampers and all tampers not covered by any other classification, form pin puller, pumps and their operation, service of air power, epoxy and waterproofing worker, fine grade person between forms, barco rammer, guard and guide rail and link fence, steel kings.

GROUP 5: Common laborers, signal person and pit person , truck spotters, powder person, landscape and nursery person, dump person.

GROUP 6: Flagperson

GROUP 7: Asbestos and Toxic Waste laborer

SHAFT AND TUNNEL IN FREE AIR CLASSIFICATIONS

GROUP 1: Outside laborers

GROUP 2: Blaster, Concrete and form setters, drill runners, air tuggers, chippers, pneumatic tools, and source of airpower, pumps and their operations, vibrator operators, Puddlers, Chuck tenders, nippers, concrete laborers tunnel sewer and water pipeliners, boring, Laborers, Powder carriers, signalmen, and Brakemen

GROUP 4: Miners

FOOTNOTE: a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, November Election Day, Veterans' Day, Thanksgiving Day and Christmas Day.

LABO0235-001 05/01/2016

BUILDING

	Rates	Fringes
LABORER.....	\$ 33.30	26.25

LABO0235-002 05/01/2016		

RESIDENTIAL

	Rates	Fringes
LABORER.....	\$ 26.80	19.55

PAIN0009-003 05/01/2020

	Rates	Fringes
PAINTER		
GLAZIERS.....	\$ 46.55	44.77
Painters, Paperhanger, Drywall Finishers & Lead Abatement Worker.....	\$ 45.70	27.67
Spray, Scaffold, Sandblasting.....	\$ 48.70	27.67

PAIN0806-001 10/01/2020

	Rates	Fringes
Painters:		
Structural Steel and Bridge.	\$ 51.50	49.63

PLUM0021-003 05/01/2021

	Rates	Fringes
Plumber and Steamfitter		
Zone 1.....	\$ 59.01	39.26

ROOF0008-003 07/01/2020

	Rates	Fringes
ROOFER.....	\$ 44.25	34.87

SFNY0669-002 04/01/2021

	Rates	Fringes
SPRINKLER FITTER.....	\$ 47.19	28.09

SHEE0038-001 07/01/2021

	Rates	Fringes
Sheet metal worker.....	\$ 47.52	44.20

TEAM0456-001 07/01/2018

HEAVY & HIGHWAY CONSTRUCION

	Rates	Fringes
Truck drivers:		
GROUP 1.....	\$ 43.47	29.17+a
GROUP 2.....	\$ 40.72	29.17+a
GROUP 3.....	\$ 41.17	29.17+a
GROUP 4.....	\$ 41.34	29.17+a
GROUP 5.....	\$ 40.72	29.17+a
GROUP 6.....	\$ 41.47	29.17+a
GROUP 7.....	\$ 42.22	29.17+a
GROUP 8.....	\$ 42.59	29.17+a
GROUP 9.....	\$ 42.09	29.17+a
GROUP 10.....	\$ 42.72	29.17+a
GROUP 11.....	\$ 42.47	29.17+a

Hazardous/Toxic Waste - An additional 20% of the basic hourly wage rate set forth in this wage determination.

CLASSIFICATION DESCRIPTIONS

GROUP 1: Lowboy (carrying equipment)
GROUP 2: Straight jobs: 6-Wheeler, 10-Wheeler, A-Frame Trucks (inside cab), Winch Truck (inside cab), Dynamite Truck, Seeding Truck, Mulching Truck, Agitator Truck, Water Truck, Cement Trucks (all types), Suburbans, Station Wagons, Cars, Pickups.
GROUP 3: Fuel and tire trucks.
GROUP 4: Tractor trailers (all types)
GROUP 5: 14 Wheeler
GROUP 6: Athey wagon, Belly dumps, Articulated Dumps, Trailer wagons.
GROUP 7: Darts.
GROUP 8: RXS
GROUP 9: Off Road Equipment (Under 40 Tons): Euclid
GROUP 10: Off Road Equipment (Over 40 Tons) Euclid, DJB
GROUP 11: Off Road Equipment (Under 40 Tons) DJB

a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, President's Day, Decoration Day, Independence Day, Labor Day, November Election Day, Thanksgiving Day, Day after Thanksgiving and Christmas Day, provided employee works two or more days in the calendar week in which the holiday falls.

PAID VACATION: 4 weeks paid vacation after 20 years of service and 30 days of employment in current contract year; 3 weeks after 10 years of seniority service; 3 weeks after 10 years and 60 days of employment in contract year, 3 weeks and 1 day after 16 years of seniority service, 3 weeks and 2 days after 17 years of seniority service; 3 weeks and 3 days after 18 years of seniority service; 3 weeks and 4 days after 19 years of seniority service; The third week and every additional day shall be granted to employee in the calendar year in which he completes his tenth or other years of seniority service; 2 weeks after 130 days of employment in the calendar year; 2 weeks after 5 years and 90 days seniority service in calendar year; 1 week and 1 additional day for each additional 18 days of employment not exceeding 10 days in any one calendar year after 90 days of employment. Casual employees 1 day for every 18 days of employment. An employee who does not qualify for vacation shall be paid pro rata on a daily basis. Holiday shall be counted as days worked for vacation benefits.

LEGAL SERVICES FUND: Employer shall contribute \$.20 to the fund on the same basis for all hours paid to employees in the form of holiday pay or vacation pay. In addition to the benefits paid for Health-Welfare and Pension for up to 40 hours worked an additional \$.25 is paid for each hour worked. The employer shall grant 3 calendar days off without loss of pay to an employee who has death in his/her immediate family, inclusive of the day of the funeral.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other

health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that

no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

SECTION 010100 SITE PREPARATION AND REMOVALS

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish all labor, materials and equipment necessary to perform clearing, grubbing and removals within the proposed construction area as required to complete the proposed improvements. This shall include such work as removing shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, masonry, large boulders, concrete pavement and curbs, concrete rubble, asphalt, existing utilities to be removed, rubbish and other objectionable materials. The Engineer, at his discretion, may require additional work under this section if he deems this work necessary to comply with the intent of this project. Any work not included under this specification but required for the successful completion of project work, as deemed by the Engineer, shall be performed by the Contractor as directed by the Engineer and paid for under Item 0905 Miscellaneous Additional Work.

The Contractor shall carefully protect all trees and shrubs and other growth shown on the plan to be protected to remain per specification "RESTORATION." The Engineer shall have the final authority on the removal of all trees and existing features to remain. The Contractor at his expense in accordance with Specification "RESTORATION" and the General Conditions shall replace any trees removed contrary to the orders of the Engineer. The Contractor shall be responsible for any and all damages to property caused by the removals operations. All damaged trees and plants or improvements shall be replaced or restored to their original condition to the satisfaction of the Engineer. Further any new or existing improvements to remain shall also be protected throughout the construction of the project. The Contractor will be responsible at his expense to replace any improvements damaged by his company workers and those of any subcontractors under the Contractor.

All materials removed under this item, which are not to be reset, shall be promptly and legally disposed of offsite by the Contractor. Burning material shall not be allowed. No removed trees, shrubs, stumps, roots, wood chips or branches may be used as backfill.

PART 2: MATERIALS

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PART 3: METHOD

3.01 DESCRIPTION

Unless otherwise directed, the Contractor shall thoroughly clear, grub and remove all objectionable surface material flush with existing grades. Trees, stumps, roots and shrubs will be removed to a depth of two feet below subgrade or as required to provide a suitable subgrade upon which the proposed facilities shall be constructed.

Note that existing topsoil shall be stored on site and protected during the course of construction.

All debris, refuse, solid waste, tires, wooden planks, junk of any nature, etc. shall also be removed from the site and disposed of legally in a manner that meets all applicable Federal, State and local codes and ordinances.

3.02 CLEARING AND REMOVALS

From areas to be cleared, the Contractor shall cut or otherwise remove all sapling trees, brush, and other vegetable matter such as snags, bark, shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, masonry, large boulders, concrete pavement and curbs, concrete rubble, asphalt, existing utilities to be removed, rubbish and other objectionable materials. No debris may be disposed of on premises.

3.03 GRUBBING

The site has been previously cleared of all trees, tree stumps. Grubbing is not required under this contract.

3.04 STRIPPING

All stumps, roots, foreign matter, topsoil, loam and unsuitable earth shall be stripped from the ground surface. The topsoil and loam shall be utilized insofar as possible, for finished surfacing unless otherwise directed by the Engineer. Only excess or unsuitable soils shall be taken from the site unless otherwise directed by the Engineer.

Strip topsoil to depths encountered in a manner that prevents intermingling of topsoil with underlying subsoil or other objectionable material.

The Contractor shall not strip topsoil from within the drip line of any tree to remain.

3.05 STOCKPILING

The Contractor shall stockpile topsoil in storage piles where approved by the Engineer and construct stockpiles so that surface water drains freely.

3.06 DISPOSAL

The Contractor shall protect topsoil piles if required by the work. Silt fencing around the perimeter shall be installed to prevent soil erosion and sedimentation. All material resulting not scheduled for reuse or stockpiling shall become the property of the Contractor and shall be suitably disposed of off site in accordance with all applicable laws, ordinances, rules, and regulations, unless otherwise directed by the Engineer.

All removed trees, shrubs, stumps, roots, wood chips or branches, concrete debris, asphalt debris, remains of utilities or other structures, or any debris remaining from site preparation or excavation must be disposed of off-site. No woody debris must be used as fill or backfill or embankments or dikes.

Such disposal shall be performed as promptly as possible after removal of the material and shall not be left until the final period of cleaning up. It is the Contractors responsibility to properly dispose of any materials to be removed off-site as per all sections of these specifications. The Contractor is responsible to find a legitimate disposal site and must obtain any permits or licenses required for proper disposal. The Contractor is responsible for any fees or fines associated with the proper disposal of any materials outline in all sections of these specifications.

PART 4: MEASUREMENT AND PAYMENT

4.01 DESCRIPTION

The cost for this work item shall be on a lump sum basis and shall include the cost of all labor, materials and equipment necessary to clear grub and remove all objectionable material within the limits shown on the Contract Drawings and as directed by the Engineer.

The work shall include but not be limited to clearing surface material, removal and disposal of shrubbery, trees, stones, vines, topsoil, organic matter, masonry, large boulders, concrete rubble, concrete pavement and curbs, concrete rubble, asphalt, existing utilities to be removed, rubbish and other objectionable materials as determined and directed by the Engineer.

SECTION 014100 REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 COMPLIANCE

- A. Comply with applicable regulatory requirements and various codes referenced in these specifications. Where conflicts exist between local, State, and/or Federal regulatory requirements, codes, or these specifications advise the Engineer's Representative. The Engineer will assist in resolving the conflicts to the satisfaction of the regulatory agencies prior to commencing the Work.

1.02 CODES

- A. All Work shall comply with the New York State Uniform Fire Prevention and Building Code (the "Uniform Code"), which includes the current editions of Part 1220 (Residential Code), Part 1221 (Building Code), Part 1222 (Plumbing Code), Part 1223 (Mechanical Code), Part 1224 (Fuel Gas Code), Part 1225 (Fire Code), Part 1226 (Property Maintenance Code), and Part 1227 (Existing Building Code) and their referenced standards. The referenced codes shall be the date of latest revision in effect at the time of receiving bids, unless the date is given.
 - 1. The contractor shall be aware of, and comply with, contractor requirements identified in the above referenced codes; for example, but not limited to: Building Code of New York State - Chapter 33 Safeguards During Construction and Existing Building Code of New York State - Chapter 14 Construction Safeguards (which governs safety during construction).
- B. Electrical Work: Conform to the requirements of the 2008 National Electrical Code (NEC) unless otherwise shown or specified. The Engineer will be the sole judge of the interpretation of these rules and requirements.

1.04 LISTINGS

- A. Equipment and materials for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.

1.06 UTILITIES

- A. Underground Utilities:
 - 1. Locate existing underground utilities prior to commencing excavation work. Conform to all requirements of NYCRR 16 Part 753, including the following:
 - a. Notify Dig Safely New York at least 48 hours in advance not counting the date of contact.
 - 1) Statewide: 800-962-7962.
 - 2) Website: www.digsafelynewyork.com
 - b. Determine exact utility locations by hand excavated test pits. Contractor will be responsible for the proper support and protection of all utilities to remain in service.
- B. Coordination with Electric Utility Company:
 - 1. Comply with utility company requirements for new or modified electric service. If a meter is required to complete the Work, arrange installation with utility company. The utility company is ConEdison.
 - 2. Comply with the utility company requirements for the incoming electric service.

END OF SECTION

SECTION 022010

**RECONSTRUCTION OF UNKNOWN AND MISMARKED
UTILITIES**

PART 1: GENERAL

1.1 SUMMARY

1.2

A. Scope

1. Provide and furnish all labor, equipment, and materials including piping, joining, excavation and backfill required to reconstruct uncharted (not shown) or incorrectly shown utilities, as ordered.
2. Incorrectly shown utilities are defined as utilities where the actual location is found to be 3 feet or more from the location as indicated by the Utility Companies or as shown on the Contract Drawings.
3. The drawings show approximate locations of all known utilities at the work site. They are not guaranteed and, as shown, may be only approximately correct. The Contractor shall be responsible for checking this information, to satisfy himself/herself as to the existence and locations of all utilities.

PART 2: PRODUCTS – Not Applicable

PART 3: EXECUTION

3.1 RELOCATION

- A. Uncharted and mismarked utilities which directly interfere with the proposed work, or which are ordered to be reconstructed by the Owner shall be reconstructed in a manner approved by the utility company or governmental agency, owning, or controlling the utility. Workmanship, materials, and methods including testing shall conform to the applicable provisions of these specifications and of the owner of the utility.

END OF SECTION

SECTION 022200- EARTHWORK
PART 1 GENERAL

1.01 DEFINITIONS

- A. The following terms have the meanings ascribed to them in this Article, wherever they appear in this Section.
1. Earth Excavation: The removal of all surface and subsurface material not classified as rock as defined below.
 2. Rock: Limestone, sandstone, shale, granite, and similar material in solid beds or masses in its original or stratified position which can be removed only by blasting operations, drilling, wedging, or use of pneumatic tools, and boulders with a volume greater than 1.0 cu yd.
 - a. Limestone, sandstone, shale, granite, and similar material in a broken or weathered condition which can be removed with an excavator or backhoe equipped with a bucket with ripping teeth or any other style bucket shall be classified as earth excavation.
 - b. Masonry building foundations, whether indicated or not, shall be classified as earth excavation.
 3. Unclassified Earth Excavation: The excavation and disposal of all surface and subsurface materials of any description necessary to perform the work of this contract. This will include:
 - a. All soil deposits of any description both above and below groundwater levels. These may be naturally deposited or placed by previous construction operations.
 - b. Ledge rock of all quality. (Limestone, Sandstone, Shale, Granite and similar materials in solid beds or masses in its original or stratified position which can only be removed by drilling, wedging, use of pneumatic tools or heavy ripping equipment.)
 - c. Boulders of any size.
 - d. Any materials of man-made origin.
 4. Subgrade Surface: Surface upon which subbase or topsoil is placed.
 5. Subbase: Select granular material or subbase course Type 2 which is placed immediately beneath pavement or concrete slabs.
 6. Foundation Bearing Grade: Grade/elevation at which the bottom-
 7. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at "Optimum Moisture Content" when determined by ASTM D 698 (Standard Proctor), or ASTM D 1557 (Modified Proctor).
 8. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
 9. Landscaped Areas: Areas not covered by structures, walks, roads, paving, or parking.

10. Unauthorized Excavation: The removal of material below required elevation indicated on the Drawings or beyond lateral dimensions indicated or specified without specific written direction by the Engineer.
11. Grading Limit Line (Shown on Drawings): Limits of grading, excavations and filling required for the work of this contract. Unless specifically noted otherwise, the Grading Limit Line and Contract Limit Line will be considered the same.

1.02 SUBMITTALS

- A. Shop Drawings:
 1. Sheeting, Shoring, and Bracing (Shown on the Drawings): Submit shop drawings for sheeting, shoring, and bracing shown on the Drawings. Shop drawings will be signed by a New York State licensed Professional Engineer.
- B. Product Data:
 - 1.. Filter Fabric: Manufacturer's catalog sheets, specifications, and installation instructions.
- C. Samples: Submit samples as follows. Take the samples in the presence of the Engineer and submit to the Engineer the laboratory test results for gradation, proctors, and soundness tests, when required. These tests will be performed in accordance with ASTM standards, will be performed and signed by a certified soils laboratory, and will be submitted as part of the original submittal. At a minimum the samples taken will be of the following quantities:
 1. Select Granular Material: 50 - 60 lb. (Two Samples).
 2. Subbase Course Type 2: 50 - 60 lb. (Two Samples).
 3. Selected Fill: 40 - 50 lb.
 4. Cushion Material: 30 lb.
 5. Item B-12: 30lb, each gradation.
 6. Crushed Stone: 30 lb.
 7. Underdrain Filter Material: 40 - 50 lb.
 8. Crushed Stone, Crushed Gravel, or Screened Gravel (Wastewater): 30 lb., each layer gradation (if more than one).
- D. Quality Control Submittals:
 1. Subbase Materials: Name and location of source and the DOT Source Number. If the material is not being taken from an approved DOT Source the results of the gradation and soundness tests performed by an ASTM certified soils laboratory will be required.
 2. Other Aggregates: Name and location of source and soil laboratory test results.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Subbase Course (NYSDOT Type 4): Recycled materials will not be accepted.
- B. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
4 inch	101.6	100
No. 40	0.425	0-70
No. 200	0.075	0-15

- C. Suitable Material (Fill and Backfill for Landscaped Areas): Material consisting of mineral soil (inorganic), blasted or broken rock and similar materials of natural or man-made origin, including mixtures thereof. Maximum particle size will not exceed 2/3 of the specified layer thickness prior to compaction. NOTE: Material containing cinders, industrial waste, sludge, building rubble, land fill, muck, and peat will be considered unsuitable for fill and backfill, except topsoil and organic silt may be used as suitable material in landscaped areas provided it is placed in the top layer of the subgrade surface.
- D. Flowable Fill (Kcrete): Shall consist of a mixture of Portland cement, sand, water, and admixtures proportioned to provide a non-segregating, free-flowing, self-consolidating material that will result in a hardened, dense backfill.
 - 1. Shall have a 28-day compressive strength between 40 and 100 psi.

2.02 GEOTECHNICAL FABRICS

- A. Filter Fabric (GeoTextile):
 - 1. Drainage and Erosion Control: Amoco 1199 & 2019, Maccaferri MacTex MX140 & MX155, Mirafi 140N & 160N, Fiberweave 403 & 404 or equivalent.
 - 2. Separation for foundation drains, underdrains, undercuts: Amoco 2002 & 2004, Contech Construction Products Inc. C-180, Synthetic Industries Geotex 250ST & 315ST, Mirafi Geolon HP570 & HP1500 or equivalent.
 - 3. Separation/Stabilization beneath pavements: GeoTex 801, Bonded Fibers Products PN080, Maccaferri Gabions MacTex MX275 & 340, Mirafi 160N & 180N or equivalent.

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING

- A. Clear and grub the Site within the Grading Limit Line (GLL) of trees, shrubs, brush, other prominent vegetation, debris, and obstructions except for those items indicated to remain. Completely remove stumps and roots protruding through the ground surface.
 - 1. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing.
 - 2. Where roots and branches of trees indicated to be saved interfere with new construction, carefully and cleanly cut them back to point of branching.
- B. Fill depressions caused by the clearing and grubbing operations in accordance with the requirements for filling and backfilling unless further excavation is indicated.

3.02 REMOVAL OF TOPSOIL

- A. Remove existing topsoil from areas within the Grading Limit Line where excavation or fill is required.
- B. Stockpile approved topsoil where directed until required for use. Place, grade, and shape stockpiles for proper drainage.
 - 1. Topsoil will be tested prior to stockpiling. Stockpile only quantities of topsoil approved in writing for re-use.

3.03 UNDERGROUND UTILITIES

- A. Locate existing underground utilities prior to commencing excavation work. Determine exact utility locations by hand excavated test pits. Support and protect utilities to remain in place.
- B. Do not interrupt existing utilities that are in service until temporary or new utilities are installed and operational.
- C. Utilities to remain in service: Will be re-routed as shown on the Contract Drawings.
- D. Utilities abandoned beneath and five feet laterally beyond the structure's proposed footprint will be removed in their entirety. Excavations required for their removal will be backfilled and compacted as specified herein.
- E. Utilities extending outside the five feet limit specified above may be abandoned in place provided their ends are adequately plugged as described below.
 - 1. Permanently close open ends of abandoned underground utilities exposed by excavations, which extend outside the limits of the area to be excavated.

2. Close open ends of metallic conduit and pipe with threaded galvanized metal caps or plastic plugs or other approved method for the type of material and size of pipe. Do not use wood plugs.
3. Close open ends of concrete and masonry utilities with concrete or flow-able fill.

3.04 EXCAVATION

- A. Excavate earth as required for the Work.
- B. Install and maintain all erosion and sedimentation controls during all earthwork operations as specified on the Contract Drawings or as directed by local officials. If the erosion and sedimentation controls specified by the local officials are more stringent than those specified on the Contract Drawings contact the Engineer.
- C. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. Comply with Code of Federal Regulations Title 29 - Labor, Part 1926 (OSHA).
 1. Trenches: Deposit excavated material on one side of trench only. Trim banks of excavated material to prevent cave-ins and prevent material from falling or sliding into trench. Keep a clear footway between excavated material and trench edge. Maintain areas to allow free drainage of surface water.
- D. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as approved by the Engineer.
- E. Excavation for Structures: Conform to elevations, lines, and limits indicated. Excavate to a vertical tolerance of plus or minus 1 inch. Extend excavation a sufficient lateral distance to provide clearance to execute the Work.
- F. Footings and Foundations: The foundation bearing grade will be established just prior to constructing the concrete foundations when concrete is to bear on undisturbed soil.
 1. Stepping Footings: Cut sloping surfaces under footings, foundations, steps, and where required for other Work as indicated.
 2. Pile Foundations: Stop excavations 6 to 12 inches above the bottom of pile cap elevation before the piles are placed. After pile installation, remove loose and displaced material and excavate to final grade, leaving a solid base to receive concrete pile caps.
 3. Where footings and other Work requiring similar soil support will rest entirely on rock, remove loose soil and loose rock and place concrete to the required elevations. Where footings and other Work requiring similar soil support will rest partially on rock and partially on soil, immediately notify the Director before any backfilling or concrete placement occurs; the Director will determine the correct foundation treatment for the Work.

- G. Slabs and Floors: Excavate to the following depths below bottom of concrete for addition of select granular material:
 - 1. Interior Floors: 6 inches unless otherwise indicated.
 - 2. Exterior Slabs and Steps: 12 inches unless otherwise indicated.
- H. Pipe Trenches: Open only enough trench length to facilitate laying pipe sections. Unless otherwise indicated on the Drawings, excavate trenches approximately 24 inches wide plus the outside pipe diameter, equally divided on each side of pipe centerline. Cut trenches to cross section, elevation, profile, line, and grade indicated. Accurately grade and shape trench bottom for uniform bearing of pipe in undisturbed earth. Excavate at bell and coupling joints to allow ample room for proper pipe connections. Pavement shall be saw cut to the dimensions shown on the plans.
 - 1. Trench in Rock: Excavate an additional 6 inches below bottom of pipe for bed of cushion material under the piping.
- I. Open Ditches: Cut ditches to cross sections and grades indicated.
- J. Pavement: Excavate to subgrade surface elevation.
- K. Unauthorized Excavations: Unless otherwise directed, backfill unauthorized excavation under footings, foundation bases, and retaining walls with compacted select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification, unless otherwise directed by the Director.
 - 1. Unauthorized excavations under structural Work such as footings, foundation bases, and retaining walls will be reported immediately to the Director before any concrete or backfilling Work commences.
- L. Notify the Engineer upon completion of excavation operations. Do not proceed with the Work until the excavation is inspected and approved. Inspection of the excavation by the Engineer will be made on three working days notice.
- M. Removal of Unsuitable Material Beneath Structures and Other Improvements: Excavate encountered unsuitable materials, which extend below required elevations, to additional depth as directed by the Director. Have cross sections taken, under the supervision of an independent Land Surveyor, to determine the quantity of such excavation. Do not backfill this excavation prior to quantity measurement.
 - 1. Such additional excavation and backfilling, not due to error, fault or neglect of the Contractor and exceeding the numeric quantities indicated on the Drawings, will be paid for at the unit prices specified in this Section.

3.05 DEWATERING

- A. Prior to the performance of any excavations provide dewatering methods such that the groundwater table is maintained at an elevation that is beneath the excavated depth.
- B. Prevent surface and subsurface water from flowing into excavations and trenches and from flooding the site and surrounding area.
- C. Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.
- D. Convey water removed from excavations, and rainwater, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
- E. Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

3.06 SHEETING, SHORING, AND BRACING

- A. Temporary Sheeting: Install temporary sheeting or sheet piling with shoring and bracing as required to create a safe working environment and prevent settlement or other damage to adjacent grounds and structures resulting from excavation operations. Shore and brace sheeting in a manner which will not interfere with progress of other Work or related contracts (if any) on this project. Check shoring and bracing for settlement and adjust for settlement. Promptly remove temporary sheeting, shoring, and bracing when no longer required.

3.07 PLACING FILTER FABRIC

- A. Place and overlap filter fabric in accordance with the manufacturer's installation instructions, unless otherwise shown.
- B. Cover tears and other damaged areas with additional filter fabric layer extending three feet beyond the damage.
- C. Do not permit traffic or construction equipment directly on filter fabric.
- D. Backfill over filter fabric within two weeks after placement. Backfill in accordance with the fabric manufacturer's instructions and in a manner to prevent damage to the fabric.

3.08 PLACING FILL AND BACKFILL

- A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation, and other deleterious materials prior to placement of fill. Remove all asphalt pavement in its entirety from areas requiring the placement of fill or break up old pavements to a maximum size of four inches. Prior to placement of fill, smooth out and compact areas where wheel rutting has occurred due to stripping or earthwork operations.
- B. Excavations: Backfill as promptly as Work permits, but not until completion of the following:
 - 1. Acceptance by the Engineer of construction below finish grade including, where applicable, dampproofing, waterproofing, perimeter insulation, and bearing capacity of supporting soil.
 - 2. Inspection, testing, approval, and recording locations of underground utilities.
 - 3. Removal of concrete formwork.
 - 4. Removal of temporary sheeting or sheet piling and backfilling of voids caused by removals.
 - 5. Cutting off top of permanent sheeting or sheet piling.
 - 6. Removal of trash and debris.
 - 7. Installation of permanent or temporary bracing on horizontally supported walls.
- C. Place backfill and fill materials in layers not more than eight inches thick in loose depth unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen, or covered with ice.
 - 1. Place fill and backfill against foundation walls, and in confined areas such as trenches not easily accessible by larger compaction equipment, in maximum six-inch-thick loose depth layers.
 - 2. For large fill areas, the layer thickness may be modified by the Engineer, at the Contractor's written request, if in the Engineer's judgment, the equipment used is capable of compacting the fill material in a greater layer thickness. This request will include the type and specifications of compaction equipment intended for use.
 - 3. For Open Graded Stone/Clean Stone (Item B-12, No. 1 crushed stone, No. 2 crushed stone, etc.) in excess of six inches: Material must be wrapped in separation fabric.
- D. Concrete walls:
 - 1. Do not place fill or backfill against concrete walls until the walls have attained 70 percent of their design strength. Place backfill against walls of structures containing basements or crawl spaces only after the first-floor structural members are in place and any concrete components of the first-floor structural system have attained 70 percent of their concrete design strength.
 - 2. Prevent wedging action of backfill against structures backfilled on both sides, by placing backfill uniformly around structure so that the elevation on each side never differs by more than 24 inches.

- E. Foundation Drains:
 - 1. Line pipe trench loosely with filter fabric. Lap successive sheets 18 inches.
 - 2. Place underdrain filter material a minimum of 4 inches deep under pipe and 6 inches on both sides and over top of drain pipe.
 - 3. Completely wrap underdrain filter material with filter fabric.
 - 4. Within two weeks complete balance of backfill with selected fill extending 2 feet out from foundation wall and up to 6 inches below finished grade.
- F. Perimeter Insulation: Before the insulation is installed, place and tamp specified backfill to a smooth plane even with the required elevation of the lower surface of the insulation.
- G. Under Exterior Concrete Slabs and Steps:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place 12 inches of select granular material over subgrade surface.
- H. Under Interior Concrete Slabs:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place six inches of select granular material over subgrade surface.
- I. Under Pavements and Walks:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place as indicated.
- J. Landscaped Areas: Place suitable material when required to complete fill or backfill areas up to subgrade surface elevation. Do not use material containing rocks over four inches in diameter within the top 12 inches of suitable material.
- L. Plastic Pipe in Trenches: Place cushion material a minimum of six inches deep under pipe, 12 inches on both sides, and 12 inches above top of pipe. Complete balance of backfill as specified.
 - 1. Trench in Rock: Place a minimum six-inch-deep bed of cushion material under pipe.
- M. Copper Tubing and Steel Gas Pipe in Trenches: Place cushion material a minimum of six inches deep under pipe, 12 inches on both sides, and 12 inches above top of pipe. Complete balance of backfill as specified.
- N. Backfilling Excavation Resulting from Removal of Unsuitable Material Beneath Structures and Other Improvements: Backfill the excavation with compacted select granular material.

1. Such additional backfilling, exceeding the numeric quantities indicated on the Drawings, is included in the unit prices specified in this Section.

3.09 ADDITIONAL REQUIREMENTS FOR PLACING FILL TO SUPPORT STRUCTURES

- A. Place fill within the entire area enclosed by a line ten feet outside the perimeter of the structure to be constructed as follows:
 1. Strip the area in accordance with the requirements for Surface Preparation of Fill Areas.
 2. Compact the stripped surface to 95 percent of maximum density.
 3. Place fill in horizontal layers not exceeding eight inches loose depth and compact layers as specified.
- B. Place fill within the entire area enclosed by a line 10 feet outside the perimeter of the structure to be constructed as follows:
 1. Strip the area in accordance with the requirements for Surface Preparation of Fill Areas.
 2. Proof roll the stripped surface with at least five passes of a vibratory drum compactor having a minimum unsprung drum weight of seven tons. Notify the Engineer of the proposed date for beginning proof rolling at least seven working days prior to commencing proof rolling.
 3. Excavate unsuitable materials (soft and unstable earth) disclosed by the proof rolling operation and replace with compacted Selected Fill material.
 4. Place fill in horizontal layers not exceeding eight inches loose depth and compact layers as specified.
- C. Obtain written approval of fill area compaction before excavating for footing.
- D. Excavate for footing width plus one foot on each side.
- E. Excavate one foot below footing elevations where bottom of footings are two feet or less above or four feet or less below original ground surface.
 1. Compact footing bottom and place a one-foot bed of select granular material. Compact select granular material in six-inch layers.
 2. Omit excavation and select granular material below bottom of footings where footing elevations are more than two feet above or more than 4 feet below original ground surface.

3.10 COMPACTION

- A. All materials with exception of open graded stone (No. 2 Coarse aggregate, No. 1 Coarse aggregate, Item B-12, etc.):
 - 1. Compact each layer of fill and backfill for the following area classifications to the percentage of maximum density specified below and at a moisture content suitable to obtain the required densities, but at not less than three percent drier or more than two percent wetter than the optimum content as determined by ASTM D 698 (Standard Proctor) or 1557 (Modified Proctor).
 - a. Structures (entire area within ten feet outside perimeter): 95 percent.
 - b. Concrete Slabs and Steps: 95 percent.
 - c. Landscaped Areas: 90 percent.
 - d. Pavements and Walks: 95 percent.
 - e. Pipes and Tunnels: 95 percent.
 - f. Pipe Bedding: 95 percent.
 - 2. When the existing ground surface to be compacted has a density less than that specified for the particular area classification, break up and pulverize, and moisture condition to facilitate compaction to the required percentage of maximum density.
 - 3. Moisture Control:
 - a. Where fill or backfill must be moisture conditioned before compaction, uniformly apply water to the surface and to each layer of fill or backfill. Prevent ponding or other free water on surface subsequent to, and during compaction operations.
 - b. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to specified density. Soil that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing, until moisture content is reduced to a value which will permit compaction to the percentage of maximum density specified.
 - 4. If a compacted layer fails to meet the specified percentage of maximum density, the layer will be recompacted and retested. If compaction cannot be achieved the material/layer will be removed and replaced. No additional material may be placed over a compacted layer until the specified density is achieved.
- B. Open graded Stone: Place material in maximum twelve-inch lifts. Each lift shall be raked smooth and compacted through several passes of a walk behind vibratory roller. Compaction Testing is **not** required.

3.11 ROUGH GRADING

- A. Interior Grading: Trim unexcavated spaces within the building to levels indicated.
 - 1. Subgrade for Interior Slabs: Compact as specified to receive fill material. Finish subgrade surface within 1 inch above or below level specified for fill required.
- B. Exterior Grading: Trim and grade area within the Grading Limit Line and excavations outside the limit line, required by this Contract, to a level of 4 inches below the finish grades indicated unless otherwise specified herein or where greater depths are indicated. Provide smooth uniform transition to adjacent areas.
 - 1. Slope cut and fill in transition areas, outside of the grading limit line, to meet corresponding levels of existing grades at a slope of 1 vertical to 2 horizontal unless otherwise indicated.
 - 2. Landscaped Areas: Provide uniform subgrade surface within 1 inch of required level to receive topsoil thickness specified. Compact fill as specified to within three inches of subgrade surface. Remove objectionable material detrimental to proper compaction or to placing full depth of topsoil. If the top three inches of subgrade has become compacted before placement of topsoil, harrow or otherwise loosen rough graded surface to receive topsoil to a depth of three inches immediately prior to placing topsoil.

3.12 SUBGRADE SURFACE FOR WALKS AND PAVEMENT

- A. Shape and grade subgrade surface as follows:
 - 1. Walks: Shape the surface of areas under walks to required line, grade, and cross section, with the finish surface not more than 1 inch above or below the required subgrade surface elevation.
 - 2. Pavements: Shape the surface of areas under pavement to required line, grade, and cross section, with the finish surface not more than 1/2 inch above or below the required subgrade surface elevation.
- B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. Thoroughly compact subgrade surface for walks and pavement by mechanical rolling, tamping, or with vibratory equipment as approved to the density specified.

3.14 FINISH GRADING

- A. Uniformly grade rough graded areas within limits of the Grading Limit Line to finish grade elevations indicated.

- B. Grade and compact to smooth finished surface within tolerances specified, and to uniform levels or slopes between points where finish elevations are indicated or between such points and existing finished grade.
- C. Grade areas adjacent to building lines to drain away from structures and to prevent ponding.
- D. Finish surfaces free from irregular surface changes, and as follows:
 - 1. Grassed Areas: Finish areas to receive topsoil to within one inch above or below the required subgrade surface elevations.
 - 2. Walks: Place and compact subbase material as specified. Shape surface of areas under walks to required line, grade, and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 - 3. Pavements: Place and compact subbase material as specified. Shape surface of areas under pavement to required line, grade, and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 - 4. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified, and to required subbase elevation. Finish final grades within a tolerance of 1/4 inch when tested with a ten-foot straightedge.
 - 5. Surfaces To Receive Vapor Barrier: Provide smooth surfaces graded, tamped and/or rolled, entirely free of obstructions or protruding objects.
- E. Spread topsoil directly upon prepared subgrade surface to a depth measuring FOUR inches after natural settlement of the topsoil has occurred in areas to be seeded or to receive sod. Place to greater depth when necessary to adjust grades to required elevations.
 - 1. Approved existing topsoil within the Grading Limit Line may be used. Provide additional topsoil from outside sources as required.
- F. Finish topsoil surface free of depressions which will trap water, free of stones over 1 inch in any dimension, and free of debris.

3.14 MAINTENANCE AND RESTORATION

- A. Restore grades to indicated levels where settlement or damage due to performance of the Work has occurred. Correct conditions contributing to settlement. Remove and replace improperly placed or poorly compacted fill materials.
- B. Restore pavements, walks, curbs, lawns, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.

3.15 DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS

- A. Remove from State property and dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements.
- B. Transport excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements, to spoil areas on areas designated by the Engineer, and dispose of such materials as directed.
- C. Transport excess topsoil to areas on property designated by the Engineer. Smooth grade deposited topsoil.

3.16 FIELD QUALITY CONTROL

- A. Compaction Testing: Notify the Engineer at least three working days in advance of all phases of filling and backfilling operations. Compaction testing will be performed by the Engineer to ascertain the compacted density of the fill and backfill materials. Compaction testing will be performed on certain layers of the fill and backfill as determined by the Engineer. If a compacted layer fails to meet the specified percentage of maximum density, the layer will be recompact and will be retested. No additional material may be placed over a compacted layer until the specified density is achieved.

3.17 PROTECTION

- A. Protect graded areas from traffic and erosion, and keep them free of trash and debris.

END OF SECTION

SECTION 022300

CRUSHED STONE AND GRAVEL

PART 1: GENERAL

1.1 SUMMARY

A. Scope:

1. Contractor shall furnish and place crushed stone and gravel of the types specified at locations shown and as ordered by the Owner.

1.2 SUBMITTALS

- A. Contractor shall furnish representative samples of the crushed stone or gravel to the Owner and shall advise of the source location.

PART 2: PRODUCTS

2.1 MATERIALS

A. Pea Gravel:

- 1 Pea gravel shall consist of well graded hard, sound, tough, durable particles of uncrushed gravel free from soft, thin, elongated, or laminated pieces, organic matter, and other deleterious substance. The percentage by weight passing a 2 inch square mesh sieve shall not be less than 95 percent, not less than 95 percent retained on No. 4 sieve and maximum 5 percent passing No. 10 sieve.

B. Crushed Stone/Gravel and Sand:

- 1 Contractor shall furnish and place crushed stone or screened gravel fill under pipe or structures in addition to that required under other Sections. This material shall be placed at such locations as the Owner shall specifically order in writing to replace material unsuitable for the foundations of the pipe or structure or to increase the load carrying capacity of the pipe. It shall also be used to refill over excavations by the Contractor.

- 2 The material shall be well-graded, clean gravel/ crushed stone and sand obtained from an approved source.

Crushed Stone/Gravel

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/2-inch	90 to 100%
1 inch	35 to 70%
3/4-inch	0 to 15%
3/8-inch	0 to 5%

Sand

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8-inch	100%
No. 8	75 to 80%
No. 60	10 to 20%
No. 100	less than 5%

- 3 All sand shall consist of clean, hard, durable particles free from organic or other deleterious matter. Crushed stone crushed or uncrushed gravel shall be clean, hard, durable material of acceptable quality.
- 4 Material used on slopes shall be crushed gravel or crushed stone. Screened river gravel is not acceptable.
- 5 Samples of all material shall be submitted to the Owner for approval.

PART 3 EXECUTION

3.1 PLACING

- A. Gravel shall be spread in layers of uniform thickness not exceeding 8 inches and shall be thoroughly compacted with suitable power-driven tampers or other power-driven equipment. The placing of crushed stone or gravel shall conform to applicable requirements of Section No. 02220, Excavation and Backfill, except as noted above.

END OF SECTION

SECTION 022700 EROSION AND SEDIMENT CONTROL

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall provide all materials, equipment, and labor to install and maintain the measures which are required to prevent erosion and control sediment as per the drawings and/or direction of the Engineer. The Contractor shall be responsible to continuously maintain, reinstall or relocate the erosion and sediment controls (E&SC) throughout the duration of the project and until such time as the site is stable and so directed to remove such practices by the Engineer. The Contractor shall understand that the transport of sediment off the site in any form is fully his responsibility and he shall clean, repair damage, and pay imposed fines at the Contractor's expense.

1.02 REFERENCE

New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC), August 2005 or latest edition.

PART 2: MATERIALS

2.01 STABILIZED CONSTRUCTION ENTRANCE

- A. Stabilized construction entrances shall be provided at all construction site traffic entrance/exit points, as specified in the Standard Specifications For Stabilized Construction Entrance included in the NYSSSESC. A stabilized construction entrance shall be provided, location as shown on the Contract Drawings. The Contractor's actual plans to enter and exit the construction site may require additional installations; these will be provided as required to provide complete site access coverage, at no cost to the Owner.

The symbols shown on the Contract Drawings are schematic only and do not precisely indicate locations of the stabilized construction entrances. These stabilized entrances shall be provided as close to paved-surface roadways as practicable.

- B. The stabilized construction entrances shall be provided to any activity on the site; maintained throughout construction and removed, and area restored, following construction, unless incorporated as part of the work.

2.02 SILT FENCE

- A. Silt fences, as specified in the Standard Specifications for Silt Fence included in the NYSSDESC shall be installed and maintained to control and prevent sediment movement. The silt fence shall be installed in the locations shown on the drawings or any other location deemed necessary by the Engineer and shall meet the specifications as per the standard detail.

Required locations for these fences will at the minimum include the following:

1. All areas down gradient of the construction site; including areas between the construction site and waterways and wetlands.
 2. Steeply sloped areas as required.
 3. Other areas as shown on the Contract Drawings.
- B. Silt fences shall be installed prior to site disturbance that requires such protection, and maintained throughout the period of disturbance.
- C. Silt fences shall be removed following establishment of sufficient vegetation to control and prevent erosion.

2.03 SOIL STOCKPILE

Areas are provided for temporary stockpiling of delivered soil material for the construction. These areas will be contained with sediment fence to prevent the movement of sediment. The stockpiles, if not active for more than seven (7) days, will be seeded and mulched. The stockpile areas were placed to best suit the proposed construction activity. The stockpile will be installed as per the drawings.

2.04 TEMPORARY VEGETATIVE COVER

This stabilization measure may be temporary and in other cases permanent vegetative cover is used. The vegetative cover specifications are based on the NYSSDESC Manual. On the Construction Plans are notes, locations, and specifications as to the vegetative cover requirements. In the notes, there are specific situations and time constraints related to stabilization of disturbed areas. The specifications give seed and fertilizer mixes as well as placement. Any disturbed area expected to remain exposed for more than seven (7) days shall receive temporary vegetative cover.

2.05 STORM DRAIN INLET PROTECTION

The inlet protection is specified to provide a permeable barrier around drainage inlets to reduce sediment content in runoff before entering the storm drain system. These shall be installed over each drainage inlet and shall be replaced as necessary based on sediment accumulation and at the direction of the Engineer.

2.06 SOIL RESTORATION

The Contractor shall provide Soil restoration which is a practice for construction projects where soil compaction occurs to soils which will be permanently vegetated. This compaction is typically a result of heavy vehicle traffic, cutting or filling, and areas which may receive heavy surcharges. Soil restoration can be done by tilling or aerating the soil to a depth of 12-inches. In heavy traffic areas, 3-inches of compost shall be placed over the compacted areas prior to the tilling. After the restoration, a 3/8" metal bar should be able to be hand pushed into the soil. Areas within the drip-line of trees should not be tilled. This work will be done at the direction of the Engineer or Landscape Architect.

2.07 WASTE DISPOSAL

The Contractor is responsible the proper disposal of all solid, sanitary and toxic waste in accordance with applicable local, state and federal regulations. It is prohibited to burn, bury or pour out onto ground or into the storm sewers any solvents, paints, stains, gasoline, diesel fuel, used motor oil, hydraulic fluid, anti-freeze, cement curing compounds, or other toxic or hazardous wastes. The Contractor shall be responsible for disposal of all waste off site.

2.08 CONCRETE TRUCK WASHOUT

The Contractor is responsible for designating a wash out area for cement trucks. This shall be a diked area where the washings can be collected and disposed of properly when they harden.

2.09 DUST CONTROL

The Contractor shall insure the generation of dust shall be minimized by limiting the extent of exposed soils and re-establishing vegetative cover in these areas as soon as possible. Additional and/or temporary methods to minimize dust may include wetting, mulching, spray adhesives, stone covering and wind barriers. The Contractor shall have the necessary access to water to perform this task.

2.10 STABILIZATION

The Contractor shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instance:

Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable.

All areas not designated as buildings, roads, driveways, parking lots, walks, or aprons shall be established as lawn or vegetative areas. Permanent planting and vegetation shall be provided per approved the landscaping plan.

2.11 DEWATERING ACTIVITIES SEDIMENT CONTROL

- A. All waters which the Contractor pumps from excavations on this Project shall be routed through a portable sedimentation tank so as to remove all sediments carried by such water. The tank shall be in accordance with the Standard Specifications for Portable Sediment Tank included in NYSSDESC. The tank(s) shall be provided at any and all excavation locations, as warranted by dewatering activities.

2.15 CLEANING UP

As the work progresses, clean up the streets and rights of way and grade and round the backfill within the limits of the excavation. Mark soft trenches with signs, and adequate lights. Promptly refill, compact and grade all areas which settle subsequent to the initial backfilling.

All streets utilized by or worked on by the Contractor will be swept with approved self-contained mechanical sweeping equipment as directed by the Engineer but at least once every two (2) weeks until acceptance of the work by the Engineer.

Upon completion of the work haul all dirt and rubbish from the work site and leave the site clean to the satisfaction of the Engineer. Remove all surplus material, tools and temporary structures from the site.

PART 3: METHOD

3.01 DESCRIPTION

All work shall be in compliance with the drawings and shall follow the NYSSSESC. The Contractor shall install all E&SC practices as per the plan, details and notes as detailed on the Contract Drawings and these specifications. They shall adhere to the greatest extent possible the construction sequence and when not possible shall notify the Engineer to discuss modifications. Further, the contractor shall insure that at the end of each work day that the site shall be stabilized and the roadway clean of any soil tracked off site. In the event a precipitation event is forecasted, the Contractor shall prepare the site by inspecting and if necessary clean and repair all E&SC, stabilize open areas, place tarps over open soil piles and install temporary diversions to prevent the erosion of soils and possible transport of sediment off site or into the town drainage system. Where necessary if the Contractor shall protect open excavations or trenches during forecasted precipitation event by diverting concentrated surface flows per the means provided on the plans or as directed by the Engineer.

PART 4: MEASUREMENT AND PAYMENT

4.01 DESCRIPTION

The cost for this work item shall be paid as a lump sum item and include the cost of all labor, materials and equipment necessary to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer.

END OF SECTION

SECTION 029500 PERMANENT VEGETATIVE COVER

PART 1: GENERAL

1.1 SUMMARY

- A. Work Included: Under this Section, the Contractor shall provide all labor, equipment, and material necessary to furnish, install and maintain all permanent vegetative cover as shown on the Contract Drawings, as specified herein, as ordered, as approved by the Owner, and as part of site restoration.
- B. In general, the locations that may require permanent vegetative cover are all exposed soils where perennial vegetation is needed for long term protection, and on all exposed soils that have a potential for causing on-site and off-site environmental damage.
 - 1. Disturbed natural areas.
 - 2. Disturbed turf.
 - 3. Disturbed lawn.

1.2 SUBMITTALS

- A. General: Submit samples in accordance with Section No. 01300, Submittals.

PART 2 PRODUCTS

2.1 TOPSOIL

- A. Where topsoil on the areas to be excavated is of acceptable quality for use in the work, it shall be stripped therefrom to a depth directed, cleared of stumps and roots, and stored at approved locations separate from other storage until required to be placed on top of the backfill, fill, or other areas, as shown, specified, or directed.
- B. New topsoil shall consist of natural loam obtained from an area that has never been stripped, and shall be free from hard clods, stiff clay, partially disintegrated stone, cement, ashes, roots, or other undesirable material.

2.2

SEEDING

Seeds should be selected and planted in accordance with the following Table:

TABLE 1 - SECTION 02950 PERMANENT SEEDING MIXTURE RECOMMENDATIONS BY RATE AND SITE ADAPTION					
Seed as early as possible in the spring and not later than June 1. Late summer/ early fall seedings can also be done between August 15 - September 15.					
Seed Mixture	Variety	Rate in lbs/1000 ft ²	Excessively Drained Soil	Well to Mod Well Drained Soil	Poorly To Very Poorly Drained Soil
P. ryegrass	Pennant	0.6-0.8			
Creeping red fescue	Ensylva	0.4-0.6			
KY bluegrass	Eclipse	2.0-2.6			
Total		3.0-4.0	NG	X	X

PART 3 EXECUTION

3.1 SITE PREPARATION

- A. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring and maintenance. All grading should be done in accordance with the Westchester County Best Management Practices Manual for Erosion and Sediment Control.
- B. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, silt screens, sediment basins, and waterways according to practices of Westchester County.

3.2 SEEDBED PREPARATION

- A. Apply limestone and fertilizer according to soil test recommendations. If soil testing is not feasible on small or variable sites, or where timing is critical, fertilizer may be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-20-10 or equivalent. In addition, 300 pounds 38-0-0 per acre or equivalent of slow-release nitrogen may be used in lieu of topdressing. Apply pulverized dolomitic limestone at a rate of 3 tons per acre.

- B. Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches with a disc, springtooth harrow, or other suitable equipment. The final harrowing or disking operation should be on the general contour. Continue tillage until a reasonably uniform seedbed is prepared.
- C. Remove from the surface all stones 2 inches and larger in any dimension. Remove all other debris, such as wire, cable, tree roots, pieces of concrete, clods, lumps, or other unsuitable material.
- D. Inspect seedbed just before seeding. If traffic has left the soil compacted, the area must be retilled and firmed as above.
- E. Soils having a pH of 4 or less or containing iron sulfide shall be covered with a minimum of 12 inches of soil having a pH of 5 or more seedbed preparation. The added soil shall be limed as above.

3.3 SEED INSTALLATION

- A. Apply seed uniformly by hand, cylcone (centrifugal) seeder, drop seeder, drill cultipacker seeder, or hydroseeder. The latter may be justifiable for large, steep areas where conventional vehicles cannot travel. Mulch shall not be included in the tank with the seed. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil, to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse textured soil.
- B. After seeding, firming the soil with a corrugated roller to assure good seed-to-soil contact, restore capillarity, and improve seedling emergence. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.

3.4 MULCHING

- A. Mulching is required on all seeding. Mulch will ensure against erosion before grass is established and will promote faster and earlier establishment. (The existence of vegetation sufficient to control soil erosion shall be deemed compliance with this mulching requirement.
- B. Mulch materials shall be unrotted small grain straw, haw free of seeds, or salt hay to be applied at the rate of 2 tons per acre (90 pounds per 1,000 square feet). Mulch chopper-blowers must not grind the material.
- C. Spread uniformly by hand or mechanically so that seventy-five (75%) percent to ninety-five (95%) percent of the soil surface will be covered. For uniform distribution of hand-spread mulch, divide area into 1,000 square feet sections and distribute 90 pounds within each section.

- D. Mulch anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This is done by one of the following methods, depending upon the size of the area, steepness of slope, and costs.
1. Peg and Twine - Drive 8-to-10-inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.
 2. Mulch Nettings - Staple paper, jute, cotton, or plastic nettings to the soil surface. Use a degradable netting in areas to be mowed.
 3. Crimper (mulch anchoring tool) - A tractor drawn implement, somewhat like a disc-harrow, especially designed to push or cut some of the broadcast long fiber mulch 3 to 4 inches into the soil so as to anchor it and leave part standing upright. This technique is limited to areas traversable by a tractor, which must operate on the contour of slopes. Straw mulch rate must be 3 tons per acre. No tackifying or adhesive agent is required.
- E. Wood-fiber or paper-fiber mulch at the rate of 1,500 pounds per acre may be applied by a hydroseeder. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.

3.5 MAINTENANCE

- A. Maintain all planting starting with the planting operations and continuing for three hundred and sixty-five (365) calendar days after planting is complete and approved by the Owner.
- B. Include all watering, weeding, cultivating, spraying, and pruning necessary to keep the plant materials in a healthy growing condition and to keep planted areas neat and attractive during the maintenance period.
1. Provide all equipment and means for proper installation of water to planted areas.
 2. Protect all planted areas against damage, including erosion and trespassing, by providing and maintaining property safety guards.

- C. The Contractor shall be responsible for all lawn areas during the period when the grass is becoming established. Grass must have a minimum of three (3) mowings before a request for acceptance can be requested.
 - 1. All areas shall be watered and maintained until a thick stand of grass is established. After four (4) weeks of favorable growing weather, all bare spots shall be recultivated, raked, and rolled as in original work. If at any time before completion, any portion of the surface becomes gullied or otherwise, damaged following permanent stabilization, the affected portion shall be reestablished.
- D. At the end of the maintenance periods, all plant material shall be in a healthy growing condition.
 - 1. During the maintenance period, should the appearance of any lawn area indicate weakness and probability of dying, immediately replace that area at no additional cost to the Owner.

END OF SECTION

SECTION 032000 CONCRETE REINFORCEMENT

PART 1: GENERAL

1.01 DESCRIPTION

- A. Work Included: Under this Section, the Contractor shall provide all labor, equipment, and material necessary to furnish and install all steel required for the concrete work placed and as shown on the Contract Drawings, specified herein and approved by the Village of Ossining.

1.02 QUALITY ASSURANCE

A. Standards:

1. ACI 301: Specifications for Structural Concrete for Buildings.
2. ACI 302: Guide for Concrete Floor and Slab Construction.
3. ACI 315: Details and Detailing of Concrete Reinforcement.
4. ACI 315R: Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
5. ACI 318: Building Code Requirements for Reinforced Concrete.
6. AWS D1.1-92: Structural Welding Code - Reinforcing Steel.
7. CRSI: Manual of Standard Practice.

- B. Allowable Tolerances: Conform to ACI 301, Section 5.4.

1.03 SUBMITTALS

- A. General: Submit shop drawings and samples in accordance with Section No. 01300, Submittals.

- B. Shop Drawings: The Contractor shall submit complete shop drawings of all material proposed to be furnished and installed under this Section.
1. Show detail layouts of jointing and reinforcement, including dimensions, openings and spacings; embedded items; bending details; bar schedules; welds; and similar items required for the proper construction of this work.
 2. Detail the reinforcement in accordance with ACI 315, ACI 315R and CRSI Manual.
 3. Include the bar schedules, the individual weight of each bar, the total weight of each bar size and the total weight of bars on each schedule list. Base the calculated weights on the theoretical unit weights shown in Table 1, ASTM A615.
 4. Include in the minimum concrete cover for reinforcement.
- C. Samples: Accompanying the above submittal, submit samples of exposed-to-view bolsters and supports.
- D. Mill Certificates: Accompanying the shop drawings, submit steel producer=s certificates of mill analysis, tensile and bend tests for reinforcing steel.

1.04 **PRODUCT HANDLING**

- A. Delivery: Deliver reinforcement to the job site bundled, tagged and marked. Use metal tags indicating bar size, lengths and other information corresponding to markings shown on placement diagrams.
- B. Storage: Store reinforcement at the job site in a manner to prevent damage and accumulation of dirt and excessive rust.

PART 2 PRODUCTS

2.01 **GENERAL**

- A. Conform to ACI 301, ACI 315 and ACI 315R unless otherwise shown or specified.

2.02 **MATERIALS**

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed, epoxy coated.
- B. Steel Wire: ASTM A 82, plane, cold drawn steel.

- C. Welded Wire Fabric (WWF): Welded Wire Fabric shall be welded steel wire fabric and shall conform to ASTM A 185. All fabric shall be hot-dipped galvanized after fabrication to produce a Class 2 coating equal to that specified in ASTM A 641, Table 1.
- D. Supports for Reinforcement: Bolster, chairs, spacers and other devices for spacing, supporting and fastening reinforcement in place:
 - 1. Use wire bar type supports complying with CRSI recommendations unless otherwise indicated. Do not use wood, brick and other unacceptable materials.
 - 2. For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 3. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with either plastic protected legs or stainless-steel legs.

2.03 FABRICATION

- A. General: Fabricate reinforcing bars to conform to required shapes and dimensions with fabrication tolerances complying with CRSI Manual. In case of fabricating errors, do not rebend or straighten reinforcement in a manner that will injure or weaken the material.
- B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the work:
 - 1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
 - 2. Bend or kinks not indicated on drawings or final shop drawings.
 - 3. Bars with reduced cross-section due to excessive rusting or other cause.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine the sub-grade conditions, form work and the conditions under which concrete reinforcement is to be placed and correct conditions which would prevent proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:

1. Comply with the specified standards for details and methods of reinforcement placement and supports and as herein specified.
2. Clean reinforcement to remove loose rust and mill scale, earth and other materials which reduce or destroy bond with concrete.
3. Position, support and secure reinforcement against displacement of form work, construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers as required.
4. Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space and securely tie bars and bar supports together with sixteen (16) gauge wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.
5. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.
6. Provide sufficient numbers of supports and of strength to carry reinforcement. Do not place reinforcing bars more than two (2) inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

B. Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact and tightly tying wire. Where welded splices are approved, conform to AWS D1.1-92.

C. Encase Steel Members: Unless otherwise shown wrap structural steel members to be encased in concrete with 6-inch x 6-inch mesh of ten (10) gauge galvanized steel wire applied around the steel over spacers to provide 3/4-inch clearance from the metal. Lap and tie the edges of the mesh and make all loose ends fast with not lighter than sixteen (16) gauge wire.

- D. Application of Standards: For all items presented in these specifications, where- ever a conflict arises regarding which standards are to apply, the more rigorous standard or code shall be deeded to apply.

END OF SECTION

SECTION 033000 CAST IN PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

- A. Under this Section, the Contractor shall provide all labor, equipment, and materials necessary to furnish, install and test all cast-in-place concrete complete in place and as shown on the Contract Drawings, specified herein and approved by the Owner.

1.02 RELATED WORK

Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and other specifications in this bid document.

1.03 QUALITY ASSURANCE

A. Standards:

1. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
2. ACI 214: Recommended Practice for Evaluation of Strength Test Results of Concrete.
3. ACI 301: Specifications for Structural Concrete for Buildings.
4. ACI 302: Guide for Concrete Floor and Slab Construction.
5. ACI 304R: Guide for Measuring, Mixing, Transporting and Placing Concrete.
6. ACI 304, 2R: Placing Concrete by Pumping Methods.
7. ACI 305R: Hot Weather Concreting.
8. ACI 306R: Cold Weather Concreting.
9. ACI 308: Standard Practice for Curing Concrete.
10. ACI 309: Standard Practice for Consolidation of Concrete.
11. ACI 318: Building Code Requirements for Reinforced Concrete.
12. ACI SP-2: ACI Manual of Concrete Inspection.
13. National Ready-Mixed Concrete Association (NRMCA): Certification of Ready-Mixed Concrete Production Facilities.
14. Truck Mixer Manufacturer's Bureau (TMMB): Truck Mixer and Agitator Standards.
15. Concrete Plant Manufacturer's Bureau (CPMB): Concrete Plant Mixer Manufacturer's Division.

16. In case of conflict between the referenced standards, the more stringent requirements shall govern.

B. Qualifications of Installers:

1. Throughout the progress of installation of the work of this Section, provide at least one (1) person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills and who shall be present at the site and direct all the work performed under this Section.
2. In actual installation of the work of this Section, use adequate numbers of skilled workmen to ensure installation in strict accordance with the approved design.
3. In acceptance or rejection of work performed under this Section, the Owner will make no allowance for lack of skill on the part of the workmen.

B. Quality Control:

1. Prior to all work under this Section, make all necessary arrangements with the testing laboratory. The testing laboratory shall:
 - a. Test and furnish certified reports on:
 - i. Proposed aggregates
 - ii. Proposed cements unless such testing is waived by the Owner.
 - iii. Mixing water.

- b. Prepare design mixes for each type of concrete. Conform to ACI 301, Section 3.8. These mix designs shall be prepared under the supervision of a Professional Engineer experienced in the special considerations of materials and mixes.
- c. Proportion mixes by laboratory trial batch using materials to be employed on the work for each class of concrete required. Conform to ACI 211.1 and report the following to the Owner.
 - i. Complete identification of aggregate source of supply.
 - ii. Results of tests of aggregates for compliance with specified requirements.
 - iii. Scale weight of each aggregate.
 - iv. Absorbed water in each aggregate.
 - v. Brand, type, chemistry, and physical test for each cement.
 - vi. Brand, type, and amount of each admixture.
 - vii. Amounts of water used in trial mixes.
 - viii. Proportions of each material per cubic yard.
 - ix. Gross weight and yield per cubic yard of trial mixes.
 - x. Measured slump.
 - xi. Water-cement ratio.
 - xii. Measured air content.
 - xiii. Compressive strength developed at one (1) calendar day, three (3) calendar days, seven (7) calendar days and twenty-eight (28) calendar days, from not less than three (3) test cylinders cast for each one (1), three (3), seven (7) and twenty-eight (28) calendar day test and for each design mix.

- d. Furnish certified reports of each proposed mix for each type of concrete at least thirty (30) calendar days prior to start of installation of the work of this Section.
2. Do not begin concrete production until all mixes have been reviewed by the Owner.
3. Also see other requirements for testing as stated in Part 3 Execution of this Section.

1.4

SUBMITTALS

- A. General: Submit shop drawings and product data.
- B. Product Data:
 1. Complete materials list of items to be furnished and installed under this Section.
 2. Sufficient data to demonstrate compliance with the specified requirements, including catalog cuts of the following:
 - a. Admixtures
 - b. Curing compound
 - c. Grout
 - d. Bonding agent
 - e. Abrasive
 - f. Floor sealer
 3. Complete information on cement source of supply, physical and chemical characteristics, transportation and intermediate terminaling procedures for mill-to-site handling and site storage procedures.
 4. Complete information on aggregate procurement, processing, and storage.
 5. Complete information on proposed batching and mixing equipment and procedures including water chilling or other devices or systems to reduce mix temperatures.
 6. Complete information on concrete handling equipment proposed to be used including capacities for chutes, pumps, tremies, buckets and all other equipment.
 7. Complete information on proposed consolidation equipment.
 8. Complete description of proposed curing methods.
 9. Complete mix designs, prepared in accordance with provisions of subparagraph 1.2.C above.
- C. Temperature Control Methods: Prior to placing concrete during hot or cold weather, submit proposed methods of controlling concrete temperatures.
- D. Batch Tickets: With each batch delivered and before unloading at the site, submit to the Owner certification or delivery ticket from concrete supplier setting forth the following information:
 1. Name of supplier.
 2. Name of batching plant and location.
 3. Serial number of tickets.

4. Date.
5. Truck number.
6. Specific job designation (contract number and location).
7. Volume of concrete (cubic yards).
8. Specific class and type of concrete (in conformance with specification requirements).
9. Time loaded.
10. Type and brand of cement.
11. Weight of cement.
12. Maximum size of aggregates.
13. Weights of coarse and fine aggregates, respectively.
14. Maximum amount of water to be added and amount of water added at the site, if any.
15. Kind and amount of admixtures.
16. Computer tape from plant with definitions of symbols.

1.5 PRODUCT HANDLING

- A. General: Conform to ACI 301 and ACI 304.
- B. Protection: Use all means necessary to protect the materials of this Section before, during and after installation and to protect the work and materials of all other trades.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and at no additional cost to the Owner.

1.6 JOB CONDITIONS

- A. Environmental Requirements:
 1. Cold Weather Concreting: Conform to ACI 301 and ACI 306R.
 2. Hot Weather Concreting: Conform to ACI 301 and ACI 305R.
- B. Protection: Conform to ACI 301, Chapter 12 and ACI 302, Chapter 8.

PART 2 PRODUCTS

2.1 GENERAL

- A. Conform to ACI 301 and ACI 302 unless otherwise shown or specified.

2.2 CEMENT

- A. General:
 1. Portland, conforming to ASTM C150, except that twenty-eight (28) calendar day cube strength shall be a minimum of 5,500 pounds per square inch.
 2. Cement shall be Type I or Type II. All concrete in contact with sewage shall employ Type II cement. Elsewhere, Type I cement may be used.

3. Do not use cement having a temperature greater than 140 degrees F.
 4. Do not use air-entraining cement.
 - B. Sequence of Use: Use only one brand of cement for the entire work and use in the same sequence as received at the site.
 - C. Mill Tests: Furnish mill tests for all cement. The twenty-eight (28) calendar day cube strength results may be submitted in a separate report but shall be related to the specific batch tested.
- 2.3 AGGREGATES
- A. General: Conform to ASTM C33, except as modified below.
 - B. Coarse Aggregate:
 1. Crushed stone, ASTM C33.
 2. Quarried or washed in fresh water.
 3. Limits for deleterious substances and physical property requirements in accordance with ASTM C33, Table 3, Classes 1S through 5S.
 - C. Fine Aggregate:
 1. Natural sand or stone sand, ASTM C33.
 2. Washed in fresh water.
 - D. Aggregate Sources: Provide aggregate from one source of supply only.
 - E. Aggregate Sizes: Maximum aggregate size shall be not larger than one-fifth of the narrowest dimension between sides of forms, one-third of the depth of slabs nor three-fourths of the minimum clearing space between individual reinforcing bars or bundles of bars.
- 2.4 WATER
- A. Water for use in concrete shall be free from objectionable quantities of oil, acid, alkali, organic matter, salt, or other impurities and shall be similar in quality to drinking water fit for human consumption.

- B. Water for curing shall not contain any substance injurious to concrete or which might cause staining.
- C. Water from doubtful sources, as determined by the Owner, shall not be used until tested and approved.

2.5

ADMIXTURE

- A. General: The use of admixtures shall not be construed as permitting a reduction in cement content.
- B. Air-entraining Admixture: ASTM C260.
- C. Water Reducing and Retarding Admixture: ASTM C494, Type A.
- D. Pumping Aid Admixture: Euclid Chemical "Pump-Ez," W.R. Grace "Darex Pumping Aid", Sika "Pump Aid" or approved equal.
- E. Accelerating Admixture: Not permitted.
- F. Calcium Chloride: Not permitted.
- G. Fly Ash: Not permitted.
- H. Acceptable Substitutes: The Owner will consider only those proposed admixture substitutions which have been completely tested and reported upon by the testing laboratory in accordance with the provisions of subparagraph 1.2.C (1) above.

2.6

CURING MATERIALS

- A. Liquid Curing Compounds: ASTM C309, Type 1.
- B. Sheet Materials: ASTM C171.
- C. Burlap Cloth: Jute or kenaf, weighing approximately nine (9) ounces per yard, AASHTO M 182, two (2) layers.

2.7

BATCHING, MIXING AND DELIVERY EQUIPMENT

- A. Use transit-mixed concrete from approved batching and mixing plant. Batch, mix and transport concrete to site in accordance with provisions of ASTM C94.

2.8 PROPORTIONING OF CEMENT

A. General:

1. Classes of concrete are designated by numerals corresponding to their twenty-eight (28) calendar day compressive strength in pounds per square inch.
2. Concrete classes are indicated on the drawings and are specified in various sections of these specifications. When class is not indicated or specified, Class 4000 shall be provided.

B. Water-cement Ratio: 0.45 maximum, by weight.C. Slump:

1. Minimum Slump: One (1) inch.
2. Maximum Slump:
 - a Footings, foundations walls: 3 inches
 - b Walls, columns, beams: 4 inches
 - c Floors, exterior slabs, other building components: 3 inches
 - d Massive concrete: 2 inches
3. If pumping of concrete is permitted by the Owner, the maximum slump may be increased by one (1) inch.

D. Air Content: In accordance with ACI 301 and ACI 302.E. Admixtures:

1. Use air-entraining admixture in all concrete. Add air-entraining admixture
2. Use admixtures for water-reducing and retarding in compliance with manufacturer's directions.
3. Use type of admixture appropriate to climatic conditions prevailing at time of placing. Adjust quantities and types of specified admixtures as required to maintain quality.

F. Pumped Concrete:1. General:

- a If pumped concrete is proposed for use, design and submit mixes specifically for pumping and obtain the Owner's written permission to use the pumping method.
- b Conform to ACI 304, 2R.
2. Use admixtures that will aid in pumping as follows:
 - a Air-entrainment sufficient for 5 to 7 percent air.

- b. Water reducer.
- c. Pumping aid.
- 3. To facilitate pumping, adjust the standard mix proportion to product a slight reduction in the volume of coarse aggregate with a corresponding increase in the volume of fine aggregate.
- 4. Cement content shall be sufficient to accommodate the specified slump.
- 5. Use fine aggregates with the fineness modulus between 2.2 and 2.8. Use gradations indicated in ACI 304, 2R, paragraphs 4.2.2, 4.2.3, 4.3.4 and 4.3.5.
- 6. Use a properly combined coarse and fine aggregate gradation by volume that will prevent the paste from being squeezed through the voids between aggregate particles.

PART 3 EXECUTION

3.1 MIXING, CONVEYING AND PLACING CONCRETE

- A. General: Mix, transport, and place concrete in accordance with ACI 301, Chapters 7, 8 and 11; ACI 301, Chapters 6 and 7; and ACI 304, unless otherwise specified.

- B. Hot Weather Concreting: Perform concreting in accordance with ACI 305R and as follows:
1. Concrete placed during hot weather shall have the lowest temperature practicable to produce under the conditions. The temperature of concrete as placed shall not exceed 85 degrees F except where an approved retarder is used. The mixing water and/or aggregates will be cooled, if necessary, to maintain a satisfactory placing temperature.
 2. In no case shall the placing temperature exceed 95 degrees F.
- C. Cold Weather Concreting:
1. Perform concreting in accordance with ACI 306R and as follows:
 2. The ambient temperature of the space adjacent to the concrete placement and surface to receive concrete shall be maintained at not less than 40 degrees F. The temperature of the concrete when placed shall be not less than 50 degrees F nor more than 75 degrees F. Mixing water or aggregates shall be heated as required to regulate the concrete placing temperature. Materials entering the mixer shall be free from ice, snow, or frozen lumps.
 3. Salt, chemicals, or other materials shall not be incorporated in the concrete to prevent freezing.
- D. Preparation for Placing Concrete:
1. Conform to ACI 301, ACI 302 and as follows.
 2. Polyethylene sheeting shall be laid over dry or previous surfaces to receive concrete as shown on the drawings. Concrete footings and exterior slabs may be laid directly on impervious surfaces which are thoroughly moistened but not muddy at the time of concrete placement.
 3. Vapor Barrier for Slabs on Grade: Immediately before placing concrete, the porous fill or subgrade under slabs in buildings shall be covered with a vapor barrier unless membrane waterproofing is indicated. Punctures and tears during subsequent operations shall be patched. Edges shall be lapped not less than four (4) inches and ends not less than six (6) inches. Patches and lapped joints shall be sealed with a pressure-sensitive adhesive or pressure-sensitive tape not less than two (2) inches wide and compatible with the vapor barrier.

4. Rock Foundations:
 - a. The rock surface shall be prepared by roughening, where necessary, and thorough cleaning. Loose rock, dried grout, flaky and scaly coatings, organic deposits, and foreign material shall be removed. Open fissures shall be cleaned to a suitable depth and to firm rock on the sides.
 - b. Cleaning shall be done by use of stiff brooms, picks, jets of water and air applied at high velocity, water blasting or any other effective means, followed by thorough washing. Accumulations of wash water in depressions shall be removed prior to placing the concrete.
 - c. The rock surface shall be completely surface dried by air jets. The presence of any free surface water, which may be indicated by shininess, will not be permitted.
- E. Batching, Mixing and Transporting Equipment: Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C94, except as otherwise specified. Truck mixers, agitators and non-agitating units shall comply with TMMB "Truck Mixer and Agitator Standards". Plant equipment facilities shall conform to NRMCA "Certification of Ready Mixed Concrete Production Facilities".
- F. Pumped Concrete:
 1. Concrete may be conveyed by pumps only when approved by the Owner.
 2. Pumping equipment shall be of a type designed to handle the types, classes, and volumes of concrete to be conveyed without segregation. The pumping distance shall be within the limits recommended by the pump manufacturer. Pipeline shall be steel or flexible hose.
 3. The pump equipment shall be so operated that a continuous stream of concrete without air pockets is produced.
 4. The discharge end of the line shall be positioned as near the final position of the concrete as possible but in no case more than five (5) feet away.
 5. When pumping is completed, the concrete remaining in the pipeline shall be ejected without contaminating the concrete in place. After each operation, the equipment shall be thoroughly cleaned, and the flushing water shall be wasted outside the forms.

3.2

FINISHES

- A. Repair of Surface Defects: Immediately after form removal, repair defects in accordance with ACI 301, Chapter 9.
- B. Formed Surfaces:
 - 1. General: Finish formed surfaces in accordance with ACI 301, Chapter 10 and as specified below.
 - 2. Exposed Interior and Exterior Surfaces: Smooth form finish, ACI 301, Section 10.2.2.
 - 3. Exposed Interior and Exterior Surfaces: Grout cleaned finish, ACI 301, Section 10.3.2.
- C. Slabs:
 - 1. Types of Finish: Conform to ACI 301, Section 11.8.
 - 2. Finishing Tolerances: Conform to ACI 301, Section 11.9.2.
 - 3. Finishing Procedures:
 - a. Conform to ACI 302, Chapters 7, Section 7.1 through 7.2.10, Section 7.8 and Section 7.11.
 - b. Troweling: Provide a second troweling only in areas where slab is to remain exposed.
 - c. Do not use any finishing or troweling machine or other apparatus which has a water attachment for wetting the concrete during finishing.

D. Preparation of Base Slabs:

1. The surface of the structural slab shall be struck off true at the grade indicated on the Contract Drawings or approved as the concrete is being
2. As soon thereafter as the condition of the concrete permits and before it has hardened appreciably (normally within two (2) to four (4) hours after being deposited), all water, scum, laitance and loose aggregate shall be removed from the surface by means of wire or bristle broom in such a manner as to leave the coarse aggregate slightly exposed and the surface clean. Raking or other methods which cause weak serrations shall not be employed. Avoid "muddying" the surface by brooming too soon. The formation of depressions and general unevenness shall be avoided. Thereafter the Contractor shall take all necessary precautions to ensure that the surface thus prepared is adequately cured and protected from drippings, staining, storage of materials or accumulation of substances which would adversely affect the concrete or the bond between the concrete and the topping.
3. If the surface has hardened to a degree that will not permit adequate cleaning of the surface by brooming, the base slab shall be prepared by chipping, wet sand blasting or scabbling after it has hardened. Such preparation shall thoroughly clean and prepare the surface as specified above. Where chipping or scabbling is required, at least ninety (90) percent of every two (2) square inch area on the surface shall be newly exposed. The depth of chipping or scabbling shall be within the tolerances given above. Particular attention shall be given to all extremities of placement, such as at columns, openings, walls, construction joints, etc. In these locations 100 percent of new concrete shall be exposed for a band at least four (4) inches wide.

3.3 CURING AND PROTECTION

- A. Cure and protect concrete in accordance with ACI 301, Chapter 12, ACI 302, Chapter 8 and ACI 308.
- B. Provide appropriate measures for the prevention of plastic shrinkage cracking in accordance with ACI 302, Section 8.4.

C. Curing Compound:

1. Do not use curing compound on surfaces to receive cementitious setting beds or toppings; terrazzo; paint; insulation, roofing or waterproofing; resilient tile; carpeting; thin-set ceramic tile or on any other surfaces that are to receive any subsequent treatment depending on adhesion or bonding to the concrete.
2. Concrete surfaces which have been subjected to rainfall within three (3) hours after during compound has been applied shall be resprayed at the coverage herein specified.

D. Correction of Defective Appearance:

1. If the use of any curing method results in stained, discolored, streaked or blotchy appearance, the use of that method shall be stopped, and another acceptable curing method shall be substituted until the cause of the defective appearance is corrected.
2. All such defective surfaces shall be remedied to the satisfaction of the Owner.

3.4

MISCELLANEOUS CONCRETE WORK

- A. Filling-in: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown, after work of other trades is in place. Mix, place, and cure concrete as herein specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work including wheel guards, pipe stanchions and similar items.

B. Installation of Grouts:

1. Base plates, bearing plates and similar items of structural steel shall be grouted immediately after their erection.
2. Plates shall be set and anchored to the proper lines and elevation. Concrete and metal surfaces in contact with grout shall be clean and free of laitance and shall be dampened.
3. Conform to the manufacturer's recommendations for mixing, placing, and curing of grout. Use chains, rods or vibrator to compact grout and remove voids.

C. Installation of Concrete Floor Fill:

1. Any equipment shall be accurately adjusted by a representative of the manufacturer prior to placement of the concrete fill, trowel-grade mortar.
2. Just prior to placement of the concrete fill, all debris and loose and foreign material shall be removed from the base slab. The base shall then be cleaned by brooming and/or air jet and flushing with a strong jet of water. Care shall be taken to clean thoroughly every square inch of the base, including all depressions, so that it will be in the same clean condition as specified above for preliminary preparation.
3. The base slab shall be left thoroughly wet at least twelve (12) hours to absorb water and thus prevent ultimate flash hardening and provide a source of water for curing of floor fill.
4. Immediately before the fill is placed, all pools of water left on the base by cleaning or prewetting operations shall be removed by air jet and a premixed thin (1/16 inch to 1/8 inch thick) coat of thick neat-cement paste or slurry having the consistency of thick lead paint shall be broomed and scrubbed into the still damp (but not glistening wet) surface for a short distance ahead of the placing operations. The area slurried at one time should not be over 100 square feet so that the paste will not achieve its initial set before the finish is placed. Dusting dry cement will not be permitted.
5. Apply and broom in the slurry in small areas not exceeding five (5) feet square to avoid segregation and dilution of the paste. All extremities of placements such as at walls, openings, construction joints, etc. shall be given special attention. Excess, diluted and dead slurry shall be constantly removed from the base.

3.05 REPAIR OF DAMAGED WORK

- A. Before final acceptance of work, neatly repair damaged surfaces, corners of concrete and concrete finish whether such damage resulted from action of elements or from any cause whatsoever.
- B. Finish damaged concrete where surface repairs are permitted to a smooth, dense, watertight condition.

3.06 CORRECTIVE WORK

- A. If the Owner gives permission for defects to be corrected, remove defective concrete, then roughen, key and soak surface with water before patching with concrete or mortar of color to match surrounding concrete. White cement shall be added as required material to produce same color as original concrete.
- B. Prepare mortar used in pointing not more than thirty (30) minutes prior to use.
- C. Correct high areas in slab surface by grinding, after concrete has cured at least fourteen days

3.7

FIELD QUALITY CONTROL

A. Testing and Inspection Services:

1. During the entire period when concrete is being placed, testing and inspection services shall be provided by an independent testing laboratory retained and paid for by the Owner.
2. The Contractor, however, shall supply whatever assistance, including labor and equipment that the test service may require. This shall include obtaining sample and the filling of cylinders.

B. Reports: The laboratory shall prepare and submit all reports required in the various standards and specifications referenced herein to the Owner and the Contractor.C. Scope of Testing and Inspection Services: The laboratory shall provide testing and inspection services in accordance with the below-referenced section of ACI 301 and in accordance with the Building Code.

1. Strength Tests: Conform to ACI 301, Section 16.3.4 except as follows:
 - a. Make one strength test (four (4) cylinders) for each thirty (30) cubic yards or fraction therefore each mix design of concrete placed in any one day.
 - b. Test one (1) specimen at seven (7) calendar days and three (3) specimens at twenty-eight (28) calendar days.
 - c. The twenty-eight (28) calendar day test results shall be the average of the strengths of the three (3) specimens, except that if one (1) specimen in a test manifests evidence of improper sampling, molding, or testing, it shall be discarded, and the remaining two (2) strengths averaged.
 - d. Should more than one (1) specimen in a test show any of the above defects, the entire test shall be discarded.
 - e. Whenever the seven (7) calendar days test results are below sixty-five (65%) percent of the specified strength and/or whenever the twenty-eight (28) calendar days test results are below the specified strength, the specimens shall be stored and kept intact for thirty (30) days or until inspected by both the Owner and the Contractor, which-ever is sooner.
2. Slump, Air Content, Unit Weight and Temperature: Conform to ACI 301, Sections 16.3.5, 16.3.6, 16.3.7 and 16.3.8.

D. In-place Tests:

1. Additional tests shall be performed by the laboratory if twenty-eight (28) calendar days test cylinders show strengths less than that which is required. The cost of these additional tests shall be borne by the Contractor and may include core tests and load tests and the use of mechanical, electrical, and electronic testing devices.
2. Additional testing may also be required if there is evidence of

faulty workmanship or a violation of project requirements. The cost of these tests shall be borne by the Contractor.

3. In the event of placed concrete failing the cylinder tests or any additional tests as above, the entire concrete shall be replaced, and all the costs shall be borne by the Contractor.

3.8

SCHEDULE - CONCRETE CLASS USE

- A. Class A - 4,000 psi 28 calendar days air-entrained concrete for all foundation slabs, walls, abutments, footings, piers, steps, pile caps, manholes and all structural concrete for superstructures.

END OF SECTION

SECTION 070200 PRECAST CONCRETE CATCH BASINS AND MANHOLES**PART 1: WORK****1.01 DESCRIPTION**

Under this work, the Contractor shall furnish and install precast concrete catch basins and manholes as indicated on the Drawings and as specified herein. Subsequently, in this Section, these items will be referred to as "precast units". This shall also include all frames, covers, traps, steps/rungs, and other miscellaneous items to be fabricated with or installed on the precast units.

- A. Tie-Ins – Included in this work shall be the cost for furnishing and installing all pipes, and appurtenances required to connect footing drains to catch basins and manholes.
- B. Cleaning - Included in this work shall be the cost for cleaning all catch basins and manholes of silt and debris prior to final acceptance of the project by the Owner.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 200: Excavation
- B. Division 300: Pavements
- C. Section 0702: Precast Concrete Catch Basins and Manholes
- D. Section 0703: Yard Drains

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
- B. Federal Specifications (FS)
- C. American Association of State Highway and Transportation Officials (AASHTO)
- D. Standard specifications of the Town of Cortlandt.
- E. International Concrete Repair Institute (ICRI)

1.04 DESIGN REQUIREMENTS

- A. Precast units shall meet The Village of Briarcliff Manor requirements and be capable of withstanding an AASHTO HS20 loading.
- B. Precast units shall be manufactured using normal weight concrete with a minimum compressive strength of 4000 psi, air-entrained, and a maximum water to cement ratio of 0.42.

1.05 SUBMITTALS

A. Product Data

Submit manufacturer's product data on each of the following:

1. Each type of cast iron cover and frame
2. Each type of step/rung
3. Trap
4. Butyl Gasket
5. Coating

B. Shop Drawings

Before casting units, submit shop drawings of each item to be cast, showing details of all pipe entries, finish grades and other pertinent information. Ensure the orientation of the catch basin properly accounts for the required grating slot direction.

C. Quality Control Submittals

1. Design Data: Submit design mixes for concrete, including list of admixtures to be used, and preliminary trial mix test results.
2. Test Reports: Daily testing logs.
3. Certification: From testing laboratory that construction of the precast units is in compliance with the requirements of The Village of Briarcliff Manor and this specification.
4. Contractor Qualifications: Provide proof of Manufacturer and Concrete Laboratory qualifications specified under "Quality Assurance".

1.06 QUALITY ASSURANCE

A. Qualifications

1. Precast Unit Manufacturer: Company specializing in the production of precast concrete site structures shall have a minimum of five years experience.
2. Concrete Laboratory: Concrete laboratory providing design mixes and quality control inspection shall be approved by The Village of Briarcliff Manor and shall meet the requirements of ASTM E329.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle precast units in such manner so as not to damage the units.

PART 2: PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

- A. All manufacturers of materials shall be as approved by The Village of Briarcliff Manor or as specified by the plans. The Contractor may offer substitutions for approval.

2.02 MATERIALS

- A. Cement

Shall conform to ASTM C150, Type II, and shall be of the non air-entrained types:

- B. Admixtures

1. The use of admixtures shall comply with the requirements of Section 500 and all related sections of the NYS DOT Standard Specifications. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed .05 at 28 days.
2. Air-entraining admixtures shall conform to ASTM C260.
3. Chemical admixtures shall conform to ASTM C494.

- C. Water

Shall be clean potable water free of injurious foreign matter conforming to the requirements for water specified in ASTM C94.

- D. Aggregates

Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3.3 of ACI 318. Aggregates shall conform to ASTM C33 and be of Size No.67 or No.8.

- E. Concrete Reinforcement

1. Reinforcing Bars: All reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615, grade 60. No rail or re-rolled steel will be permitted.
2. Welded Steel Wire Fabric: Wire Fabric shall conform to the requirements of ASTM A185.

F. Manhole/Detention Basin Frame and Cover

Campbell Foundry Co. cast iron frame and cover with type as specified on the plans or equal product approved by the Engineer.

G. Catch Basin Frame and Cover

Campbell Foundry Co. cast iron frame and cover with type as specified on the plans or equal product approved by the Engineer.

H. Precast Unit Steps/rungs:

1. Campbell Foundry Co. Pattern #2592 (cast iron, diamond non-skid design) or equal product approved by the Engineer.

I. Self-sealing Butyl Gasket

7/8" x 7/8" or 1" diameter conforming to Fed. Spec. SS-S-00210.

J. Expansion Screw Anchors with malleable lead shields in accordance with Federal Specifications FF-S-325C, Group 1, Type 1, Class 1.

K. Interior Coating

Two component high solids epoxy polyamide coating in accordance with ANSI/NSF Standard 61 meeting the performance characteristics of Tnemec Series 66 Hi-Build Epoxoline or Carboline Carboguard 888.

L. Exterior Coating

Two component coal tar-epoxy coating meeting the performance characteristics of Tnemec 46-413 Tneme-Tar or Carboline Bitumastic 300M.

2.03 MIXES

A. General

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

Strength requirements given in Part 1 of this Specification are based on 28-day compressive strength.

C. Provide the following air content for the grading size of coarse aggregate as follows:

1. No.8.....7½%
2. No. **57 or 67**.....6%

Tolerance on air content as delivered shall be +1.5%.

2.04 FABRICATION

- A. Fabricate the precast units to the sizes and shapes shown on the Drawings, with pipe openings, precast collars, rungs/steps, lift inserts and other items as indicated.
- B. Cast units in tight, well-built forms; vibrate concrete to ensure smooth, laitance-free surfaces.
- C. Finished units shall be warp-free, of uniform thicknesses with shapes, sizes, pipe openings, inserts and all other details as shown on the Drawings and as specified herein.
- D. Provide 5/8" threaded dowels at pipe opening locations to provide attachment for piping.
- E. Provide scoring for bond on bottom slab of the precast units as detailed on the Drawings. Provide keys at all joints.

2.05 PROTECTIVE COATINGS

- A. Interior coating for precast units
 - 1. Surface preparation
 - a. Surfaces shall be cleaned free of dust, oil, grease, laitance, or any other foreign matter.
 - b. Surfaces shall be acid etched or whipblasted to provide an ICRI CSP 1 surface prep.
 - 2. The epoxy coating is to be applied in two applications. While the surface preparation is to be done at the plant, the contractor has the option of having the first application of the coating done in the plant or having both applications done in the field. Apply at a rate of 4.0 mils DFT per coat. Apply in strict accordance with the manufacturer's recommendations.
- B. Exterior coating for precast units

Provide for units and surfaces specified to receive it.

1. Surface preparation
 - a. Surfaces shall be cleaned free of dust, oil, grease, laitance, or any other foreign matter.
 - b. Surfaces shall be acid etched or whipblasted to provide an ICRI CSP 1 surface prep.
2. The coal tar-epoxy coating is to be applied in two applications. While the surface preparation is to be done at the plant, the contractor has the option of having the first application of the coating done in the plant or having both applications done in the field. Apply at a rate of 8.0 mils DFT per coat. Apply in strict accordance with the manufacturer's recommendations.

PART 3: METHOD

3.01 INSTALLATION

- A. Install precast units at locations shown on the Drawings; place level and plumb, and to proper depths. Catch basins are to be placed to ensure that the long direction of the slot of the grating will be perpendicular to the flow of pedestrian traffic. Coordinate with pipe connection locations. Install butyl gaskets at joints on both horizontal surfaces of keyed joint, in such manner to seal each joint completely, providing adequate lap. One 9" or less diameter opening per unit is permitted to be core drilled in the field due to fabrication errors. Any other unit requiring greater diameter or greater opening shall be rejected.
- B. Install precast collars and manhole brick set in Type M mortar to allow for placement of the covers at the correct rim invert elevation.
- C. Install cast iron frames and covers, and traps, as detailed on the Drawings and as recommended by the manufacturer. Grates are to be placed with the long direction of the slot perpendicular to the flow of pedestrian traffic when placed in walkways.
- D. Units with large spalls (greater than 2" in depth and 2 SF in area) and openings greater than 9" in diameter placed in the wrong location are rejected and shall be replaced. Minor spalls and openings 9" or less placed in the wrong location are to be patched as follows:
 1. Roughen surface or perimeter of opening to a fractured aggregate surface.
 2. In openings, drill and install a minimum of four 1/2" dia ss expansion anchors with 4" extension.
 3. At openings, install butyl sealant around perimeter.
 4. Apply slurry coat of hydraulic repair mortar of type approved by the A/E of Record to all surfaces to receive repair mortar.
 5. Install hydraulic repair mortar to match existing contours and thicknesses of members.

- E. After installation of the precast units and before backfilling, provide protective coatings as follows:
1. Interior: If the first coat was applied in the shop, lightly clean and roughen the surface and touch up areas of damage with the same coating. Apply a second coat at 4.0 mils DFT. IF both coats are to be applied in the field, apply each coat at 4.0 mils DFT per coat, allowing the manufacturer's recommended cure time between coats. If second coat is not installed within manufacturer's specified time parameters, lightly roughen prior to second coat.
 2. Exterior, for those surfaces and units designated to receive it: If the first coat was applied in the shop, lightly clean and roughen the surface and touch up areas of damage with the same coating. Apply a second coat at 8.0 mils DFT. IF both coats are to be applied in the field, apply each coat at 8.0 mils DFT per coat, allowing the manufacturer's recommended cure time between coats. If second coat is not installed within manufacturer's specified parameters, lightly roughen prior to second coat.
- F. Make pipe-to-precast unit connections using non-shrink grout.

PART 4: MEASUREMENT AND PAYMENT

4.01 DESCRIPTION

The cost for this work item shall be included in the **Project Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to the catch basins or manholes, frames and grates installed in place. The work shall include the cost of furnishing all labor, materials and equipment including but not limited to excavation, select backfilling and compaction, sub base material, removal and disposal of surplus material, proposed and existing drainage pipe connections, brick masonry, concrete block, concrete, precast structures, frames and grates, reinforcing, bolts or other connections, asphalt saw cutting, temporary pavement, pavement repair or patching, and any incidental work required to complete the work in accordance with the Contract Drawings and Specifications, and to the satisfaction of the Engineer. Included in this work shall be the cost for cleaning all catch basins and manholes of silt and debris prior to final acceptance of the project by the Owner.

END OF SECTION

SECTION 075350 MODIFIED BITUMEN MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. PREPARATION OF EXISTING ROOF SYSTEM TO RECEIVE ROOFING MATERIALS
- B. ROOF MEMBRANE APPLICATION
- C. ROOF FLASHING APPLICATION
- D. ROOF PROTECTION SYSTEM APPLICATION
- E. INCORPORATION OF SHEET METAL FLASHING COMPONENTS AND ROOFING ACCESSORIES INTO THE ROOF SYSTEM

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

- A. SHEET METAL FLASHING AND TRIM
- B. SHEET METAL ROOFING SPECIALTIES
- C. PAVER BALLAST & PEDESTALS

1.03 REFERENCE STANDARDS

References in these specifications to standards, test methods, codes etc., are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout these specifications.

ASTM	American Society for Testing and Materials Philadelphia, PA (215) 299-5585
BOCA	Building Officials and Code Administrators International, Inc. Country Club Hills, IL (708) 799-2300
FM	Factory Mutual Engineering and Research Norwood, MA (617) 762-4300
ICBO	International Conference of Building Officials Whittier, CA (562) 699-0541
NRCA	National Roofing Contractors Association Rosemont, IL (847) 299-9070
OSHA	Occupational Safety and Health Administration Washington, DC (202) 523-1452

SMACNA Sheet Metal and Air Conditioning Contractors National Association
Chantilly, VA (703) 803-2980

UL Underwriters Laboratories
Northbrook, IL (708) 272-8800

1.04 DESCRIPTION OF WORK

The basic work descriptions (components, layering and attachment methods) required in this specification are referenced below. See also Parts 2 & 3 for specific products, preparation, application and details.

PROJECT TYPE: Tear-off
DECK: Concrete
SLOPE: Less than 1/2 inch
SUBSTRATE PREPARATION: Prime with asphalt primer, at a rate of 100 square feet per gallon.

ROOF SYSTEM: Paradiene 20 TG, torch applied; Teranap 1M Sand, torch applied.

FLASHING SYSTEM (8" minimum height requirement): Veral Aluminum, torch applied.

FLUID FLASHING SYSTEM (supplemental and low flashings): Siplast Parapro 123 fluid applied reinforced flashing system.

PROTECTION SYSTEM:

Root Barrier: Parablock 60 Root Barrier, laid dry over the waterproofing membrane with the laps heat-welded.

Drainage Mat: Paradrain Drainage Mat, loose laid.

Insulation: Extruded polystyrene insulation, having a compressive strength of 60 psi and a thickness of 6 inches (two layers of 3"), loose laid.

Drainage Mat: Paradrain Intensive Drainage Mat, loose laid.

Growing Medium: Paragrow Soil Growing Medium, having a compacted depth of 6 inches, installed over the drainage mat.

Vegetation: Intensive vegetation supplied by others

SPECIFIED GUARANTEE: Twenty year Waterproofing Guarantee.

1.05 SUBMITTALS

All submittals which do not conform to the following requirements will be rejected.

- A. SUBMITTALS OF EQUALS. Submit primary roof systems to be considered as equals to the specified roof system no less than 10 days prior to bid date. Primary roof systems which have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. Include the following submittals of equals prior to bid:
1. Product Data Sheet for each component of the roofing system.
 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 3. Descriptive list of the materials proposed for use.
 4. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 5. List of three (3) of the manufacturer's projects, located in the United States, of equal size and degree of difficulty which have been performing successfully for a period of at least five (5) years.
 6. Complete list of material physical and mechanical properties for each sheet including: weights and thicknesses; low temperature flexibility; breaking load; ultimate elongation; dimensional stability; compound stability; granule embedment and resistance to thermal shock (foil faced products).
 7. Sample copy of the specified guarantee.
- B. SUBMITTALS PRIOR TO CONTRACT AWARD:
1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.
 2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee.
- C. SUBMITTALS PRIOR TO PROJECT CLOSE-OUT:
1. Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

1.06 QUALITY ASSURANCE

- A. **ACCEPTABLE PRODUCTS.** Primary roofing products, including each type of sheet, all manufactured in the United States, shall be supplied by a single manufacturer which has been successfully producing the specified types of primary products for not less than 10 years. Secondary or accessory products shall be acceptable to the manufacturer of the primary roofing products.
- B. **ACCEPTABLE CONTRACTOR.** Contractor shall have a minimum of 2 years experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products.
- C. **SCOPE OF WORK.** The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractor's Association, amended to include the acceptance of a phased roof system installation.
- D. **LOCAL REGULATIONS.** Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.
- E. **MANUFACTURER REQUIREMENTS.** Ensure that the primary roofing materials manufacturer provides direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conducts a final inspection upon successful completion of the project.

1.07 PRODUCT DELIVERY STORAGE AND HANDLING

- A. **DELIVERY.** Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- B. **STORAGE.** Store materials out of direct exposure to the elements. Store roll goods on a clean, flat and dry surface. All material stored on the roof overnight shall be stored on pallets. Rolls of roofing must be stored on ends. Store materials on the roof in a manner so as to preclude overloading of deck and building structure. Store materials such as solvents, adhesives and asphalt cutback products away from open flames, sparks or excessive heat. Cover all material using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.
- C. **HANDLING.** Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Handle rolled goods to prevent damage to edges or ends.
- D. **DAMAGED MATERIAL.** Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, removed and replaced at the Contractor's expense.

1.08 PROJECT/SITE CONDITIONS

A. REQUIREMENTS PRIOR TO JOB START

1. NOTIFICATION. Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.
2. PERMITS. Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.
3. SAFETY. Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

B. ENVIRONMENTAL REQUIREMENTS

1. PRECIPITATION: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.

C. PROTECTION REQUIREMENTS

1. MEMBRANE PROTECTION. Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.
2. TORCH SAFETY: Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas of roof construction. Continue the fire watch for one hour after roofing material application has been suspended for the day.
3. LIMITED ACCESS. Prevent access by the public to materials, tools and equipment during the course of the project.
4. DEBRIS REMOVAL. Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.
5. SITE CONDITION. Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.

1.09 GUARANTEE/WARRANTY

- A. WATERPROOFING GUARANTEE. Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's 20-year labor and materials membrane guarantee. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and shall be issued at no additional cost to the Owner. This guarantee shall not exclude random areas of ponding from coverage. This guarantee shall not exclude random areas of ponding from coverage. By addendum, the guarantee shall also include removal/replacement of the overburden components in the event of a roof leak covered under the terms of the Waterproofing Membrane Guarantee.

> **Siplast twenty-year Teranap Waterproofing guarantee**

- B. **Insulation Warranty:** Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with an addendum covering replacement of any extruded polystyrene insulation in such cases where the insulation does not retain its advertised compressive strength and dimensional stability due to material defects or workmanship deficiencies. In addition the manufacturer shall guarantee that the actual resistance to heat flow through the roof insulation material will be at least 90% of the design thermal resistance throughout the guarantee period.

PART 2 PRODUCTS

2.01 ROOFING SYSTEM ASSEMBLY/PRODUCTS

- A. **ROOFING MEMBRANE SYSTEM.** A roof membrane system consisting of two (2) plies of a prefabricated, torch grade Styrene-Butadiene-Styrene (SBS) copolymer modified asphalt system secured to a prepared substrate. The modified bitumen base ply and modified bitumen finish ply shall be prefabricated using a fiberglass mat reinforcement. Both reinforcement mats shall be impregnated and coated each side with a high quality SBS modified bitumen blend. Both modified bitumen sheets shall be coated on one side with a high quality torch grade SBS bitumen blend. The adhesive layer shall be manufactured using a process that embosses the surface with a grooved pattern to provide optimum burn-off of the plastic film and to maximize application rates. The modified bitumen base sheet shall possess waterproofing capability, such that a phased roof application, with only the modified bitumen base ply in place, can be achieved for prolonged periods of time without detriment to the watertight integrity of the entire roof system.

1. **MODIFIED BITUMEN BASE PLY, STRIPPING PLY AND FLASHING REINFORCING SHEET**

- a) Thickness (avg.): 80 mils – 3.3 mm
- b) Weight (avg. per 100 ft² of coverage) - 110 lbs – 4.4 kg/m²
- c) Low temperature flexibility @ 13° F (-25° C) - PASS (ASTM D 5147)
- d) Breaking Load (avg.) @ 73° F - 30 lbf/inch (ASTM D 5147)
- e) Ultimate Elongation (avg.) @ 73° F - 50% (ASTM D 5147)
- f) Compound Stability (min.) - 248° F (120° C)
- g) Approvals - UL Class listed, FM Approved (products shall bear seals of approval)
- h) Reinforcement - fiberglass mat

> **Siplast Paradiene 20TG - torchable grade**

2. **MODIFIED BITUMEN FINISH PLY**

- a) Thickness (avg.): 160 mils - 4.0 mm
- b) Weight (per 100 ft²) - 90 lbs - 4.4 kg/sq m
- c) Low temperature flexibility @ -13° F (-25° C) - PASS (ASTM D 5147)
- d) Breaking Load (avg.) @ 73° F - 70 lbf/inch (ASTM D 5147)
- e) Ultimate Elongation (avg.) @ 73° F - 90% (ASTM D 5147)
- f) Compound Stability (min.) - 248° F (120° C)
- h) Reinforcement - non woven polyester geotextile
- l) Surfacing – Sanded Surface

>Siplast Teranap 1M Sand/ Sand

B. Flashing Membrane Assembly: A flashing membrane assembly consisting of a prefabricated, reinforced, Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane with a continuous, channel-embossed metal-foil surfacing. The finish ply shall conform to ASTM D 6298 and the following physical and mechanical property requirements.

1. Metal-Clad Modified Bitumen Flashing Sheet
 - a) Thickness (avg): 150 mils (3.8 mm) (ASTM D 5147)
 - b) Thickness (min): 146 mils (3.7 mm) (ASTM D 5147)
 - c) Weight (min per 100 ft² of coverage): 96 lb (4.6 kg/m²)
 - d) Coating Thickness – back surface (min): 40 mils (1 mm) (ASTM D 5147)
 - e) Low temperature flexibility @ 0° F (-18° C): PASS (ASTM D 5147)
 - f) Peak Load (avg) @ 73°F (23°C): 85 lbf/inch (15 kN/m) (ASTM D 5147)
 - g) Peak Load (avg) @ 0°F (-18°C): 180 lbf/inch (31.7 kN/m) (ASTM D 5147)
 - h) Ultimate Elongation (avg) @ 73°F (23°C): 45% (ASTM D 5147)
 - i) Tear-Strength (avg): 120 lbf (0.54 kN) (ASTM D 5147)
 - j) Dimensional Stability (max): 0.2% (ASTM D 5147)
 - k) Compound Stability (min): 225°F (107°C) (ASTM D 5147)
 - l) Cyclic Thermal Shock Stability (maximum): 0.2% (ASTM D 7051)
 - m) Approvals: UL Approved, FM Approved (products shall bear seals of approval)
 - n) Reinforcement: fiberglass scrim mat or other meeting the performance and dimensional stability criteria
 - o) Surfacing: aluminum metal foil

>Siplast Veral flashing system, aluminum finish

- C. FLUID APPLIED FLASHING MEMBRANE ASSEMBLY. Resin for Flashing Applications: A multi-component, flexible, polymethylmethacrylate (PMMA) based resin combined with a thixotropic agent for use in combination with fleece fabric to form a monolithic, reinforced flashing membrane.

> Parapro 123 fluid reinforced flashing system

1. REINFORCED FLUID APPLIED PMMA FLASHING SYSTEM
 - a) Catalyst: A reactive agent used to induce curing of polymethylmethacrylate (PMMA) resins.
 - > Pro Liquid Catalyst by Siplast; Irving, TX
 - b) Fleece for Membrane and Flashing Reinforcement: A non-woven, 110 g/m², needle-punched polyester fabric reinforcement as supplied by the membrane system manufacturer.
 - > Pro Fleece by Siplast; Irving, TX
 - c) Resin for Flashing Applications: A multi-component, flexible, polymethylmethacrylate (PMMA) based resin combined with a thixotropic agent for use in combination with fleece fabric to form a monolithic, reinforced flashing membrane.
 - > Parapro Flashing Resin by Siplast; Irving, TX

C. OVERBURDEN:

- A. Root Barrier: A 60 mil thick, low-density polyethylene sheet for use over the roof membrane and below the insulation and edge retention outlining the planted area.

>**Parablock Root Barrier** by Siplast; Irving, TX

- B. Prefabricated Drainage Panel: A multi directional core, geotextile covered, high flow capacity, interlocking, high compression strength prefabricated drainage panel.

> **Paradrain** manufactured by Siplast; Irving, TX

- C. Extruded Polystyrene Insulation (XEPS): A continuous closed-cell, high compression strength polystyrene foam panel conforming to ASTM C 578. Panels to be constructed for use in protected roofing/waterproofing membrane assemblies having with drainage channels on the bottom surface. Provide panels having a minimum compression strength of 60 psi nominal, a thickness of 6 inches (two layers of 3-inch).

> Acceptable XEPS type is **Foamular 604** brand by the Owens Corning, **PlazaMate** by the Dow Chemical Company or **GreenGuard** by Kingspan, supplied by Siplast.

- D. Drainage Mat: A prefabricated sheet drain and protection board consisting of a formed polystyrene core covered on both sides with a root resistant filter fabric.

>**Paradrain** Intensive Drainage Mat by Siplast; Irving, TX

- E. Growing Medium: A growing medium for intensive vegetated roofs in multi-course construction. The material is a proprietary mixture of mineral light weight aggregates and premium organic components. The lightweight aggregate shall be blended with organic components and fully composted products derived from manures, mushroom composts, straw, alfalfa, and yard wastes, which are low in salts, low in heavy metals, and free from weed seeds, pathogens and other deleterious materials. The pH of the organic matter shall be between 6.0 and 8.5.

> **Paragrow Soil Growing Medium** by Siplast, Inc., Irving, TX

- F. Intensive Plantings by Others

2.02 ROOFING ACCESSORIES

A. ROOFING ADHESIVES

1. FLASHING ADHESIVE. A slump resistant, asphalt cutback flashing adhesive, reinforced with non-asbestos fibers, conforming to ASTM D 4586 Type II requirements.

>**Siplast SFT Flashing Cement**

B. BITUMINOUS CUTBACK MATERIALS

1. PRIMER. A high flash, quick drying, asphalt solvent blend which meets or exceeds ASTM D 41 requirements.

>**Siplast PA-917LS Asphalt Primer**

2. MASTICS. An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D 4586 Type II requirements.

>**Siplast PA-1021 Plastic Cement**

C. PMMA Primers

1. PMMA Primer for Concrete/Masonry/Wood/Plywood Substrates: A two component, PMMA based primer for use over concrete, concrete repair materials, masonry substrates and wood/plywood substrates.

>**Pro Primer W** by Siplast; Irving, TX

2. PMMA Primer for Asphaltic Substrates: A two component, fast-curing, PMMA based primer for use over asphaltic materials.

>**Pro Primer R** by Siplast; Irving, TX

- D. Preparation Paste: A multi-component, fast curing, PMMA based paste used for remediation of depressions in substrate surfaces or other irregularities.

>**Pro Paste Resin** by Siplast; Irving, TX

- E. Spray Primer for Stainless Steel, Aluminum and Copper Substrates: An enamel spray primer for metal substrates to receive PMMA-based flashings.

> Rust-Oleum™ High Performance V2100 System Enamel Spray Primer by Rust-Oleum™, Vernon Hills, IL

- F. CAULKING/SEALANTS CAULKING/SEALANTS. A single component, high performance, elastomeric sealant conforming to ASTM D 232, ASTM C 920, or ASTM C 920. Acceptable types are as follows: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Siplast PS-715 NS Elastomeric Sealant
2. Siplast PS 209 Elastomeric Sealant

- G. Preparation Paste: A multi-component, fast curing, PMMA based paste used for remediation of depressions in substrate surfaces or other irregularities.

> Pro Paste Resin by Siplast; Irving, TX

PART 3 EXECUTION

3.01 PREPARATION

- A. GENERAL. Sweep or vacuum all surfaces, removing all loose aggregate and foreign substances prior to commencement of roofing.
- B. REMOVE ALL EXISTING:
 - Roof membrane
 - Stone Ballast and Pavers
 - Base flashings
 - Metal cap-flashing
 - Flanged metal flashings
 - Cants, wood blocking
 - Non functional penetrations/curbs and concrete slabs
 - Existing passive ventilator

3.02 SUBSTRATE PREPARATION

- A. PREPARATION OF SURFACE. Prime the concrete deck using PA-917LS Primer at the rate of 1 gallon per 100 square feet of surface.

3.03 ROOF MEMBRANE INSTALLATION

- A. MEMBRANE APPLICATION. Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements. Application of roofing membrane components shall immediately follow application of base sheet and/or insulation as a continuous operation.
- B. AESTHETIC CONSIDERATIONS. An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials (i.e. granules, metallic powder, etc.), and exercise care in ensuring that the finished application is acceptable to the Owner.
- C. PRIMING. Prime metal flanges (all jacks, edge metal, lead drain flashings, etc.) and concrete and masonry surfaces with a uniform coating of ASTM D 41 asphalt primer.
- D. BITUMEN CONSISTENCY. Cutting or alterations of bitumen, primer, and sealants will not be permitted.
- E. ROOFING APPLICATION. Apply all layers of roofing free of wrinkles, creases or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets. Stagger the lap seams between the base ply layer and the finish ply layer. Stagger the courses to ensure this.
 - 1. Apply all layers of roofing perpendicular to the slope of the deck.

2. Fully bond the base ply to the prepared substrate, utilizing minimum 3-inch side and end laps. Apply each sheet directly behind the torch applicator. Stagger end laps a minimum of 3 feet.
 3. Fully bond the finish ply to the base ply, utilizing minimum 3-inch side and end laps. Apply each sheet directly behind the torch applicator. Stagger end laps of the finish ply a minimum 3 feet. Stagger side laps of the finish ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply.
 4. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds 1/2 inch per foot. The manufacturer shall provide acceptable sheet lengths and the required fastening schedule for all roofing sheet applications to applicable roof slopes.
- F. Flashing Application - Masonry Surfaces: Flash masonry parapet walls and curbs using the reinforcing sheet and the metal foil flashing membrane. After the base ply has been applied to the top of the cant, fully adhere the reinforcing sheet, utilizing minimum 3-inch side laps and extend a minimum of 3 inches onto the base ply surface and 3 inches up the parapet wall above the cant. After the final roofing ply has been applied to the top of the cant, prepare the surface area that is to receive flashing coverage by torch heating granular surfaces or by application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three-foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the metal foil flashing layer from lap seams in the reinforcing layer. Extend the flashing sheet a minimum of 4 inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9-inch centers. (See manufacturer's schematic for visual interpretation).
- G. FLASHING APPLICATION -MIXING OF RESIN PRODUCTS. Preparation/Mixing/Catalyzing Resin Products: Pour the desired quantity of resin into a clean container and using a spiral mixer or mixing paddle, stir the liquid for the time period specified by the resin manufacturer. Calculate the amount of catalyst powder needed using the manufacturers guidelines and add the pre-measured catalyst to the primer. Mix again for the time period specified by the resin manufacturer, ensuring that the product is free from swirls and bubbles. It is imperative that air is not entrained into the product during the mixing process. To avoid aeration, do not use a spiral mixer unless the spiral section of the mixer can be fully contained in the liquid during the mixing process. Mix only enough product to ensure that it can be applied before expiration of resin pot life.
- H. REINFORCED FLUID APPLIED PMMA FLASHING APPLICATION
1. Using masking tape, mask the perimeter of the area to receive the flashing system. Apply resin primer to substrates requiring additional preparation and allow primer to set. Prepare surface of Teranap finish ply to receive fluid applied flashing by removing protective polyester resin with open flame torch.
 2. Pre-cut fleece to ensure a proper fit at transitions and corners prior to membrane application.

3. Apply an even, generous base coat of flashing resin using a roller at the rate of 19 kg/sq (2.0 kg/m²) to prepared surfaces requiring flashing coverage. Work the fleece into the wet, catalyzed resin using a brush or roller to fully embed the fleece in the resin and remove trapped air. Lap fleece layers a minimum of 2 inch (5 cm) and apply an additional coat of catalyzed resin between layers of overlapping fleece. Again, using a roller, apply an even topcoat of catalyzed resin at the rate of 12 kg/sq (1.3 kg/m²) immediately following embedment of the fleece, ensuring full saturation of the fleece. Ensure that the flashing resin is applied to extend a 0.25 inch (6 mm) beyond the fleece. Remove the tape before the catalyzed resin sets. Make allowances for saturation of roller covers and application equipment.
 4. Should work be interrupted for more than 12 hours or the surface of the catalyzed resin becomes dirty or contaminated by the elements, wipe the surface to be lapped with new flashing resin using the specified cleaner/solvent. Allow the surface to dry for a minimum 20 minutes and a maximum 60 minutes before continuing work.
- I. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.

3.04 ROOF SYSTEM INTERFACE WITH RELATED COMPONENTS

The following is a list of verbal descriptions for correct installation of components integrated into the roof membrane assembly. In all cases, unless otherwise approved, incorporate flanged components into the system between the application of the base ply and the finish ply. The flange must be primed with a uniform coating of approved ASTM D 41 asphalt primer and allowed to dry thoroughly; all flanges must be set in approved mastic.

- A. EDGE METAL. Completely prime metal flanges and allow to dry prior to installation. Turn the base ply down 2 inches past the roof edge and over the nailer. After the base ply and continuous cleat (if applicable) have been installed, set the flange in mastic and stagger nail every 3 inches on center. Strip-in the flange using the stripping-ply material, extending a minimum of 4 inches beyond the edge of the flange. Terminate the finish ply at the gravel-stop rise of the edge metal. SEE ITEM: SEALANT, for finish of this detail.
- B. LEAD PIPE FLASHINGS. Completely prime the lead flanges and allow to dry prior to installation. After the base ply has been applied, set the flange in mastic and strip-in the flange using the stripping-ply material, extending a minimum of 4 inches beyond the edge of the flange. Terminate the finish ply at the flange-sleeve juncture of the pipe flashing. SEE ITEM: SEALANT for finish of this detail.
- C. LEAD DRAIN FLASHINGS. Completely prime the lead drain flashing and allow to dry prior to installation. After the base ply has been applied, set the lead flashing sheet in mastic and form to turn down inside of the drain bowl. Ply-in the perimeter of the lead flashing using an additional layer of the base ply material, overlapping the perimeter of the lead a minimum of 4 inches. Terminate the finish ply to extend beneath the clamping ring seal. Install the clamping ring with all clamps, bolts etc., in place.

- D. METAL PIPE FLASHINGS. Completely prime the metal pipe flanges and allow to dry prior to installation. After the base ply has been applied, set the flanges in mastic and strip-in the flange using the stripping-ply material, extending a minimum of 4 inches beyond the edge of the flange. Terminate the finish ply at the flange-sleeve juncture of the pipe flashing. Install a watertight umbrella to the penetration, completely covering the opening of the pipe flashing. SEE ITEM: SEALANT for finish of this detail.
- E. SEALANT. Caulk all exposed finish ply edges at gravel stops, waste stacks, pitch pans, vent stacks, etc..., with a smooth continuous bead of approved sealant.

3.05 MEMBRANE PROTECTION - APPLICATION

* NOTE: The roof membrane system must be inspected by the manufacturer's representative prior to installation of the protection system. The manufacturer's representative will compile required punchlist items indicating any deficiencies in the roof membrane and flashing membrane system that shall be corrected before the installation will be accepted.

- A. GENERAL. All application of roofing, detailing, shall be completed; all surfaces shall be clean, free of debris, etc.
- B. MEMBRANE PROTECTION LAYER. Place the specified drainage mat unadhered directly over all areas of the newly applied membrane, extending to walls, curbs, and other related junctures. Lap the utilizing factory applied selvage side and end.
- C. INSULATION. Install of the specified insulation as required directly over the membrane protection layer, in strict accordance with the insulation manufacturer's requirements and the following recommendations.
 - 1. All end joints must be staggered.
 - 2. Install the panels to fit tightly; leaving a maximum acceptable opening between panels of three-eighths (3/8) inch.
 - 3. Closely abut walls, penetrations and projections with the panels; leave a maximum opening between insulation panels and projections of three-quarter (3/4) inch.
 - 4. Where insulation is installed in multi-layer configurations, use the following modifications.
 - a) The bottom layer must be a minimum two (2) inches in thickness;
 - b) The lower layer must be the thickest;
 - c) Stagger all joints in relation to underlying layers;
 - d) Install all layers unadhered.
- D. OVERBURDEN. Install drainage mat, growing medium and plantings, as specified.

3.06 FIELD QUALITY CONTROL AND INSPECTIONS

- A. SITE CONDITION. Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.
- B. NOTIFICATION OF COMPLETION. Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.
- C. FINAL INSPECTION
 - 1. POST-INSTALLATION MEETING. Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.
 - 2. DRAIN VERIFICATION. At final inspection of all work, verify that all drains, scuppers, etc., are functioning properly. Ensure that roof drains have adequate strainers.
- D. ISSUANCE OF THE GUARANTEE. Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sleeves.
 - 2. Sleeve-seal systems.
 - 3. Grout.

1.2 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 SLEEVES

- A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.
- B. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.
- C. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.
- D. Galvanized-Steel-Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

2.2 SLEEVE-SEAL SYSTEMS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. CALPICO, Inc.
 - 2. GPT; an EnPro Industries company.
- B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
 - 1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.

2. Pressure Plates: Carbon steel.
3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.3 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
 1. Sleeves are not required for core-drilled holes.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
 2. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.
- D. Install sleeves for pipes passing through interior partitions.
 1. Cut sleeves to length for mounting flush with both surfaces.
 2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint.
- E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.

3.2 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.3 SLEEVE AND SLEEVE-SEAL SCHEDULE

- A. Use sleeves and sleeve seals for the following piping-penetration applications:
 - 1. Exterior Concrete Walls above Grade:
 - a. Piping Smaller Than NPS 6: Galvanized-steel-pipe sleeves.
 - 2. Interior Partitions:
 - a. Piping Smaller Than NPS 6: Galvanized-steel-pipe sleeves.

END OF SECTION 230517

SECTION 230518 - ESCUTCHEONS FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Escutcheons.

1.2 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

- A. One-Piece, Cast-Brass Type: With chrome plated finish and setscrew fastener.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install escutcheons for piping penetrations of walls
- B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
 - 1. Escutcheons for New Piping:
 - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
 - b. Insulated Piping: One-piece, stamped-steel type.

3.2 FIELD QUALITY CONTROL

- A. Replace broken and damaged escutcheons using new materials.

END OF SECTION 230518

SECTION 230523.15 - GATE VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Iron gate valves.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of valve.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - 1. ASME B1.20.1 for threads for threaded-end valves.
 - 2. ASME B16.1 for flanges on iron valves.
 - 3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
 - 4. ASME B16.18 for solder joint.
 - 5. ASME B31.1 for power piping valves.
 - 6. ASME B31.9 for building services piping valves.
- C. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- D. Valve Sizes: Same as upstream piping unless otherwise indicated.
- E. RS Valves in Insulated Piping: With 2-inch stem extensions.
- F. Valve Bypass and Drain Connections: MSS SP-45.

2.2 IRON GATE VALVES

- A. Iron Gate Valves, NRS, Class 125:
 - 1. Milwaukee
 - 2. Description:

- a. Standard: MSS SP-70, Type I.
- b. NPS 2-1/2 to NPS 12 , CWP Rating: 200 psig
- c. Body Material: ASTM A 126, gray iron with bolted bonnet.
- d. Ends: Flanged.
- e. Trim: Bronze.
- f. Disc: Solid wedge.
- g. Packing and Gasket: Asbestos free.

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

3.2 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valve applications are not indicated, use the following:
 - 1. Shutoff Service: Gate valves.
- B. If valves with specified SWP classes or CWP ratings are unavailable, the same types of valves with higher SWP classes or CWP ratings may be substituted.
- C. Select valves, except wafer types, with the following end connections:
 - 1. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends, except where threaded valve-end option is indicated in valve schedules below.

3.4 CHILLED-WATER VALVE SCHEDULE

- A. Pipe NPS 2-1/2 and Larger: Iron gate valves, NRS, Class 125

END OF SECTION 230523.15

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Thermal-hanger shield inserts.
3. Fastener systems.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Hangers and supports for HVAC piping shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details

1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.5 QUALITY ASSURANCE

- A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pre-galvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.2 THERMAL-HANGER SHIELD INSERTS

- A. Insulation-Insert Material for Hot Piping: ASTM C 552, Type II cellular glass with 100-psig minimum compressive strength.
- B. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- C. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- D. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.3 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type, stainless- steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.4 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 1. Properties: Non-staining, noncorrosive, and nongaseous.
 2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- C. Fastener System Installation:
 - 1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
 - 2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- D. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- E. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- F. Install lateral bracing with pipe hangers and supports to prevent swaying.
- G. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping.
- H. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- I. Insulated Piping:
 - 1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
 - 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

- a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
- 3. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
- 4. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 METAL FABRICATIONS

- A. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- B. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.3 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.4 HANGER AND SUPPORT SCHEDULE

- A. Refer to drawings for pipe hanger schedule
- B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports and attachments for general service applications.
- F. Use padded hangers for piping that is subject to scratching.

- G. Use thermal-hanger shield inserts for insulated piping and tubing.
- H. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
- I. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
- J. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 - 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joint construction, to attach to top flange of structural shape.
 - 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 - 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 - 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 - 6. C-Clamps (MSS Type 23): For structural shapes.
 - 7. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb.
 - b. Medium (MSS Type 32): 1500 lb.
 - c. Heavy (MSS Type 33): 3000 lb.
 - 8. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 - 9. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
- K. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 - 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 - 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- L. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
 2. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
 3. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
- M. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- N. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 230529

SECTION 230548.13 - VIBRATION CONTROLS FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Elastomeric isolation pads.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 ELASTOMERIC ISOLATION PADS

A. Elastomeric Isolation Pads:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ace Mountings Co., Inc.
 - b. Kinetics Noise Control, Inc.
 - c. Mason Industries, Inc.
2. Fabrication: Single or multiple layers of sufficient durometer stiffness for uniform loading over pad area.
3. Size: Factory or field cut to match requirements of supported equipment.
4. Pad Material: Oil and water resistant with elastomeric properties.
5. Surface Pattern: Ribbed pattern.
6. Infused nonwoven cotton or synthetic fibers.
7. Load-bearing metal plates adhered to pads.

PART 3 - EXECUTION

3.1 VIBRATION CONTROL DEVICE INSTALLATION

- A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points

- B. Installation of vibration isolators must not cause any change of position of equipment, or piping resulting in stresses or misalignment.

END OF SECTION 230548.13

SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Equipment labels
2. Pipe labels

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Carlton Industries, LP.
 - b. emedco.
 - c. Kolbi Pipe Marker Co.
2. Material and Thickness: Brass, 0.032-inch stainless steel, 0.025-inch aluminum, 0.032-inch or anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
3. Letter Color: Black.
4. Background Color: White.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
7. Fasteners: Stainless-steel rivets.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

- B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.
- C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number, and identify Drawing numbers where equipment is indicated (plans, details, and schedules) and the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 PIPE LABELS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. Carlton Industries, LP.
 - 2. Emedco.
 - 3. Kolbi Pipe Marker Co.
- B. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction according to ASME A13.1.
- C. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to partially cover circumference of pipe and to attach to pipe without fasteners or adhesive.
- D. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- E. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
 - 2. Lettering Size: Size letters according to ASME A13.1 for piping.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.

- B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

- A. Piping Color-Coding: Painting of piping is specified in by Architect.
- B. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Near each valve and control device.
 - 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 - 3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
 - 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 - 5. Near major equipment items and other points of origination and termination.
 - 6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
 - 7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.
- C. Pipe Label Color Schedule:
 - 1. Chilled Water Return: White letters on a dark blue background
 - 2. Chiller Water Supply: White letters on a dark blue background

END OF SECTION 230553

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Balancing Hydronic Piping Systems:
 - a. Constant-flow hydronic systems.
 - b. Variable-flow hydronic systems.

1.2 DEFINITIONS

- A. NEBB: National Environmental Balancing Bureau.
- B. TAB: Testing, adjusting, and balancing.
- C. TABB: Testing, Adjusting, and Balancing Bureau.
- D. TAB Specialist: An independent entity meeting qualifications to perform TAB work.
- E. TDH: Total dynamic head.

1.3 INFORMATIONAL SUBMITTALS

- A. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.
- B. Certified TAB reports.

1.4 QUALITY ASSURANCE

- A. TAB Specialists Qualifications: Certified by NEBB
 1. TAB Field Supervisor: Employee of the TAB specialist and certified by NEBB
 2. TAB Technician: Employee of the TAB specialist and certified by NEBB
- B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."

PART 2 - EXECUTION

2.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.
- B. Examine installed systems for balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine equipment performance data including pump curves.
 - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance.
- F. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- G. Examine test reports specified in individual system and equipment Sections.
- H. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.
- I. Examine strainers. Verify that startup screens have been replaced by permanent screens with indicated perforations.
- J. Examine control valves for proper installation for their intended function of throttling, diverting, or mixing fluid flows.
- K. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- L. Examine system pumps to ensure absence of entrained air in the suction piping.
- M. Examine operating safety interlocks and controls on HVAC equipment.
- N. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

2.2 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures for balancing the systems.
- B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:
 - 1. Hydronics:
 - a. Verify leakage and pressure tests on water distribution systems have been satisfactorily completed.
 - b. Piping is complete with terminals installed.
 - c. Water treatment is complete.
 - d. Systems are flushed, filled, and air purged.
 - e. Strainers are pulled and cleaned.
 - f. Control valves are functioning per the sequence of operation.
 - g. Shutoff and balance valves have been verified to be 100 percent open.
 - h. Pumps are started and proper rotation is verified.
 - i. Pump gage connections are installed directly at pump inlet and outlet flanges or in discharge and suction pipe prior to valves or strainers.
 - j. Variable-frequency controllers' startup is complete and safeties are verified.
 - k. Suitable access to balancing devices and equipment is provided.

2.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" in this Section.
- B. Cut insulation, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 - 2. After testing and balancing, install test ports and duct access doors that comply with requirements in Section 233300 "Air Duct Accessories."
 - 3. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation," Section 230716 "HVAC Equipment Insulation," and Section 230719 "HVAC Piping Insulation."
- C. Mark equipment and balancing devices, valve position indicators, , and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in [inch-pound (IP)] [and] [metric (SI)] units.

2.4 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS

- A. Prepare test reports for pumps, coils, and heat exchangers. Obtain approved submittals and manufacturer-recommended testing procedures. Crosscheck the summation of required coil and heat exchanger flow rates with pump design flow rate.
- B. Prepare schematic diagrams of systems' "as-built" piping layouts.
- C. In addition to requirements in "Preparation" Article, prepare hydronic systems for testing and balancing as follows:
 - 1. Check liquid level in expansion tank.
 - 2. Check highest vent for adequate pressure.
 - 3. Check flow-control valves for proper position.
 - 4. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
 - 5. Verify that motor starters are equipped with properly sized thermal protection.
 - 6. Check that air has been purged from the system.

2.5 PROCEDURES FOR CONSTANT-FLOW HYDRONIC SYSTEMS

- A. Adjust pumps to deliver total design gpm.
 - 1. Measure total water flow.
 - a. Position valves for full flow through coils.
 - b. Measure flow by main flow meter, if installed.
 - c. If main flow meter is not installed, determine flow by pump TDH or exchanger pressure drop.
 - 2. Measure pump TDH as follows:
 - a. Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
 - b. Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
 - c. Convert pressure to head and correct for differences in gage heights.
 - d. Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow, and verify that the pump has the intended impeller size.
 - e. With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved.
 - 3. Monitor motor performance during procedures and do not operate motor in an overloaded condition.
- B. Adjust flow-measuring devices installed in mains and branches to design water flows.
 - 1. Measure flow in main and branch pipes.
 - 2. Adjust main and branch balance valves for design flow.

3. Re-measure each main and branch after all have been adjusted.
- C. Adjust flow-measuring devices installed at terminals for each space to design water flows.
 1. Measure flow at terminals.
 2. Adjust each terminal to design flow.
 3. Re-measure each terminal after it is adjusted.
 4. Position control valves to bypass the coil, and adjust the bypass valve to maintain design flow.
 5. Perform temperature tests after flows have been balanced.
- D. For systems with pressure-independent valves at terminals:
 1. Measure differential pressure and verify that it is within manufacturer's specified range.
 2. Perform temperature tests after flows have been verified.
- E. For systems without pressure-independent valves or flow-measuring devices at terminals:
 1. Measure and balance coils by either coil pressure drop or temperature method.
 2. If balanced by coil pressure drop, perform temperature tests after flows have been verified.
- F. Verify final system conditions as follows:
 1. Re-measure and confirm that total water flow is within design.
 2. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
 3. Mark final settings.
- G. Verify that memory stops have been set.

2.6 PROCEDURES FOR VARIABLE-FLOW HYDRONIC SYSTEMS

- A. Balance systems with automatic two- and three-way control valves by setting systems at maximum flow through heat-exchange terminals, and proceed as specified above for hydronic systems.
- B. Adjust the variable-flow hydronic system as follows:
 1. Verify that the differential-pressure sensor is located as indicated.
 2. Determine whether there is diversity in the system.
- C. For systems with no diversity:
 1. Adjust pumps to deliver total design gpm.
 - a. Measure total water flow.
 - 1) Position valves for full flow through coils.
 - 2) Measure flow by main flow meter, if installed.

- 3) If main flow meter is not installed, determine flow by pump TDH or exchanger pressure drop.
 - b. Measure pump TDH as follows:
 - 1) Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
 - 2) Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
 - 3) Convert pressure to head and correct for differences in gage heights.
 - 4) Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.
 - 5) With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved.
 - c. Monitor motor performance during procedures and do not operate motor in an overloaded condition.
2. Adjust flow-measuring devices installed in mains and branches to design water flows.
 - a. Measure flow in main and branch pipes.
 - b. Adjust main and branch balance valves for design flow.
 - c. Re-measure each main and branch after all have been adjusted.
 3. Adjust flow-measuring devices installed at terminals for each space to design water flows.
 - a. Measure flow at terminals.
 - b. Adjust each terminal to design flow.
 - c. Re-measure each terminal after it is adjusted.
 - d. Position control valves to bypass the coil and adjust the bypass valve to maintain design flow.
 - e. Perform temperature tests after flows have been balanced.
 4. For systems with pressure-independent valves at terminals:
 - a. Measure differential pressure and verify that it is within manufacturer's specified range.
 - b. Perform temperature tests after flows have been verified.
 5. For systems without pressure-independent valves or flow-measuring devices at terminals:
 - a. Measure and balance coils by either coil pressure drop or temperature method.
 - b. If balanced by coil pressure drop, perform temperature tests after flows have been verified.
 6. Prior to verifying final system conditions, determine the system differential-pressure set point.

7. If the pump discharge valve was used to set total system flow with variable-frequency controller at 60 Hz, at completion open discharge valve 100 percent and allow variable-frequency controller to control system differential-pressure set point. Record pump data under both conditions.
 8. Mark final settings and verify that all memory stops have been set.
 9. Verify final system conditions as follows:
 - a. Re-measure and confirm that total water flow is within design.
 - b. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
 - c. Mark final settings.
 10. Verify that memory stops have been set.
- D. For systems with diversity:
1. Determine diversity factor.
 2. Simulate system diversity by closing required number of control valves, as approved by the design engineer.
 3. Adjust pumps to deliver total design gpm.
 - a. Measure total water flow.
 - 1) Position valves for full flow through coils.
 - 2) Measure flow by main flow meter, if installed.
 - 3) If main flow meter is not installed, determine flow by pump TDH or exchanger pressure drop.
 - b. Measure pump TDH as follows:
 - 1) Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
 - 2) Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
 - 3) Convert pressure to head and correct for differences in gage heights.
 - 4) Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.
 - 5) With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved.
 - c. Monitor motor performance during procedures and do not operate motor in an overloaded condition.
 4. Adjust flow-measuring devices installed in mains and branches to design water flows.
 - a. Measure flow in main and branch pipes.
 - b. Adjust main and branch balance valves for design flow.
 - c. Re-measure each main and branch after all have been adjusted.

5. Adjust flow-measuring devices installed at terminals for each space to design water flows.
 - a. Measure flow at terminals.
 - b. Adjust each terminal to design flow.
 - c. Re-measure each terminal after it is adjusted.
 - d. Position control valves to bypass the coil, and adjust the bypass valve to maintain design flow.
 - e. Perform temperature tests after flows have been balanced.
6. For systems with pressure-independent valves at terminals:
 - a. Measure differential pressure, and verify that it is within manufacturer's specified range.
 - b. Perform temperature tests after flows have been verified.
7. For systems without pressure-independent valves or flow-measuring devices at terminals:
 - a. Measure and balance coils by either coil pressure drop or temperature method.
 - b. If balanced by coil pressure drop, perform temperature tests after flows have been verified.
8. Open control valves that were shut. Close a sufficient number of control valves that were previously open to maintain diversity, and balance terminals that were just opened.
9. Prior to verifying final system conditions, determine system differential-pressure set point.
10. If the pump discharge valve was used to set total system flow with variable-frequency controller at 60 Hz, at completion open discharge valve 100 percent and allow variable-frequency controller to control system differential-pressure set point. Record pump data under both conditions.
11. Mark final settings and verify that memory stops have been set.
12. Verify final system conditions as follows:
 - a. Re-measure and confirm that total water flow is within design.
 - b. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
 - c. Mark final settings.
13. Verify that memory stops have been set.

2.7 TOLERANCES

- A. Set HVAC system's airflow rates and water flow rates within the following tolerances:
 1. Cooling-Water Flow Rate: Plus or minus 10 percent
- B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

2.8 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
 3. Certify validity and accuracy of field data.
- B. Final Report Contents: In addition to certified field-report data, include the following:
 1. Pump curves.
 2. Manufacturers' test data.
 3. Field test reports prepared by system and equipment installers.
 4. Other information relative to equipment performance; do not include Shop Drawings and Product Data.
- C. General Report Data: In addition to form titles and entries, include the following data:
 1. Title page.
 2. Name and address of the TAB specialist.
 3. Project name.
 4. Project location.
 5. Architect's name and address.
 6. Engineer's name and address.
 7. Contractor's name and address.
 8. Report date.
 9. Signature of TAB supervisor who certifies the report.
 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
 12. Nomenclature sheets for each item of equipment.
 13. Notes to explain why certain final data in the body of reports vary from indicated values.
 14. Test conditions for pump performance forms including the following:
 - a. Cooling coil, wet- and dry-bulb conditions.
 - b. Face and bypass damper settings at coils.
 - c. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of hydronic distribution systems. Present each system with single-line diagram and include the following:
 1. Water and steam flow rates.
 2. Pipe and valve sizes and locations.
 3. Balancing stations.

4. Position of balancing devices.

E. Instrument Calibration Reports:

1. Report Data:
 - a. Instrument type and make.
 - b. Serial number.
 - c. Application.
 - d. Dates of use.
 - e. Dates of calibration.

2.9 VERIFICATION OF TAB REPORT

- A. The TAB specialist's test and balance engineer shall conduct the inspection in the presence of the construction manager
- B. Construction Manager shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
- C. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
- D. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.
- E. If TAB work fails, proceed as follows:
 1. TAB specialists shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
 2. If the second final inspection also fails, Owner may contract the services of another TAB specialist to complete TAB work according to the Contract Documents and deduct the cost of the services from the original TAB specialist's final payment.
 3. If the second verification also fails, Owner may contact AABC Headquarters regarding the AABC National Performance Guaranty.
- F. Prepare test and inspection reports.

2.10 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.

- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION 230593

SECTION 230719 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes insulating the following HVAC piping systems:

1. Chilled-water piping, indoors and outdoors

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 2. Detail insulation application at pipe expansion joints for each type of insulation.
 3. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
 4. Detail removable insulation at piping specialties.
 5. Detail application of field-applied jackets.
 6. Detail application at linkages of control devices.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- C. Mineral-Fiber, Preformed Pipe Insulation:
 - 1. Owens Corning, Johns Manville, Knauf Insulation
 - 2. Type I, 850 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
 - 3. Type II, 1200 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type II, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2.2 INSULATING CEMENTS

- A. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

2.3 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
- C. ASJ Adhesive, and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

2.4 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
- B. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.
- B. See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers and products. See Section 016000 "Product Requirements."
 - 1. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
 - 2. Service Temperature Range: Minus 20 to plus 180 deg F
 - 3. Solids Content: 60 percent by volume and 66 percent by weight.

4. Color: White.

2.5 SEALANTS

A. Joint Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Permanently flexible, elastomeric sealant.
3. Service Temperature Range: Minus 100 to plus 300 deg F
4. Color: White or gray.

B. FSK and Metal Jacket Flashing Sealants: See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers and products. See Section 016000 "Product Requirements."

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F
4. Color: Aluminum.

C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants: See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers and products. See Section 016000 "Product Requirements."

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F
4. Color: White.

2.6 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.
4. FSP Jacket: Aluminum-foil, fiberglass-reinforced scrim with polyethylene backing; complying with ASTM C 1136, Type II.
5. PVDC Jacket for Outdoor Applications: 6-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.01 perm when tested according to ASTM E 96/E 96M

and with a flame-spread index of 5 and a smoke-developed index of 25 when tested according to ASTM E 84.

6. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip.
7. Vinyl Jacket: White vinyl with a permeance of 1.3 perms when tested according to ASTM E 96/E 96M, Procedure A, and complying with NFPA 90A and NFPA 90B.

2.7 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. FSK Jacket: Aluminum-foil face, fiberglass-reinforced scrim with kraft-paper backing.
- C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
 1. Adhesive: As recommended by jacket material manufacturer.
 2. Color: White
 3. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
 - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.
- D. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.
 1. Factory cut and rolled to size
 2. Finish and thickness are indicated in field-applied jacket schedules.
 3. Moisture Barrier for Indoor Applications: 1-mil- thick, heat-bonded polyethylene and kraft paper
 4. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
 5. Factory-Fabricated Fitting Covers:
 - a. Same material, finish, and thickness as jacket.
 - b. Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
 - c. Tee covers.
 - d. Flange and union covers.
 - e. End caps.
 - f. Beveled collars.
 - g. Valve covers.
 - h. Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

- E. Self-Adhesive Outdoor Jacket: 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a cross-laminated polyethylene film covered with white aluminum-foil facing.
- F. PVDC Jacket for Indoor Applications: 4-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.02 perm when tested according to ASTM E 96/E 96M and with a flame-spread index of 5 and a smoke-developed index of 20 when tested according to ASTM E 84.
- G. PVDC Jacket for Outdoor Applications: 6-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.01 perms when tested according to ASTM E 96/E 96M and with a flame-spread index of 5 and a smoke-developed index of 25 when tested according to ASTM E 84.
- H. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip.

2.8 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
 - 1. Width: 3 inches
 - 2. Thickness: 11.5 mils
 - 3. Adhesion: 90 ounces force/inch in width.
 - 4. Elongation: 2 percent.
 - 5. Tensile Strength: 40 lbf/inch in width.
 - 6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
 - 1. Width: 3 inches
 - 2. Thickness: 6.5 mils
 - 3. Adhesion: 90 ounces force/inch in width.
 - 4. Elongation: 2 percent.
 - 5. Tensile Strength: 40 lbf/inch in width.
 - 6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
 - 1. Width: 2 inches
 - 2. Thickness: 6 mils
 - 3. Adhesion: 64 ounces force/inch in width.
 - 4. Elongation: 500 percent.

5. Tensile Strength: 18 lbf/inch in width.
- D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
1. Width: 2 inches
 2. Thickness: 3.7 mils
 3. Adhesion: 100 ounces force/inch in width.
 4. Elongation: 5 percent.
 5. Tensile Strength: 34 lbf/inch in width.
- E. PVDC Tape for Indoor Applications: White vapor-retarder PVDC tape with acrylic adhesive.
1. Width: 3 inches
 2. Film Thickness: 4 mils
 3. Adhesive Thickness: 1.5 mils
 4. Elongation at Break: 145 percent.
 5. Tensile Strength: 55 lbf/inch in width.
- F. PVDC Tape for Outdoor Applications: White vapor-retarder PVDC tape with acrylic adhesive.
- F. See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers and products. See Section 016000 "Product Requirements."
1. Width: 3 inches
 2. Film Thickness: 6 mils
 3. Adhesive Thickness: 1.5 mils
 4. Elongation at Break: 145 percent.
 5. Tensile Strength: 55 lbf/inch in width.

2.9 SECUREMENTS

- A. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- K. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches . Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at **2 inches**
 - a. For below-ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
- L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

- N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- O. For above-ambient services, do not install insulation to the following:
 - 1. Vibration-control devices.
 - 2. Testing agency labels and stamps.
 - 3. Nameplates and data plates.
 - 4. Manholes.
 - 5. Handholes.
 - 6. Cleanouts.

3.3 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches (50 mm) below top of roof flashing.
 - 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.
- C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 - 4. Seal jacket to wall flashing with flashing sealant.
- D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.4 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
 9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
 3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches (50 mm) over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
 5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.5 INSTALLATION OF MINERAL-FIBER PREFORMED PIPE INSULATION

- A. Insulation Installation on Straight Pipes and Tubes:
1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
 2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
 3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches o.c.
 4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.
- B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch , and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.
- 5.

3.6 FINISHES

- A. Pipe Insulation with ASJ or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
1. Flat Acrylic Finish: two coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coat Material: Interior, flat, latex-emulsion size.
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.
- D. Do not field paint aluminum or stainless-steel jackets.

3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.8 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
 - 1. Drainage piping located in crawl spaces.
 - 2. Underground piping.
 - 3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.9 INDOOR PIPING INSULATION SCHEDULE

- A. Chilled Water, above 40 Deg F : Insulation shall be the following:
 - 1. Mineral-Fiber, Preformed Pipe, Type I: 1 inch thick

3.10 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

- A. Chilled Water and Brine: Insulation shall be the following:
 - 1. Mineral-Fiber, Preformed Pipe Insulation, Type I: 3 inch thick.

3.11 OUTDOOR, UNDERGROUND PIPING INSULATION SCHEDULE

- A. Chilled Water, All Sizes: Cellular glass, 2 inches thick.

3.12 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Piping, Exposed:
 - 1. PVC: 30 mils

3.13 UNDERGROUND, FIELD-INSTALLED INSULATION JACKET

- A. For underground direct-buried piping applications, install underground direct-buried jacket over insulation material.

END OF SECTION 230719

SECTION 232113 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes pipe and fitting materials and joining methods for the following:

1. Steel pipe and fittings.
2. Joining materials.
3. Transition fittings.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of the following:

1. Pipe.
2. Fittings.
3. Joining materials.

- B. Delegated-Design Submittal:

1. Design calculations and detailed fabrication and assembly of pipe anchors and alignment guides, hangers and supports for multiple pipes, expansion joints and loops, and attachments of the same to the building structure.
2. Locations of pipe anchors and alignment guides and expansion joints and loops.
3. Locations of and details for penetrations, including sleeves and sleeve seals for exterior walls, floors, basement, and foundation walls.
4. Locations of and details for penetration and firestopping for fire- and smoke-rated wall and floor and ceiling assemblies.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Hydronic piping components and installation shall be capable of withstanding the following minimum working pressure and temperature unless otherwise indicated:
 - 1. Chilled-Water Piping: 150 psig, 73 deg F

2.2 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black steel with plain ends; welded and seamless, Grade B, and wall thickness as indicated in "Piping Applications" Article.
- B. Malleable-Iron Threaded Fittings: ASME B16.3, Classes 150 and 300 as indicated in "Piping Applications" Article.
- C. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in "Piping Applications" Article.
- D. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - 1. Material Group: 1.1.
 - 2. End Connections: Butt welding.
 - 3. Facings: Raised face.
- E. Grooved Mechanical-Joint Fittings and Couplings:
 - 1. Victaulic, Nexus Valves, National Fittings, Inc
 - 2. Joint Fittings: ASTM A 536, Grade 65-45-12 ductile iron; ASTM A 47/A 47M, Grade 32510 malleable iron; ASTM A 53/A 53M, Type F, E, or S, Grade B fabricated steel; or ASTM A 106/A 106M, Grade B steel fittings with grooves or shoulders constructed to accept grooved-end couplings; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.
 - 3. Couplings: Ductile- or malleable-iron housing and EPDM gasket of central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.

2.3 JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.

- b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Chilled-water piping, aboveground, NPS 2-1/2 and larger, shall be the following:
 - 1. Schedule 40 steel pipe; grooved, mechanical joint coupling and fittings; and grooved, mechanical joints.

3.2 PIPING INSTALLATIONS

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Install piping to allow application of insulation.
- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- K. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- L. Install piping at a uniform grade of 0.2 percent upward in direction of flow.

- M. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- N. Install valves according to the following:
 - 1. Section 230523.15 "Gate Valves for HVAC Piping."
- O. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
- P. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for identifying piping.
- Q. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- R. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- S. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230518 "Escutcheons for HVAC Piping."

3.3 HANGERS AND SUPPORTS

- A. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for hanger, support, and anchor devices. Comply with the following requirements for maximum spacing of supports.
- B. Comply with requirements in Section 230548 "Vibration and Seismic Controls for HVAC" for seismic restraints.
- C. Install the following pipe attachments:
 - 1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
- D. Support vertical runs at roof, at each floor, and at 10-foot intervals between floors.

3.4 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.

2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- E. Grooved Joints: Assemble joints with coupling and gasket, lubricant, and bolts. Cut or roll grooves in ends of pipe based on pipe and coupling manufacturer's written instructions for pipe wall thickness. Use grooved-end fittings and rigid, grooved-end-pipe couplings.

3.5 FIELD QUALITY CONTROL

- A. Prepare hydronic piping according to ASME B31.9 and as follows:
 1. Leave joints, including welds, uninsulated and exposed for examination during test.
 2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
 3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
 4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
 5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.
- B. Perform the following tests on hydronic piping:
 1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
 2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
 3. Isolate expansion tanks and determine that hydronic system is full of water.
 4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times the "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
 5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
 6. Prepare written report of testing.
- C. Perform the following before operating the system:
 1. Open manual valves fully.
 2. Inspect pumps for proper rotation.
 3. Set makeup pressure-reducing valves for required system pressure.

4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
5. Set temperature controls so all coils are calling for full flow.
6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
7. Verify lubrication of motors and bearings.

END OF SECTION 232113

SECTION 232113.13 - UNDERGROUND HYDRONIC PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel pipes and fittings.
 - 2. Cased piping system.

1.2 PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing hydronic piping systems with the following minimum working-pressure ratings:
 - 1. Chilled-Water Piping: 150 psig at 200 deg F

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Cased piping.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Test Reports: For cased piping.
- B. Source quality-control reports.
- C. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation.

PART 2 - PRODUCTS

2.1 STEEL PIPES AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black with plain ends; type, grade, and wall thickness as indicated in "Piping Application" Article.
- B. Malleable-Iron, Threaded Fittings: ASME B16.3, Class 150

- C. Malleable-Iron Unions: ASME B16.39; Class 150
- D. Wrought-Steel Fittings: ASTM A 234/A 234M, wall thickness to match adjoining pipe.
- E. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - 1. Material Group: 1.1.
 - 2. End Connections: Butt welding.
 - 3. Facings: Raised face.
- F. Steel Welding Fittings: ASME B16.9 and ASTM A 234/A 234M, seamless or welded.
 - 1. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- G. Nipples: ASTM A 733, made of same materials and wall thicknesses as pipe in which they are installed.
- H. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and -bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
- I. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- J. PVC Plastic:
 - 1. Pipe: ASTM D 1785, Schedules 40 and 80, plain ends as indicated in "Piping Application" Article.
 - 2. Pipe Fittings: Socket-type pipe fittings, ASTM D 2466 for Schedule 40 pipe; ASTM D 2467 for Schedule 80 pipe.
 - 3. Solvent Cements: ASTM D 2564. Include primer according to ASTM F 656.
 - a. Use PVC solvent cement that has a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - b. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.2 Cased Piping System

- A. Description: Factory-fabricated piping with carrier pipe, insulation, and casing.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Thermal Pipe Systems.
 - b. Tricon Piping Systems, Inc.
 - c. Uponor.
- B. Carrier Pipe: Ductile-iron pipe and fittings.
- C. Carrier Pipe Insulation:
 1. Polyurethane Foam Pipe Insulation: Rigid, cellular, high-pressure injected between carrier pipe and jacket.
 - a. Comply with ASTM C 591; thermal conductivity (k-value) shall not exceed 0.14 Btu x in./h x sq. ft. x deg F at 75 deg F after 180 days of aging.
- D. Casing: Heavy Wall PVC
- E. Casing accessories include the following:
 1. Joint Kit: Half-shell, pourable or split insulation, casing sleeve, and shrink-wrap sleeve.
 2. Expansion Blanket: Elastomeric foam, formed to fit over piping.
 3. End Seals: Shrink wrap the casing material to seal watertight around casing and carrier pipe.
- F. Source Quality Control: Factory test the carrier pipe to 150 percent of the operating pressure of system. Furnish test certificates.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to civil drawings and specifications

3.2 PIPING APPLICATION

- A. Chilled-Water Piping:
 1. NPS 2-1/2 and larger shall be the following:
 - a. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
 2. Cased piping with polyurethane carrier-pipe insulation.
 - a. Piping Insulation Thickness: 2 inches.

3.3 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicate piping locations and arrangements if such were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Remove standing water in the bottom of trench.
- C. Do not backfill piping trench until field quality-control testing has been completed and results approved.
- D. Install piping at uniform grade of 0.2 percent. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points and elsewhere as required for system drainage. Install manual air vents at high points.
- E. Install components with pressure rating equal to or greater than system operating pressure.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. See Section 230517 "Sleeves and Sleeve Seals for HVAC Piping" for sleeves and mechanical sleeve seals through exterior building walls.
- I. Secure anchors with concrete thrust blocks

3.4 JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- E. Welded Joints: Construct joints according to AWS D10.12M/D10.12.

- F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- G. Pressure-Sealed Joints: Use manufacturer-recommended tool and procedure. Leave insertion marks on pipe after assembly.
- H. Conduit and Cased Piping Joints: Assemble sections and finish joints with pourable or split insulation and exterior jacket sleeve, and apply shrink-wrap seals.

3.5 IDENTIFICATION

- A. Install continuous plastic underground warning tapes during back filling of trenches for underground hydronic piping. Locate tapes 6 to 8 inches below finished grade, directly over piping. See civil specifications for warning-tape materials and devices and their installation.

3.6 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Prepare hydronic piping for testing according to ASME B31.9 and as follows:
 - a. Leave joints, including welds, uninsulated and exposed for examination during test.
 - b. Fill system with water. Where there is risk of freezing, air or a safe, compatible liquid may be used.
 - c. Use vents installed at high points to release trapped air while filling system.
 - 2. Test hydronic piping as follows:
 - a. Subject hydronic piping to hydrostatic test pressure that is not less than 1.5 times the design pressure.
 - b. After hydrostatic test pressure has been applied for 10 minutes, examine joints for leakage. Remake leaking joints using new materials and repeat hydrostatic test until no leaks exist.
- B. Prepare test and inspection reports.

END OF SECTION 232113.13

SECTION 232116 - HYDRONIC PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes special-duty valves and specialties for the following:
 - 1. Connectors.
- B. Related Requirements:

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of the following:
 - 1. Connectors.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. ASME Compliance: Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

PART 2 - PRODUCTS

2.1 CONNECTORS

- A. Stainless-Steel Bellow, Flexible Connectors:
 - 1. Body: Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket.
 - 2. End Connections: Threaded or flanged to match equipment connected.
 - 3. Performance: Capable of 3/4-inch misalignment.
 - 4. CWP Rating: 150 psig
 - 5. Maximum Operating Temperature: 250 deg F

PART 3 - EXECUTION

3.1 HYDRONIC SPECIALTIES INSTALLATION

- A. Install connectors per manufacturers recommendations.
- B. Install connectors where indicated on drawings. .

END OF SECTION 232116

SECTION 236423.21 - AIR-COOLED SCROLL WATER CHILLERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes packaged, air-cooled, electric-motor-driven, scroll water chillers.

1.2 DEFINITIONS

- A. BAS: Building automation system.
- B. COP: Coefficient of performance. The ratio of the rate of heat removal to the rate of energy input using consistent units for any given set of rating conditions.
- C. DDC: Direct digital control.
- D. EER: Energy-efficiency ratio. The ratio of the cooling capacity given in Btu/h to the total power input given in watts at any given set of rating conditions.
- E. GFI: Ground fault interrupt.
- F. IPLV: Integrated part-load value. A single-number part-load efficiency figure of merit for a single chiller calculated per the method defined by AHRI 550/590 and referenced to AHRI standard rating conditions.
- G. I/O: Input/output.
- H. kW/Ton: The ratio of total power input of the chiller in kilowatts to the net refrigerating capacity in tons at any given set of rating conditions.
- I. NPLV: Nonstandard part-load value. A single number part-load efficiency figure of merit for a single chiller calculated per the method defined by AHRI 550/590 and intended for operating conditions other than the AHRI standard rating conditions.
- J. SCCR: Short-circuit current rating.
- K. TEAO: Totally enclosed air over.
- L. TENV: Totally enclosed nonventilating.

1.3 ACTION SUBMITTALS

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

- B. Shop Drawings: Complete set of manufacturer's prints of water chiller assemblies, control panels, sections and elevations, and unit isolation. Include the following:
 - 1. Assembled unit dimensions.
 - 2. Weight and load distribution.
 - 3. Required clearances for maintenance and operation.
 - 4. Size and location of piping and wiring connections.
 - 5. Diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Certificates: For certification required in "Quality Assurance" Article.
- B. Installation instructions.
- C. Source quality-control reports.
- D. Startup service reports.
- E. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

- A. AHRI Certification: Certify chiller according to AHRI 590 certification program.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of water chillers that fail in materials or workmanship within specified warranty period.
 - 1. Extended warranties include, but are not limited to, the following:
 - a. Complete chiller including refrigerant and oil charge.
 - b. Complete compressor and drive assembly including refrigerant and oil charge.
 - c. Refrigerant and oil charge.
 - 1) Loss of refrigerant charge for any reason due to manufacturer's product defect and product installation.
 - d. Parts and labor
 - 2. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Site Altitude: Chiller shall be suitable for altitude at which installed without affecting performance indicated. Make adjustments to affected chiller components to account for site altitude.
- B. AHRI Rating: Rate water chiller performance according to requirements in AHRI 550/590.
- C. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."
- D. ASME Compliance: Fabricate and stamp water chiller heat exchangers to comply with ASME Boiler and Pressure Vessel Code.
- E. Comply with NFPA 70.
- F. Comply with requirements of UL 1995, "Heating and Cooling Equipment," and include label by a qualified testing agency showing compliance.
- G. Operation Following Loss of Normal Power:
 - 1. Equipment, associated factory- and field-installed controls, and associated electrical equipment and power supply connected to backup power system shall automatically return equipment and associated controls to the operating state occurring immediately before loss of normal power without need for manual intervention by an operator when power is restored either through a backup power source, or through normal power if restored before backup power is brought on-line.
 - 2. See drawings for equipment served by backup power systems.
 - 3. Provide means and methods required to satisfy requirement even if not explicitly indicated.
- H. Outdoor Installations:
 - 1. Chiller shall be suitable for outdoor installation indicated. Provide adequate weather protection to ensure reliable service life over a 25 year period with minimal degradation due to exposure to outdoor ambient conditions.
 - 2. Chillers equipped to provide safe and stable operation while achieving performance indicated when operating at extreme outdoor temperatures encountered by the installation. Review historical weather database and provide equipment that can operate at extreme outdoor temperatures recorded over past 30-year period.

2.2 MANUFACTURERS

- A. Carrier
- B. Trane

- C. Daikin

2.3 MANUFACTURED UNITS

- A. Description: Factory-assembled and run-tested water chiller complete with compressor(s), compressor motors and motor controllers, evaporator, condenser with fans, electrical power, controls, and indicated accessories.
- B. Fabricate water chiller mounting base with reinforcement strong enough to resist water chiller movement during a seismic event when water chiller is anchored to field support structure.

2.4 CABINET

- A. Base: Galvanized-steel base extending the perimeter of water chiller. Secure frame, compressors, and evaporator to base to provide a single-piece unit.
- B. Frame: Heavy-gauge, galvanized-steel. Exterior panels shall be galvanized steel with a baked enamel powder or pre-painted finish
- C. Casing: Heavy-gauge, galvanized steel.
- D. Finish: Coat base, frame, and casing with a corrosion-resistant coating capable of withstanding a 1000 hour salt-spray test according to ASTM B 117.

2.5 COMPRESSOR/COMPRESSOR ASSEMBLY

- A. Compressors:
 - 1. Description: Fully hermetic, direct-drive, scroll type compressors.
 - 2. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have either internal line break thermal and current overload protection or external current overload modules with compressor temperature sensors.
 - 3. Compressor shall be mounted on rubber in shear vibration isolators
 - 4. Staging of compressors shall provide unloading capability.

2.6 REFRIGERATION

- A. Refrigerant: R-410A. Classified as Safety Group A1 according to ASHRAE 34.
- B. Refrigerant Compatibility: Parts exposed to refrigerants shall be fully compatible with refrigerants, and pressure components shall be rated for refrigerant pressures.
- C. Refrigerant Circuit: Each circuit shall include an electronic expansion valve, filter drier, moisture indicating sight glass, and a complete operating charge of both refrigerant R-410A and compressor oil.
- D. Pressure Relief Device:

1. Comply with requirements in ASHRAE 15, ASHRAE 147, and applicable portions of ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.
2. Select and configure pressure relief devices to protect against corrosion and inadvertent release of refrigerant.
3. ASME-rated, spring-loaded, pressure relief valve; single- or multiple-reseating type. Pressure relief valve(s) shall be provided for each heat exchanger.

2.7 EVAPORATOR

A. Brazed Plate:

1. Direct-expansion, single-pass, brazed-plate design.
2. Type 316 stainless-steel construction.
3. Code Compliance: Tested according to ASME Boiler and Pressure Vessel Code.
4. Fluid Nozzles: Terminate with mechanical-coupling end connections for connection to field piping.
5. Inlet Strainer: Factory-furnished, 40 mesh strainer for field installation in supply piping to evaporator. Manufacturer has option to factory install strainer.

B. Flow Switch: Factory-furnished and installed flow switch wired to chiller operating controls.

C. Heater: Factory-installed and -wired electric heater with integral controls designed to protect the evaporator to minus 20 degrees F

D. Shell shall be insulated with $\frac{3}{4}$ inch closed-cell, polyvinyl-chloride foam with a maximum K factor of 0.28

E. Unit shall be provided with a factory-installed flow switch.

F. Shall incorporate 2 independent refrigerant circuits

G. All connections shall use standard Victaulic-type fittings

2.8 AIR-COOLED CONDENSER

A. Coil(s) with integral subcooling on each circuit.

B. Aluminum Microchannel Coils:

1. Series of flat tubes containing a series of multiple, parallel-flow microchannels layered between refrigerant header manifolds.
2. Two pass arrangement.
3. Construct fins, tubes, and header manifolds of aluminum alloy treated with a corrosion-resistant coating.
4. Tubes shall be cleaned, dehydrated, and sealed
5. Assembled condenser coils shall be leak tested and pressure tested at 565 psig

C. Corrosion-Resistant Coating: Coat coils with corrosion-resistant coating after fabrication.

- D. Hail Protection: Provide condenser coils with louvers, baffles, or hoods to protect against hail damage.
- E. Fans: Direct-drive propeller type with statically and dynamically balanced fan blades with inherent corrosion resistance, arranged for vertical air discharge.
- F. Fan Motors: Totally enclosed, with permanently lubricated bearings, Class F insulations and internal, automatic reset thermal overload protection or manual reset calibrated circuit breakers
- G. Fan Guards: Removable steel safety guards with corrosion-resistant PVC coated
- H. Shaft: shall have inherent corrosion resistance

2.9 INSULATION

- A. Factory-applied insulation over all cold surfaces of chiller capable of forming condensation. Components shall include, but not be limited to, evaporator, evaporator water boxes including nozzles, refrigerant suction pipe from evaporator to compressor, cold surfaces of compressor, refrigerant-cooled motor, and auxiliary piping.

2.10 ELECTRICAL

- A. Factory installed and wired, and functionally tested at factory before shipment.
- B. Factory-installed and -wired switches, motor controllers, transformers, and other electrical devices necessary shall provide a single-point field power connection to water chiller.
- C. House in a unit-mounted, NEMA 250, Type 4x enclosure with hinged access door with lock and key or padlock and key.
- D. Wiring shall be numbered and color-coded to match wiring diagram.
- E. Unit shall operate on 3 phase power at the voltage shown in the equipment schedule
- F. Control points shall be accessed through terminal block
- G. Unit shall be shipped with factory control and power wiring installed
- H. Indicate the following for water chiller electrical power supply:
 - 1. Current, phase to phase, for all three phases.
 - 2. Voltage, phase to phase and phase to neutral for all three phases.
 - 3. Three-phase real power (kilowatts).
 - 4. Three-phase reactive power (kilovolt amperes reactive).
 - 5. Power factor.
 - 6. Running log of total power versus time (kilowatt hours).
 - 7. Fault log, with time and date of each.

2.11 CONTROLS

- A. Factory installed and wired, and functionally tested at factory before shipment.
- B. Standalone, microprocessor based, with non-volatile memory. Battery backup system shall not be accepted
- C. Enclosure: Share enclosure with electrical power devices or provide a separate enclosure of matching construction.
- D. Operator Interface: The control panel shall include, as standard, a scrolling marquee display capable of indicating the safety lockout condition by displaying a code for which an explanation may be scrolled at the display.
 - 1. Date and time.
 - 2. Compressor lockout
 - 3. Loss of charge
 - 4. Low fluid flow
 - 5. Evaporator freeze protection
 - 6. Evaporator set point
 - 7. Chilled water reset parameters
 - 8. Thermistor and transducer malfunction
 - 9. Entering and leaving fluid temperature
 - 10. Compressor suction temperature
 - 11. Evaporator and condenser pressure
 - 12. System refrigerant temperatures
 - 13. Chiller run hours
 - 14. Compressor run hours
 - 15. Compressor number of starts
 - 16. Low superheat
 - 17. Superheat.
- E. Control Functions:
 - 1. Capacity control based on leaving chilled fluid temperature and compensated by rate of change of return fluid temperature with temperature set point accuracy to 0.1 degrees F
 - 2. Limiting the chilled fluid temperature pulldown rate at start up to an adjustable range of 0.2 degrees F to 2 degrees F per minute to prevent excessive demand spikes at start up
 - 3. Seven day time schedule
 - 4. Leaving chilled fluid temperature reset from return fluid and outside air temperature
 - 5. Chilled water pump start/stop control
 - 6. Timed maintenance scheduling to signal maintenance activities for pumps, condenser coil cleanings, strainer maintenance and user defined maintenance activities.
 - 7. Boiler enable signal to initiate system heating mode
 - 8. Low ambient protection to energize evaporator and hydronic system heaters
 - 9. Periodic pump start to ensure pump seals are properly maintained during off-season
 - 10. Single step demand limit control activated by remote contact closure
 - 11. Nighttime sound mode to reduce the sound of the machine by a user defined schedule
 - 12. Automatic lead-lag switching.

- F. Manual-Reset Safety Controls: The following conditions shall shut down water chiller and require manual reset:
 - 1. Low evaporator pressure or high condenser pressure.
 - 2. Low chilled-water temperature.
 - 3. Refrigerant high pressure.
 - 4. High or low oil pressure.
 - 5. High oil temperature.
 - 6. Loss of chilled-water flow.
 - 7. Loss of condenser-water flow.
 - 8. Control device failure.
- G. BAS System Interface: Factory-install hardware and software to enable system to monitor, control, and display chiller status and alarms. Chiller shall be tied into existing BAS system located in Lower Level Mechanical Room
- H. Factory-installed wiring outside of enclosures shall be in NFPA 70-complaint raceway. Make terminal connection with liquid tight or flexible metallic conduit

2.12 ACCESSORIES

- A. Field installed ¼ inch neoprene isolator pads

2.13 CAPACITIES AND CHARACTERISTICS

- A. Refer to equipment schedule on drawings

2.14 SOURCE QUALITY CONTROL

- A. Perform functional test of water chillers before shipping. Unit shall be full load run tested at the factory
- B. Unit shall be stored and handled per unit manufacturers recommendations
- C. Factory performance test water chillers, before shipping, according to AHRI 550/590.
 - 1. Test the following conditions:
 - a. Design conditions indicated.
 - b. AHRI 550/590 part-load points.
- D. Factory test and inspect evaporator and condenser according to ASME Boiler and Pressure Vessel Code: Section VIII, Division 1. Stamp with ASME label.
- E. For water chillers located outdoors, rate sound power level according to AHRI 370 procedure.

PART 3 - EXECUTION

3.1 WATER CHILLER INSTALLATION

- A. Coordinate sizes and locations of bases with actual equipment provided. Cast anchor-bolt inserts into concrete bases.
- B. Install water chillers on support structure indicated.
- C. Equipment Mounting:
 - 1. Install water chillers on cast-in-place concrete equipment bases. Refer to architectural plans for additional information
 - 2. Comply with requirements for vibration isolation devices specified in Section 230548.13 "Vibration Controls for HVAC."
- D. Maintain manufacturer's recommended clearances for service and maintenance.
- E. Maintain clearances required by governing code.
- F. Chiller manufacturer's factory-trained service personnel shall charge water chiller with refrigerant if not factory charged and fill with oil if not factory installed.
- G. Install separate devices furnished by manufacturer and not factory installed.
 - 1. Chillers shipped in multiple major assemblies shall be field assembled by chiller manufacturer's factory-trained service personnel.

3.2 PIPING CONNECTIONS

- A. Comply with requirements in Section 232113 "Hydronic Piping" and Section 232116 "Hydronic Piping Specialties." Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Where installing piping adjacent to chillers, allow space for service and maintenance.
- C. Connect each drain connection with a drain valve, full size of drain connection.
- D. Connect each chiller vent connection with automatic vent, full size of vent connection.

3.3 ELECTRICAL POWER CONNECTIONS

- A. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

- C. Provide nameplate for each electrical connection indicating electrical equipment designation and circuit number feeding connection. Nameplate shall be laminated phenolic layers of black with engraved white letters at least ½" high. Locate nameplate where easily visible.

3.4 CONTROLS CONNECTIONS

- A. Install control and electrical power wiring to field-mounted control devices.
- B. Connect control wiring between chillers and other equipment to interlock operation as required to provide a complete and functioning system.
- C. Connect control wiring between chiller control interface and existing BAS system

3.5 STARTUP SERVICE

- A. Engage a factory authorized service representative to perform startup service.
- B. Inspect field-assembled components, equipment installation, and piping and electrical connections for proper assemblies, installations, and connections.
- C. Complete installation and startup checks according to manufacturer's written instructions and perform the following:
 - 1. Verify that refrigerant charge is sufficient and water chiller has been leak tested.
 - 2. Verify that pumps are installed and functional.
 - 3. Verify that thermometers and gages are installed.
 - 4. Operate water chiller for run-in period.
 - 5. Check bearing lubrication and oil levels.
 - 6. Verify that refrigerant pressure relief device for chillers installed indoors is vented outside.
 - 7. Verify proper motor rotation.
 - 8. Verify static deflection of vibration isolators, including deflection during water chiller startup and shutdown.
 - 9. Verify and record performance of chilled-water flow and low-temperature interlocks.
 - 10. Verify and record performance of water chiller protection devices.
 - 11. Test and adjust controls and safeties. Replace damaged or malfunctioning controls and equipment.
- D. Visually inspect chiller for damage before starting. Repair or replace damaged components, including insulation. Do not start chiller until damage that is detrimental to operation has been corrected.
- E. Prepare a written startup report that records results of tests and inspections.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain water chillers.
 - 1. Instructor shall be factory trained and certified.
 - 2. Provide training.
 - 3. Train personnel in operation and maintenance and to obtain maximum efficiency in plant operation.
 - 4. Provide instructional videos showing general operation and maintenance that are coordinated with operation and maintenance manuals.
 - 5. Obtain Owner sign-off that training is complete.
 - 6. Owner training shall be held at Project site.

END OF SECTION 236423.21

SECTION 334211 HIGH DENSITY POLYETHYLENE DRAINAGE PIPE**PART 1: WORK****SCOPE**

This specification describes 24- through 60-inch (600 to 1500 mm) N-12 Low Head pipe for use in low head / low pressure applications.

PIPE REQUIREMENTS

N-12 Low Head pipe shall have a smooth interior and annular exterior corrugations.

- 24- through 60-inch (600 to 1500 mm) pipe shall meet AASHTO M294, Type S or ASTM F2306 with the modifications listed herein.
- Manning's "n" value for use in design shall be 0.012.
- Where low head applications sustain continuous pressure, the sustained pressure shall not exceed 5psi and the surge pressure shall not exceed 10 psi.

JOINT PERFORMANCE

Pipe shall be joined using a bell and spigot joint meeting the requirements of AASHTO M294 or ASTM F2306. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gaskets are free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have a reinforced bell with a polymer composite band installed by the manufacturer.

FITTINGS

Fittings shall conform to AASHTO M294 or ASTM F2306. Bell and spigot connections shall utilize a welded or integral bell and inline, valley, or saddle gaskets meeting the watertight joint performance requirements of ASTM D3212.

FIELD PIPE AND JOINT PERFORMANCE

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

MATERIAL PROPERTIES

Material for pipe and fitting production shall be high-density polyethylene conforming with the minimum requirements of cell classification 435400C for the corrugated exterior profile, and 445464C, for the interior liner as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 24- through 60-inch (600 to 1500mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.4 and 5.1 of AASHTO M294 and ASTM F2306 respectively. The interior liner resin shall have a material designation code of PE3408/PE3608 by the Plastic Pipe Institute and a Hydrostatic Design Basis of 1600 psi.

INSTALLATION

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exceptions that minimum cover in traffic areas for 24- through 48-inch (600 to 1200mm) diameters shall be one foot (0.3m) and for 60-inch (1500mm) diameter the minimum cover shall be 2-feet (0.6m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material.

PIPE DIMENSIONS

Pipe I.D. in (mm)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Pipe O.D.* in (mm)	27.8 (719)	36 (914)	42 (1067)	48 (1219)	54 (1372)	67 (1702)
Minimum Pipe Stiffness @ 5% Deflection #/in./in. (kN/m ²)	28 (195)	28 (195)	22 (150)	20 (140)	18 (125)	14 (95)

END OF SECTION

SECTION 260500 - GENERAL ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.1 GENERAL

- A. Applicable provisions of the Information for Bidders, General and Special Clauses, General Requirements, govern the work of this section.

1.2 WORK INCLUDED

- A. The work under this Division and applicable sections of Division 13000 shall consist of all labor, materials, equipment and services necessary and required to complete all electrical as shown on the Drawings, as described in the specifications, or as inferable from the Drawings and Specifications. Where the words provide or install are used singularly or in combination, it shall mean to furnish and install complete for fully functioning and operational systems. The work shall include but not necessarily be limited to the following:
 - 1. Building mains and feeders in accordance with the drawing.
 - 2. Conduit, wiring, switches, and relays.
 - 3. Motor disconnect switches as required by Code as shown.
 - 4. Setting controllers furnished by other trades.
 - 5. Access doors.
 - 6. Temporary light and power.
 - 7. Setting of all sleeves, hanger supports and the like.
 - 8. Trenching, excavation and backfill, ductbanks.
 - 9. Cutting and patching for installation of electric work.
 - 10. Testing, adjustments and instructions.
 - 11. Provide shop drawings for all work.

1.3 WORK NOT INCLUDED

- A. The following related items will be covered in other sections of these specifications:
 - 1. Furnishing motors and controllers. (Only controllers shipped in manufactured control panels).
 - 2. HVAC equipment.

1.4 CODES AND STANDARDS

- A. All materials furnished and all work installed shall comply, where applicable, with the requirements of the current New York State Building Code, Local Codes and the 2008 National Electrical Code. Whenever reference is made of "National Electrical Code" or "NEC," it shall mean the 2008 National Electrical Code.
- B. Material and work shall comply with other Codes and Standards as may be specified or referenced.
- C. Where applicable or specified herein, all material and devices furnished shall meet requirements of Underwriters' laboratories Inc., shall be U.L. listed and where further applicable, shall bear the U.L. listing mark.

1.5 POWER SHUTDOWN

- A. The Contractor may be permitted power shutdowns during normal working hours of 8 a.m. to 3 p.m. Tuesday through Thursday only. Arrange for connections to existing systems as directed by the Engineer, Owner and Utility Company. See Construction Phasing Schedule.
- B. The Contractor will schedule and coordinate shutdowns a minimum of two weeks in advance with the Engineer and Owner. Provide at least three (3) days of generator fuel at any time. Pay for all diesel fuel for all shutdowns.
- C. The Contractor shall include the cost of performing work during other than normal work hours at overtime or premium wage rates in the bid price. The Contractor will not receive any separate or additional payment for work during other than normal working hours above lump sum bid work included under this Contract.

1.6 FINAL TEST AND INSPECTION

- A. The Contractor shall be required to demonstrate to the satisfaction of the Engineer that all the electrical systems, equipment and devices operate as specified.
- B. The Contractor shall test the fire systems for proper operation to the satisfaction of the Engineer.
- C. All existing systems shall first be tested by owner to insure total system functioning. The contractor shall adapt, connect to, or modify systems as required.
- D. Provide fire underwriters certificate of inspection.

1.7 TEMPORARY ELECTRIC LIGHT AND POWER AND GENERATOR

- A. The Electrical Contractor shall be responsible for furnishing, installing, maintaining, and upon completion removing, a system of temporary light and power for the use of all construction trades and contracts. If the electrical contractor requires the de-energizing of the utility electric service prior to the power system being installed, then he shall provide a generator sized to accommodate the facility's full load including pumps. Installation of cable, overcurrent devices shall be included in the electrical contractor's bid. This shall include all overtime required to complete work between Tuesday and Thursday.

1.8 CUTTING AND PATCHING

- A. The Contractor shall provide all necessary cutting of the walls, floors, ceilings, etc. for installation of conduit, outlet boxes, etc. Cutting shall be kept to a minimum, all areas shall be spray painted for approval prior to any cutting.
- B. All finished patching and painting to be by this Contractor. The Electrical Contractor shall completely fill all openings left by the removal of conduit, equipment, etc., with regard to floor openings, plywood shall be attached to the underside of the slab to facilitate the filling of the opening completely.

1.9 FIREPROOFING

- A. All openings through fire proof barriers shall be fully resealed to maintain the fire rating with 3M CP25WB caulking or approved equal.
- B. Fire rated barrier and non-flammable supports for floor openings to be KBS Sealbags or equal.

1.10 HEAT SCAN

- A. Upon completion of all work under the contract, the Contractor shall perform a heat scan survey of all his work.
- B. Scan shall be performed while the facility is under full operation, and equipment at full load.
- C. Equipment shall be capable of taking pictures of all areas, especially problem locations.
- D. Results shall be neatly assembled and labeled in three (3) binders for the Owner after the Engineer's approval.

1.11 PERFORMANCE REQUIREMENTS

- A. The electrical contractor shall verify that all terminations on contract equipment is proper. Testing for phase rotation, continuity and full operation of the equipment shall be performed.
- B. The electrical contractor shall render full assistance to all trades for control wiring sequence and unit operation testing.

1.12 ROOF PENETRATIONS

- A. No conduit penetrations shall be made through roofs without prior permission of the Owner.
- B. Any penetrations allowed will be performed using pitch pockets as approved by the Owner.

1.13 WALL PENETRATIONS

- A. All wall penetrations for conduit shall be performed using pre-manufactured wall sleeves as manufactured by Link Seal, OZ Gedney or equal.

1.14 TORQUE REQUIREMENTS

- A. All equipment and cable connections shall be tightened to the torque values determined by the manufacturer.
- B. Assemble all information after the work is complete in a binder for the owner.

1.15 WORKMANSHIP

- A. The Contractor shall perform all operations necessary for the proper installation and operation of all systems.
- B. All work performed shall be first class work in every respect. The work shall be performed by mechanics skilled in their respective trades, who shall at all times be under the supervision of competent persons.
- C. Work that is slipshod, poorly laid out, not perfectly aligned, or that is not consistent with the requirements generally accepted in the trade for "first class work" will not be acceptable.
- D. In addition to the materials specified elsewhere, all other miscellaneous items be necessary for the completion of the work shall be furnished and installed by the Contractor to the extent that all system be complete and operative.
- E. Electrical Contractor shall submit references for the foreman to run the project. Electrical Foreman shall have a minimum of five (5) years experience as a working foreman.

1.16 REGULATIONS AND CERTIFICATES

- A. All work required by the Drawings and Specifications shall be installed to comply with all applicable building laws, regulations and ordinances of the State of New York, and local laws and regulations as may apply, except where these requirements are exceeded by the Drawings and Specifications in quality or quantity.
- B. Any and all changes in the arrangement of the work, either before or after installation, to suit conditions in the building or the work of other trades, and any and all changes required by agencies having jurisdiction shall be made without extra charge, unless the charges are in consequence of changes made by the Owner.

1.17 OPENINGS

- A. The admittance into the building of all equipment and materials furnished under this Contract shall be through finished openings. The Contractor shall refer to the Owner for specific requirements relative to the use of building freight elevator if exists and other existing facilities.

1.18 TRENCHING, EXCAVATION, BACKFILL & CONCRETE

- A. Contractor shall perform the required trench, excavation, backfill and concrete as indicated on the Drawings and as specified herein. Concrete to be 4000 psi, dyed red, unless otherwise noted.
- B. Rock Excavation
 - 1. If rock is encountered, Contractor shall be paid for rock excavation in the following manner:

“Rock Excavation” shall mean the excavation and removal of solid ledge rock which, in the opinion of the Engineer, requires for its removal any or several of the following excavation methods: drilling, wedging, sledging, barring or breaking up with power operated tool. “Rock Excavation” shall also mean the excavation and removal of rock fragments, boulder, masses of masonry, or pieces of concrete (except from existing pavements) regardless of the method employed, provided that the particular piece of material in question exceeds in volume thirteen (13) cubic feet.

The removal of so called “hardpan” frozen earth, hard clay, or other similar material will not be considered “Rock Excavation” even though the material in question cannot be removed by backhoe or “Dipper Stick” without first loosening by blasting or the use of drills, spades or other equipment. Existing road pavements, curbs, gutters and sidewalks shall not be measured as rock. Soft or disintegrated ledge rock which can be removed by heavy excavating equipment (1 CY or over), or rock which falls into the excavation will not be considered “Rock” for payment measurement.

Payment for rock excavation will be made under Lump Sum Proposal/Separate Item on Proposal Page.

Rock payment shall be computed between the following pay lines:

- a. Vertical – Top of the rock and bottom of the trench.
- b. Horizontal – Width of duct plus 6” clearance from each side or as directed by the Engineer.

1.19 EXPEDITING THE WORK

- A. The Contractor shall take all measurements at the job, verify all figured dimensions indicated on the construction drawings, familiarize himself to assure complete knowledge of code requirements and coordinate the work with other trades so as to cause no delay in the work and to eliminate wherever possible future cutting and patching. Any discrepancies or interference shall be reported immediately to the Owner.

1.20 PROTECTION OF THE WORK

- A. The Contractor shall provide temporary covering and do all work required to protect work, materials, machinery and equipment from all damage from moisture.
- B. After the work is completed, the Contractor shall clean all equipment and piping.

1.21 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. The Contractor shall furnish to the Owner one set for initial review and four sets of final written operating, maintenance and lubrication instructions for all installed systems and equipment. Instructions shall include copies of all designated approved shop drawings, manufacturer’s descriptive data, control diagrams, wiring diagrams, performance test data, test and balance reports and installation and operating instructions as specified.

B. Operation and Maintenance Submittal Instructions

1. Organize all instructions as follows:
 - a. All instructions shall be submitted in electronic format on CD-ROM in the formats described below.
 - b. Information shall be organized and saved in separate data files, clearly named.
 - c. CD-ROMs submitted shall be clearly labeled, and shall be submitted with a table of contents referencing the specification section of the files contained on them.
 - d. Text shall be submitted in Rich Text Format (RFT), or Microsoft Word (doc).
 - e. All graphics shall be submitted in Joint Photographics Expert Group (jpeg or jpg) format.
 - f. Text shall include written instruction on operating and maintaining the equipment, and at minimum shall include:
 - 1) Startup instructions
 - 2) Standard operation instructions
 - 3) Any emergency or non-standard operating instruction
 - 4) Design criteria for the equipment, in the table format.
Information shall include standard size information, such as length, width, or diameter, and capacity information such as flow and head that is not included in the nameplate table.
 - 5) A description of the controls provided with the equipment.
 - 6) Troubleshooting in the table format as follows:

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
 - 7) Nameplate data for the equipment in table format. Nameplate information shall include data for the overall assembly and any major components such as motors, gear reducers, etc.
 - 8) Manufacturer and local vendor information, including address, phone numbers, email addresses, and web sites.
 - 9) Information needed for ordering new parts.
 - 10) Preventive maintenance and lubrication instructions and schedule including recommended lubricants, application points, and a list of special tools required for operation and maintenance.
 - 11) List of spare parts supplied with the equipment, identified by manufacturer's part number.
 - 12) Assembly and disassembly instruction for each preventative or corrective maintenance task.
- g. Graphics shall be provided in high resolution (75 dpi or greater) with a maximum width of 820 pixels, and shall include, at minimum:
 - 1) Complete electrical and control schematics with labeled terminations
 - 2) Parts diagrams with parts clearly identified with manufacturer's part numbers
 - 3) Diagrams required for maintenance including lubrication locations, pump packing arrangements, etc.
 - 4) Performance diagrams, such as pump curves, blower curves, etc.

- C. The above instructions, charts, etc. shall be submitted to the Engineer as a rough draft and after the required corrections are made, six (6) sets in looseleaf, hardback binders, CDs, suitable indexed and identified, shall be furnished to the Owner.
- D. The Owner's designated operating personnel shall be instructed in the proper operation and maintenance of the equipment as well as the operation and maintenance of the controls for the various systems by the vendor's representative. Informal or unwitnessed instructions, or instructions to non-designated personnel will not be acceptable. In addition to the instruction periods specified elsewhere, the Contractor shall furnish instruction for a minimum of two (2) working day straight time not necessarily consecutive. Prior arrangements for instruction periods shall be made with the Owner.
- E. Final payment will not be granted until all manuals and training have been provided to the Owner/Owner's representative.

1.22 RECORD DRAWINGS

- A. The Contractor shall maintain an accurate record set of reproducible as-built drawings of any deviations in work as actually installed from the work as indicated on the design drawings. The Contractor shall utilize the contract design drawings for marking up any deviations to the drawings. The record shall be kept current and available at the site for inspection.
- B. As-built drawings shall be updated at the site as work progresses.
- C. Final payment will not be granted until all final as-built drawings are delivered to the Owner/Owner's Representative.
- D. Contractor shall furnish as-built drawings to Engineer at 30%, 60%, and 100% of project completion. As-builts are to be submitted in AutoCAD computer format. Submit three sets of discs and three sets of blueprints.

1.23 GUARANTEE

- A. The Contractor shall guarantee clean power throughout the new systems.
- B. The Contractor shall guarantee that the capacity of all new equipment installed meets Specification requirements.
- C. The Contractor shall guarantee that all new systems will operate without excessive noise and vibration.
- D. The Contractor shall obtain from the various manufacturers or vendors standard guarantees or warranties for their particular equipment or components for a period of at least one year, and deliver them to the Owner.

1.24 EQUIPMENT GROUNDING

- A. All equipment, panels and devices (except motors) which require electrical connections shall be furnished with a factory-welded (prior to finish painting) ground lug in a concealed and accessible location.

1.25 FINAL INSPECTION

- A. The Contractor shall conduct a final inspection of all work installed under each Section of the Specification after the installation have been completed; the testing hereinafter specified has been performed; and test reports have been submitted.
- B. During the conduct of the final inspection, the Contractor shall have present a representative of the various manufacturers and a representative of the manufacturers of other pertinent equipment as direct by the Owner.
- C. The Contractor shall include in his bid a testing period of two (2) working days wherein all aspects of the electrical systems specified herein will be tested in accordance with detailed test procedures which will be issued by the Owner at a later date. The Contractor shall provide sufficient technical personnel and instruments to perform the tests as directed by the Owner. Personnel for each working day shall include one mechanic, one helper, manufacturer's representative as required, plus GC and HVAC supervisory personnel. The testing period specified herein is in addition to all other testing or instruction periods included in the specifications.
- D. The Contractor shall demonstrate, to the satisfaction of the Owner, that the systems installed meet Specification requirements and that the capacities and performances of the equipment meets schedule requirements. The contractor shall make all changes, modifications and adjustments to the installed systems, as directed by the Owner, to meet Specifications requirements, at no additional cost to the Owner.

1.26 ALTERATION AND REMOVAL OF EXISTING WORK

- A. The Contractor shall refer to the Contract Documents, for specific requirements relative to the existing facilities and the Sequence of work.
- B. All existing systems shall be maintained in operation during the construction period as directed by the Owner. Existing systems shall not be shut down nor shall connections be made thereto without prior approval of the Owner.
- C. The Contractor shall relocate all existing conduit hangers and supports, as required to accommodate the new installation at no additional costs to the Owner. This includes all work in spaces where new work is specified under this Contract.
- D. Unless otherwise specified or indicated on the Drawings, all equipment, piping, appurtenances, etc. are indicated to be removed from the site when directed by the Owner.

1.27 CONSTRUCTION PHASING SCHEDULE

- A. The.....

1.28 SHOP DRAWINGS

- A. The Contractor shall submit copies of manufacturer's shop drawings and descriptive literature together with the manufacturer's installation, operating and maintenance instructions, for all equipment to be incorporated in the work including all required wiring diagrams and shall obtain approval before proceeding with the installation.
- B. The Contractor shall submit copies of shop drawings at 1/4 inch scale or larger showing all conduit mains, including connections to equipment, and all equipment layouts and shall obtain approval before proceeding with the work. Shop drawings shall be accurately dimensioned so that conduit clears all structural members and other work incorporated in the project. The Contractor shall take all shop drawing measurements at the building.
- C. The Contractor shall submit the following shop drawings, manufacturer's brochures, manufacturer's installation and operating instructions, etc. for approval before proceeding with the work:
 - 1. Wire
 - 2. Raceways/Conduit
 - 3. Wiring Devices
 - 4. Disconnects
 - 5. Fuses
 - 6. Mechanical sleeve seals
 - 7. Electrical Identification materials
- D. Acceptance of shop drawings does not absolve the Contractor to provide specified materials and function in the intended manner.

1.29 SHOP DRAWING SUBMISSION

- A. All shop drawings submitted shall be in multiple sets (minimum 8), and identified by transmittal.
- B. The transmittal shall have all appropriate information including, project name, date, specification section, submission number, and item description. It is recommended that the attached transmittal form be used to expedient turn over.
- C. If this format is not followed, the Engineer reserves the right to reject any submission.
- D. Facsimiles will not be accepted for shop drawings.

END OF SECTION 260500

SHOP DRAWING TRANSMITTAL

PROJECT: _____

DATE: _____

LSE PROJECT NO: _____

LSE PROJECT MANAGER: _____

Item Description/ Manufacturer	Specification Section No.	Submission No.	Disposition
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Connectors, splices, and terminations rated 600 V and less.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: Indicate type, use, location, and termination locations.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. General Cable; Prysmian Group North America.
 2. Okonite Company (The).
 3. Southwire Company.
- C. Standards:
 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
 2. RoHS compliant.
 3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

- E. Conductor Insulation:
 - 1. Type THHN and Type THWN-2: Comply with UL 83.

2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. 3M Electrical Products.
 - 2. Hubbell Incorporated, Power Systems.
 - 3. ILSCO.
- C. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- D. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
 - 1. Material: Copper.
 - 2. Type: One hole with standard barrels.
 - 3. Termination: Compression.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger. Conductors shall be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- D. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.
- E. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN/THWN-2, single conductors in raceway.

- B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Metal-clad cable, Type MC.
- C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.
- D. Exposed Branch Circuits, Including in Crawlspace: Type THHN/THWN-2, single conductors in raceway.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway.
- F. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.7 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes grounding and bonding systems and equipment.

1.2 ACTION SUBMITTALS

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

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.
 - 1. Plans showing as-built, dimensioned locations of system described in "Field Quality Control" Article, including the following:
 - a. Test wells.
 - b. Ground rods.
 - c. Ground rings.
 - d. Grounding arrangements and connections for separately derived systems.
 - 2. Instructions for periodic testing and inspection of grounding features at ground rings grounding connections for separately derived systems based on NFPA 70B.
 - a. Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
 - b. Include recommended testing intervals.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Certified by NETA.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Burndy; Hubbell Incorporated, Construction and Energy.
 - 2. ILSCO.
 - 3. Siemens Industry, Inc., Energy Management Division.

2.3 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B3.
 - 2. Stranded Conductors: ASTM B8.
 - 3. Tinned Conductors: ASTM B33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, **1/4 inch (6 mm)** in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; **1-5/8 inches (41 mm)** wide and **1/16 inch (1.6 mm)** thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; **1-5/8 inches (41 mm)** wide and **1/16 inch (1.6 mm)** thick.
- C. Grounding Bus: Predrilled rectangular bars of annealed copper, **1/4 by 4 inches (6.3 by 100 mm)** in cross section, with **9/32-inch (7.14-mm)** holes spaced **1-1/8 inches (28 mm)** apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V and shall be Lexan or PVC, impulse tested at 5000 V.

2.4 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
- D. Bus-Bar Connectors: Compression type, copper or copper alloy, with two wire terminals.
- E. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.
- F. Cable-to-Cable Connectors: Compression type, copper or copper alloy.
- G. Cable Tray Ground Clamp: Mechanical type, zinc-plated malleable iron.
- H. Conduit Hubs: Mechanical type, terminal with threaded hub.
- I. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.
- J. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.
- K. Lay-in Lug Connector: Mechanical type, copper rated for direct burial terminal with set screw.
- L. Service Post Connectors: Mechanical type, bronze alloy terminal, in short- and long-stud lengths, capable of single and double conductor connections.
- M. Signal Reference Grid Clamp: Mechanical type, stamped-steel terminal with hex head screw.
- N. Straps: Solid copper, cast-bronze clamp copper lugs. Rated for 600 A.
- O. Tower Ground Clamps: Mechanical type, copper or copper alloy, terminal one-piece clamp.
- P. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.
- Q. Water Pipe Clamps:
 - 1. Mechanical type, two pieces with zinc-plated bolts.
 - a. Material: Tin-plated aluminum.
 - b. Listed for direct burial.
 - 2. U-bolt type with malleable-iron clamp and copper ground connector.

2.5 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet (19 mm by 3 m).
- B. Ground Plates: 1/4 inch (6 mm) thick, hot-dip galvanized.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
 - 1. Install bus horizontally, on insulated spacers **2 inches (50 mm)** minimum from wall, **6 inches (150 mm)** above finished floor unless otherwise indicated.
 - 2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

- A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Receptacle circuits.
 - 4. Single-phase motor and appliance branch circuits.
 - 5. Three-phase motor and appliance branch circuits.
 - 6. Flexible raceway runs.
 - 7. Armored and metal-clad cable runs.
- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

- D. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.
- E. Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.4 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
- C. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.
 - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.
- E. Grounding and Bonding for Piping:
 - 1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
 - 2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
 - 3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

3.5 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 - 3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
 - 4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- C. Grounding system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Report measured ground resistances that exceed the following values:
 - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
 - 2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
 - 3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
 - 4. Power Distribution Units or Panelboards Serving Electronic Equipment: 1 ohm(s).
- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel slotted support systems.
2. Conduit and cable support devices.
3. Support for conductors in vertical conduit.
4. Structural steel for fabricated supports and restraints.
5. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
6. Fabricated metal equipment support assemblies.

B. Related Requirements:

1. Section 260548.16 "Seismic Controls for Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For fabrication and installation details for electrical hangers and support systems.

1. Hangers. Include product data for components.
2. Slotted support systems.
3. Equipment supports.
4. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, and coordinated with each other, using input from installers of the items involved.

B. Seismic Qualification Data: Certificates, for hangers and supports for electrical equipment and systems, accessories, and components, from manufacturer.

C. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M.
 - 2. AWS D1.2/D1.2M.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design hanger and support system.
- B. Seismic Performance: Hangers and supports shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 - 1. The term "withstand" means "the supported equipment and systems will remain in place without separation of any parts when subjected to the seismic forces specified and the supported equipment and systems will be fully operational after the seismic event."
 - 2. Component Importance Factor: 1.5.
 - 3. .
- C. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame Rating: Class 1.
 - 2. Self-extinguishing according to ASTM D635.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum **13/32-inch- (10-mm-)** diameter holes at a maximum of **8 inches (200 mm)** o.c. in at least one surface.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit; Atkore International.
 - b. B-line; Eaton, Electrical Sector.
 - c. Unistrut; Atkore International.
 - 2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 - 3. Material for Channel, Fittings, and Accessories: Galvanized steel.
 - 4. Channel Width: Selected for applicable load criteria.
 - 5. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 6. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

7. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 8. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- C. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be made of malleable iron.
- D. Structural Steel for Fabricated Supports and Restraints: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.
- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
 3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, **Grade A325** (**Grade A325M**).
 6. Toggle Bolts: All-steel springhead type.
 7. Hanger Rods: Threaded steel.

2.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 - 1. NECA 1.
 - 2. NECA 101
 - 3. NECA 102.
 - 4. NECA 105.
 - 5. NECA 111.
- B. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.
- C. Comply with requirements for raceways and boxes specified in Section 260533 "Raceways and Boxes for Electrical Systems."
- D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be **1/4 inch (6 mm)** in diameter.
- E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.
- F. Spring-steel clamps designed for supporting single conduits without bolts may be used for **1-1/2-inch (38-mm)** and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT IMC and RMC may be supported by openings through structure members, according to NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus **200 lb (90 kg)**.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
 2. To New Concrete: Bolt to concrete inserts.
 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 4. To Existing Concrete: Expansion anchor fasteners.
 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
 7. To Light Steel: Sheet metal screws.
 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that comply with seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS**PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Metal conduits and fittings.
2. Nonmetallic conduits and fittings.
3. Metal wireways and auxiliary gutters.
4. Nonmetal wireways and auxiliary gutters.
5. Surface raceways.
6. Boxes, enclosures, and cabinets.
7. Handholes and boxes for exterior underground cabling.

B. Related Requirements:

1. Section 078413 "Penetration Firestopping" for firestopping at conduit and box entrances.
2. Section 270528 "Pathways for Communications Systems" for conduits, wireways, surface pathways, innerduct, boxes, faceplate adapters, enclosures, cabinets, and handholes serving communications systems.

1.2 ACTION SUBMITTALS**A. Product Data:** For each type of product.**B. Shop Drawings:** For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.**1.3 INFORMATIONAL SUBMITTALS****A. Coordination Drawings:** Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:

1. Structural members in paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.

B. Seismic Qualification Data: Certificates, for enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

A. Metal Conduit:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit; Atkore International.
 - b. Patriot Aluminum Products, LLC.
 - c. Southwire Company.
 - d. Western Tube; Zekelman Industries.
 - e. Wheatland Tube; Zekelman Industries.
2. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
3. GRC: Comply with ANSI C80.1 and UL 6.
4. JEMT: Comply with ANSI C80.3 and UL 797.
5. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

B. Metal Fittings: Comply with NEMA FB 1 and UL 514B.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit; Atkore International.
 - b. Southwire Company, LLC.
 - c. Wheatland Tube; Zekelman Industries.
2. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
3. Fittings, General: Listed and labeled for type of conduit, location, and use.
4. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.
5. Fittings for EMT:
 - a. Material: [Steel].
 - b. Type: compression.
6. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.

2.2 NONMETALLIC CONDUITS AND FITTINGS

A. Nonmetallic Conduit:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Anaconda Sealtite; Anamet Electrical, Inc.
 - b. Dura-Line Communications Group; Orbia Advance Corporation, S.A.B. de C.V.
 - c. Electri-Flex Company.
- B. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 1. ENT: Comply with NEMA TC 13 and UL 1653.
 2. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
 3. LFNC: Comply with UL 1660.
- C. Nonmetallic Fittings:
 1. Fittings, General: Listed and labeled for type of conduit, location, and use.
 2. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
 3. Fittings for LFNC: Comply with UL 514B.
 4. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. B-line; Eaton, Electrical Sector.
 2. Square D; Schneider Electric USA.
 3. Wiegmann; Hubbell Incorporated, Commercial and Industrial.
- B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 unless otherwise indicated, and sized according to NFPA 70.
 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.4 NONMETALLIC WIREWAYS AND AUXILIARY GUTTERS

- A. Listing and Labeling: Nonmetallic wireways and auxiliary gutters shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Description: PVC, extruded and fabricated to required size and shape, and having snap-on cover, mechanically coupled connections, and plastic fasteners.

- C. Fittings and Accessories: Couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings shall match and mate with wireways as required for complete system.
- D. Solvents and Adhesives: As recommended by conduit manufacturer.

2.5 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- C. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing **50 lb (23 kg)**. Outlet boxes designed for attachment of luminaires weighing more than **50 lb (23 kg)** shall be listed and marked for the maximum allowable weight.
- D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- E. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- F. Device Box Dimensions: **4 inches square by 2-1/8 inches deep (100 mm square by 60 mm deep)**.
- G. Gangable boxes are allowed.
- H. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 with continuous-hinge cover with flush latch unless otherwise indicated.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Nonmetallic Enclosures: Plastic.
 - 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- I. Cabinets:
 - 1. NEMA 250, Type 1 Type 3R Type 12 galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 - 2. Hinged door in front cover with flush latch and concealed hinge.
 - 3. Key latch to match panelboards.
 - 4. Metal barriers to separate wiring of different systems and voltage.
 - 5. Accessory feet where required for freestanding equipment.
 - 6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Indoors: Apply raceway products as specified below unless otherwise indicated.
 - 1. Exposed, Not Subject to Physical Damage: EMT.
 - 2. Exposed, Not Subject to Severe Physical Damage: EMT.
 - 3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 - 5. Damp or Wet Locations: GRC.
 - 6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
- B. Minimum Raceway Size: 1/2-inch (16-mm) trade size.
- C. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 - 2. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.
 - 3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- D. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- E. Install surface raceways only where indicated on Drawings.
- F. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C).

3.2 INSTALLATION

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- C. Do not install raceways or electrical items on any "explosion-relief" walls or rotating equipment.
- D. Do not fasten conduits onto the bottom side of a metal deck roof.
- E. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

- F. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- G. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- H. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within **12 inches (300 mm)** of changes in direction.
- I. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.
- J. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- K. Support conduit within **12 inches (300 mm)** of enclosures to which attached.
- L. Stub-ups to Above Recessed Ceilings:
 - 1. Use EMT for raceways.
 - 2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- M. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- N. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
- O. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- P. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to **1-1/4-inch (35-mm)** trade size and insulated throat metal bushings on **1-1/2-inch (41-mm)** trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- Q. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than **200-lb (90-kg)** tensile strength. Leave at least **12 inches (300 mm)** of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- R. Surface Raceways:
 - 1. Install surface raceway with a minimum **2-inch (50-mm)** radius control at bend points.
 - 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding **48 inches (1200 mm)** and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

- S. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.
- T. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where an underground service raceway enters a building or structure.
 3. Conduit extending from interior to exterior of building.
 4. Conduit extending into pressurized duct and equipment.
 5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
 6. Where otherwise required by NFPA 70.
- U. Expansion-Joint Fittings:
1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed **30 deg F (17 deg C)** and that has straight-run length that exceeds **25 feet (7.6 m)**.
 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Indoor Spaces Connected with Outdoors without Physical Separation: **125 deg F (70 deg C)** temperature change.
 - b. Attics: **135 deg F (75 deg C)** temperature change.
 3. Install fitting(s) that provide expansion and contraction for at least **0.00041 inch per foot of length of straight run per degree F (0.06 mm per meter of length of straight run per degree C)** of temperature change for PVC conduits.
 4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
 5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- V. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of **36 inches (915 mm)** of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
 2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
- W. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
- X. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

- Y. Locate boxes so that cover or plate will not span different building finishes.
- Z. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.4 FIRESTOPPING

- A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260544 - SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
2. Sleeve-seal systems.
3. Sleeve-seal fittings.
4. Grout.
5. Silicone sealants.

B. Related Requirements:

1. Section 078413 "Penetration Firestopping" for penetration firestopping installed in fire-resistance-rated walls, horizontal assemblies, and smoke barriers, with and without penetrating items.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Wall Sleeves:

1. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
2. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies: Galvanized-steel sheet; 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.

C. Sleeves for Rectangular Openings:

1. Material: Galvanized sheet steel.
2. Minimum Metal Thickness:

- a. For sleeve cross-section rectangle perimeter less than **50 inches (1270 mm)** and with no side larger than **16 inches (400 mm)**, thickness shall be **0.052 inch (1.3 mm)**.
- b. For sleeve cross-section rectangle perimeter **50 inches (1270 mm)** or more and one or more sides larger than **16 inches (400 mm)**, thickness shall be **0.138 inch (3.5 mm)**.

2.2 SLEEVE-SEAL SYSTEMS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
 1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - a. Advance Products & Systems, LLC.
 - b. BWM Company.
 - c. CALPICO, Inc.
 - d. Flexicraft Industries.
 2. Sealing Elements: EPDM rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 3. Pressure Plates: Carbon steel.
 4. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.3 SLEEVE-SEAL FITTINGS

- A. Description: Manufactured plastic, sleeve-type, waterstop assembly made for embedding in concrete slab or wall. Unit shall have plastic or rubber waterstop collar with center opening to match piping OD.
 1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

2.4 GROUT

- A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.
- B. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- C. Design Mix: **5000-psi (34.5-MPa)**, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

2.5 SILICONE SEALANTS

- A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.
 - 2. <Double click to insert sustainable design text for sealants.>
- B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

- A. Comply with NECA 1.
- B. Comply with NEMA VE 2 for cable tray and cable penetrations.
- C. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:
 - 1. Interior Penetrations of Non-Fire-Rated Walls and Floors:
 - a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Section 079200 "Joint Sealants."
 - b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect material while curing.
 - 2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 3. Size pipe sleeves to provide **1/4-inch (6.4-mm)** annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
 - 4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
 - 5. Install sleeves for floor penetrations. Extend sleeves installed in floors **2 inches (50 mm)** above finished floor level. Install sleeves during erection of floors.
- D. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies:
 - 1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 2. Seal space outside of sleeves with approved joint compound for gypsum board assemblies.

- E. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- F. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- G. Underground, Exterior-Wall and Floor Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing sleeve-seal system.

3.2 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at raceway entries into building.
- B. Install type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.3 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings in new walls and slabs as they are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

END OF SECTION 260544

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Color and legend requirements for raceways, conductors, and warning labels and signs.
2. Labels.
3. Bands and tubes.
4. Tapes and stencils.
5. Tags.
6. Signs.
7. Cable ties.
8. Paint for identification.
9. Fasteners for labels and signs.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of label and sign to illustrate composition, size, colors, lettering style, mounting provisions, and graphic features of identification products.
- C. Delegated-Design Submittal: For arc-flash hazard study.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with ASME A13.1 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.

- E. Comply with NFPA 70E and Section 260573.19 "Arc-Flash Hazard Analysis" requirements for arc-flash warning labels.
- F. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

- A. Raceways and Cables Carrying Circuits at 600 V or Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage and system or service type.
- B. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
 - 1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
 - 2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - 3. Colors for 240-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - 4. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
 - 5. Color for Neutral: White.
 - 6. Color for Equipment Grounds: Green.
 - 7. Colors for Isolated Grounds: Green two or more yellow stripes.
- C. Warning Label Colors:
 - 1. Identify system voltage with black letters on an orange background.
 - 2. .
- D. Warning labels and signs shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR **36 INCHES (915 MM)**."
3. .

E. Equipment Identification Labels:

1. Black letters on a white field.
- 2.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. Champion America.
 - c. emedco.

B. Snap-around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameter and that stay in place by gripping action.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. HellermannTyton.
 - c. Marking Services Inc.

C. Self-Adhesive Wraparound Labels: Preprinted, **3-mil- (0.08-mm-)** thick, polyester flexible label with acrylic pressure-sensitive adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. A'n D Cable Products.
 - b. Brady Corporation.
 - c. Brother International Corporation.
 - d. emedco.
2. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
3. Marker for Labels: Permanent, waterproof, black ink marker recommended by tag manufacturer.

4. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.
- D. Self-Adhesive Labels: Polyester, thermal, transfer-printed, **3-mil-** (0.08-mm-) thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
 1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
 2. Minimum Nominal Size:
 - a. **1-1/2 by 6 inches** (37 by 150 mm) for raceway and conductors.
 - b. **3-1/2 by 5 inches** (76 by 127 mm) for equipment.
 - c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBES

- A. Snap-around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, **2 inches** (50 mm) long, with diameters sized to suit diameter and that stay in place by gripping action.
 1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameters of and shrunk to fit firmly around item being identified. Full shrink recovery occurs at a maximum of **200 deg F** (93 deg C). Comply with UL 224.
 1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)

2.5 TAPES AND STENCILS

- A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
 1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than **3 mils** (0.08 mm) thick by **1 to 2 inches** (25 to 50 mm) wide; compounded for outdoor use.
 1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- C. Tape and Stencil: **4-inch-** (100-mm-) wide black stripes on **10-inch** (250-mm) centers placed diagonally over orange background and is **12 inches** (300 mm) wide. Stop stripes at legends.
 1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- D. Floor Marking Tape: **2-inch-** (50-mm-) wide, **5-mil** (0.125-mm) pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.
 1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)

2.6 TAGS

A. Write-on Tags:

1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
2. Polyester Tags: [0.010 inch (0.25 mm)] [0.015 inch (0.38 mm)] thick, with corrosion-resistant grommet and cable tie for attachment.
3. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
4. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.7 SIGNS

A. Baked-Enamel Signs:

1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
2. Preprinted aluminum signs, [high-intensity reflective,]punched or drilled for fasteners, with colors, legend, and size required for application.
3. 1/4-inch (6.4-mm) grommets in corners for mounting.
4. Nominal Size: 7 by 10 inches (180 by 250 mm).

B. Metal-Backed Butyrate Signs:

1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
2. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396-inch (1-mm) galvanized-steel backing, punched and drilled for fasteners, and with colors, legend, and size required for application.
3. 1/4-inch (6.4-mm) grommets in corners for mounting.
4. Nominal Size: 10 by 14 inches (250 by 360 mm).

C. Laminated Acrylic or Melamine Plastic Signs:

1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
2. Engraved legend.
3. Thickness:
 - a. For signs up to 20 sq. in. (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
 - b. For signs larger than 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick.
 - c. Engraved legend with [black letters on white face] [white letters on a dark gray background] <Insert colors>.
 - d. [Punched or drilled for mechanical fasteners with 1/4-inch (6.4-mm) grommets in corners for mounting] [Self-adhesive].
 - e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. HellermannTyton.
 2. Ideal Industries, Inc.
 3. Marking Services Inc.
- B. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
1. Minimum Width: **3/16 inch (5 mm)**.
 2. Tensile Strength at **73 Deg F (23 Deg C)** according to ASTM D638: **12,000 psi (82.7 MPa)**.
 3. Temperature Range: **Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C)**.
 4. Color: Black, except where used for color-coding.
- C. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
1. Minimum Width: **3/16 inch (5 mm)**.
 2. Tensile Strength at **73 Deg F (23 Deg C)** according to ASTM D638: **12,000 psi (82.7 MPa)**.
 3. Temperature Range: **Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C)**.
 4. Color: Black.
- D. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.
1. Minimum Width: **3/16 inch (5 mm)**.
 2. Tensile Strength at **73 Deg F (23 Deg C)** according to ASTM D638: **7000 psi (48.2 MPa)**.
 3. UL 94 Flame Rating: 94V-0.
 4. Temperature Range: **Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C)**.
 5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of each item before installing identification products.
- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.
- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- G. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.
- H. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.
 - 1. Secure tight to surface of conductor, cable, or raceway.
- I. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.
- K. Accessible Fittings for Raceways: Identify the covers of each junction and pull box of the following systems with the wiring system legend and system voltage. System legends shall be as follows:
 - 1. "EMERGENCY POWER."
 - 2. "POWER."
 - 3. .
- L. Vinyl Wraparound Labels:
 - 1. Secure tight to surface at a location with high visibility and accessibility.
 - 2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.
- M. Snap-around Labels: Secure tight to surface at a location with high visibility and accessibility.

- N. Self-Adhesive Wraparound Labels: Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
- O. Self-Adhesive Labels:
1. On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
 2. Unless otherwise indicated, provide a single line of text with **1/2-inch- (13-mm-)** high letters on **1-1/2-inch- (38-mm-)** high label; where two lines of text are required, use labels **2 inches (50 mm)** high.
- P. Snap-around Color-Coding Bands: Secure tight to surface at a location with high visibility and accessibility.
- Q. Heat-Shrink, Preprinted Tubes: Secure tight to surface at a location with high visibility and accessibility.
- R. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.
- S. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of **6 inches (150 mm)** where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- T. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's written instructions.
- U. Write-on Tags:
1. Place in a location with high visibility and accessibility.
 2. Secure using general-purpose cable ties.
- V. Baked-Enamel Signs:
1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
 2. Unless otherwise indicated, provide a single line of text with **1/2-inch- (13-mm-)** high letters on minimum **1-1/2-inch- (38-mm-)** high sign; where two lines of text are required, use signs minimum **2 inches (50 mm)** high.
- W. Metal-Backed Butyrate Signs:
1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
 2. Unless otherwise indicated, provide a single line of text with **1/2-inch- (13-mm-)** high letters on minimum **1-1/2-inch- (38-mm-)** high sign; where two lines of text are required, use signs minimum **2 inches (50 mm)** high.
- X. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with **1/2-inch- (13-mm-)** high letters on minimum **1-1/2-inch- (38-mm-)** high sign; where two lines of text are required, use signs minimum **2 inches (50 mm)** high.

Y. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.2 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.
 1. Locate identification at changes in direction, at penetrations of walls and floors, at **50-foot (15-m)** maximum intervals in straight runs, and at **25-foot (7.6-m)** maximum intervals in congested areas.
- D. Accessible Fittings for Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive labels containing the wiring system legend and system voltage. System legends shall be as follows:
 1. "EMERGENCY POWER."
 2. "POWER."
 3. "UPS."
 4. .
- E. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use vinyl wraparound labels to identify the phase.
 1. Locate identification at changes in direction, at penetrations of walls and floors, at **50-foot (15-m)** maximum intervals in straight runs, and at **25-foot (7.6-m)** maximum intervals in congested areas.
- F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use write-on tags with the conductor or cable designation, origin, and destination.
- G. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive wraparound labels with the conductor designation.

- H. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.
- I. Auxiliary Electrical Systems Conductor Identification: Marker tape that is uniform and consistent with system used by manufacturer for factory-installed connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
- J. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
- K. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.
- L. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive equipment labels.
 - 1. Apply to exterior of door, cover, or other access.
 - 2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:
 - a. Power-transfer switches.
 - b. Controls with external control power connections.
 - c. .
- M. Arc Flash Warning Labeling: Self-adhesive labels.
- N. Operating Instruction Signs: Self-adhesive labels.
- O. Equipment Identification Labels:
 - 1. Indoor Equipment: Self-adhesive label.

END OF SECTION 260553

SECTION 262813 – FUSES**PART 1 GENERAL****1.01 SUBMITTALS**

- A. Product Data: Catalog sheets, specifications and installation instructions.

1.02 MAINTENANCE

- A. Spare Parts:
1. Six spare fuses of each size and category, including any accessories required for a complete installation.
 2. Special tools if required for installation or removal of fuses.

PART 2 PRODUCTS**2.01 FUSEHOLDERS**

- A. Equipment provided shall be furnished with fuseholders to accommodate the fuses specified.

2.02 FUSES RATED 600V OR LESS

- A. Fuses for Safety Switches (Motor Circuits) and Service Disconnects:
1. Cartridge Type (250 Volts, 600 Amperes or Less): Dual element time-delay, UL Class RK-5, 200,000 amperes R.M.S. symmetrical interrupting capacity:
 - a. Cooper Industries Inc.'s/Bussman Div. Type FRN-R.
 - b. Gould Inc.'s/Circuit Protection Div. (Shawmut) Type TR-R.
 - c. Littlefuse Inc.'s Type FLN-R.
 2. Cartridge Type (600 Volts, 600 Amperes or Less): Dual element time-delay, UL Class RK-5, 200,000 amperes R.M.S. symmetrical interrupting capacity:
 - a. Cooper Industries Inc.'s/Bussmann Div. Type FRS-R.
 - b. Gould Inc.'s/Circuit Protection Div. (Shawmut) Type TRS-R.
 - c. Littlefuse Inc.'s Type FLS-R.
 3. Cartridge Type (600 Volts or Less - Above 600 Amperes): Current limiting, UL Class L, 200,000 amperes R.M.S. symmetrical interrupting capacity:
 - a. Cooper Industries Inc.'s/Bussmann Div. Type KTU.
 - b. Gould Inc.'s Circuit Protection Div. (Shawmut) Type A4BY.
 - c. Littlefuse Inc.'s Type KLP-C.
- B. Fuses for Safety Switches (Lighting and Heating Circuits):
1. Cartridge Type (250 Volts): Single element, UL Class RK-1, 200,000 amperes R.M.S. symmetrical interrupting capacity:
 - a. Cooper Industries Inc.'s/Bussmann Div., Type KTN-R.

- b. Gould Inc.'s/Circuit Protection Div. (Shawmut) Type A2K-R.
 - c. Littlefuse Inc.'s Type KLN-R.
- 2. Cartridge Type (600 Volts): Single element, UL Class RK-1, 200,000 amperes R.M.S. symmetrical interrupting capacity:
 - a. Cooper Industries Inc.'s/Bussmann Div. Type KTS-R.
 - b. Gould Inc.'s/Circuit Protection Div. (Shawmut) Type A6K-R.
 - c. Littlefuse Inc.'s Type KLS-R.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install fuses in respective equipment.

END OF SECTION

SECTION 26 28 16**ENCLOSED SWITCHES AND CIRCUIT BREAKERS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes:
 - 1. Fusible switches.
 - 2. Nonfusible switches.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include nameplate ratings, dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
- B. Shop Drawings: For enclosed switches and circuit breakers.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Include wiring diagrams for power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.
- C. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Accredited by NETA.
 - 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

1.6 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: One year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2.2 GENERAL REQUIREMENTS

- A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by an NRTL, and marked for intended location and application.
- D. Comply with NFPA 70.

2.3 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ABB (Electrification Products Division).
2. Eaton.
3. Siemens Industry, Inc., Energy Management Division.
4. Square D; by Schneider Electric.

- B. Type HD, Heavy Duty:

1. Single throw.
2. Three pole.
3. 600-V ac.
4. 1200 A and smaller.
5. UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses.

6. Lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Isolated Ground Kit: Internally mounted; insulated, labeled for copper and aluminum neutral conductors.
4. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
5. Service-Rated Switches: Labeled for use as service equipment.

2.4 NONFUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ABB (Electrification Products Division).
2. Eaton.
3. Siemens Industry, Inc., Energy Management Division.
4. Square D; by Schneider Electric.

- B. Type HD, Heavy Duty, Three Pole, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Isolated Ground Kit: Internally mounted; insulated, labeled for copper and aluminum neutral conductors.
4. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
5. Service-Rated Switches: Labeled for use as service equipment.

PART 3 - EXECUTION

3.1 ENCLOSURE ENVIRONMENTAL RATING APPLICATIONS

- A. Enclosed Switches and Circuit Breakers: Provide enclosures at installed locations with the following environmental ratings.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R.
3. Kitchen Wash-Down Areas: NEMA 250, Type 4X, stainless steel.
4. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.

5. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.
6. Hazardous Areas Indicated on Drawings: NEMA 250, Type 7 with cover attached by Type 316 stainless steel bolts.

3.2 INSTALLATION

- A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
 1. Notify Owner no fewer than seven days in advance of proposed interruption of electric service.
 2. Indicate method of providing temporary electric service.
 3. Do not proceed with interruption of electric service without Owner's written permission.
 4. Comply with NFPA 70E.
- B. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- C. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- D. Comply with mounting and anchoring requirements
- E. Temporary Lifting Provisions: Remove temporary lifting of eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- F. Install fuses in fusible devices.
- G. Comply with NFPA 70 and NECA 1.

3.3 IDENTIFICATION

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems."
 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Perform tests and inspections with the assistance of a factory-authorized service representative.
- D. Tests and Inspections for Switches:
 1. Visual and Mechanical Inspection:

- a. Inspect physical and mechanical condition.
- b. Inspect anchorage, alignment, grounding, and clearances.
- c. Verify that the unit is clean.
- d. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
- e. Verify that fuse sizes and types match the Specifications and Drawings.
- f. Verify that each fuse has adequate mechanical support and contact integrity.
- g. Inspect bolted electrical connections for high resistance using one of the two following methods:
 - 1) Use a low-resistance ohmmeter.
 - a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.
 - 2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.
 - a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.
- h. Verify that operation and sequencing of interlocking systems is as described in the Specifications and shown on the Drawings.
- i. Verify correct phase barrier installation.
- j. Verify lubrication of moving current-carrying parts and moving and sliding surfaces.

2. Electrical Tests:

- a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
 - b. Measure contact resistance across each switchblade fuse holder. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
 - c. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
 - d. Measure fuse resistance. Investigate fuse-resistance values that deviate from each other by more than 15 percent.
 - e. Perform ground fault test according to NETA ATS 7.14 "Ground Fault Protection Systems, Low-Voltage."
- E. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports.

1. Test procedures used.
2. Include identification of each enclosed switch and circuit breaker tested and describe test results.
3. List deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 26 28 16