

*Specifications for:*

***PERSHING FIELD -  
PLAYGROUND  
RENOVATIONS***

***PROJECT NO. 2013-024***

CITY OF JERSEY CITY

DEPARTMENT OF  
ADMINISTRATION  
DIVISION OF  
ARCHITECTURE  
ENGINEERING, TRAFFIC AND  
TRANSPORTATION

13 - 15 LINDEN AVENUE EAST, FIRST FLOOR  
JERSEY CITY, NEW JERSEY 07305



# **SPECIFICATIONS FOR THE LABOR AND MATERIALS REQUIRED FOR**

**PROJECT:** PERSHING FIELD - PLAYGROUND RENOVATION

**LOCATION:** 201 CENTRAL AVENUE  
JERSEY CITY, NEW JERSEY 07307

**OWNER:** CITY OF JERSEY CITY  
280 GROVE STREET  
JERSEY CITY, N.J. 07302

HONORABLE STEVEN M. FULOP, MAYOR  
ROBERT KAKOLESKI, BUSINESS ADMINISTRATOR  
PETER FOLGADO, PURCHASING AGENT, RPPO, QPA

**PROJECT ARCHITECTS** DIVISION OF ARCHITECTURE, ENGINEERING, TRAFFIC AND  
TRANSPORTATION  
13 - 15 LINDEN AVENUE EAST, FIRST FLOOR  
JERSEY CITY, NEW JERSEY 07305  
(201) 547-5900

**DATE:** MARCH, 2015

**PROJECT NUMBER:** 2013-024

**SPECIFICATIONS FOR  
PERSHING FIELD - PLAYGROUND RENOVATIONS  
JERSEY CITY, NEW JERSEY**

**PROJECT NO. 2013-024**

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## ABBREVIATIONS

Abbreviations of names of Associations, Institutes or Agencies used throughout the Contract Documents are as follows:

AASHTO or AASHO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association, Incorporated
AISC	American Institute of Steel Construction, Incorporated
ANSI or ASA	American National Standards Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BOG&T	Bureau of Geology and Topography, State of New Jersey
CIPRA	Cast Iron Pipe Research Association
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
EIAJ	Electronic Industries Association of Japan
FED. SPEC.	Federal Specification
IEEE	Institute of Electrical and Electronics Engineer (Successor to AIEE and IRE)
NEMA	National Electrical Manufacturer's Association
NJDOT	New Jersey Department of Transportation
NJSS or SS	New Jersey State Highway Department, Standard Specifications for Road & Bridges Construction, 1983, as currently amended. Also called Standard Specifications
OSHA	Occupational Safety and Health Administration
UL	Underwriter's Laboratory

## NOTICE TO BIDDERS

Sealed bid proposals will be received, opened and read in public by the Purchasing Agent at **394 Central Avenue, Second Floor, Jersey City, New Jersey 07307** on \_\_\_\_\_ 2015, at 11:00 A.M.

Prevailing time, or as soon thereafter as the matter can be reached, for the:

### **PERSHING FIELD - PLAYGROUND RENOVATIONS JERSEY CITY, NEW JERSEY**

Bidders are required to comply with the requirements of N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27. Full requirements of the Equal Employment Opportunity and Affirmative Action Programs are incorporated herein by reference and may be obtained with Proposal Form. Bidders are also required to comply with the requirements of P.L. 2004, c.57 (N.J.S.A. 52:32-44) which includes the requirement that contractors provide copies of their Business Registration Certificates issued by the New Jersey Department of the Treasury, as well as other provisions as listed in the Contract Documents.

Proposals **MUST BE ACCOMPANIED** by a Bid Bond or Certified Check, made payable to the City of Jersey City, in an amount equal to Ten (10%) Percent of the Bid.

Each Bidder shall submit with his proposal submittal item nos. one (1) through fifteen (15) listed in the Schedule of Submittals by Bidder on page 51 of the General Conditions.

**Bids may be submitted in person, or may be sent by U.S. certified mail return receipt requested, or may be sent by private courier service. Mail bids to: Peter Folgado, Purchasing Agent, RPPO, QPA, Division of Purchasing, 394 Central Avenue, Second Floor, Jersey City, New Jersey 07307. Bids sent by mail must be received by the Purchasing Agent no later than 4:00 P.M. on the last City business day before the day of the bid reception. Bids sent by courier service must be delivered to the Purchasing Agent no later than 11:00 A.M. on the day of the bid reception. The City shall not be responsible for the loss, non-delivery or physical condition of bids sent by mail or courier service. Bids must be submitted individually in a sealed envelope addressed to the Purchasing Agent. Bid proposals must comply with specifications.**

The Purchasing Agent reserves the right to reject any and all bids received, or portions thereof, if deemed to be in the best interest of the City to do so.

## **INFORMATION TO BIDDERS**

### 1. INTENT OF CONTRACT DOCUMENTS:

Under these specifications and the contract which will be based thereon, it is proposed that the bidder shall furnish all materials, equipment, tools, labor and supervision necessary to complete the work upon which he bids in strict accordance with the plans and specifications.

The intent of the Contract Documents is to obtain a complete job, satisfactory to the Architect. It shall be understood that the bidder has satisfied himself as to the full requirements of the Contract Documents and has based his Proposal upon such understanding.

### 2. FAMILIARITY WITH WORK:

It is the obligation of the Bidder to ascertain for himself all the facts concerning conditions to be found at the location(s) of the Project including all physical characteristics above, and or below the surface of the ground; to fully examine the Plans, Proposal, Estimate of Quantities, to read the Specifications thoroughly and completely, to consider fully these and all other matters which can in any way affect the work under the Contract and to make the necessary investigations relating thereto, and he agrees to this obligation in the signing of the Contract. The City assumes no responsibility whatsoever with respect to ascertaining for the Contractor such facts concerning physical characteristics at the site(s) of the Project. The Contractor agrees that he will make no claim for additional payment or extension of time for completion of the work or any other concession because of any misinterpretation or misunderstanding of the Contract, on his part, or of any failure to fully acquaint himself with all conditions relating to the work.

### 3. PLANS AND SPECIFICATIONS:

The project shall be performed in strict accordance with the requirements of the Plans and Specifications, subject to addenda issued by the City in writing. The Plans and Specifications are intended to complement and supplement each other. Any work required by either of them and not by the other shall be performed as if denoted both ways. Should any work be required which is not denoted in the Specifications or on the Plans because of an obvious omission but which is nevertheless necessary for the proper performance of the Project, such work shall be performed as fully as if it were described and delineated.

### 4. INTERPRETATIONS OR ADDENDA:

Should a Bidder find discrepancies or omissions from the Plans, Specifications, or Contract Documents, or should he be in doubt as to their meaning, he should at once notify Brian F. Weller, Division Director in writing at 575 Route 440, Second Fl., Jersey City, New Jersey 07305. No oral interpretation will be made to any Bidder as to the meaning of the Contract Documents or any part thereof. Every request for such interpretation shall be in writing and to be given consideration, must be received at least ten (10) calendar days prior to the date fixed for the opening of bids, to allow the City to issue an addendum prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions or addition of items will be in the form of written addenda to the specifications which, if issued, will be mailed by registered mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purpose).

## INFORMATION TO BIDDERS

All addendum so issued shall become part of the Contract Documents and shall be read immediately prior to the opening of the bids by the Purchasing Agent who shall give each bidder or his representative present an opportunity to withdraw his bid before any bids are opened. Any objection arising out of the addendum subsequent to the opening of bids will not be considered. Failure of any bidder to receive any such addendum or interpretation or to attend the reading of the bids shall not relieve such bidder from any obligation under his bid as submitted, including such addendum. The City will not be responsible for any other explanations or interpretations of the proposed documents.

### 5. SUBSURFACE CONDITIONS:

It is the obligation of the Bidder to make his own investigations of subsurface conditions prior to submitting the Proposal. Borings, test excavations and other subsurface investigations, if any, made by the City prior to the Construction of the Project, the records of which may be available to the bidders, are made for use only as a guide for design. Said borings, test excavations and other subsurface investigations are not warranted to show the actual subsurface conditions.

Any interpretations of the City's subsurface investigation records made by the bidder as to the types, characteristics, quantity and quality of any subsurface material or condition shall be at the sole risk of the bidder.

The Contractor agrees that he will make no claims against the City, if in carrying out the Project he finds that the actual conditions encountered do not conform to those indicated by said borings, test excavations and other subsurface investigations.

### 6. SUBMITTING PROPOSAL:

Each Bid must be submitted on the prescribed Proposal Form which shall not be removed from the Specifications. All entries must be in ink or typewritten. Bidders shall submit their Proposals in sealed envelopes. On the outside of the envelope shall be stated the name and address of the bidder and the name of the work as shown in the Notice to Bidders.

When the Proposal is made by an individual his Post Office Address shall be stated and he shall sign the Proposal: when made by a firm or partnership its name and Post Office Address shall be stated, and the Proposal shall be signed by one or more of the partners: when made by a corporation, its name and principal Post Office Address shall be stated and the Proposal shall be signed by an authorized official of the Corporation, with Corporate Seal affixed. Signatures shall be notarized in all cases. Proposals shall be delivered in person to the City Purchasing Agent at the time and place stated in the Notice to Bidders, and they will be publicly opened and read aloud on the date, place, and at the time set and stated in the Notice to Bidders.

**Bids may be submitted in person, or may be sent by U.S. certified mail return receipt requested, or may be sent by private courier service. Mail bids to: Peter Folgado, Purchasing Agent, RPPO, QPA, 394 Central Avenue, Second Floor, Jersey City, New Jersey 07307. Bids sent by mail must be received by the Purchasing Agent no later than 4:00 P.M. on the last City business day before the day of the bid reception. Bids sent by courier service must be delivered to the Purchasing Agent no later than 11:00 A.M. on the day of the bid reception. The City shall not be responsible for the loss, non-delivery or physical condition of bids sent by mail or courier service. Bids must be submitted individually in a sealed envelope addressed to the Purchasing Agent. Bid proposals must comply with specifications.**

## INFORMATION TO BIDDERS

### 7. BID DOCUMENTS:

The Bid Documents to be included in the sealed envelope with the Proposal shall include but not be limited to the following:

- \* 1. Proposal
- \* 2. Certificate of Experience of General Contractor
- 3. Certificate of Experience of Subcontractors listed on Page P-9, pursuant to N.J.S.A. 40A: 11-16
- \* 4. Plant and Equipment Questionnaire of General Contractor
- 5. Plant and Equipment Questionnaire of Subcontractors listed on Page P-9, pursuant to N.J.S.A. 40A: 11-16
- 6. Non-Collusion Affidavit
- \* 7. Corporation or Partnership Statement
- \* 8. Bid Guarantee
- \* 9. Consent of Surety
- 10. New Jersey Business Registration Certificates of General Contractor and all Subcontractors listed on Page P-9, pursuant to N.J.S.A. 40A:11-16
- 11. Equality Information on Substituted Items (if applicable)
- \* 12. Written acknowledgment of Addendum (if issued), pursuant to N.J.S.A. 40A:11-23.2(e)
- 13. Public Works Contractor Registration Certificates for bidder and all subcontractors named in bid proposal are required pursuant to N.J.S.A. 34:11-56.48 et seq.
- 14. Exhibit B: Mandatory Equal Employment Opportunity Language
- 15. Form MWB-3; Minority/Women Business Compliance Plan

Failure to include the bid documents listed immediately above that are marked with an asterisk (\*) shall result in automatic rejection of the bid at the time of the bid reception.

**The contractor/bidder and all subcontractors named in the bid proposal must be registered with the Department of Labor pursuant to the Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq., at the time the bid proposal is received, or the proposal will be determined to be non-responsive and will be rejected.** Any non-listed subcontractor must be registered with the Department of Labor prior to physically starting work. A contractor desiring to register should contact the Contractor Registration Unit, Division of Wage and Hour Compliance, New Jersey Department of Labor, P.O. Box 389, Trenton, New Jersey 08625-0389, telephone no: (609) 292-9464, fax no: (609) 633-8591, e-mail: [contreg@dol.state.nj.us](mailto:contreg@dol.state.nj.us), website: [www.nj.gov/labor/lsse/lspubcon.html](http://www.nj.gov/labor/lsse/lspubcon.html).

## INFORMATION TO BIDDERS

### 8. BID GUARANTEE:

Each proposal shall be accompanied by a Certified Check, Cashier's Check or Bid Bond in the amount of not less than 10% of the total amount bid in the Proposal, but in no case need the Certified Check, Cashier's Check or Bid Bond or any combination thereof exceed \$20,000.00. No cash will be accepted. This Certified Check, Cashier's Check or Bid Bond is offered as evidence of good faith and as a guarantee that, if awarded the contract, the Bidder shall execute the Contract and Performance Bond in the full amount of the Contract.

The bidder's bond is offered as a guarantee, made by a surety company qualified and authorized to do business in the State of New Jersey and must be signed by an officer or agent of the surety company authorized to execute bid bonds on behalf of the surety company. Included with the bid bond must be such documents which indicate that the offer or agent is authorized to execute the bid bond. If a certified check is offered as a guarantee, it shall be made payable to the City of Jersey City.

### 9. CONSENT OF SURETY:

All bidders shall submit with their bids a certificate from an approved surety company, authorized to do business in the State of New Jersey, stating that it will provide the contractor with a performance bond on such sum as required. The successful bidder will be required to furnish a surety corporation bond in the amount of the contract conditioned for the faithful performance thereof.

### 10. WITHDRAWAL OF PROPOSAL:

A Proposal, after having been submitted, may be withdrawn by the Bidder on a given Project prior to the opening of any bid on that Project.

N.J.S.A. 40A:11-23.3 authorizes a bidder to request withdrawal of a public bid due to a mistake on the part of the bidder. A mistake is defined by N.J.S.A. 40A:11-2(42) as a clerical error that is an **unintentional and substantial computational error or an unintentional omission of a substantial quantity of labor, material, or both, from the final bid computation.**

A bidder claiming a mistake under N.J.S.A. 40A:11-23.3 must submit a request for withdrawal, **in writing**, by certified or registered mail to: Peter Folgado, Purchasing Agent, RPPO, QPA, 394 Central Avenue, Second Floor, Jersey City, New Jersey 07307. The bidder must request withdrawal of a bid due to a mistake, as defined by law, within five business days after the receipt and opening of the bids. Since the bid withdrawal request shall be effective as of the postmark of the certified or registered mailing, Peter Folgado, Director, Division of Purchasing may contact all bidders, after bids are opened, to ascertain if any bidders wish to, or already have exercised a request to withdraw their bid pursuant to N.J.S.A. 40A:11-23.3.

A bidder's request to withdraw the bid **shall** contain evidence, including any pertinent documents, demonstrating that a mistake was made. Such documents and relevant written information shall be reviewed and evaluated by the public owner's designated staff pursuant to the statutory criteria of N.J.S.A. 40A:11-23.3.

The City will not consider any written request for a bid withdrawal for a mistake, as defined by N.J.S.A. 40A:11-2(42), by the bidder in the preparation of a bid proposal unless the postmark of the certified or registered mailing is within the five business days following the opening of bids.

## **INFORMATION TO BIDDERS**

### **11. CAUSES FOR REJECTION:**

Proposals from bidders who are found to be unqualified and Proposals not accompanied by all required and properly completed bid documents may be rejected.

In addition, causes for rejection of Proposals may include but not be limited to the following:

- A. if prices are obviously unbalanced,
- B. if received from Bidders who have previously performed work in an unsatisfactory manner,
- C. if the Purchasing Agent, at his/her sole discretion, deems it advisable to do so in the best interest of the City of Jersey City,
- D. if conditions, limitations or provisions are attached by a Bidder to his Proposal, if Proposals are otherwise irregular or if the enclosed or accompanying documents are not completed and properly executed,
- E. if the bidder has not constructed at least three (3) comparable projects within the previous three (3) years,
- F. if the bidder does not own sufficient or satisfactory equipment to perform the work.

### **12. RETURN OF BID GUARANTEES:**

The Bid Guarantees of all except the apparent three (3) lowest responsible bidders on the project will be returned within ten (10) working days after the opening of bids. The bids of such bidders will be considered as officially withdrawn. Within three (3) working days after awarding the contract, and the approval of the contractor's Performance Bond, the bid guarantees of the remaining unsuccessful bidders will be returned.

Upon execution of the contract by the successful bidder and acceptance by the City of the Performance Bond, and the receipt of the certificate of insurance, the bid guarantee of the lowest bidder will be returned.

No interest will be paid on any form of bid guarantee.

### **13. AWARD OF CONTRACT:**

The Contract, if awarded, will be awarded to the lowest responsible, qualified bidder whose Proposal complies with the requirements as stated herein. Proposals may be rejected where the prices as bid are obviously unreasonable. Award of the contract will be announced by the Municipal Council of the City of Jersey City. If the Total Price is found to have been incorrectly computed, change will be made in any and all unit prices so as to attain conformity with the Total Price before the award is made.

### **BID FOR UNIT PRICES CONTRACT:**

The Bidder shall state on the Proposal Form the price per unit of measure for each scheduled item of work for which he will agree to carry out the work, and the total price for the performance of the Project, as determined by multiplying each estimated quantity by the price per unit of measure bid and adding together the resulting amounts. Unit prices shall be given in writing and in figures and in the case of variance the prices in writing shall prevail.

## INFORMATION TO BIDDERS

### BID FOR LUMP SUM CONTRACT:

Lump Sum Bid, Base Bid prices and Alternates shall be in figures and words. In case of discrepancy the amount described in words shall govern. If any of the alternates listed in the Proposal Form does not involve change in price, the Bidder shall so indicate by writing the words "no change" on the space provided.

If the Base Bid is within the amount of funds available to finance the construction contract and the City wishes to accept alternate bids, then contract award will be made to that responsible bidder submitting the low combined bid, consisting of the base bid plus alternate bids. Under this procedure, if the City wishes to make award on only the base bid, then contract award will be made to that responsible bidder submitting the low base bid.

For the purpose of comparison of bids received, the total price stated in the Proposal will be considered to be the amount bid for the Project and award will be made on that Total Price. The Purchasing Agent may consider informal any Bids not prepared and made in accordance with the provisions stated herein and may waive or reject any or all bids. Bids containing any conditions, omissions, unexplained erasure or alterations, or items not called for in the proposal, or irregularities of any kind may be rejected by the City.

The Purchasing Agent will either award the Contract or reject all Proposals received within sixty (60) days after the formal opening of Proposals. The acceptance of a Proposal will be a notice in writing signed by the Purchasing Agent and no other act shall constitute the acceptance of a Proposal.

### 14. TIME FOR EXECUTING CONTRACT & LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT:

Any bidder whose Proposal is accepted will be required to execute four (4) copies of the Contract and furnish satisfactory bond, and insurance certificate to the City of Jersey City within ten (10) days after notice of acceptance.

The successful bidder, upon his failure or refusal to execute and deliver the signed contract, bonds and certificate of insurance required within ten (10) days after receipt of contracts shall forfeit the certified check, cashier's check or bid bond to the City as liquidated damages for such failure or refusal.

The damages to the City of Jersey City for breach as above provided will include loss from interference with its construction program and other items whose accurate amount will be difficult or impossible to compute. The amount of the Bid Guarantee accompanying the proposal of such Bidder shall be retained by the City of Jersey City, not as a penalty, but as liquidated damages for such breach. In the event any bidder whose proposal has been accepted shall fail, refuse or resist to execute the contract as hereinbefore provided, the Municipal Council of the City of Jersey City may, as their option, determine that such Bidder has abandoned the Contract and thereupon his proposal and the acceptance thereof shall be null and void, and the City shall be entitled to liquidated damages as above provided.

The rights and obligations provided for in the Contract shall become effective and binding upon the parties only with its formal execution by the City of Jersey City. Any work started or materials delivered prior to said execution of contract shall be at the Contractor's risk.

## INFORMATION TO BIDDERS

### 15. PERFORMANCE BOND:

Within ten (10) days of the date of award of the Contract, the Bidder to whom the Contract has been awarded shall furnish and deliver Surety Corporation Bond, conditioned for the faithful performance and completion of the work, and for the payment of all lawful claims and bills against the contractor for all labor, material, tools and equipment used in or in connection therewith. The Bond shall not be returned or canceled until all liability to any and all persons protected by the conditions of said Bond shall have been met by the Contractor or person primarily liable for the payment thereof, or by the Surety on said Bond.

The Bond required for the faithful performance of the Contract shall be in such sum equal to one hundred percent (100%) of the total amount of the contract, shall be satisfactory to the Corporation Counsel of the City of Jersey City shall be executed by a Surety Company licensed to do business in the State of New Jersey, and shall comply with N.J.S.A. 2A: 44-143 to 147 and amendments thereof and supplements thereto. In no case shall the contractor begin work prior to approval of said bond by the City.

### 16. CERTIFICATE OF INSURANCE:

The contractor shall also supply to the City, at the time the Contract is signed, Certificate of Insurance in such amounts as described elsewhere in these specifications, which will be maintained by the contractor during the life of the contract. The City of Jersey City shall be named as co-insured on Certificate/Policy.

### 17. ESTIMATES QUANTITIES AND UNIT PRICES:

The Unit Price bid in each of the items included in the Proposal shall cover all costs of whatever nature, incidental to the work. In explanation but not in limitation thereof, these costs shall include the cost of all work, labor, material, equipment, transportation and all else necessary to perform and complete the Project in the manner and within the time required, and all incidental expenses in connection therewith, all costs on account of loss by damage or destruction encountered for settlement of damages, and for replacement of defective work and materials.

The Estimate of Quantities specified covering all work to be done and materials to be furnished is approximate only and is given solely to be used as a uniform basis for comparison of bids. The Architect reserves the right to increase or diminish any or all quantities, or to omit any, if it is deemed necessary to do so.

If any part is so withdrawn by the City, the contractor shall have no claim for loss incurred by him for commitments made by him in anticipation of the work contemplated, or for loss of anticipated profits, or for work done prior to his having been authorized to proceed therewith.

## INFORMATION TO BIDDERS

### 18. LUMP SUM PRICE:

The Lump Sum Price in the Proposal shall cover all costs of whatever nature, incident to and growing out of the work. In explanation but not in limitation thereof, these costs shall include the cost of all work, labor, material, equipment, transportation, and all else necessary to perform and complete the Project in the manner and within the time required, and all incidental expenses for unforeseen difficulties encountered for settlement of damages, and for replacement of defective work and materials.

### 19. CHANGES - EXTRA WORK FOR UNIT PRICE CONTRACT:

The City may at any time desire changes in either the quantity or the quality of Work or materials to be performed or furnished. These changes may be such as to either reduce or to increase quantities specified or may call for Extra Work or materials not contemplated in the original Schedule of Prices in the Proposal.

The City may make changes in the Work required to be performed by the Contractor under the Contract by making additions thereto, or by omitting Work therefrom, without invalidating the Contract, and without relieving or releasing the Contractor from any of his obligations under the Contract or any Bonds given by him pursuant to the Contract provisions, and without relieving or releasing the Surety or Sureties of said Bonds. All such changes in the Work will be authorized by written Change Order, the Total Contract Price and the Contract Time being adjusted accordingly; and shall be executed under the terms of the original Contract unless it is expressly provided otherwise. The Change Orders shall be limited to the following types:

- A. Emergency occurrence affecting health, safety or welfare.
- B. Unforeseeable problems.
- C. Minor modifications to effect economics, improve service or resolve minor problems with affected property owners.

When the Extra Work to be performed is of a kind not embraced in the Proposal or being so embraced is to be done at a lesser or greater price or quantity than originally agreed upon, the Contractor shall be furnished a written Change Order signed by the City and approved by the City Council. Said Change Order shall state the Extra Work to be done, the amount to be paid therefor, and the number of additional days, if any, that will be added to the time specified for the completion of the entire Project covered by this Contract.

The price stated in this written Change Order representing the sum to be added to or deducted from the Total Contract Price shall be determined as follows:

- (1) By such applicable Unit Prices, if any, as are set forth in the Contract; or
- (2) If no such Unit Prices are set forth, then by a Lump Sum mutually agreed upon by the City and the Contractor; or
- (3) If no such Unit Prices are so set forth and if the parties cannot agree upon a Lump Sum then by the actual net cost in money to the Contractor of:
  - a. The wages of applied labor, including foreman, required for such Extra Work. Labor rates shall be as per current New Jersey Department of Labor Prevailing Wage Rates plus thirty-four (34%) percent of the Prevailing Wage Rate for other direct cost of labor to the Contractor, which includes taxes (eg. FICA, FUTA,

## INFORMATION TO BIDDERS

SUTA, SDI, etc.), insurance premiums (Workmen's Compensation Insurance, General Liability, etc.), bond premiums (Performance and Payment Bonds, etc.), plus benefits listed in the Prevailing Wage Rates;

- b. Plus the materials entering permanently into such Extra Work;
- c. Plus such rental for plant and equipment (other than small tools) required and approved for such Extra Work. The Contractor's hourly equipment rates shall be as per the monthly rates divided by 176 in the current "Blue Book" published by Nielsen/DATAQUEST. The weekly, hourly and daily rates will not be used.
- d. Plus power and consumable supplies for the operation of power equipment required for such Extra Work;
- e. Plus fifteen (15%) percent of a, b, c and d above as compensation for all other items and profits, and costs or expenses including administration, overhead, superintendence, materials used in temporary structures, allowances made by the Contractor to the Subcontractors, the use of small tools and any other general expenses. The Contractor's compensation for overhead and profit shall be limited to five (5%) percent on Work performed by a Subcontractor. All time and material quantities shall be verified by the City on a daily basis.

When Extra Work is performed under Method 3, the Contractor shall furnish satisfactory bills, certified payrolls and vouchers covering all items of cost, and when required, shall give the City access to accounts relating thereto.

The provisions hereof shall not affect the power of the Contractor to act in case of emergency, as hereinafter provided. Under no circumstances shall the Contractor perform Work in excess of the quantities delineated in the Proposal without a written Change Order issued by the City. The City shall not be liable for any claims for Work performed outside the Contract unless so authorized by a written Change Order.

It is understood and agreed to by the Bidder that any delays necessary to institute a Change Order, resolved by the City Council, shall not be a basis for claims for additional compensation. Wherever possible the Contractor shall mobilize his forces to construct another portion of the Project while awaiting said written Change Order.

### 20. CHANGES - EXTRA WORK FOR LUMP SUM CONTRACT:

The City, through the City, may at any time desire changes in either the quantity or the quality of Work or materials to be performed or furnished. These changes may be such as to either reduce or to increase quantities specified or may call for Extra Work or materials not contemplated in the original Schedule of Prices in the Proposal.

The City, through the City, may make changes in the Work required to be performed by the Contractor under the Contract by making additions thereto, or by omitting Work therefrom, without invalidating the Contract, and without relieving or releasing the Contractor from any of his obligations under the Contract or any Bonds given by him pursuant to the Contract provisions, and without relieving or releasing the Surety or Sureties of said Bonds. All such changes in the Work will be authorized by written Change Order, the Total Contract Price and the Contract Time being adjusted accordingly; and shall be executed under the terms of the original Contract unless it is expressly provided otherwise. The Change Orders shall be limited to the following types:

## INFORMATION TO BIDDERS

- A. Emergency occurrence affecting health, safety or welfare.
- B. Unforeseeable problems.
- C. Minor modifications to effect economics, improve service or resolve minor problems with affected property owners.

When the Extra Work to be performed is of a kind not embraced in the Proposal or being so embraced is to be done at a lesser or greater price or quantity than originally agreed upon, the Contractor shall be furnished a written Change Order signed by the City and approved by the City Council. Said Change Order shall state the Extra Work to be done, the amount to be paid therefor, and the number of additional days, if any, that will be added to the time specified for the completion of the entire Project covered by this Contract.

The price stated in this written Change Order representing the sum to be added to or deducted from the Total Contract Price shall be determined as follows:

1. By such applicable Unit Prices, if any, as are set forth in the Contract; or
2. If no such Unit Prices are set forth, then by a Lump Sum mutually agreed upon by the City and the Contractor; or
3. If no such Unit Prices are so set forth and if the parties cannot agree upon a Lump Sum then by the actual net cost in money to the Contractor of:
  - a. The wages of applied labor, including foreman, required for such Extra Work. Labor rates shall be as per current New Jersey Department of Labor Prevailing Wage Rates plus thirty-four (34%) percent of the Prevailing Wage Rate for other direct cost of labor to the Contractor, which includes taxes (eg. FICA, FUTA, SUTA, SDI, etc.), insurance premiums (Workmen's Compensation Insurance, General Liability, etc.), bond premiums (Performance and Payment Bonds, etc.), plus benefits listed in the Prevailing Wage Rates;
  - b. Plus the materials entering permanently into such Extra Work;
  - c. Plus such rental for plant and equipment (other than small tools) required and approved for such Extra Work. The Contractor's hourly equipment rates shall be as per the monthly rates divided by 176 in the current "Blue Book" published by Nielsen/DATAQUEST. The weekly, hourly and daily rates will not be used.
  - d. Plus power and consumable supplies for the operation of power equipment required for such Extra Work;
  - e. Plus fifteen (15%) percent of a, b, c and d above as compensation for all other items and profits, and costs or expenses including administration, overhead, superintendence, materials used in temporary structures, allowances made by the Contractor to the Subcontractors, the use of small tools and any other general expenses. The Contractor's compensation for overhead and profit shall be limited to five (5%) percent on Work performed by a Subcontractor. All time and material quantities shall be verified by the City on a daily basis.

When Extra Work is performed under Method 3, the Contractor shall furnish satisfactory bills, certified payrolls and vouchers covering all items of cost, and when required, shall give the City access to accounts relating thereto.

## INFORMATION TO BIDDERS

The provisions hereof shall not affect the power of the Contractor to act in case of emergency, as hereinafter provided. Under no circumstances shall the Contractor perform Work in excess of the quantities delineated in the Proposal without a written Change Order issued by the City. The City shall not be liable for any claims for Work performed outside the Contract unless so authorized by a written Change Order.

It is understood and agreed to by the Bidder that any delays necessary to institute a Change Order, resolved by the City Council, shall not be a basis for claims for additional compensation. Wherever possible the Contractor shall mobilize his forces to construct another portion of the Project while awaiting said written Change Order.

### 21. SUBSTITUTIONS:

Each Bidder represents that his Proposal is based upon the materials and equipment described in the bidding documents.

Where materials are specified by a trade name or manufacturer's model or catalog number, the name product shall be construed to read "or equivalent". If a bidder substitutes any material other than those named in the Specifications, such material shall be equivalent in all respects to the named products specified. The burden of submitting adequate information to prove equivalency of substituted materials shall be the responsibility of the Contractor. All information necessary to prove equivalency of substituted materials should be included with the proposal submitted at the bid reception. Proposed substitutions shall satisfy all design conditions including performance and physical properties which will be reviewed prior to approving the substitute; physical dimensions, pattern, colors, weight effect on other trades, availability, cost, performance and test data, guarantee and other properties. Where a Contractor substitutes materials, he shall submit two (2) samples of materials specified and two (2) samples of material considered by contractor to be an equivalent, along with technical information on each. Where a Contractor's information on a product is insufficient to determine "equivalency", laboratory tests will be required. A private laboratory will be selected by the Architect to conduct the test, the cost of which will be paid by the Contractor regardless of the test result. All modifications to existing work or to adjoining work, which are necessary to accommodate any item offered as an equivalent, shall be performed at no additional cost to the City. The Contractor shall substantiate in writing, by economic analysis, that items offered as equivalents will cause no addition in maintenance, fuel, or utility cost over the items shown or specified and have an equal life expectancy.

If after review of all submitted material, the substitution is deemed not an equivalent, the bid will be rejected.

All materials, equipment and assemblies shall be accompanied by manufacturer's instructions pertaining to installation, use and maintenance, as applicable, so as to be suitable for the intended purpose or service in the proposed methods of construction. All materials shall be used in strict accordance with manufacturer's instruction, which will include instructions for appropriate reconditioning of existing or previously applied materials in a manner that will provide conditions to ensure satisfactory completed Work.

## INFORMATION TO BIDDERS

### 22. INTENT OF PLANS AND SPECIFICATIONS:

It is the intent of these contract documents to detail a complete job and to specify the work to be accomplished. The plans and specifications are complementary and what is called for by one shall be binding as if called for by both.

Interpretation of the drawings and specifications shall be given preference in the following order:

1. Addenda to the specifications and/or drawings, (later dates to take precedence over earlier dates).
2. Specifications
3. Contract drawings (notes on drawings to take precedence over other data on drawings).

In case the Contractor finds the specifications or plans are not sufficiently clear or complete, he shall request the Architect to provide supplementary plans and specifications and the Architect will provide such additional information as may be necessary. Such request shall be made in writing at least two weeks prior to the time such drawings and specifications are to be needed, and no delay caused by the tardiness of the Architect, in supplying such information, shall be considered as neglect or default on his part unless written application shall have been so made.

The Architect shall have the authority to resolve any controversy as to the meaning and intent of these plans and specifications and he shall have the right to correct any errors or omissions therein for the proper completion of the project.

The Contractor shall also keep at least one set of the plans and specifications on the job site(s) at all times.

### 23. RESPONSIBILITY OF WORK:

The Contractor assumes full responsibility for materials and equipment employed in the construction of the Project and agrees to make no claim against the City of Jersey City for damages to such materials and equipment from any cause whatsoever. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the Project, or to any part thereof, due to any cause whatsoever.

The provisions of the foregoing paragraph shall not be a waiver of the Contractor's guarantee to replace defective work and materials during the maintenance period after date of acceptance.

The Contractor shall make good all work damaged or destroyed before the final acceptance of the Project and the cost thereof shall be included in the prices bid for the various items scheduled in the Proposal.

## **INFORMATION TO BIDDERS**

### **24. LAWS, ORDINANCES, REGULATIONS & PERMITS:**

The successful bidder must secure all permits, insurance, licenses and pay any inspection in accordance with provisions as set forth in laws, ordinances, and regulations by all governmental agencies affecting the work at his own expense. The successful bidder shall be solely responsible for any damage resulting from his neglect to obey all laws, regulations, rules, and ordinances. Ignorance regarding such requirements shall in no way serve to modify the provisions of the contract.

The Contractor shall keep fully informed of all Federal and State laws, all local laws, ordinances, safety codes, regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, safety code, regulations, order, or decree, whether by himself or his employees.

The Contractor shall, at his own expense, secure and pay to the appropriate department of the City of Jersey City, the fees or charges for all permits for street pavement, sidewalks, sheds, removal of abandoned water taps, sealing of house connection drains, pavement cuts, buildings, electrical, plumbing, water, gas and sewer permits required by the City of Jersey City and any of its agencies.

The Contractor shall comply with applicable City laws and ordinances governing the disposal of surplus excavation materials, debris and rubbish on or off the Project Area and commit no trespass on any public or private property in any operation due to or connected with the work embraced in this Contract.

### **25. PROVISIONS REQUIRED BY LAW DEEMED INSERTED:**

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 otherwise any such provision is not correctly inserted, then upon the application of either party, the contract shall forthwith be physically amended to correct such insertion.

### **26. INSURANCE:**

Certificates of liability and Workmen's Compensation Insurance satisfactory to the City shall be filed with the City at the time the contract is signed. All of the contractor's insurance coverage shall contain a clause indemnifying and saving harmless the City of Jersey City and its other agents from any and all liability of whatever nature arising from the work to be performed under the contract, including attorney's fees and costs in connection with the defense of such claims. The certificate of insurance furnished by the contractor shall spell out specifically that the above indemnification is guaranteed by the policy.

The Contractor shall not commence work under the Contract or under any special condition until he has obtained all insurance as required under the following sub-paragraphs, and until such insurances have been approved by the City, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurances required of the subcontractor have been obtained and approved.

## INFORMATION TO BIDDERS

The Contractor shall take out and maintain, during the life of this Contract, Workmen's Compensation Insurance for all its employees at the site of the project and, in case any work is sublet, the Contractor shall require the Subcontractor similarly to provide Workmen's Compensation Insurance for all the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this Contract at the site of the Project is not protected under Workmen's Compensation Statutes, the Contractor shall provide, and shall cause each Subcontractor to provide Compensation Insurance with a private company in an amount equivalent to that provided by the Workmen's Compensation Statutes for the protection of his employees not otherwise protected.

The Contractor shall obtain and keep in force during the term of the Contract, General Liability and Property Damage Insurance in companies and in form to be approved by the City. Said insurance shall provide coverage to the Contractor, any Subcontractor performing work provided by this Contract, and the City. The City of Jersey City, its officers, agents, servants, and employees as their interest may appear, shall be named as an additional insured on said policy insofar as the work and obligations performed under the Contract are concerned. The coverage so provided shall protect against claims for personal injuries, including accidental death, as well as claims for property damages, which may arise from any act or omission of the City, the Contractor or the Subcontractor or by anyone directly or indirectly employed by either of them.

The minimum policy limits of such insurance shall be as follows:

A. General Liability and Property Damage Insurance:

In an amount not less than \$1,000,000 for injuries, including wrongful death, to any one person, and subject to the same limit for each person, and an amount of not less than \$2,000,000 on account of one accident, and property damage insurance in an amount of not less than \$100,000 for each accident, and for an aggregate limit of not less than \$300,000. This insurance shall be written with an acceptable company authorized to do business in the State of New Jersey, shall be taken out before any operations of the Contractor are commenced, and shall be kept in effect until all operations shall be satisfactorily completed.

B. Special Hazards Insurance:

The following special hazards shall be covered during the life of this Contract by rider or riders to the policy or policies above required or by separate policies of insurance: (A) blasting and explosion; (b) collapse of or structural injury to any structure or facility due to (1) excavation or pumping, (2) shoring or demolition of any structure or the removal or rebuilding of any structural support thereof; (c) all vehicles and equipment; (d) the term "caused by accident" in the standard policy shall be broadened by the inclusion of the term "occurrence". This policy shall contain a broad form contractual coverage endorsement.

C. Automobile Insurance:

(a) Automobile Liability Insurance to cover each automobile, truck, vehicle or other equipment used in the performance of the Contract in an amount not less than \$1,000,000 on account of injury or death of one person and not less than \$2,000,000 on account of

## INFORMATION TO BIDDERS

injury or death of two or more persons; (b) Property Damage Liability Insurance to cover each automobile, truck, vehicle or other equipment used in performance of the Contract in an amount not less than \$100,000 in any accident.

D. Workers' Compensation:

Workers' Compensation coverage with NJ statutory limits and including Employer's Liability limits of no less than \$1,000,000.

E. Builders Risk Insurance:

Coverage shall be in an amount equal to the full value of the material cost to adequately protect the Contractor and the City from all risks resulting in damage to the property.

F. Notice of Change:

Each and every insurance policy required by the terms of this Contract shall carry endorsement to the effect that the insurance company will give at least thirty days notice to the City of any modification or cancellation of any policy or policies.

27. INDEMNITY:

The Contractor agrees to save the City of Jersey City, its officers, agents, servants, and employees as their interest may appear, harmless from all loss or damage occasioned to it or to any third person or property by reason of any carelessness or negligence on the part of the City, the Contractor, Subcontractors, agents, and employees in the performance of the Contract and will, after reasonable notice thereof, defend and pay the expense of defending any suit which may be commenced against the City of Jersey City, its officers, agents, servants and employees as their interest may appear, by any third person alleging injury by reason of such carelessness or negligence, and will pay any judgement which may be obtained against the City of Jersey City, its officers, agents, servants, and employees as their interest may appear, in such suit.

The cost of such indemnification shall be included in the prices bid for the various scheduled items in the Proposal. So much money due to the Contractor under and by virtue of the Contract as shall be considered necessary by the City may be retained by the City and held until such suits, actions, claims or amounts shall have been settled and suitable evidence to that effect furnished to the City.

28. SUBMISSION OF POST-BID INFORMATION:

Upon request by the Architect, the selected Bidder shall within seven (7) days thereafter submit the following:

- A. A statement of costs for each major item of work included in the Proposal.
- B. A designation of the work to be performed by the Bidder with his own forces.

## INFORMATION TO BIDDERS

- C. A list of names of the subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for such portions of the work as may be designated in the bidding documents or, if no portions are so designated, the names of the subcontractors proposed for the principal portions of the work.

The bidder will be required to establish to the satisfaction of the Architect the reliability and responsibility of the proposed Subcontractors to furnish and perform the work described in the sections of the Specifications pertaining to such proposed Subcontractor's respective trades. Prior to the award of the Contract, the Architect will notify the bidder in writing if the Architect after due investigation, has reasonable and substantial objection to any person or organization or such list. If the Architect has a reasonable and substantial objection to any person or organization on such list, and refuses in writing to accept such person or organization, the Bidder shall obtain another Subcontractor satisfactory to the Architect at no additional cost to the contract.

## **GENERAL CONDITIONS**

### **GC-1 PUBLIC SAFETY AND CONVENIENCE:**

The Contractor shall conduct his work with the least possible obstruction to traffic. The convenience of the public and of the residents adjacent to the Project, and the protection of persons and property, are of first importance and shall be provided for by the Contractor in an adequate and satisfactory manner. Adequate temporary crossings shall be constructed and maintained where access to adjacent property is desired, the fire hydrants shall be kept accessible.

Trucks hauling materials shall have tight tail gates and shall be loaded with adequate freeboard of not less than three (3) inches without precarious cones or piles of material.

The Contractor shall provide for prompt removal from existing roadways of all dirt and other materials that have been spilled, washed, tracked or otherwise deposited thereon by his hauling and other operations whenever the accumulation is sufficient to cause the formation of mud, interfere with drainage, damage pavements or create a traffic hazard.

The Contractor shall employ construction methods and means that will keep flying dust to the minimum. He shall provide for the laying of dust retardants on the Project, and on roads, streets and other areas immediately adjacent to the Project limits, wherever traffic, or buildings that are occupied or in use, are affected by such dust caused by his hauling or other operations. The materials and methods used for retardant laying shall be subject to the approval of the Engineer. The cost of carrying out the foregoing provisions shall be included in the prices bid for the various items scheduled in the Proposal.

The Contractor shall conduct his operations in such a manner as to provide maximum safety for all employees on the work and the public as well. He shall comply promptly with such safety regulations as may be prescribed by the Engineer and shall, when so directed by the Engineer or his duly authorized agents, properly correct any unsafe conditions created by or unsafe practices on part of his employees. In the event of the Contractor's failure to comply, the Engineer may take the necessary measures to correct the conditions or practices and all costs thereof will be deducted from any monies due the Contractor. Failure of the Engineer to direct the correction of unsafe conditions or practices shall not relieve the Contractor of his responsibility herein.

### **GC-2 FAILURE TO MAINTAIN STREETS IN SAFE CONDITION:**

In the event that the Contractor fails to maintain trenches and roads in a safe and passable condition following pipe laying or fails to clean up or fails to install and maintain pavement replacement over trenches, the City shall have the right to order this work done by others at the cost and expense of the Contractor. The Contractor will be given notice of the unsatisfactory condition. After such notice is submitted to the Contractor, the City may order this work done and deduct the cost of same from payment due under this contract.

### GC-3 ACCIDENT PREVENTION:

Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes, and the rules and regulations of U. S. Occupational Safety & Health Administration (OSHA), shall be observed. Machinery, equipment and other hazards of whatsoever character shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not inconsistent with applicable Federal, State and City laws and regulations.

If any operation, practice or condition during the course of the work be deemed by the Engineer to be unsafe, the Contractor shall take corrective action when notified in writing by the Engineer. However, where in the opinion of the Engineer, any operation, practice or condition endangers persons or property, it shall be discontinued and adequate remedial action taken before the affected part of the work is resumed.

Nothing in the foregoing paragraphs shall be construed as relieving the Contractor from full responsibility for safe prosecution of the work at all times.

### GC-4 PROPERTY DAMAGE:

The Contractor shall protect all property, monuments, trees, existing structures, utilities and work of any kind along and adjacent to the work under this contract against damage or interruption of service. Damage, injury, loss, or interruption of service resulting from the failure to do so shall be repaired or restored promptly by the contractor at his own expense.

The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity to the site, which may be in any way affected by the excavations or other operations connected with the construction or reconstruction of the work embraced in this contract.

The Contractor shall not enter on or make use of private property in the prosecution of the Project unless written permission therefor is secured in duplicate, from the owner, one copy of which shall be filed with the Engineer. He shall promptly restore or repair, without cost to the City and in a manner satisfactory to its owner, property damaged or destroyed by his operations. Special attention shall be given to the protection of existing landscape features and vegetation.

### GC-5 PUBLIC UTILITIES & UNDERGROUND FACILITIES:

The terms public utility or public utilities used in this Article shall be construed to include those publicly and privately owned.

It shall be the Contractor's responsibility to notify in writing all the various utility companies concerned prior to the initial start of construction, so that they will have sufficient time to locate, relocate or construct their facilities. He shall also be responsible for the location of all other underground lines and appurtenances such as existing sanitary sewers and house connections,

existing water and gas lines, existing storm drains, etc., whether such underground lines and appurtenances are noted or not noted on the plans, so as to prevent any direct interference with underground lines being constructed.

The Contractor is responsible for coordinating said work with the utility companies so as not to disrupt the progress of the job nor the workmanship of said improvement. All existing utilities are to be located and adjusted by the various utilities concerned. All the utilities have been located on the drawings by the Engineer as designated by the utility companies. The Engineer does not assume responsibility for said locations. The contractor must have the utility companies verify said locations.

The Contractor shall at his own expense properly support and maintain all public utility structures and facilities together with all other existing underground lines and appurtenances he may encounter in connection with the work, and shall replace any street signs, stop signs, bus station signs, etc., which may have to be removed temporarily and replace or repair any he may damage. The Contractor is cautioned to insure the safety of all persons with reference to overhead power lines.

Should the Contractor in course of the construction work cause any damage to the existing underground lines and appurtenances, he shall at his own expense restore or repair the damaged lines.

The Contractor shall carry out his work carefully and skillfully and shall support and secure public utility structures so as to avoid damage to them. Flow in drains and sewers shall be satisfactorily maintained. He shall not move without the owner's written consent any public utility structures, and at the completion of the work their condition shall be as safe and permanent as before. When public utility structures, facilities or equipment are damaged by the Contractor, he shall notify their owners, who may cause the damage to be repaired at the Contractor's expense. If the cost thereof is not paid by the Contractor within 30 days after repairs have been completed, the City may retain an amount sufficient to cover the cost from any moneys due or that may become due the Contractor under this Contract. House service connections damaged by the Contractor shall be repaired by competent skilled mechanics.

When the removal, relocation or replacement of public utility structures or facilities is not deemed essential by the Engineer for carrying out the Project as planned, but is performed for the Contractor's convenience, the cost of such work shall be included in the prices bid for the various items scheduled in the Proposal. When such removal, relocation or replacement is deemed essential by the Engineer for carrying out the work of the Project as planned, the cost shall be borne by the City or by the owner of the utility in accordance with City policy.

Due notice will be given to all interested parties in accordance with N.J.S.A., that all surface openings within the site of the Project shall be made prior to the laying of the finished pavement.

#### GC-6 MAINTENANCE AND PROTECTION OF TRAFFIC:

All roadways within the limits of the project which are reserved for traffic shall be maintained by the Contractor free from obstruction and in a smooth riding condition at all times.

The Contractor shall always provide a safe driveway and/or walkway for the use of traffic and/or pedestrians to and from properties along the street. Such passageways shall be adequately maintained and provided with adequate signs, barricades, lights and watchmen.

In streets and roadways the contractor will be responsible for the maintenance of traffic with a minimum of one lane open at all times. Where necessary, steel plates shall be employed to provide for the maintenance of traffic as directed by the Engineer. Under no circumstances will a street or roadway be completely closed to traffic without permission from the Engineer; and the Contractor, upon receiving permission from the Engineer; shall notify the Police, Fire and Public Works Department of such closing.

The Contractor shall supply, erect, place and maintain in good and upright condition during the course of the work, barricades, warning signs, lights, flares, approved flashing electric flasher units, rubber traffic cones, and other warning and danger signals and devices, appropriate and adequate for the specific needs and subject to the Engineer's approval, at working sites, closed roads, intersections, open excavations, locations of material storage, standing equipment, and other obstructions, at points where the usable traffic width of the road is reduced, at points where traffic is deflected from its normal courses or lanes, and at other places of danger to vehicular or pedestrian traffic or to the completed work.

Signs, barricades, traffic cones, flares and electric flasher units shall be established, relocated, repaired and replaced in such a manner and at such times and places as may be necessary for adequate protection of vehicular and pedestrian traffic, subject to approval by the Engineer.

The Contractor shall provide sufficient watchmen and traffic directors and shall take all other precautions, including any which may be ordered by the Engineer, that may be necessary for the safety of the public and protection of the work.

When detours are required due to the construction, such detours shall be established with the approval of the Police Department in advance, and the Contractor at his own expense shall furnish, erect and maintain barricades as specified above to close the street or highway and protect traffic and his work at the beginning and end of the detour.

The Contractor shall take all precautions, including any which may be ordered by the Engineer, that may be necessary for the safety of the public and the protection of the work during night time hours, with adequate patrolling during this period and replace missing flares and other lighting units.

Where traffic is to be maintained on main thoroughfares, the Contractor shall provide approved metal plates to cover open trenches, as directed by the Engineer. All signs and barricades shall conform to current specifications set forth in the "Manual on Uniform Traffic Control Devices for Streets and Highways", U.S. Department of Transportation, Federal Highway Administration, as currently amended.

The cost of Maintenance and Protection of Highway or Street Traffic as described above will not be paid for under any specific item, but the cost thereof shall be included in the prices bid for the various items scheduled in the Proposal.

#### GC-7 OTHER CONTRACTORS:

The right is reserved by the city to do work with its own employees or with the use of contractors and to permit public utility companies and others to do work during the progress of the project within the limits thereof or adjacent thereto. The Contractor shall conduct his work and cooperate with such utility companies and others so as to cause as little interference as possible with their work, as the Engineer may direct. The Contractor shall allow other contractors and utility companies and their agents access to their work within the site of the Project. The Contractor shall and hereby does agree, to make no claims against the City for additional payment due to delays or other conditions created by the operations of such other parties. If there be a difference of opinion as to the respective rights of the Contractor and others doing work within the limits of or adjacent to the Project, the Engineer will decide as to the respective rights of the various parties involved in order to secure the completion of the City's work in general harmony and in a satisfactory manner.

His decision shall be final and binding on, and shall not be cause for claims by the Contractor.

The Contractor will be held responsible for any damage done or caused by his work or forces to the work performed by other Contractors or utility companies within or adjacent to the site of the Project, and he shall repair or make good any such damage in a manner satisfactory to the Engineer and without cost to the City.

#### GC-8 EXISTING MONUMENTS:

Existing monuments and title stones which need not be removed shall be left in place and protected by the Contractor against damage and dislocation. When relocation or change in the grade of existing monuments is necessary, they shall be protected in their original position until their removal is approved by the Engineer, and shall be reset when directed and in conformance with the new lines and grades to be furnished, by him. Monuments and title stones, that are to be left in place or reset and are removed without approval of the Engineer shall be replaced at the Contractor's expense. The cost of resetting monuments shall be included in the base bid.

#### GC-9 PATENTS:

The Contractor shall hold and save the City of Jersey City, its officers, and employees, harmless from liability of any nature or kind, including costs and expenses, for, or an account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the City, unless otherwise specifically stipulated in the Technical Specifications.

#### GC-10 CONTRACT AND CONTRACT DOCUMENTS:

The Plans, Bid Specifications, Technical Specifications and Addenda, if any, shall form part of the contract, and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the contract documents and in no way affect limit, or cast light on the interpretation of the provisions to which they refer. The organization of the Specifications into divisions, sections and articles, and the

arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

Anything mentioned in the Technical Specifications and not shown on Drawings, or shown on the Drawings and not mentioned in the Technical Specifications, shall be of like effect as if shown on or mentioned in both. In case of difference between Drawings and Technical Specifications, the Technical Specifications shall govern. In case of any discrepancy in Drawings, or Technical Specifications, the matter shall be immediately submitted to the Engineer, for a decision.

The figured dimensions on the Drawings or notes indicating dimensions shall be used instead of measurements of the Drawings by scale, and shall be strictly complied with. No scale measurements shall be used as a dimension to work with except on large scale drawings not dimensioned. In case of difference between small and large scale drawings, the large scale drawings shall govern.

#### GC-11 CONTRACTOR'S ORGANIZATION & EQUIPMENT:

Methods and Equipment. The Contractor shall at all times employ competent supervision, labor and adequate equipment for prosecuting the several classes of work to full completion in the manner and time required by these Specifications.

All workmen shall have sufficient skill and experience to perform properly the work assigned to them. Workmen engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Should the Contractor fail to remove any employee from work when requested or fail to furnish suitable and sufficient personnel and equipment for the proper prosecution of the work, the Engineer may suspend the work by written notice until compliance with such order.

The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, subcontractors, or material men engaged upon this Contract. He shall be prepared to guarantee to each of his subcontractors the locations and measurements which they may require for the fitting of their work to all surrounding work.

All equipment which is used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent property, or other highways will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the Contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the Contract.

When the Contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than those specified in the Contract, he may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods

and equipment proposed and the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with Contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove the deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. Unless otherwise provided, no change will be made in basis of payment for the construction items involved nor in Contract time as a result of authorizing a change in methods or equipment under these provisions.

The Contractor and his Subcontractors shall not engage, on a full or part-time or other basis during the period of the Contract, any of the professional or technical personnel of the Division of Architecture, Engineering or Traffic and Transportation, or of any State, County or City Department, who are or have been at any time during the period of the Contract, or for 30 days prior to the award of the Contract, in the employ of such public agencies, except regularly retired employees, without the written consent of the public employer of such personnel.

#### GC-12 SUPERINTENDENT AND WORKMEN:

The Contractor shall attend to the work personally or through a competent, English-speaking superintendent on the work, authorized to receive and carry out instructions. The workmen shall be competent and shall perform their work in a neat and workmanlike manner. Any workman not properly qualified for his work or who is doing it in an unsatisfactory manner or contrary to the Specifications or the Engineer's instructions, or who is disorderly, shall be discharged if so requested by the Engineer, and shall not be employed again on the Project except with the approval of the Engineer. The superintendence and the number of workmen shall be sufficient, in the opinion of the Engineer, to insure the completion of the Project within the time stipulated therefor.

The Contractor shall also furnish to the City the telephone numbers of his superintendent and assistants for any emergency arising outside the normal work day schedule as a result of the Contract. If such an emergency does arise, and the City cannot contact the Contractor or his agents, or the Contractor or his agents do not arrive on the job site within two hours of such notification, the City reserves the right to correct the situation. Any costs incurred by the City shall be reported, in writing, to the Contractor for immediate payment. No additional estimates for work under this Contract shall be paid to the Contractor until the City is in receipt of payment for such emergency work.

#### GC-13 EQUIPMENT:

Good equipment only shall be used, and it shall be in proper working conditions. Sufficient equipment shall be used to insure the completion of the Project within the time specified. The equipment shall be operated so as not to damage public or private property. When a specific type or character of equipment is called for it shall be provided and used. All equipment shall be subject to the approval of the Engineer.

If the Contractor or his subcontractors do not own all or part of the equipment required, a written statement shall be submitted by the Contractor or his subcontractors, respectively, of the name and address of the owner or owners, stating that an agreement has been made to lease or loan the equipment and that in event of default, the Architect/Engineer has the right to take over and use such equipment or cause it to be used for completing the Project.

GC-14 WORKING SITE:

Any space that the Contractor may require for plant, equipment, storage or other purpose, in addition to that available therefore at the site of the Project, shall be procured by the Contractor and the cost thereof shall be included in the prices bid for the various items scheduled in the Proposal. In event of default the Architect/Engineer has the right to take over and occupy such space, or cause it to be occupied, for the purpose of completing the Project, at the Contractor's expense. If leased, the lease shall contain a provision that in event of default by the Contractor the lease may be assigned to the City or its nominee. The Contractor agrees in said default, that he will make such assignment.

GC-15 SANITARY PROVISIONS:

The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees and for the use of government employees when the special provisions do not contain other provisions, to comply with the requirements of the State and local Boards of Health, or of other bodies or tribunals having jurisdiction. No direct payment will be made for the work required by this subsection, but the costs thereof will be considered to be included in bid prices of the contract. Attention is directed to Federal, State and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his health or safety.

GC-16 MATERIALS AND WORKMANSHIP:

All materials used in the construction shall be new, except where reclaimed materials are indicated, and shall be furnished by the Contractor, and shall be approved by the Engineer. Request for approval of materials shall state the proposed source. All workmanship shall be satisfactory to the Engineer. Materials and workmanship not satisfactory shall be replaced by the Contractor without expense to the City.

The Contractor shall comply with provisions of the N.J. revised statutes 52:33-2 requiring that preference be given to the use of domestic materials.

The Contractor shall do all things necessary in connection with his work, and shall leave the premises in as good condition as found furnishing new materials and work if necessary.

The Contractor shall and will in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this contract and said specifications and in accordance with the plans and drawings covered by this contract and any and all supplemental plans and drawings, and in accordance with the directions of the Engineer as given

from time to time during the progress of the work. He shall furnish, erect, maintain and remove such construction plant and such temporary works as may be required. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the contract and specifications, and shall do, carry on, and complete the entire work to the satisfaction of the Engineer and the City.

The Contractor shall furnish to the Engineer for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment, which he contemplates installing, together with full information as to type, performance characteristics, and all other pertinent information as required, and shall likewise submit for approval as required full information concerning all other materials or articles which he proposes to incorporate in the work.

Machinery, mechanical and other equipment, materials or articles installed or used without such prior approval shall be at the risk of subsequent rejection.

Materials specified by reference to the number or symbol of a specific standard, such as an A.S.T.M. Standard, a Federal Specification or other similar standard shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the Invitation for Bids, except as limited to type, class or grade, or modified in such reference. The standards referred to, except as modified in the Technical Specifications shall have full force and effect as though printed therein.

#### GC-17 TESTING AND INSPECTION OF MATERIALS:

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the City. The City will pay for all laboratory inspection service direct, and not as a part of the Contract. When instructed, the Contractor shall furnish representative samples of materials and shall make them available for collection by the Engineer.

Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for uses intended.

This article shall not be construed to mean that the contractor is relieved from inspection services and/or test required by the technical specifications and payments to the same.

#### GC-18 SAMPLES, CERTIFICATES AND TESTS:

The Contractor shall submit all material or equipment samples, certificates, affidavits, etc., as called for in the Contract Documents or required by the Engineer promptly after award of the contract and acceptance of the Contractor's bond. No such material or equipment shall be manufactured or delivered to the site, except at the Contractor's own risk, until the required samples or certificates have been approved in writing by the Engineer. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the contract time.

Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the project for which it is intended, and the name of the producer. The accompanying certificate or letter from the Contractor shall state that the sample complies with Contract requirements, shall give the name and brand of the product, its place of origin, the name and address of the producer and all specifications or other detailed information which assist the Engineer in passing upon the acceptability of the sample promptly. It shall also include the statement that all materials or equipment furnished for use in the project will comply with the samples and/or certified statements.

Approval of any materials shall be general only and shall not constitute a waiver of the City's right to demand full compliance with Contract requirements. After actual deliveries, the Engineer will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Engineer will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable.

Except as otherwise specifically stated in the Contract, the costs of sampling and testing shall be assumed by the Contractor. The Contractor shall furnish without extra cost, including packing and delivery charges, all samples and tests requested by the Engineer.

#### GC-19 CONTRACTOR'S TITLE TO MATERIALS:

No materials or supplies for the work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work, free from all liens, claims or encumbrances.

#### GC-20 ASSIGNMENT OR NOVATION:

The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the City provided, however, that assignments to banks, trust companies, or other financial institutions may be made without the consent of the City. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for performed services rendered, and materials, tools, and equipment supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor services or supplying such materials, tools, or equipment.

#### GC-21 STORING OF MATERIALS:

All materials required in the work may be stored on the site upon which the work is to be constructed, subject to the approval of the Engineer. All such materials, tools and machinery shall be neatly and compactly piled in such manner as to cause the least inconvenience to the City and other contractors. All fire hydrants must at all times be kept free and unobstructed and water and gas shut-off boxes, underground power and telephone line manholes, sanitary and sewer manholes, must not be covered at any time by such materials.

Materials, tools and machinery shall not be piled or placed against shade trees unless they shall be amply protected against injury therefrom. All materials, tools, machinery, etc., stored upon public thoroughfares must be provided with flashing amber lights at nighttime to warn the traffic of such obstruction.

The Contractor shall arrange for the timely and orderly delivery of all materials and shall be responsible for their proper handling and protection.

Materials and equipment may be stored on the site, but the protection of same shall be the Contractor's responsibility. In storing materials within the site the Contractor shall consult with the Engineer.

#### GC-22 CLEAN-UP:

- A. The Contractor shall at all times keep the project site and adjacent areas free of waste material, debris, rubbish and other unsuitable materials caused by his employees or work and shall remove same from any area of the site at least daily and additionally, if in the opinion of the Engineer such material, debris, rubbish, equipment or other material constitutes a hazard or nuisance.

The Contractor shall not allow equipment nor materials to encumber the flow of any watercourse. No equipment shall be left unattended in any watercourse.

- B. Upon completion of the work and before the final acceptance of the project, the Contractor shall remove all equipment, temporary work, unused and useless materials, rubbish and temporary buildings, shall repair or replace in an acceptable manner fences or other private or public property which may have been damaged or destroyed on account of the prosecution of the work, shall fill all depressions and water pockets on public and private property caused by his operations, shall remove all obstructions from waterways caused by his work, shall clean all drains and ditches within and adjacent to the site of the project which has been obstructed by his operations, and shall leave the site of the project and adjacent public and private property in a neat and presentable condition wherever his operations have disturbed conditions existing at the time of starting work. The Contractor shall procure and submit to the Engineer signed statements from property owners affected that he has fulfilled his obligations in the matters enumerated above with regard to their respective properties. Payment for final cleaning up and restoration of property as above provided will not be made under any specific item but the cost of this work shall be included in the priced bid for the various items scheduled in the Proposal.

#### GC-23 AUTHORITY OF THE ARCHITECT/ENGINEER:

Wherever the term Engineer is used through out these Specifications, it shall be understood to mean Architect/Engineer.

The Architect/Engineer shall make all necessary explanations as to the meaning and intent of the Contract Documents, shall give all orders and directions contemplated under the Contract, and in every case in which a difficult or unforeseen condition shall arise in the performance of the work the Architect/Engineer shall determine the adequacy of the Contractor's methods, plant, and appurtenances. The Architect/Engineer shall determine in all cases the quantity, quality, and

acceptability of the several kinds of work and materials and shall determine all questions in relation to the work and the construction thereof.

In case there is any inconsistency or ambiguity in the Contract Documents brought to his attention by the Contractor, the Architect/Engineer shall base his decision upon the premise that the more stringent interpretation was made by the Contractor in the submission of his bid. The Architect/Engineer shall decide any difference or conflicts which may arise between the Contractor and other Contractors of the City in regard to their work.

**GC-24 APPEAL BY THE CONTRACTOR:**

Should the Contractor take exception to any determination made by the Engineer relating to this Contract, the Contractor shall, within fourteen (14) calendar days, after receiving notification of such decision, file with the City a written notice of appeal, together with a full statement of facts as he believes them to be true. A copy of said notice and statement of facts shall be furnished to the Engineer.

Upon completion of the work, all matters of appeal shall be submitted to a Board of Arbiters, composed of three members, one of whom shall be appointed by the City, one by the Contractor, and the third member shall be chosen by the first two. The cost of appeal shall be borne by the Contractor in matters wherein the decisions of the Engineer are affirmed, and in other matters the costs shall be borne jointly by the Contractor and the City in such proportion as the Board of Arbiters shall determine.

The decision of the Board of Arbiters shall be conclusive and binding upon both the City and the Contractor.

**GC-25 UNAUTHORIZED WORK:**

Work done without lines and grade being given, work done beyond the lines and grades shown on the drawings or as given, or any extra work done without written authorization, will be considered unauthorized. Such work will be at the expense of the Contractor and will not be paid for by the City. Work so done may be ordered removed, and/or replaced by the Engineer at the Contractor's expense.

**GC-26 INSPECTION:**

The City shall have the right to inspect all work done and all materials furnished, including the preparation, fabrication and manufacture in mill, plant, shop and field of the materials to be used, and may assign an Inspector or other authorized representative for this purpose. The Contractor shall provide all facilities necessary for such inspection and shall furnish or cause to be furnished to the said Inspector or other authorized representative safe access at all times to the places where preparations, fabrication or manufacture of materials and construction of the work is in progress, as well as such information and assistance as may be required to make a complete and detailed inspection. The Engineer may undertake the inspection of materials at the source.

Manufacturing plants may be inspected periodically for compliance with specified manufacturing methods, and material samples will be obtained for laboratory testing for compliance with material quality requirements. In the event inspection is undertaken at the plant, the following conditions shall be met:

- (a) The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted for materials.
- (b) The Engineer shall have full entry at all times to such parts of the plant as may concern the manufacture or production of the materials being furnished.

If the Contractor is not the owner of the place where fabrication, preparation or manufacture is in progress, the owner thereof shall be deemed to be the agent of the Contractor with respect to the obligation assumed hereunder. The Contractor or his agent shall be responsible for the payment of claims for injuries to the City's authorized representative due to negligence on the part of the said Contractor or his agent. The cost of providing the necessary facilities, information, assistance and protection and of satisfying claims for injuries to the City's representative, as specified above, shall be included in the prices bid for the various items scheduled in the Proposal. If the specifications, the Engineer's instructions, laws, ordinance or any public authority require any work be tested or approved, the Contractor shall give the Engineer timely notice of its readiness in writing for inspection is by another authority other than the Engineer, the date fixed for such inspection shall be confirmed and made in writing.

Inspectors or other authorized representatives may be stationed on the work to report to the Engineer as to the progress thereof and the manner in which it is being performed, to inform him whenever it appears that the materials furnished and the work performed by the Contractor fails to conform to the requirements of the Plans and Specifications; and to direct the attention of the Contractor to such failure. The inspection, however, shall not relieve the Contractor from his obligations to furnish materials or perform work in conformity with the requirements of the Plans and Specifications.

The Inspector or other authorized representative is not authorized to revoke, alter, enlarge, relax or release any requirements of the Specifications or to issue instruction contrary to the Plans and Specifications. If a difference of opinion arises between the Inspector and the Contractor relating to the materials furnished or the performance of the work, the Inspector has the authority to reject the materials and notify the Contractor that further work on the construction involved will not be authorized and will be subject to nonpayment until the question at issue can be referred to and decided by the Engineer.

No work shall be closed or covered up until it has been duly inspected and approved. Should completed work be covered, the Contractor shall, at his own expense, uncover all such work so that it can be properly inspected; and after inspection, he shall properly repair and replace all such work if found defective.

At any time during the progress of the work and up to the date of final acceptance, the Engineer shall have the right to reject any work which does not conform to the requirements of the Contract Documents, even though such work has been previously inspected and paid for. Any omissions or failure on the part of the Engineer to disapprove or reject any work or materials at the time of inspection shall not be or be construed as an acceptance of any defective work or materials. If any

work or materials shall be condemned by the Engineer as defective or improperly done, the work shall be removed and/or reconstructed and replaced in a manner satisfactory to the Engineer and consistent with the intent of the Contract.

The Contractor shall notify the Engineer at least 72 hours prior to start of work of any change in the approved project schedule. In addition, the Contractor shall notify the Engineer during regular working hours on the day prior to any projected interruption in his operations.

Failure to give the proper notification as provided above may result in the rejection of uninspected work and materials, and a reduction in the final payment, in accordance with the liquidated damages sections of these Specifications.

The Contractor shall allow at all times any authorized persons representing The City of Jersey City, its consultants and the granting agencies to inspect the site.

GC-27 WORKING HOURS:

Working hours shall be between the hours of 8:00 A.M. and 4:30 P.M., prevailing time. Working before 8:00 A.M. or after 4:30 P.M. shall not be permitted except upon authorization by the Engineer. No work other than maintenance work shall be performed on Saturdays, Sundays, or legal holidays, except in the case of emergency and then only to the extent necessary and with the written approval of the Engineer. Should permission be obtained to perform night work, the Contractor shall provide, at his own expense, all lighting, safety and other facilities necessary for such work.

GC-28 INSPECTION SERVICES:

The wages and overhead of inspectors employed by the City shall be paid by the City except that the cost of such services required anytime on Saturdays, Sundays, or City holidays, or on weekdays outside of the hours 8:00 a.m. to 4:30 p.m. inclusive, shall be borne by the Contractor. The amount to be paid for by the Contractor for inspection work required on Saturdays, Sundays, City holidays and off-hours shall be at the rate of seventy dollars (\$70.00) per hour per man.

City Holidays

New Year's Day	Labor Day
Martin Luther King Jr.'s Birthday	Columbus Day
Lincoln's Birthday	Election Day
Washington's Birthday	Veterans' Day
Good Friday	Thanksgiving Day
Memorial Day	Friday After Thanksgiving
Independence Day	Christmas

The cost of such services shall be deducted from payments due to the Contractor. If the Contractor is directed or requested in writing by the City or the Engineer to work Saturdays, Sundays, City holidays, or off-hours for the convenience of the City of Jersey City the above described reimbursement requirement will be waived.

#### GC-29 CONSTRUCTION LAYOUT:

General: Working from lines and levels established by the contract documents and as shown in relation to the work, the General Contractor shall establish and maintain bench marks and other dependable markers to set lines and levels to properly locate all work. The General Contractor shall calculate and measure required dimensions as shown (within recognized tolerances if not otherwise indicated); and shall not scale drawings to determine dimensions. Advise tradespersons performing work, of marked lines and levels provided for their use in layout of work.

Surveyor: The General Contractor shall engage a Land Surveyor experienced and specializing in land survey work, who is licensed in the State of New Jersey, to perform services specified in this article.

Survey Procedures: The General Contractor shall verify layout information shown on drawings, in relation to property survey and existing bench marks, before proceeding with layout of actual work. As work proceeds, surveyor shall check every major element for line, level and plumb (where applicable), and maintain an accurate surveyor's log or record book of such checks, available for Architect's or Engineer's reference at reasonable times. Surveyor shall record deviations from required lines and levels, and advise Architect or Engineer promptly upon detection of deviations exceeding indicated or recognized tolerances. The General Contractor shall record deviations which are accepted (not corrected) on record drawings.

No separate payment shall be made for the work described above; but the costs for this work shall be included in the prices bid for the various items scheduled in the Proposal; except when an item "Construction Layout" is scheduled in the Proposal.

#### GC-30 CLAIM FOR ADDITIONAL COMPENSATION:

If the Contractor claims that any instructions by Drawings or otherwise involve extra cost or extension of time, he shall, within ten (10) days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Engineer, stating clearly and in detail the basis of his objections. No such claim will be considered unless so made.

Any discrepancies which may be discovered between actual conditions and those represented by the Drawings and maps shall at once be reported to the Engineer and work shall not proceed except at the Contractor's risk, until written instructions have been received by him from the Engineer.

If, on the basis of the available evidence, the Engineer determines that an adjustment of the Contract Sum and/or Time is justifiable, the procedure shall be as provided in paragraphs 18 and 19 of the Information to Bidders.

#### GC-31 COMMENCEMENT AND PROCEDURE:

The contractor shall commence work not later than ten (10) calendar days after execution of the contract or as specified in the "Notice to Proceed" and shall continue operations without interruptions until the work is completed, except when weather or other conditions are interfering or the Engineer deems it advisable to suspend work.

The sequence of the work shall conform to the approved progress schedule submitted, provided, however, that said schedule may be modified from time to time as directed or approved by the Engineer. The Contractor shall give the Engineer not less than seven (7) days notice of the time and place or places he will start the work.

GC-32 NOTICE TO PROCEED:

A written "Notice to Proceed" will be issued by the Contracting Agent for the City of Jersey City.

GC-33 PROGRESS SCHEDULE AND PRECONSTRUCTION:

After the execution of the contract, but before the issuance of "Notice to Proceed" the contractor shall contact the Engineer to set up a preconstruction conference.

At the conference, the Contractor shall furnish the Engineer with a "Progress Schedule" and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the "Progress Schedule" for his approval. Updated "Progress Schedules" shall be submitted with each monthly invoice. "Progress Schedules" shall be executed on forms approved by the City.

In addition to the "Progress Schedule", the Contractor shall submit to the Engineer a cost breakdown of his estimated cost of all the work, so arranged and itemized as to meet the approval of the Engineer. This breakdown shall be submitted promptly after execution of the agreement and before any payment is made to the Contractor for the work performed under this contract. After approval by the Engineer the prices established in the breakdown shall be used in estimating the amount of partial payments to the Contractor.

If required the progress schedule shall be prepared on the basis of an accepted critical path method of scheduling. The progress schedule may be used as the basis for establishing major construction operations and as a check on the progress of the work.

The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the times set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall:

- a. Submit a revised schedule for completion of the work within the contract time.
- b. Modify his operation to provide such additional materials, equipment, and labor necessary to meet the revised time estimates.

Should the prosecution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least twenty-four (24) hours in advance of resuming operations.

#### GC-34 LIMITATION OF OPERATIONS:

The Contractor shall conduct the work at all times in such a manner and in such sequence as will assure the least interference with traffic. The Engineer may require the Contractor to finish a section on which work is in progress before work is started on any additional sections if the opening of such section is essential to public convenience.

#### GC-35 SHOP DRAWINGS AND SAMPLES:

All required shop drawings, machinery details, layout drawings, samples, etc. shall be submitted to the Engineer for approval sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting and rechecking if necessary. The Contractor may proceed, only at his own risk, with manufacture or installation of any equipment or work covered by said drawings, etc. until they are approved and no claim by the Contractor for extension of the Contract time will be granted by reason of his failure in this respect.

Any drawings submitted without the Contractor's stamp of approval will not be considered and will be returned to him for proper resubmission. If any drawings show variations from the requirements of the contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter or transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of Contract price and/or time. Otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though the drawings have been approved.

By approving and submitting Shop Drawings, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, and that he has checked and coordinated each Shop Drawing with the requirements of the Work and of the Contract Documents. Shop Drawings shall be available on the site.

All calculations, if required, shall be signed and sealed by a New Jersey State licensed Professional Engineer. Date and reference of work shall be shown.

If a shop drawing is in accord with the Contractor or involves only a minor adjustment in the interest of the City of Jersey City not involving a change in Contract price or time, the Engineer may approve the drawing. The Engineer shall accept no responsibility for the Shop Drawings even though they carry his approval. The checking of the Shop Drawings is a gratuitous service to the General Contractor and in no way relieves the General Contractor of full responsibility for the completion of the job as drawn and specified. The approval shall be general and shall not relieve the Contractor from his responsibility for adherence to the contract or for any error in the drawing and shall represent in substance the following:

"Any modification shown on the attached drawings is approved in the interest of the City of Jersey City to effect an improvement for the Project and is ordered with the understanding that it does not involve any change in the Contract Price or time; that it is subject generally to all Contract stipulation and covenants; and that it is without prejudice to any and all rights to the City of Jersey City under the Contracts and surety bond or bonds."

Shop drawings and samples shall be dated and marked to show the names of the Project, Engineer, Contractor, originating subcontractor, manufacturer or supplier, and separate detailer if pertinent. Shop drawings shall completely identify Specification section and locations of which materials or equipment are to be installed. Reproductions of Contract Drawings are acceptable as Shop Drawings only when specifically authorized in writing by the Engineer.

Submission of shop drawings and samples shall be accompanied by 2 copies of a transmittal letter containing Project name, Contractor's name, number of drawings and samples, titles and other pertinent data.

Unless otherwise specified, the number of shop drawings and the number of samples which the Contractor shall submit and, if necessary, resubmit, is the number that the Contractor requires to be returned plus 2 copies which will be retained by the Engineer.

Submit minimum 4 prints of each shop drawing, including fabrication erection, layout and setting drawings and such other drawings as required under various sections of the Specifications, until final approval is obtained. Submit minimum 4 copies of manufacturers' description data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance characteristics and capacities, wiring diagrams and controls, schedules, and other pertinent information as required. Where printed materials describe more than one product or model, clearly identify which is to be furnished.

Contractor is responsible for obtaining and distributing required approved prints of shop drawings to his subcontractors and material suppliers after as well as before final approval.

Contractor will keep one set of all approved shop drawings on the project site till completion of the entire project.

GC-36 TIME FOR COMPLETION, LIQUIDATED DAMAGES AND EXTENSION OF TIME:

It is hereby understood and mutually agreed by and between the Contractor and the City of Jersey City that the date of beginning and the time for completion as specified in the contract of work to be done hereunder are ESSENTIAL CONDITIONS of this contract: and it is further mutually understood and agreed that the work embraced in this contract shall be commenced within ten (10) calendar days from the execution of the contract or as specified in the Notice to Proceed.

The Contractor agrees that said work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the City of Jersey City that the time for the completion of the work described herein is a reasonable time for the completion of the same taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

Extension of Contract Time for extreme weather conditions will be granted in accordance with the following chart:

<b>Number of Days the Contractor's Work is Limited to in One Month As the Result of Adverse Weather Conditions</b>	<b>Extension of Contract Time Allowable</b>
16-31	0
15	1
14	2
13	3
12	4
11	5
10	6
9	7
8	8
7	9
6	10
5	11
4	12
3	13
2	14
1	15
0	16

In utilizing the above chart, the Architect will:

consider days on which an extension is granted under the category above “floods, tidal waves, earthquakes, cyclones, tornadoes, hurricanes or other cataclysmic natural phenomeon,” as days on which the Contractor’s work is limited as the result of adverse weather conditions;

consider days for which an extension is granted under the categories above for causes other than “floods, tidal waves, earthquakes, cyclones, tornadoes, hurricanes or other cataclysmic natural phenomeon” as days on which the Contractor worked and was unaffected by adverse weather conditions; and

make the above calculation based on the full 30 or 31 days in the calendar month as being days on which the Contractor could have worked without regard to Saturdays, Sundays and holidays.

If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the City of Jersey City then the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the City of Jersey City the amount specified herein, not as a penalty but as a liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Proposal for completing the work.

Liquidated damages in the amount set forth in the following table will be charged for each calendar day of delay until the work is completed and accepted.

CHARGE FOR LIQUIDATED DAMAGES FOR EACH DAY OF DELAY

Original Contract Price

From More than-	To and Including	Calendar Day or Specified Completion Date
\$ 0.	\$ 50,000.	\$ 250.
50,000.	100,000.	500.
100,000.	500,000.	750.
500,000.	1,000,000.	1,000.
1,000,000.	2,000,000.	1,250.
2,000,000.		1,500.

The said amount is fixed and agreed upon by and between the Contractor and the City of Jersey City because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the City of Jersey City would in such event sustain, and said amount is agreed to be the amount of damages which the City of Jersey City would sustain and said amount shall be retained from time to time by the City of Jersey City from current periodical estimates.

It is further agreed that time is of the essence of each and every portion of this contract and of the specification wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this contract. Provided that the Contractor shall not be charged with liquidated damages or any excess cost when the City of Jersey City determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the City of Jersey City.

Provided further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

- a. To any preference, priority or allocation order duly issued by the City of Jersey City.
- b. To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including but not restricted to, act of God, or of the public enemy, acts of the City of Jersey City, acts of another Contractor in the performance of a contract with the City of Jersey City, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and severe weather.
- c. To any delays of subcontractors or suppliers occasioned by any of the caused specified in subsections a and b of this article: Provided further, that the Contractor shall, within ten (10) days from the beginning time prior to the date of final settlement of the contract, notify the City of Jersey City in writing, of the cause of delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter.

### GC-37 NO DAMAGE FOR DELAY

The City shall have the right to defer the beginning or to suspend the whole or any part of the work herein contracted to be done whenever, in the opinion of the City Engineer, it may be necessary or expedient for the City to do so. If the Contractor is delayed in the completion of the work by act, neglect or default of the City, the City Engineer or of any of the contractors or consultants employed by the City upon the work; by change orders in the work; by strikes, lockouts, fire, unusual delay by common carriers, unavoidable casualties or any cause beyond the Contractor's control; or by any cause which the City Engineer shall decide to justify the delay; then for all such delays and suspensions, the Contractor shall be allowed one calendar day addition to the time herein stated for each and every calendar day of such delay so caused in the completion of the work as specified in GC-36 above, the same to be determined by the City Engineer, and a similar allowance of extra time will be made for such other delays as the City Engineer may find to have been caused by the City. No such extension shall be made for any one or more of such delays unless, within 10 calendar days after the beginning of such delay, a written request for additional time shall be filed with the City Engineer. Apart from the extension of time, no payment or allowance of any kind shall be made to the Contractor as compensation for damages on account of hindrance or delay for any cause in the progress of the work, whether such delay be avoidable or unavoidable.

The Contractor shall not be entitled to any damages or extra compensation from the City on the count of any work performed by the City or any other contractor or the City Engineer or any other party, or by reasons of any delays whatsoever, whether caused by the City or any other party including, and not limited to, the delays mentioned in this contract.

### GC-38 ACCEPTANCE OF WORK:

When the Project has been completed, the Contractor shall notify the Engineer in writing. If it is not acceptable to the Engineer he will advise the Contractor as to the particular defects to be remedied before final acceptance will be made. Payments made to the Contractor before the final acceptance, do not commit the Engineer to the acceptance of the Project. The final inspection and acceptance will be made by the Engineer when the Project has been completed.

The City shall not be precluded or estopped by any measurement, estimate, or certificate, made either before or after the completion and acceptance of the Project and payment thereof, if such measurement, estimate or certificate be found to be in error or untrue, from showing the true amount and character of the work performed and materials furnished by the Contractor, or from showing that any such measurement, estimate or certificate is incorrectly made or untrue, or that the work or materials do not conform in fact to the requirements of the Contract. The City of Jersey City shall not be precluded or estopped, notwithstanding any such measurement, estimate or certificate, and payment made in accordance therewith, from recovering from the Contractor and his Surety such damages as it may sustain by reason of the Contractor's failure to comply or to have complied with the terms of the Contract.

Neither the acceptance of the whole or any part of the Project by the Engineer or by any representative of the Engineer, nor any payment made for the work, nor any extension of time granted the Contractor, nor any possession taken by the Engineer, shall operate as a waiver of any portion of the Contract or of any power herein reserved, or of any right to damage herein provided. A waiver of any breach of the Contract shall not be held to be waiver of any other or subsequent breach.

GC-39 ACCEPTANCE OF FINAL PAYMENT AS RELEASE:

The acceptance by the Contractor of final payment shall be and shall operate as a release to the City of Jersey City of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the City of Jersey City and others relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from any obligation under this contract or the Performance and Payment Bond.

GC-40 SUSPENSION OF WORK:

The Engineer may, by written order, suspend the performance of the work, either in whole or in part for such periods as he deems necessary. Reasons for suspension of work include but are not limited to the following:

- a) Due to weather or soil conditions considered unsuitable for prosecution of the work;  
or
- b) For failure of the Contractor to:
  - 1. Correct conditions unsafe for the workmen or the general public; or
  - 2. Carry out orders given by the Engineer; or
  - 3. Perform any provisions of the Contract.

Suspension of work on some but not all items will be considered "partial suspension." Work of an emergency nature ordered by the Engineer for the convenience of public traffic and minor operations not affected by or connected with the cause of suspension may be performed during a period of total suspension if permitted by the Engineer.

No compensation or allowance will be made on account of such suspensions unless it shall be for more than 10 working days. Should this suspension be for more than 10 working days and should the Contractor be put to additional expense on account thereof, he shall have the right to file with the Engineer a statement showing the character and amount of such additional expense and, if the Engineer deems it a proper charge, the Contractor will be reimbursed therefor. However, he shall have no claim for additional expense for said first ten days of suspension, and any claim for all allowances as above provided shall be filed, in writing, with the Engineer before the expiration of the first ten days of suspension. No payment will be made for work done by the Contractor on suspended work.

Any adjustment of Contract Time for suspension of the work shall be as provided in subsection entitled TIME FOR COMPLETION, EXTENSION OF TIME.

GC-41 RIGHT OF THE CITY TO DECLARE CONTRACTOR IN DEFAULT:

The City of Jersey City has the right to declare the Contractor in default under the following circumstances:

- a) If the Contractor fails to begin the work within the required time.
- b) If the work to be done under this Contract is abandoned.
- c) If the Contractor is adjudged bankrupt or makes an assignment for the benefit of creditors.
- d) If the Contractor fails to or refuses to regard laws, ordinances, regulations, and such orders as given by the City of Jersey City or Architect with respect to the work.
- e) If the Contractor, after notice from the Architect, refuses or fails to supply enough properly skilled workmen or proper materials or equipment.
- f) If the Contractor violates any of the provisions of this Contract or shall not perform the same in good faith.
- g) If the Contractor refuses or fails to prosecute the work or any part thereof with such diligence as will insure the work's completion within the specified period (or any duly authorized extension) or fails to complete the work within the prescribed period.
- h) If the Contractor fails to make prompt payment to persons supplying labor or materials for the work.
- i) If the Contractor assigns or sublets the work otherwise than as specified.
- j) If the Contractor fails to remove an incompetent foreman or superintendent as requested by the Architect.
- k) If the Architect is of the opinion, and has certified in writing, that the work or any part thereof is unnecessarily or unreasonably delayed, or that the Contractor is not complying with the order of the Architect, or that sufficient workmen, materials, plant, tools, supplies, safety standards, or other means of carrying on the work are not provided to carry out all the requirements of the Contract.

The City of Jersey City shall serve written notice to the Contractor ordering the Contractor not to begin, or not to resume, or to discontinue all work under this Contract for any of the above stated reasons.

The City of Jersey City may then enter upon and take possession of the work, or any part thereof and may complete the work by purchase of necessary materials and equipment and by direct employment of labor; or the City of Jersey City may cause the work to be completed by other persons by contract without advertising; or the City of Jersey City may readvertise and re-let the uncompleted portions of the work and all expenses of financial loss to the City of Jersey City by reason of any of the above methods for completing the unfinished work shall be deducted out of monies then due, or to become due the Contractor under this Contract.

In case such expenses shall exceed the amount which would have been payable under this Contract, if the same had been completed by the Contractor, the Contractor or his sureties shall pay the amount of such excess to the City of Jersey City.

Should such expense be less than the amount payable, under this Contract, had the same been completed by the Contractor, the Contractor or his Surety shall receive the difference after deducting the amount retained as herein before specified.

All the work undertaken by the City of Jersey City, by contract or otherwise, shall be certified by the Architect as to the amount of work done, the cost and amount of excess cost, if any. Such certification shall be binding and conclusive upon the Contractor, his sureties, successors, assigns or lienors.

In case this Contract, or any alterations or modifications thereof be thus terminated, the decision of the City of Jersey City shall be conclusive, and said Contractor shall not be allowed to claim or receive any compensation or damages for not being allowed to proceed with the work.

GC-42 REMOVAL OF EQUIPMENT:

In case of termination of work, from any cause whatever, prior to completion, the Contractor shall promptly remove any part or all of his equipment and supplies from the work. If such removal is not completed within five (5) working days after written notification by the City of Jersey City, the City of Jersey city shall have the right to remove such equipment and supplies at the expense of the Contractor.

GC-43 PAYMENTS:

The Contractor will be entitled to monthly payments for portions of the project work which have been fully completed as required by the Contract to the satisfaction of the Architect and such completion has been certified by the Architect.

To insure proper performance of the Contract, the City shall retain a percentage of the amount of each estimate as herein after described until final completion and acceptance of all work covered by the Contract.

Applications for Payment are to be submitted on the G702 and G703 forms and be based on the schedule of values that were submitted at the Preconstruction Conference. Four (4) copies of the Application for Payment are to be submitted to the architect showing completion of the term of the payment term as of the 30th of each month.

Applications for Payment are to be submitted with four (4) copies to the Division of Architecture.

Release of Liens, schedule update, and other material required to accompany the Application must be included in order to receive payment on the Application.

The contractor is to include along with the Application for Payment, a Release of Liens (payment of debits and claims form attached) on the attached form with each Application for Payment for the previous payment period.

In preparing estimates, the material delivered on the site and preparatory work done may be taken into consideration, if the Contractor furnishes releases of liens for the materials at the time each estimate of work is submitted for payment. All materials and work covered by partial payments made shall thereupon become the sole property of the City, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as waiver of the right of the City to require fulfillment of all the terms of the Contract.

The Contractor agrees that he will indemnify and save the City harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The Contractor shall, at the City's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails to do so, then the City may, after having

served written notice on the said Contractor, either pay unpaid bills, of which the City has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the City to either the Contractor or his Surety.

In paying any unpaid bills of the Contractor, the City shall be deemed the agent of the Contractor, and any payment so made by the City, shall be considered as a payment made under the contract by the City to the Contractor, and the City shall not be liable to the Contractor for such payment made in good faith.

A. LUMP SUM PAYMENTS:

The sum bid for any lump sum items shall constitute payment in full for all of the various classes of work, including materials, equipment and labor necessary or required to complete, in conformity with the Contract Documents, the entire Project Work shown, indicated or specified under such lump sum item.

B. PROGRESS PAYMENTS:

- (1) On lump sum items, the Contractor shall submit to the Architect for his approval, prior to the start of the Work under the Contract, a schedule giving a breakdown of labor, materials, equipment and other costs used in preparation of the bid. This schedule shall be in sufficient detail to indicate separate figures for excavation, concrete, reinforcing steel, equipment, and all other items which make up the lump sum price. This schedule shall be used in computing the periodic estimate which is issued monthly, and as a basis for negotiations concerning any credits which may arise during the execution of the Work of this Contract.
- (2) During the first ten days of each month, the Architect, in consultation with the Contractor, will estimate the amount of work during the preceding calendar month. The quantities so determined will be used as the basis for a periodic estimate. The periodic estimate will be presented to the Architect by the Contractor and shall indicate the value of the work performed and materials and equipment built into the Project, in accordance with the Contract. As soon as practicable thereafter, the City will pay the Contractor an amount equal to the value of such work, materials and equipment indicated on the periodic estimate less the amount of all previous payments. The retainage as hereinafter described shall be deducted from each and every estimate presented during the Contract and shall be retained until final completion and acceptance of all work covered by the Contract.
- (3) No claim by the Contractor for additional payment based on any error in any periodic estimate will be recognized.
- (4) The City may withhold payment for any of the following:
  - a. Failure to submit a revised progress schedule, which has been approved by the Architect, with each monthly invoice.
  - b. Defective work not corrected.

- c. Claims filed or responsible evidence indicating probability of filing claims.
  - d. Failure of the Contractor to make proper payments to Subcontractors or for material or labor.
  - e. Unpaid damages by the Contractor to Subcontractors, the City or any other agency or person.
  - f. If in the judgement of the Architect the Project is not proceeding in accordance with the Contract or the Contractor is not complying with the requirements of the Contract Documents.
  - g. The Contractor is found to be in default.
- (5) No payment voucher shall protect the Contractor and no claim shall be founded thereon by the Contractor in case of overpayment or in case it shall at any time appear that the Project or any part thereof have not been constructed, completed and maintained in strict accordance with the Contract Documents.
  - (6) No interim payment voucher shall be held to signify the approval of permanent work, materials, or other things to which such certificate relates, and the Contractor shall not be relieved by any such certificates from any risks or liability to which he may be subject under the Contract until the Final Certificate, hereinafter referred to, has been granted to them.
  - (7) Errors in any monthly measurements or bill, on being discovered, shall be rectified by the Architect in subsequent measurements and bills.
  - (8) If any work the value of which has been included in any interim bill is damaged or destroyed and has to be removed or reconstructed by the Contractor, an amount representing the value of the work so damaged or destroyed, less any insurance monies therefor received by the City, shall be deducted by the Architect in succeeding monthly bills until such time as such work has been renovated or reconstructed.
  - (9) The State Law requires that all claims for payments must be approved by the governing body of the municipality. The Contractor should allow 4 to 6 weeks for receipt of partial payment after the payment has been approved by the Architect.

C. RETAINAGE:

The following procedures will apply in accordance with the Contractor's chosen option of retainage as indicated on the proposal:

- (1) An amount of ten percent (10%) of each and every payment made to the contractor shall be withheld by the City until the project is completed to the satisfaction of the City; and all maintenance bonds, plans, shop drawings, etc., are in the possession of the City; and all other requirements of the contract are met by the contractor. The amount withheld shall be deposited with a banking institution or savings and loan association insured by an agency of the federal

government, in an account bearing interest at the rate currently paid by such institutions or associations on time or savings deposits. Any interest accruing on cash payments withheld shall be credited to the City.

- (2) Whenever any contract, the total price of which exceeds \$100,000.00, is entered into by the City for the Construction, reconstruction, alteration or repair of any building, structure, facility or other improvement of real property, the amount of withholding enumerated in Item (1) shall be reduced to two percent (2%) pursuant to N.J.S.A. 40A:11-16.3. All other provisions of Item (1) shall remain in full force and effect.
- (3) In lieu of the withholding of funds as prescribed in Item (2) above, the contractor may agree to deposit with the City, negotiable bearer bonds of the State of New Jersey, or negotiable bearer bonds or notes of any political sub-division of the State, the value of which is equal to the amount necessary to satisfy the amount that otherwise would be withheld pursuant to Item (2) above. The nature and amount of the bonds or notes to be deposited shall be subject to the approval of the City. For purposes of this section, "value" shall mean par value or current market value, whichever is lower. The bonds shall be returned to the contractor pursuant to the same conditions for retainage which is stated in Item (1) above.

The bidder shall denote in the Proposal the method of his choice in accordance with the above amount.

As to the subject retainage, the above provisions are controlling and any and all other references to retainage in these specifications which conflict with the above sections shall be interpreted in the light of the above and, this section taking a precedent over any other.

#### D. FINAL PAYMENT:

- (1) Upon written notice from the Contractor that the Project is complete, the Architect will make a final inspection and will notify the Contractor in writing of any particulars in which this inspection reveals that the Work is defective. The Contractor shall immediately make such corrections as are necessary to remedy such defects.
- (2) When the Contractor has completed all such corrections to the satisfaction of the Architect and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates and other documents, all as required by the Contract Documents, he may make application for final payment. The Architect will determine from actual as-built field measurement, the amount of the work performed by the Contractor, and also the value of such work under and according to the terms of the Contract. After final acceptance of the Project completed, in place, tested and ready for use the Architect will process the final certificate for payment upon receipt of a maintenance bond as described in these specifications. The final payment will include retainage and all other monies due the Contractor as determined by the Architect. The final certificate will also serve as an instrument to recommend release of negotiable securities held as retainage.
- (3) The acceptance by the Contractor of final payment shall be and shall operate as a release to the City of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the City and others relating to or arising out of

this work. No payment, however, final or otherwise shall operate to release the Contractor or his Sureties from any obligation under this contract or the Performance and Payment Bond.

GC-44 MAINTENANCE BOND:

Before final payment is made, the Contractor shall furnish a surety corporation bond to the Architect in a sum equal to one hundred percent (100%) of the Contract price. The bond shall remain in full force and effect for a period of two (2) years from the date of acceptance of the Project by the Architect, regardless of the date of installation of individual items, and shall provide that the Contractor guarantees to replace for said period of two (2) years all work performed and all materials furnished that were not performed or furnished according to the terms and performance requirements of the contract, and made good the defects thereof which have become apparent before the expiration of the said period of two (2) years.

If, in the judgment of the Architect, any part of the Project need be replaced, repaired or made good during the specified guarantee period, for the reasons stated above, he will so notify the Contractor in writing. If the Contractor refuses or neglects to start such work within five (5) days from the date of service of such notice or at such other time as the Architect may direct, or if he fails to complete such work within the time prescribed by the Architect, the Contractor agrees that the Architect may have the work done by others and the cost thereof shall be paid by the Contractor, or his Surety. Before the Surety is released from its bond, the Architect shall certify in writing that the forgoing obligations have been duly performed.

GC-45 SUBCONTRACTING:

The Contractor shall not subcontract, sublet, sell transfer, assign, or otherwise dispose of any portion of the contract work without written consent of the Architect. Before consent is given to subcontract any work, the Contractor, if requested by the Architect, shall present evidence that the proposed subcontractor is fully qualified to do the work. If consent is given, the Contractor will be permitted to subcontract a portion of the work, but shall perform with his own organization, work amounting to not less than fifty percent (50%) of the original contract amount, except that any items designated in the contract as "specialty items" may be performed by subcontract and the cost of any such specialty items so performed by subcontract may be deducted from the original contract amount before computing the amount of work required to be performed by the Contractor with his own organization. No subcontracts shall relieve the Contractor of his liability under the contract and bonds.

No subcontract, approval of a subcontract, or any other action shall create any contractual relation between subcontractors and the City of Jersey City. The contractor shall be liable and responsible for any action or lack of action of a subcontractor. Contractors and subcontractors shall be charged with all direct, imputed or presumed knowledge the others might possess.

Within ten (10) days after award, either by the Contractor or subcontractor, of any subcontract for performance of work at the construction site, the Contractor shall deliver to the Contracting Officer and Architect an executed statement and acknowledgment in regard to award of subcontract and incorporation of labor clauses in the subcontract.

GC-46 PREVAILING RATE OF WAGES ON PUBLIC CONTRACTS:

The attention of all bidders is specifically called to the fact that wage rates determined by the Commissioner of Labor and Industry, in accordance with the provisions of Chapter 150 of the Laws of 1963, commonly known as the Prevailing Wage Act, shall be required to be paid for all services performed under this contract.

The wages to be paid for a legal day's work to laborers, workmen or mechanics employed upon the work contemplated by this contract or upon any materials to be used thereon shall not be less than the "prevailing rate of wage", pursuant to law, which Schedule of Wage Rates is on file in the office of the Purchasing Agent and hereby made part of this contract.

The act also provides among other requirements, the following, which are selected excerpts from the statute:

Every contract in excess of \$2,000.00 for any public work to which any public body is a party shall contain a provision stating the prevailing wage rate which can be paid (as shall be designated by the Commissioner) to the workmen employed in the performance of the contract and the contract shall contain a stipulation that such workmen shall be paid not less than such prevailing wage rate. Such contract shall also contain a provision that in the event it is found that any workman, employed by the Contractor or any Subcontractor covered by said contract, has been paid by such contract the public body may terminate the Contractor's or Subcontractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages and to prosecute the work to completion or otherwise. The Contractor and his sureties shall be liable to the public body for any excess costs occasioned thereby.

The public body awarding any contract for public work or otherwise undertaking any public work shall ascertain from the commissioner the prevailing wage rate in the locality in which the public work is to be performed for each craft or trade needed to perform the contract and shall specify in the contract itself what the prevailing wage rate in the locality is for each craft or trade or classification of all workmen needed to perform the contract during the anticipated term thereof. Nothing in this act however shall prohibit the payment of more than the prevailing wage rate to any workmen employed on a public work.

Every Contractor and Subcontractor shall keep an accurate record showing the name, craft or trade and actual hourly rate of wages paid to each workman employed by him in connection with a public work and such records shall be preserved for two (2) years from date of payment. The record shall be open at all reasonable hours to the inspection of the public body awarding the contract and to the commissioner.

The State of New Jersey Department of Labor and Industry prevailing wage rates are made a part of this Contract for performance of the work described.

GC-47 EQUAL EMPLOYMENT OPPORTUNITY/AFFIRMATIVE ACTION:

Bidders (Contractors) are required to comply with the requirements of N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27. No firm may be issued a contract unless it complies with these equal employment opportunity and affirmative action provisions. The following information summarizes the full, required regulatory text, which is included as Exhibit B of this Bid specification:

After notification of award, but prior to signing a construction contract, the contractor shall submit to Public Agency Compliance Officer and the New Jersey Division of Contract Compliance & Equal Employment Opportunity in Public Contracts, an Initial Project Workforce Report (Form AA-201) provided to the public agency by the Division for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7.

The contractor shall also submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of the contract to the Division and the Public Agency Compliance Officer. The contractor shall also cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the job and/or off-the-job programs for outreach and training of minorities and women.

GC-48 AMERICANS WITH DISABILITIES ACT OF 1990:

Discrimination on the basis of disability in construction contracting is prohibited. Bidders are required to read Americans With Disabilities language that is included as Appendix A of this specification and agree that the provisions of Title II of the Act are made a part of the contract. The contractor is obligated to comply with the Act and to hold the owner harmless.

GC-49 NOT USED

GC-50 WARRANTY OF TITLE:

No material, supplies, or equipment to be installed as part of the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies and equipment installed or incorporated in the work and, upon completion of all work shall deliver the same together with all work and appurtenances constructed or placed thereon by him to the City of Jersey City free from any claim, liens, or charges. Neither the Contractor nor any person, firm, or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any work or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of person furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law

permitting such person to look to funds due Contractor in the hands of the City of Jersey City. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials. At the completion of work and prior to final acceptance by the Architect, the contractor shall execute the attached form entitled Warranty of Good Title.

GC-51 COMMUNICATIONS:

All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.

GC-52 DEFECTIVE WORK:

All materials furnished and all work performed which, in the opinion of the Architect, is not in accordance with the plans and specifications shall be removed from the City immediately, and other materials which are satisfactory shall be furnished and work which is satisfactory shall be performed. In the event that defects are discovered, the Contractor shall immediately take all actions necessary to correct any and all defects to achieve compliance with the Plans, Specifications or as directed by the Architect. The contractor is responsible for his own work and that of his subcontractors. The contractor is to guarantee that all work and materials are in all respects conformable to the Plans and Specifications.

GC-53 CO-RELATED SPECIFICATIONS:

In addition to these specifications, the following Standard Specifications & Codes shall be considered a part of these specifications where such specifications are applicable, and shall include all current changes and revisions:

New Jersey State Highway Department Standard Specifications for Road and Bridge Construction, 1983 as currently amended.

National Electrical Code for the National Board of Fire Underwriters.

Standard Specifications of American Water Works Association.

State of New Jersey Uniform Construction Code, Chapter 23, Title 5, New Jersey Administration Code.

American Concrete Institute Building Code.

National Standard Plumbing Code.

Ordinances and Laws of the City of Jersey City

American Society for Testing and Materials.

#### GC-54 USE AND OCCUPANCY PRIOR TO ACCEPTANCE BY THE CITY:

The contractor agrees to the use and occupancy of a portion or unit of the project before formal acceptance by the City, provided the City:

- a. Secures written consent of the Contractor except in the event, in the opinion of the Architect/Engineer, the Contractor is chargeable with unwarranted delay in completing the contract requirements:
- b. Secures consent of the Surety:
- c. Secures endorsement from the insurance carrier(s) permitting occupancy of the building or use of the project during the remaining period of construction: or
- d. When the project consists of more than one building, and one of the buildings is occupied, secures permanent fire and extended coverage insurance, including a permit from the insurance carrier to complete construction.

#### GC-55 STATED ALLOWANCES:

The Contractor shall include in his proposal the cash allowances if any, stated in the Technical Specification Conditions. The Contractor shall purchase the "Allowed Materials" as directed by the Architect on the basis of the lowest and best bid of at least three competitive bids. If the actual price for purchasing the "Allowed Materials" is more or less than the "Cash Allowances", the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance or any other incidental expenses. The cost of installation of the "Allowed Materials" shall be included in the applicable sections of the contract specifications covering this work.

#### GC-56 PROOF OF BUSINESS REGISTRATION

P.L. 2004, c. 57 (Chapter 57) amends and supplements the business registration provisions of N.J.S.A. 52:32-44 which requires that each bidder (contractor) submit proof of business registration with the bid proposal or prior to the contract award. Proof of Registration shall be a copy of the bidder's Business Registration Certificate (BRC). A BRC is obtained from the New Jersey Division of Revenue. Information on obtaining a BRC is available on the internet at [www.njgov/njbgs](http://www.njgov/njbgs) or by phone at (609) 292-1730. N.J.S.A. 52:32-44 imposes the following requirements on contractors and all subcontractors that **knowingly** provide good or perform services for a contractor fulfilling this contract:

- a) The contractor shall provide written notice to its subcontractors and suppliers to submit proof of business of business registration to the contractor;
- b) Prior to receipt of final payment from a contracting agency, a contractor must submit to the contracting agency an accurate list of all subcontractors or attest that none was used;

- c) During the term of this contract, the contractor and its affiliates shall collect and remit, and shall notify all subcontractors and their affiliates that they must collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act, (N.J.S.A. 54:32B-1 et seq.) On all sales of tangible personal property delivered into this State.

A contractor, subcontractor or supplier who fails to provide proof of business registration or provides false business registration information shall be liable to a penalty of \$25 for each day of violation, not to exceed \$50,000 for each business registration not properly provided or maintained under a contract with a contracting agency. Information on the law and its requirements is available by calling (609) 292-1730.

ADD MANDATORY BUSINESS REGISTRATION  
LANGUAGE FROM EEO

**P.L. 2004, c. 57 (N.J.S.A. 52:32-44)**  
**MANDATORY BUSINESS REGISTRATION LANGUAGE**

**Construction Contracts**

The contractor shall provide written notice to its subcontractors and suppliers of the responsibility to submit proof of business registration to the contractor. The requirement of proof of business registration extends down through all levels (tiers) of the project.

Before final payment on the contract is made by the contracting agency, the contractor shall submit an accurate list and the proof of business registration of each subcontractor or supplier used in the fulfillment of the contract, or shall attest that no subcontractors were used.

For the term of the contract, the contractor and each of its affiliates and a subcontractor and each of its affiliates [N.J.S.A. 52:32-44(g)(3)] shall collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act on all sales of tangible personal property delivered into this State, regardless of whether the tangible personal property is intended for a contract with a contracting agency.

A business organization that fails to provide a copy of a business registration as required pursuant to section 1 of P.L.2001, c.134 (C.52:32-44 et al.) or subsection e. or f. of section 92 of P.L.1977, c.110 (C.5:12-92), or that provides false business registration information under the requirements of either of those sections, shall be liable for a penalty of \$25 for each day of violation, not to exceed \$50,000 for each business registration copy not properly provided under a contract with a contracting agency."

**STATE OF NEW JERSEY  
BUSINESS REGISTRATION CERTIFICATE  
FOR STATE AGENCY AND CASINO SERVICE CONTRACTOR**

DEPARTMENT OF TREASURY  
DIVISION OF REVENUE  
PO BOX 322  
TRENTON, NJ

TAXPAYER NAME: TAX REGISTRATION TEST ACCOUNT

TAX REGISTRATION TEST ACCOUNT

TAXPAYER IDENTIFICATION#: 070-097-382/000

ADDRESS: 847 ROEBLING AVE  
TRENTON NJ 08611

ISSUANCE DATE: 07/14/04

TRADE NAME: AMM

CLIENT REGISTRATION SEQUENCE NUMBER: 01073

*John S. Teally*  
Adj. Director

This Certificate is NOT assignable or transferable. It must be conspicuously displayed at above address.

  
**STATE OF NEW JERSEY  
BUSINESS REGISTRATION CERTIFICATE**

Taxpayer Name: TAX REG TEST ACCOUNT

Trade Name:

Address: 847 ROEBLING AVE  
TRENTON, NJ 08611

Certificate Number: 1093907

Date of Issuance: October 14, 2004

For Office Use Only:  
20041014112823633





GC-57 SCHEDULE OF SUBMITTALS BY BIDDER

<u>SUBMITTAL ITEM</u>	<u>TIME OF SUBMISSION</u>	<u>CONSEQUENCES OF NON COMPLIANCE</u>
1. Proposal	Prior to Bid Opening	Bid Rejected
2. Certificate of Experience of General Contractor	With Proposal	Bid Rejected
3. Certificate of Experience of Subcontractors listed pursuant to <u>N.J.S.A. 40A:11-16</u>	With Proposal, or within 24 hours of bid opening	Bid May Be Rejected
4. Plant and Equipment Questionnaire of General Contractor	With Proposal	Bid Rejected
5. Plant and Equipment Questionnaire of Subcontractors listed pursuant to <u>N.J.S.A. 40A:11-16</u>	With Proposal, or within 24 hours of bid opening	Bid May Be Rejected
6. Non-Collusion Affidavit	With Proposal, or within 24 hours of bid opening	Bid May Be Rejected
7. Corporation or Partnership Statement	With Proposal	Bid Rejected
8. Bid Guarantee	With Proposal	Bid Rejected
9. Consent of Surety	With Proposal	Bid Rejected
10. New Jersey Business Registration Certificates for General Contractor and all Subcontractors listed pursuant to <u>N.J.S.A. 40A:11-16</u>	With Proposal or prior to the Contract award	Bid May Be Rejected
11. Written Acknowledgment of addenda (if issued) pursuant to <u>N.J.S.A. 40A:11-23.2(e)</u>	With Proposal (See Bid Form P-1)	Bid Rejected
12. Public Works Contractor Registration Certificates for General Contractor and all Subcontractors listed pursuant to <u>N.J.S.A. 40A:11-16</u>	With Proposal or prior to the Contract award	Bid Rejected (See Section 7 of Information to Bidders)
13. Exhibit B: Mandatory Equal Employment Opportunity Language	With Proposal, or within 24 hours of bid opening	Bid May Be Rejected
14. MWBE (Contractor Compliance Plan)	With Proposal, or within 24 hours of bid opening	Bid May Be Rejected

<u>SUBMITTAL ITEM</u>	<u>TIME OF SUBMISSION</u>	<u>CONSEQUENCES OF NON COMPLIANCE</u>
15. Initial Manning Report (JCAA-1)	After notification of award but prior to signing a construction Contract	Forfeiture of Bid Security
16. Monthly Project Workforce Report	Once a month thereafter for the Duration of Contract	Default of Contract
17. Insurance Certificates	Prior to Execution of Contract by the City	Forfeiture of Bid Security
18. Performance and Payment Bond	Prior to Execution of Contract by the City	Forfeiture of Bid Security
19. Execution of Contract Agreement	Within 10 days of City Notice of Contract Award	Forfeiture of Bid Security
20. Construction Permits	Prior to Start of Construction (where required)	Default of Contract
21. Subcontractor Prequalification and Insurance other than those listed under <u>N.J.S.A.</u> 40A:11-16	Prior to Subcontractor's Participation	Denial of Subcontractor or Default
22. Material Certifications	Prior to Incorporation in Project	Removal of Unapproved Materials or Default of Contract
23. Shop Drawings	Prior to Incorporation in Project	Removal of Unapproved Materials or Default of Contract
24. Preconstruction Photographs	Prior to Commencement of Work or Stockpiling of Materials (where required)	Default of Contract
25. Notification to Public Utilities	Prior to Commencement of Work	Default of Contract
26. Commencement of Work	Within 10 days of Contract or as Stated in "Notice to Proceed"	Default of Contract
27. Claims for Extra Cost	Within 48 Hours of Instructions from Architect	Denial of Claim
28. Construction Schedule Periodic Estimates	Prior commencement of work and following with each partial payment	Payment Withheld Until Received
29. Request for Additional Time	Within 10 days of Beginning of Delay	Denial of Request Liquidated Damages
30. Water Sample Analysis or other Required Tests	Testing of New Water Mains and Equipment	No Acceptance Final Payment Withheld

The Contractor shall provide all submittals required under this Contract whether or not listed above.



**CONTRACTOR'S  
AFFIDAVIT OF  
RELEASE OF LIENS**

---

City of Jersey City  
280 Grove Street  
Jersey City, New Jersey 07302

ARCHITECT'S PROJECT NO:

CONTRACT FOR:

CONTRACT DATE:

PROJECT :  
(name, address)

---

State of:

County of:

The undersigned hereby certified that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of payment noted above.
2. Separate Release or Waivers of Liens from Subcontractors and material and equipment suppliers accompanied by a list thereof.

CONTRACTOR:

Address:

BY:

Subscribed and Sworn to before me this  
day of 20

Notary Public:

My Commission Expires:

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# CONTRACTOR'S INTERIM AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

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City of Jersey City  
280 Grove Street  
Jersey City, New Jersey 07302

ARCHITECT'S PROJECT NO:

CONTRACT FOR:

CONTRACT DATE:

PROJECT :  
(name, address)

---

State of:

County of:

The undersigned hereby certified that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered for the period of \_\_\_\_\_ to \_\_\_\_\_ represented in payment no. \_\_\_\_\_ .

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of payment noted above.
2. Separate Release or Waivers of Liens from Subcontractors and material and equipment suppliers accompanied by a list thereof.

CONTRACTOR:

Address:

BY:

Subscribed and Sworn to before me this  
day of 20

Notary Public:

My Commission Expires:

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SUPPLEMENTARY CONDITIONS

1. EXAMINATION OF SITES:

Every prime and sub-contract bidder shall study the conditions at the site(s) thoroughly before submitting his bid. No allowance for extra charges will be permitted because of lack of knowledge of all conditions peculiar thereto except such conditions as are indeterminable before the commencement of the work.

2. CHARGE OF SITES:

The contractor shall take the site as found, and shall assume charge of his work throughout the site until completion and acceptance of project by the Architect/Engineer.

The contractor shall cooperate fully and coordinate his work with the City, all utility companies, and all other contractor(s) so that all work is completed on time, with good workmanship and in a harmonious and efficient manner.

The contractor shall be responsible for the security of all his materials, equipment, facilities within the confines of the site.

It shall be the responsibility of the contractor to provide all necessary work of a permanent or temporary nature to safeguard public and construction site.

Work scheduling shall take into full consideration the requirements of the City with respect to minimal disruption of existing functions by demolition and alterations, including the following:

- a. Electrical, gas, water, telephone and drainage services.
- b. Accessibility to existing areas.
- c. Parking areas.
- d. Accessibility by City Maintenance Crews.
- e. Safety of park patrons.
- f. Noise of demolition and construction operations.

The scheduling of shutdowns and other interruptions of existing utilities shall have the approval of the Owner. No shutdowns will be allowed without prior clearance. Shutdown time shall be held to a minimum.

The time and date agreed upon for shutdown periods shall occur during hours approved by the Owner. The performance of this work at such times shall not result in additional expense to the City.

**SUPPLEMENTARY CONDITIONS**

### 3. PROTECTION OF PERSONS AND PROPERTY:

This bidder shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with his work. The bidder shall take all reasonable precautions for the safety of and shall provide all reasonable protection to prevent damage, injury, or loss to:

1. All employees on the site and all other persons who may be affected thereby.
2. Other property at the site or adjacent thereto, including interiors and exteriors of the buildings, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation, or replacement in the courses of construction.

The bidder shall comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including precaution against fire, erection of solid fencing, posting of danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities. He shall designate a responsible member of his organization at the site, whose duty shall be the prevention of accidents.

Material Safety Data Sheets (MSDS) must be filed with the designated city personnel and copy to the architect, a minimum of ten (10) days prior to any material being brought onto the site. Failure to file MSDS will result in rejection of the material by the city inspector and it will not be permitted on the site.

No requirement of or omission to this Contract shall be deemed to limit or impair any responsibilities or obligations assumed by the contractor under or in connection with this contract.

All debris and waste resulting from the performance of the work shall be removed in such a manner as to prevent damage to all existing and new construction, and shall be legally disposed of by the contractor at his expense at the end of each day. Stockpiling of debris and waste is not permitted.

When the work is in progress, the contractor shall protect the areas directly below and/or around the work areas with yellow traffic cones. This bidder shall not load or permit any part of the work to be loaded so as to endanger its safety.

Fire protection during the contractor's activity shall be provided by installation of a minimum of two (2) chemical fire extinguishers on the site.

The contractor shall, at his own expense, make good any damage, direct or indirect that may be done in the course of the performance of the work by him or his subcontractor to any utility structure or municipal facility, or to newly completed work, through or by reason of the performance of the work.

### **SUPPLEMENTARY CONDITIONS**

#### 4. TEMPORARY WORK AND SERVICES:

The contractor shall provide all materials, labor and equipment necessary to perform all work of a general or temporary nature as required for the complete construction of the project, all as shown on the accompanying drawings and as specified herein.

All Temporary Work and Services shall be maintained in an acceptable condition for the duration of the project and until removal is authorized. At the end of the project, or as directed, the contractor shall remove all temporary work and services and dispose of all materials off site. Cost of all work plus cost of operating and maintaining temporary services shall be included in the contract price.

Temporary Stairs, Runways, etc.: The contractor shall design and provide the necessary temporary stairs, ladders, runways, platforms, scaffolding, floors, etc. that may be required. All such temporary structures shall be of adequate strength for the purposes for which they are constructed.

Temporary Light and Power: Where necessary, the contractor shall provide at his own expense, suitable power facilities and the temporary lighting required for the proper prosecution of the work.

#### 5. PRODUCT HANDLING, STORAGE AND DELIVERY:

The contractor shall arrange for the timely and orderly delivery of all materials and shall be responsible for their proper handling and protection.

Materials and equipment may be stored on the site, but the protection of same shall be the contractor's responsibility. In storing materials within the site, the contractor shall consult with the Owner.

Deliver material in manufacturer's original, unopened containers and rolls with labels intact and legible, to be inspected by Inspector. Deliver materials in sufficient quantity to allow continuity of work.

Store all materials on clean raised platforms. Store rolled goods on end. Handle rolled goods so as to prevent damage to edge or ends.

Provide continuous water protective covering for those materials which require protection against wetting and moisture absorption. Protect materials against damage by construction traffic. Remove damaged materials from construction site.

The contractor will not be permitted to store any petroleum products or any other flammable materials at the construction site.

The materials and equipment not to be stored at the work site shall be removed from the site and stored in the area designated for the contractor's use prior to the end of each work day. Access to work areas with equipment and material will be approved by the Architect prior to any work.

### **SUPPLEMENTARY CONDITIONS**

6. PROGRESS SCHEDULE AND COST BREAKDOWN:

The Contractor shall submit to the Architect a Progress Schedule and cost Breakdown for approval as described in Article GC-33, of the General Conditions.

The cost breakdown shall generally follow the division of trades in the Technical Specifications. Should any trade amount exceed \$10,000., this trade shall be subdivided into finer cost breakdowns as to meet the Architects/Engineers approval.

7. RECORD DRAWINGS

The Record Drawings (Section 01700, Item 1.5 B) shall be reviewed the same day as the request for payment during the course of the Work. Payment will not be made unless all work which varies substantially or requires precise measurement has been transferred to the Record Drawings.

8. CLEANING UP:

The contractor shall keep the site free from all surplus material, dirt and rubbish at all times. At the completion of the work, he shall remove all waste materials and rubbish from and about the project and shall remove all paint and/or bituminous spots from new and existing surrounding surfaces.

Spaces where construction work is in progress and all the adjacent areas shall be broom cleaned and free of refuse, rubbish, scrap material or debris at the end of each work day.

In addition to general broom cleaning, the following cleaning shall be done at completion of work: remove marks, stains, fingerprints, other soil and dirt from all surfaces affected by this project; clean out all new and existing drainage structures constructed and/or affected in any way by the work of this contract.

9. PUNCH LIST:

Near the completion of the project, upon the contractor's notification, the Architect and Engineer will inspect the work, and prepare one or more punch lists of work that needs to be corrected. The contractor shall have the work on the punch list corrected by the respective trades to conform to the contract documents, shall check the work, and shall notify the Architect when the punch list items are properly corrected.

The final payment shall not be released until all corrective work is completed and approved by the Architect.

END OF SUPPLEMENTARY CONDITIONS

**SUPPLEMENTARY CONDITIONS**

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Project consists of removal and replacement of existing play structure.

- 1. Project Location: 201 Central Avenue, Jersey City, New Jersey 07307.
- 2. Owner: City of Jersey City, 280 Grove Street, Jersey City, New Jersey 07302.

- B. Architect Identification: The Contract Documents, dated March 2015 were prepared for the Project by Jersey City Division of Architecture, 13 - 15 Linden Avenue East, Jersey City, New Jersey 07305.

- C. The Work consists of but is not limited to the following:

- \* Removal and disposal of existing site improvements, as designated on the drawings, that include but are not necessarily limited to; concrete sidewalk, curbing, play structures, spray structures, footings, rubber safety surfacing, drainage pipe, fencing and designated trees.
- \* Earthwork
- \* Installation of new playground equipment.
- \* Installation of new water spray feature, including new water meter, backflow preventor, hot box (cover), water spray components, all associated plumbing, electrical and drainage infrastructure.
- \* Installation of new site furnishings (benches, trash cans, etc.) as specified or as shown on the drawings.
- \* Installation of new curbing and concrete flatwork including colored and/or textured concrete surfaces as designated and specified.

- \* Preparation and installation of specified landscaping items, including but not limited to decorative iron fencing, gates and large caliper trees.
- \* Acquisition of all necessary permit(s) from various agencies having authority.

### 1.3 CONTRACTS

- A. Project will be constructed under a general construction contract.

### 1.4 USE OF PREMISES

- A. General: Contractor shall have full use and responsibility of premises for construction operations, including use of Project site, during construction period. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01322 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
  - 1. Preconstruction photographs.
  - 2. Periodic construction photographs.
  - 3. Final Completion construction photographs.

1.3 SUBMITTALS

- A. Qualification Data: For firms and persons specified in “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same label information as corresponding set of photographs.
- C. Construction Photographs: Submit a proof set of a minimum of fifteen (15) photographic views within seven (7) days of taking photographs. Six (6) to ten (10) photographs for each phase or as further described will be selected to be printed and submitted for record.
  - 1. Format: 8-by-10-inch smooth-surface matte prints on single-weight commercial-grade photographic paper, enclosed back to back in clear plastic sleeves that are punched for standard 3-ring binder.
  - 2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
    - a. Name of Project.
    - b. Name and address of photographer.

- c. Name of Architect.
  - d. Name of Contractor.
  - e. Date photograph was taken if not date stamped by camera.
  - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
  - g. Unique sequential identifier.
3. Digital Images: Submit a complete set of digital image electronic files with each submittal of prints as a Project Record Document on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.

#### 1.4 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

#### 1.5 COORDINATION

- A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

#### 1.6 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Jersey City Division of Architecture (JCA) for unlimited reproduction of photographic documentation.

### PART 2 - PRODUCTS

#### 2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 16.0 megapixels, and at an image resolution of not less than 3872 by 2592 pixels.

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified commercial photographer to take construction photographs.
- B. Available Photographer:
  - 1. Subject to compliance with requirements, photographers offering services that may be used include, but are not limited to, the following:
    - a. Zbig Zedrus Photography or approved equal.
- C. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- D. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in filename for each image.
  - 2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Architect.
- E. Preconstruction Photographs: Before commencement of demolition and before starting construction, take digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Construction Manager.
  - 1. Flag construction limits before taking construction photographs.
  - 2. Take six 6 photographs minimum to show existing conditions adjacent to areas that are to remain undisturbed before starting the Work.
  - 3. Take eight 8 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
  - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

- F. Periodic Construction Photographs: Take 15 digital photographs at each construction milestone, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
  
- G. Final Completion Construction Photographs: Take 15 color photographs after date of Substantial Completion for submission as Project Record Documents. Construction Manager will direct photographer for desired vantage points.
  - 1. Do not include date stamp.
  
- H. Additional Photographs: Architect[ or Construction Manager] may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum [or in the allowance for construction photographs].
  - 1. Three days' notice will be given, where feasible.
  - 2. In emergency situations, take additional photographs within 24 hours of request.
  - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
    - a. Special events planned at Project site.
    - b. Immediate follow-up when on-site events result in construction damage or losses.
    - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
    - d. Substantial Completion of a major phase or component of the Work.
    - e. Extra record photographs at time of final acceptance.
    - f. Owner's request for special publicity photographs.

END OF SECTION 01322

**SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.
- B. Temporary utilities include, but are not limited to, the following:
  - 1. Sewers and drainage.
  - 2. Water service and distribution.
  - 3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
  - 4. Heating facilities.
  - 5. Electric power service.
  - 6. Lighting.
  - 7. Telephone service.
- C. Support facilities include, but are not limited to, the following:
  - 1. Dewatering facilities and drains.
  - 2. Project identification and temporary signs.
  - 3. Waste disposal facilities.
  - 4. Field offices
  - 5. Storage and fabrication sheds.
  - 6. Snow and ice removal.
  - 7. Lawn Maintenance.
- D. Security and protection facilities include, but are not limited to, the following:
  - 1. Environmental protection.
  - 2. Stormwater control.
  - 3. Site enclosure fence.
  - 4. Barricades, warning signs, and lights.
  - 5. Fire protection.

- E. Related Sections include the following:
1. Division 2 Section "Tree Protection and Trimming" for temporary protection controls.
  2. Divisions 2 through 16 for temporary heat, ventilation, and humidity requirements for products in those Sections.

### 1.3 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
1. Owner's construction forces.
  2. Occupants of Project.
  3. Architect.
  4. Testing agencies.
  5. Personnel of authorities having jurisdiction.
- B. Water Service: Pay water service use charges, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site.
- C. Electric Power Service: Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site.

### 1.4 SUBMITTALS

- A. Project Identification Sign: Submit shop drawings of project sign with lettering sizes and font types indicated.
- B. Traffic Control Plan: Submit plans indicating work sequencing in terms of traffic control. Indicate traffic patterns, areas to be closed down to pedestrians and automotive traffic including all signs and barricades required.
- C. Application for Street, Lane, Sidewalk Closure: Submit application located at end of Section, or most current revised application, to Jersey City Engineering & Transportation Division.
- D. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

- E. Implementation and Termination Schedule: Within 15 days of date established for submittal of Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility.

## 1.5 QUALITY ASSURANCE

- A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
  - 1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
  - 2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

## 1.6 PROJECT CONDITIONS

- A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.
  - 1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
  - 1. Keep temporary services and facilities clean and neat.
  - 2. Relocate temporary services and facilities as required by progress of the Work.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

- B. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.76-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts.
- C. Construction Signs: See Application at end of Section for typical signs. Meet N.J.D.O.T. and J.C. Engineering and Transportation requirements.
- D. Paint: Comply with requirements in Division 9 Section "Painting."
- E. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- F. Water: Potable.

## 2.2 EQUIPMENT

- A. General: Provide equipment suitable for use intended.
- B. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
  - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- C. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- D. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.
  - 1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7.2 to 12.7 deg C).
- E. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

- F. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.
- G. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.
- H. First Aid Supplies: Comply with governing regulations.
- I. Communication Equipment:
  - 1. Provide fax/copier/scanner throughout construction period for use by City personnel engaged in construction activities.
  - 2. Two (2) Microsoft Office on CD-ROM with applicable licenses and updates.
  - 3. Two (2) cell phones (I-Phone 5s or equivalent) with service from major service provider, including voicemail, unlimited data and Caller ID, case and clip, stationary and mobile chargers, through final payment of project.
  - 4. Two (2) Verizon mobile hotspot, 4G LTE with service through final payment of project.
  - 5. Two (2) Adobe Reader (latest version) on CD-ROM with applicable licenses and updates.
  - 6. Two (2) Dell Latitude 14, 3000 series Laptops with Windows 7 Pro.
- J. Field Offices: Prefabricated Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading. Office is for the express use of the Division of Architecture, their consultants, and representatives. Office shall not be used for Contractor storage. Provide the following for job-built construction:
  - 1. **Field office shall be installed and fully energized prior to the first site meeting. Failure to complete this task shall result in a negotiated credit to the Owner on the first payment application request.**

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
  2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
  3. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.
- B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.
1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
  2. Connect temporary sewers to municipal system as directed by sewer department officials.
  3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
  4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
  2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.
  3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
    - a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.

4. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
    - a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7.2 to 12.7 deg C).
  5. Locate toilets and drinking-water fixtures so personnel need not walk more than or 200 feet (60 m) horizontally to facilities.
- D. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.
1. Install electric power service underground, unless overhead service must be used.
  2. Install power distribution wiring overhead and rise vertically where least exposed to damage.
- E. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
  2. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.
- G. At construction site, post a list of important telephone numbers.
1. Police and fire departments.
  2. Ambulance service.
  3. Contractor's home office.
  4. Architect's office.
  5. Engineers' offices.
  6. Principal subcontractors' field and home offices.
- H. Telephone Service:
1. Provide two (2) cellular phones with chargers with unlimited usage for the Jersey City Inspectors and Project Managers use during the contract limit through final

payment. Turn over activated phones at Pre-Construction Meeting. Include carrying cases or clips along with an automobile charging cord. Phones to be I Phone 5S with unlimited voice and data plans.

### 3.3 SUPPORT FACILITIES INSTALLATION

#### A. General: Comply with the following:

1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines. Comply with NFPA 241.
3. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

#### B. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.

#### C. Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.
2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.
3. Remove snow and ice as required to minimize accumulations. Snow shall be removed by G.C. from all sidewalks within the right-of-way within 24 hours of stoppage of snow.

#### D. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated at the end of this section. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.

1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
2. Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.
3. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.

- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.
  - 1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.
  - 2. Develop a waste management plan for Work performed on Project. Indicate types of waste materials Project will produce and estimate quantities of each type. Provide detailed information for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials.
  
- F. Janitorial Services: Provide janitorial services on a bi-monthly basis for temporary offices, first-aid stations, toilets, wash facilities, lunchrooms, and similar areas. Provide weekly service for toilet facilities.
  
- G. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.
  - 1. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
  - 2. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.

### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.
  
- B. Stormwater Control: Provide earthen embankments and similar barriers in accordance with Hudson Essex Passaic Soil Erosion and Sediment Control Standards in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.
  
- C. Tree and Plant Protection: Comply with requirements in Division 2 Section "Tree Protection and Trimming."
  
- D. Site Enclosure Fence: Before construction operations begin, install chain-link enclosure fence with lockable entrance gates. Locate where indicated, or enclose entire Project site or portion determined sufficient to accommodate construction operations. Install in a

manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.

1. Set fence posts in compacted mixture of gravel and earth or in concrete bases.
  2. Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.
  3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner with one set of keys.
- E. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- F. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
  2. Vertical Openings: Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
  3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
  4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
  5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use fire-retardant-treated material for framing and main sheathing.
- H. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
    - a. Field Offices: Class A stored-pressure water-type extinguishers.
    - b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
    - c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
5. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

### 3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
  1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
  2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

**SECTION 01731 - CUTTING AND PATCHING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
  - 1. Division 1 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
  - 2. Divisions 1 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
    - a. Requirements in this Section apply to site/civil, mechanical and electrical installations. Refer to respective Divisions and Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

**1.3 DEFINITIONS**

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

**1.4 QUALITY ASSURANCE**

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

### 3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
  5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

END OF SECTION 01731

SECTION 01732 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Demolition and removal of selected playground structures.
  - 2. Demolition and removal of selected site elements, including concrete sidewalk and curb.
  - 3. Repair procedures for selective demolition operations.
  - 4. Clearing, loading and removal of demolished concrete miscellaneous concrete footings, safety surfacing and excess spoil materials.
- B. Related Sections include the following:
  - 1. Division 1 Section "Photographic Documentation" for preconstruction photographs taken before selective demolition.
  - 2. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
  - 3. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
  - 4. Division 2 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Save: Salvage items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

#### 1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
  - 1. Coordinate with Owner, who will establish special procedures for removal and salvage.

#### 1.5 QUALITY ASSURANCE

- A. Professional Engineer Qualifications: Comply with Division 1 Section "Quality Requirements."
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.

#### 1.6 PROJECT CONDITIONS

- A. Owner assumes no responsibility for condition of areas to be selectively demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

- C. Storage or sale of removed items or materials on-site will not be permitted.
- D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

## PART 2 - PRODUCTS

### 2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
  - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. General Contractor to engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

### 3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
  - 1. Arrange to shut off indicated utilities with utility companies.
  - 2. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
  - 3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
  - 4. All utilities are to be terminated at source in street in accordance with the governing Utility Company's requirements.
- D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

### 3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Pest Control: Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.
- C. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
  - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.

3. Protect existing site improvements, appurtenances, and landscaping to remain.
  4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- D. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- E. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

### 3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

### 3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain [fire watch and] portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly.
  10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Remove and Salvaged Items: Comply with the following:
1. Clean salvaged items by hosing clean.
  2. Transport items to Owners storage area located at the Municipal Services Complex, 13 - 15 Linden Avenue East, Jersey City, N.J.
  3. Contractor to call the Director of Parks and Forestry at (201) 547-4449 24 hours in advance of delivery of salvaged items.
- C. Removed and Reinstalled Items: Comply with the following:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
  2. Pack or crate items after cleaning and repairing. Identify contents of containers.

3. Protect items from damage during transport and storage.
  4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- 
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition [and cleaned] and reinstalled in their original locations after selective demolition operations are complete.
  - E. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
  - F. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
  - G. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- 
- 3.6 PATCHING AND REPAIRS
- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
  - B. Patching: Comply with Division 1 Section "Cutting and Patching."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 01732

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Inspection procedures.
  - 2. Project Record Documents.
  - 3. Operation and maintenance manuals.
  - 4. Warranties.
  - 5. Instruction of Owner's personnel.
  - 6. Final cleaning.
- B. Related Sections include the following:
  - 1. Division 1 Section "Photographic Documentation" for submitting Final Completion construction photographs and negatives.
  - 2. Divisions 2 through 9 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

4. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Complete startup testing of systems.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

#### 1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

## 1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three (3) copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  - 1. Organize list of spaces in sequential order.
  - 2. Organize items applying to each space by major element.
  - 3. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Page number.

## 1.6 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.
- B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
  - 1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
    - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
    - b. Accurately record information in an understandable drawing technique.
    - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
    - d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
  - 2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
  - 3. Mark important additional information that was either shown schematically or omitted from original Drawings.

4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
  5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
  6. **At a time near the completion of the work, arrange and pay for reproduction firm with document loss insurance coverage to secure original drawings from Architect to make one complete set of mylar transparencies of all drawings included in this contract. Carefully transfer all changes shown on the record drawings to the corresponding mylars. Call attention to each change entry by drawings neatly in a crisp pen or pencil. Submit full set of mylars as a record document. Original drawings to be returned to the architect by the reproduction firm.**
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Note related Change Orders and Record Drawings where applicable.
- D. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

## 1.7 OPERATION AND MAINTENANCE MANUALS

- A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
1. Operation Data:
    - a. Emergency instructions and procedures.
    - b. System, subsystem, and equipment descriptions, including operating standards.
    - c. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
    - d. Description of controls and sequence of operations.
    - e. Piping diagrams.

- f. Required maintenance procedures. Manufactures representative shall schedule to demonstrate all required and recommended maintenance inspections and adjustments to maintain warranty.
2. Maintenance Data:
- a. Manufacturer's information, including list of spare parts.
  - b. Name, address, and telephone number of Installer or supplier.
  - c. Maintenance procedures.
  - d. Maintenance and service schedules for preventive and routine maintenance.
  - e. Maintenance record forms.
  - f. Sources of spare parts and maintenance materials.
  - g. Copies of maintenance service agreements.
  - h. Copies of warranties and bonds.
- B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

## 1.8 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove snow and ice to provide safe access to areas.
    - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - g. Remove labels that are not permanent.
    - h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    - i. Leave Project clean and ready for occupancy.

- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 02230 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Removal of trees and other vegetation.
  - 2. Topsoil stripping.
  - 3. Clearing and grubbing.
  - 4. Disconnecting, capping or sealing, and abandoning site utilities in place.
  - 5. Disconnecting, capping or sealing, and removing site utilities.
- B. Related Sections include the following:
  - 1. Division 1 Section "Temporary Facilities and Controls" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures during site operations.
  - 2. Division 1 Section "Selective Demolition" for demolition of structures.

1.3 PROJECT CONDITIONS

- A. Traffic: Conduct site-clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.
- B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
  - 1. Protect improvements on adjoining properties and on Owner's property.
  - 2. Restore damaged improvements to their original condition, as acceptable to property owners.

#### 1.4 MATERIALS OWNERSHIP

- A. Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

#### 1.5 EXISTING SERVICES

- A. General: Indicated locations are approximate; determine exact locations before commencing Work.
- B. Arrange and pay for disconnecting, removing, capping, and plugging utility services. Notify affected utility companies in advance and obtain approval before starting this Work.
- C. Place markers to indicate location of disconnected services. Identify service lines and capping locations on Project Record Documents.

#### 1.6 SUBMITTALS

- A. Photographs or videotape sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damaged caused by site clearing.
- B. Record Drawings according to Division 1 Section "Project Closeout".
  - 1. Identify and accurately locate capped utilities and other subsurface structural, electrical, and mechanical conditions.

### PART 2 - PRODUCTS

#### 2.1 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."
  - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
  - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

### 3.2 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
  - 1. Arrange to shut off indicated utilities with utility companies.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.
- C. Excavate for and remove underground utilities indicated to be removed.

### 3.3 SITE CLEARING

- A. General: Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions, as indicated, to permit installation of new construction. Only those trees listed for removal shall be removed. Removal includes digging out and off-site disposal of stumps and roots.
- B. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material. May be revised onsite subject to screening, testing and reuse requirements.

1. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping. Mechanically 'screen' stripped topsoil prior to stockpiling for reuse. Screen all CV-40-D or equal.
    - a. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root system.
  2. Stockpile topsoil in storage piles in areas indicated or directed. Construct storage piles to provide free drainage of surface water. Cover storage piles, to prevent wind erosion.
  3. Dispose of unsuitable, excess topsoil or screening spoils as specified for disposal of waste material.
  4. See Section - Landscape Plantings for topsoil reuse requirements.
- C. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except for those indicated to be left standing.
1. Completely remove stumps, roots, and other debris protruding through ground surface.
  2. Use only hand methods for grubbing inside drip line of trees indicated to remain.
  3. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
    - a. Place fill material in horizontal layers not exceeding 6 inches loose depth, and thoroughly compact each layer to a density equal to adjacent original ground.
- D. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction. Fill voids left from removal of foundations with engineered fill to subgrade level.
- E. Abandonment or removal (with resetting as required) of certain underground pipe or conduits may be required during excavation of new site utilities. Removal of abandoned underground piping or conduit 'interfering' with construction is included under this section, at no additional cost to the City.
- F. When new construction crosses existing utilities that are abandoned (irrigation and storm drain piping), the contractor shall cap all ends with concrete fill plug, no less than twice pipe diameter or 12" which ever is greater.

### 3.4 REMOVAL AND DISPOSAL OF WASTE MATERIALS

- A. Removal and Disposal from Owner's Property: Remove trash debris, obstructions, waste materials, unsuitable materials, excess topsoil and/or subgrade material from Owner's property in accordance with all applicable regulations in a legal manner. Comply with specification Section 2300 Earthwork; 3:22 DISPOSAL OF SURPLUS WASTE MATERIALS.

1. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

B. Burning of Owner's Property: Burning is not permitted on Owner's property.

END OF SECTION 02230

SECTION 02240 - DEWATERING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes construction dewatering.

1.2 PERFORMANCE REQUIREMENTS

- A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control ground-water flow into excavations and permit construction to proceed on dry, stable subgrades.

1.3 SUBMITTALS

- A. Shop Drawings for Information: For dewatering system. Show arrangement, locations, and details of wells and well points; locations of headers and discharge lines; and means of discharge and disposal of water.
  - 1. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with water disposal requirements of authorities having jurisdiction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.
  - 1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site and surrounding area.

2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

### 3.2 INSTALLATION

- A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
- B. Before excavating below ground-water level, place system into operation to lower water to specified levels. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed, or until dewatering is no longer required.
- C. Provide an adequate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.
  1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
- D. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
  1. Maintain piezometric water level a minimum of **24 inches (600 mm)** below surface of excavation.
- E. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water in a manner that avoids inconvenience to others. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
- F. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to Owner.
  1. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches (900 mm) below overlying construction.
- G. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.

END OF SECTION 02240

**SECTION 02261- UTILITY EXCAVATION, BACKFILL, AND COMPACTION**

**PART 1 - GENERAL**

**1.1 DESCRIPTION OF WORK**

- A. Contractor shall furnish all labor, materials and equipment to do all clearing of work areas, excavation to the depth shown and/or indicated, support of utilities, maintenance of excavation, removal of all water, backfilling, additional fill, disposal of excess fill, grading, compaction and all incidental work to complete earthwork for foundation and utility construction in accordance with all City requirements, and as required for a complete installation.
- B. Excavation shall be in open cut, unless written permission is given by permitting agencies to excavate by other methods. The Engineer shall be empowered to require under special circumstances (such as fragile utilities nearby) that hand excavation and backfill be employed within reasonable limits and accepted construction practices. It shall be the responsibility of the contractor to plan the trench work to avoid conflicts, obstructions, etc.
- C. All work shall be in accordance with OSHA Safety and Health Standards (29CFR 1910), latest revision. All excavation work shall be under the direction of a ‘competent person’, as defined under the OSHA Excavation Safety Program. The competent person shall be provided by the Contractor.
- D. Backfill material shall be as required by NJDOT, or as specified herein.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Division 2 Sections – “Piped Utilities – Basic Materials and Methods”.

**1.3 REFERENCE STANDARDS**

- A. New Jersey Department of Transportation (NJDOT) Specifications, latest edition.
- B. American Society for Testing and Materials (ASTM)

D1556          Density of Soil in Place by the Sand Cone Method

D1557          Moisture - Density Relations of Soils and Soil-Aggregate  
Mixtures Using 10 lb. Rammer and 18 in. Drop.

D2922 Density of Soil and Soil Aggregate in Place by Nuclear Methods

D3017 Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods

- C. OSHA Safety and Health Standards (29CFR 1910), latest revision.

1.4 QUALITY ASSURANCE

- A. The services of qualified inspection and testing agencies shall be used for this work.

1.5 BLASTING

- A. Blasting will not be permitted for this project.

1.6 ACCOMMODATION OF TRAFFIC

- A. The Contractor shall, where required, maintain roads open for traffic with satisfactory barricades, warning signs and lights. Where permission for detouring traffic is granted, the Contractor shall post detour signs, and the Contractor shall maintain such detour routes. During progress of the work, sidewalks and crossings shall be kept open for passage of pedestrians, unless otherwise authorized.
- B. The Contractor shall furnish, place and maintain safety fence around all excavations and other areas designated by The Engineer during non-work hours. Safety fencing shall be the product of Tenax Corporation, bright orange, no less than five feet in height, or approved equal.
- C. The Contractor shall construct and maintain, without compensation, adequate and approved bridges over excavations as may be necessary or directed by The Engineer for purpose of accommodating pedestrians or vehicles.
- D. All fire hydrants, water valves, and fire alarm boxes shall be left uncovered and readily accessible for use.
- E. Traffic control for vehicular traffic shall be provided in accordance with these Specifications.

1.7 PROTECTION OF PROPERTY AND STRUCTURES

- A. The Contractor shall sustain in their places and protect from direct or indirect injury, all pipes, conduits, poles, tracks, walls, buildings, pavement, guiderails, driveways, curb, street signs, sidewalks, lawns, fields, mailboxes, shrubs, bushes, plantings, and other

structures or property in vicinity of his work, whether above or below ground. He shall replace any pipe if, in the opinion of the Engineer, it is a functioning pipe. Contractor shall restore any existing property damaged by construction activity. Restoration, when complete, shall render the disturbed area equal to or better than its original condition prior to construction.

- B. The Contractor shall have sufficient sheeting or shoring available for supporting his excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened or weakened.

**1.8 OBSTRUCTION SHOWN ON DRAWINGS**

- A. When the construction drawings show information in addition to structures and systems to be built, such as locations of pipes, conduits and other structures which exist along lines of work below and/or above the surface of the ground, said information may be shown for the convenience of the Contractor who must verify in advance the information given to his own satisfaction.

**1.9 REMOVAL AND STORAGE OF SURFACE MATERIALS**

- A. The Contractor shall grub and clear surface and remove all surface materials, of whatever nature, over line of trench and site of other structures; and he shall properly store, guard and preserve such of said materials as may be required for use in backfilling, resurfacing, repaving, or for other purposes. All curb, gutter, sidewalk and all paving material which may be removed, together with all materials taken from trenches, shall be stored in such parts of roadway or such other suitable place and in such manner, as shall be approved and directed. The Contractor shall be responsible for any loss of or damage to curb, gutter, sidewalk, flagstones, paving material, grass and plantings through their careless removal or neglectful or wasteful storage, disposal or use.

**1.10 OBSTRUCTIONS AND MAINTENANCE OF SERVICES**

- A. The Contractor shall arrange with all utility companies for any relocation, temporary removal and restoration of their facilities when required for prosecution of work.
- B. There shall be maintained at all times a continuous flow in all existing gas, water, sewer, conduit, electric power, and telephone lines, or any other pipes or structures encountered in prosecution of work under this project, whether above or below ground surfaces.

**PART 2 - PRODUCTS**

**2.1 SOIL MATERIALS**

**A. Definitions:**

1. Satisfactory Soil Materials: Satisfactory soil materials shall be defined as those complying with the Unified Soil Classification System classes GW, GP, GM, SW, SP, SM and SP-SM. Suitable soil shall have a minimum compacted dry density of 110 lbs/cubic foot.
2. Unsatisfactory Soil Materials: Unsatisfactory soil materials are defined as those in the Unified Soil Classification System classes GC, SC, ML, CL, OL, MH, CH, OH and PT, and other highly organic soils.

**B. Soil Backfill and Fill Materials: Should the use of a modified backfill not be required, provide satisfactory materials for backfill and fill, free of debris, waste, frozen materials, vegetation and other deleterious matter.**

1. Use on-site excavated or off-site borrow material that has been sampled, tested and certified as satisfactory soil material.
2. Use approved satisfactory soil materials as backfill in all excavations.
3. All backfill placed shall be compacted and tested as specified herein.

2.2 No ashes, decomposable refuse, large stones, or other material of an unsatisfactory character shall be used in backfilling.

2.3 In the event that additional material is needed, the Contractor shall obtain borrow material from other sources. All borrowed material shall be of satisfactory quality for required purposes. In certain locations, grading and filling of adjacent ground may be required or directed by The Engineer.

**PART 3 - EXECUTION**

**3.1 TRENCHING**

**A. Trench Width and Depth:**

1. Trenches shall be excavated to necessary width and depth, as specified herein or as directed. Where sheeting is used the maximum width below top of pipe shall be measured between interior faces of sheeting as driven, but in no case shall stringers or waling-strips be so placed as to interfere with proper ramming of earth under and around pipe.
2. If sheeting does not extend below a point six (6) inches above pipe as laid, the maximum width allowed shall be measured between faces of excavation below bottom of sheeting.

3. Sides of trenches shall be practically plumb and under no circumstances will they be permitted to be sloped unless approved by The Engineer. The maximum allowable trench width shall be two (2) feet wider than outside diameter of pipe. Where more than one pipe is placed in a trench, a maximum clear distance of 12 inches shall be allowed from the wall of the nearest pipe.
4. Where, in the opinion of The Engineer, the grade is suitable for foundation of work, the bottom of the trench shall be excavated flat to receive pipe and the bottom of trench under each joint or coupling hollowed out to allow for making joints.
5. Trenches excavated below proper grade, excepting at joints, shall be filled to proper grade with satisfactory material thoroughly rammed, to insure adequate support and stability of pipe or other structures.
6. Where rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6-inch layer of AASHTO No. 57 coarse aggregate.

B. Trench Length:

1. No greater length of trench shall be left open, in advance of completed structure placed therein, than shall be authorized or directed by The Engineer. The Engineer shall be empowered at anytime to require backfilling of open trenches over completed pipe lines, if in their judgment such action is necessary. The Contractor shall have no claim for extra compensation, even though to accomplish said backfilling he may be compelled to temporarily stop excavation or other work.
2. If work is stopped on any trench, for any reason except by order of The Engineer, and excavation is left open for an unreasonable length of time in advance of construction, the Contractor shall, if so directed, backfill such trench at his own expense, and shall not again open said trench until he is ready to complete structure therein. If the Contractor refuses or fails to backfill such trench completely within forty eight (48) hours The Engineer shall authorize the work to be performed by other forces, and The Engineer shall charge expense thereof to the Contractor.
3. Unless otherwise authorized, excavation of trenches may be fully completed no more than (100) feet in advance of pipe laying.
4. No trench shall be left open at the end of each work day.

C. Preparation of Foundation: All irregularities and cavities, either in earth or rock excavation, in bottom of trenches or tunnels, shall be filled to required level with satisfactory fill material, and compacted, before pipe lines are laid therein.

**D. Sheeting and Shoring:**

1. The Contractor shall support sides and ends of all excavations or structures, when necessary or directed, with braces, sheeting, shores or stringers of quality and character required. All timbering or underpinning shall be placed or driven by men skilled in such work and shall be arranged so that it may be withdrawn as backfilling proceeds, without injury to structures built or adjacent structures or properties.
2. If, in opinion of the Engineer, the material furnished for timbering excavation is not of proper quality or size, or is improperly placed, the Contractor shall, upon notice, procure and place satisfactory timbering, or place said timbering in a satisfactory manner. Upon his failure to do so, work may be ordered stopped until said notice shall have been complied with.
3. Timbering in excavations may be withdrawn as the backfilling is being done, except to such extent as The Engineer shall order that said timbering be left-in-place. The Contractor shall cut off any sheeting left-in-place, at least 12 inches below finished grade where ordered by the Engineer and shall remove cut-off material.

**E. Dewatering Excavations:**

1. There shall be provided and maintained at all times during construction of work, ample means and devices, including all necessary equipment, power and labor to pump, bail or otherwise promptly remove and properly dispose of all water and/or sewage entering, or found in the excavations, trenches or other parts of work. Well points shall be utilized wherever necessary to maintain dry conditions throughout working areas.
2. Method used to accomplish dewatering must meet with the Engineer's approval.
3. When in quicksand or soft ground, or for protection of any structure or property, sheeting shall be driven to a depth below bottom of excavation as may be required.
4. Water from pumping must be properly filtered before discharging to an acceptable location.

**F. Responsibility for Condition of Excavation:**

1. The Contractor shall be solely responsible for condition of all his excavations, and any slides or cave-ins shall be removed without extra compensation.
2. Failure or refusal of The Engineer to order the use of bracing or sheeting, to order better quality or larger sizes of timber; to order sheeting, bracing or shoring left-in-place; to give orders or directions on methods or placing or driving sheeting, braces or shores, shall not relieve the Contractor of any responsibility concerning the condition of excavations or his obligation under the contract.
3. Any delay, (whether caused by the Contractor or by The Engineer or their agents or employees) that requires keeping an excavation open longer than would otherwise have been necessary, shall not relieve the Contractor from his

obligation to properly and adequately protect the excavation from cave-ins or slipping or any of his obligations under the contract relating to injury of persons or property.

G. Tunneling:

1. Tunneling will be allowed when permission is granted by The Engineer or permitting agencies.
2. Tunnels for laying pipelines shall be of sufficient size to allow joining of pipe and compacting of backfill around them. Tunnels shall be timbered where necessary, in accordance with approved methods. All methods of tunneling used shall be subject to approval of The Engineer.

### 3.2 BACKFILLING

- A. The Contractor shall backfill all excavations as rapidly as practicable, following inspection and approval of work by The Engineer.
- B. No part of a pipe line or other structure that needs to be tested, located or measured, shall be filled over or around until required tests and measurements have been made and permission given by The Engineer to backfill.
- C. The space between pipe and sides of trench shall be backfilled by hand and thoroughly tamped with a light tamper in layers not to exceed 4 inches in thickness to a depth of at least one foot above top of pipe.
- D. The method of backfilling above 1 foot over top of pipe to grade or bottom of paving shall then be filled and compacted by tamping or rolling. The backfill material shall be evenly spread in built up layers not exceeding 8 inches for material compacted by heavy compaction equipment and 4 inches for material compacted by hand operated tampers, subject to approval of The Engineer. No stone will be allowed in refilling until earth or granular backfill has been placed at least 2 feet above pipe or structure as directed above. Backfill material placed above earth or granular backfill may contain some rock but in no case shall it exceed more than 20 percent by volume.
- E. When the opening is across or within completed road paving, the method of backfilling above 12 inches over the top of pipe to grade or bottom of paving shall be backfilled as specified above except that the backfill material shall consist of NJDOT 2RC stone.

### 3.3 MAINTENANCE

- A. The Contractor shall maintain all backfilled excavations in proper conditions as specified. All depressions appearing in backfilled excavations shall be promptly repaired by the Contractor. If the Contractor fails to make repairs within forty eight (48) hours after receipt of written notice from The Engineer, The Engineer may backfill said

depression and, in an emergency, The Engineer may backfill or protect any dangerous depression wherever necessary without giving previous notice to the Contractor, and The Engineer shall charge expense thereof to the Contractor.

**3.4 COMPACTION**

- A. The contractor shall be required to compact all backfill materials to a minimum of 95% of the materials maximum dry density as determined by A.S.T.M. D698 (Standard Proctor).

**3.5 TESTING**

**A. Testing Laboratory**

- 1. Tests to determine conformance with all requirements for all Contractor secured materials proposed for use shall be performed by an independent commercial laboratory retained and compensated by the Contractor and approved by The Engineer.
- 2. On-site quality control testing will be performed during construction to determine conformance with plans and specifications by an independent laboratory retained and compensated by the Contractor. Frequency of sampling and testing shall be as specified in Paragraph 3.5C of this section.
- 3. Testing laboratory shall furnish the Contractor and The Engineer with copies of all reports and certificates regarding tests and inspections of equipment, materials, and completed work.
- 4. Laboratory shall furnish The Engineer a sampling schedule to give The Engineer an opportunity to observe the sampling.

- B. During or after the backfill operations The Engineer may take soils compactions tests in conformance with A.S.T.M. Standard Procedures or other available methods. If determined by The Engineer that any lift does not meet specified percent maximum dry density the contractor shall be required to dig test holes, as directed by The Engineer at various levels, throughout the backfill, at the contractors expense, so that additional tests may be taken. If the additional tests indicate unsatisfactory compaction the contractor shall remove all unsatisfactory backfill and recompact same to the required standards at his expense.

**C. Frequency of Testing**

- 1. Each truckload of backfill material from an off-site borrow area shall be tested to ensure that it is satisfactory as specified in this Section.
- 2. Perform at least three (3) maximum dry density tests, in accordance with ASTM D1557, on each different type of soil encountered in the excavation or used for backfill.

3. Perform at least one (1) in-place density test per lift per 100 feet of trench length on the backfill material. Determine in-place density in the field in accordance with ASTM D1556, or by ASTM D2922 and ASTM D3017.
4. If it is determined by The Engineer that any lift does not meet the specified percent dry density, the Contractor shall dig test holes, as directed by The Engineer at various levels, throughout the backfill, at the Contractor's expense, so that additional tests may be taken. If the additional tests indicate unsatisfactory compaction, the Contractor shall remove all unsatisfactory backfill and recompact same to the required standards at his expense.

END OF SECTION 02261

**SECTION 02262 - EXCAVATING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 Specification Sections apply to this Section.

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Excavating for paving.
  - 2. Excavating for site structures.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 2 Section “Backfilling.”
  - 2. Division 2 Section “Utility Excavation, Trenching and Compaction.”

**1.3 FIELD MEASUREMENTS**

- A. Verify that survey benchmark and intended elevations for the Work are as indicated.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain from damage.
- C. Notify utility company in writing prior to removal and/or relocation of utilities. Copy construction manager on notification.
- D. Protect plant life, lawns, and other features remaining as a portion of final landscaping.

- E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### 3.2 EXCAVATING

- A. Support adjacent structures, which may be damaged by excavating work.
- B. Excavate subsoil to accommodate paving and site structures, and construction operations.
- C. Compact disturbed load-bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Division 2 Sections “Backfilling” and “Trenching.”
- D. Slope banks with machine to angle of repose or less until shored.
- E. Do not interfere with 45-degree bearing splay of foundations.
- F. Grade top perimeter of excavating to prevent surface water from draining into excavation.
- G. Hand trim excavation. Remove loose matter.
- H. Remove lumped subsoil, boulders, and rock up to 1/3-cu. yd. measured by volume.
- I. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- J. Correct areas over excavated in accordance with Division 2 Section “Backfilling.”
- K. Stockpiling of excavated material will be permitted providing that stockpiled soil does not interfere with existing plant operations or contractors own construction activities.

### 3.3 FIELD QUALITY CONTROL

- A. Provide for visual inspection of bearing surfaces.

### 3.4 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION 02262

**SECTION 02263 - BACKFILLING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 Specification Sections apply to this Section.

**1.2 SUMMARY**

- A. Section Includes:

- 1. Site structure backfilling to subgrade elevations.
- 2. Site filling and backfilling.
- 3. Fill under slabs-on-grade and site structure.
- 4. Fill under paving.
- 5. Fill for over-excavation.
- 6. Consolidation and compaction as scheduled.

- B. Related Sections: The following Sections contain requirements that relate to this Section:

- 1. Division 2 Section “Excavating.”
- 2. Division 2 Section “Trenching.”

**1.3 REFERENCES**

- A. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-inch drop.
- B. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb Rammer and 12-inch drop.
- C. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- D. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb Rammer and 18-inch drop.
- E. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

- F. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- G. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.
- H. New Jersey Department of Transportation, Standard Specification for Road and Bridge Construction, latest edition.

## PART 2 - PRODUCTS

### 2.1 FILL MATERIALS

- A. Fill Type S1, S2 and A4: As specified in Division 2 Section “Aggregate Materials.”
- B. Structural Fill Type A1, A2 & A4: As specified in Division 2 Section “Aggregate Materials.”

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- B. Verify structural ability of unsupported walls to support imposed loads by the fill.

### 3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Type A1 fill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify and proof roll subgrade surface to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

### 3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

- C. Granular Fill: Place and compact materials in equal continuous layers not exceeding compacted depth.
- D. Soil Fill Type: Place and compact material in equal continuous layers not exceeding compacted depth.
- E. Employ a placement method that does not disturb or damage other work.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Backfill against supported foundation walls. Do not backfill against unsupported foundation walls.
- H. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- I. Slope grade away from building minimum, ¼-inch in 1-foot, unless noted otherwise.
- J. Make gradual grade changes. Blend slope into level areas.
- K. Remove surplus backfill materials from site.
- L. Stockpiling of materials on site will be allowed, provided stockpiling does not impede on current plant operations.

### 3.4 TOLERANCES

- A. Top Surface of Backfilling Under Paved Areas: Plus or minus 1/4 inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1-inch from required elevations.

### 3.5 FIELD QUALITY CONTROL

- A. Compaction testing will be performed in accordance with the NJDOT Standard Specifications, latest edition and ASTM D 1557.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to the Owner.
- C. Proof roll compacted fill surfaces under slabs-on-grade, and paving.

### 3.6 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Division 1 Section “Temporary Facilities and Controls.”
- B. Reshape and re-compact fills subjected to vehicular traffic.

### 3.7 SCHEDULE

- A. Exterior Side of Foundation Walls:
  - 1. Fill Type A1, A2, or A3, to subgrade elevation, eight (8”) inches each lift, compacted to 90-percent.
- B. Fill Under Grass Areas:
  - 1. Fill Type S1 or S2, to four (4”) inches below finish grade, compacted to 90-percent.
- C. Fill Under Landscaped Areas:
  - 1. Fill Type S1 or S2, to twelve (12”) inches below finish grade, compacted to 90-percent.
- D. Fill For Berming:
  - 1. Fill Type S1 or S2, to twelve (12”) inches below finish grade, compacted to 95-percent.
- E. Fill for Under Concrete Sidewalks:
  - 1. Compact subsoil to 95-percent of its maximum dry density.
  - 2. Fill Type A2, to five (5”) inches below finish grade, compacted to 95-percent.
- F. Fill Under Parking Area Paving:
  - 1. Compact subsoil to 95-percent of its maximum dry density.
  - 2. Fill Type A4, to twelve (12”) inches below finished grade, compacted to 95-percent.
- G. Fill Under Roadway Pavement
  - 1. Compact subsoil to 95-percent of its maximum dry density.
  - 2. Fill Type A4, to twelve (12”) inches below finish paving elevation, compacted to 95-percent.

- H. Fill Over Drainage and Sewer Pipe Cover:
  - 1. Fill Type A4, compacted to 90-percent.
- I. Fill to Correct Over-excavation:
  - 1. Fill Type A1, flush to required elevation, compacted to 90-percent, in landscaped areas and 95-percent in structural areas.
- J. Fill Under Slabs-On-Grade and Site Structure:
  - 1. Compact subsoil to 95-percent of its maximum dry density per ASTM 1557.
  - 2. Fill classified as SM, ML, SP, SW, GM, GP or GW in accordance with ASTM D2487, with a Plasticity Index less than 10, and at least 20 percent of material larger than the No. 200 standard sieve.

END OF SECTION 02263

SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section as if written out herein full.

1.2 SUMMARY

- A. This Section includes the following:
  1. Preparing and grading subgrades for slabs-on-grade, walks, pavements, and landscaping.
  2. Excavating and backfilling for structures.
  3. Excavating and backfilling for underground storm and/or sanitary drainage and water utilities.
  4. Drainage course for slabs-on-grade.
  5. Dewatering of trenches during excavation activities.
  6. Subbase course for concrete walks and pavements.
  7. Shoring and bracing requirements for safe trench conditions.
  8. Subsurface drainage backfill for walls and trenches.
  9. Soil compaction required for backfill operations or suitable subbase for paving improvements & infrastructure.
  10. Warning tape installation for underground utilities.

- B. Related Sections: The following Sections contain requirements that relate to this Section.

- Section 01732. . . . . Selective Demolition
- Section 02230. . . . . Site Clearing
- Section 02450. . . . . Soil Erosion and Sediment Control
- Section 02791. . . . . Playground Safety Surface
- Section 02861. . . . . Spray Equipment System
- Section 02870. . . . . Site Furnishings
- Section 03300. . . . . Cast-in-Place Concrete

1.3 DEFINITIONS

- A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.

- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement or walk.
- E. Base Course: The layer placed between the subbase and surface pavement in a paving system.
- F. Drainage Fill: Course of washed granular material supporting play surface placed to cut off upward capillary flow of pore water.
- G. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Architect. Unauthorized excavation, as well as remedial work directed by the Architect, shall be at the Contractor's expense.
  - 1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Architect.
  - 2. In locations other than those above, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Architect.
- H. Additional Excavation: When excavation has reached required subgrade elevations, notify Architect, who will make an inspection of conditions. If Architect determines that bearing materials at required subgrade elevations are unsuitable, continue excavation until suitable bearing materials are encountered and replace excavated material as directed by Architect. The contract sum may be adjusted by an appropriate contract modification.
  - 1. Removal of unsuitable material and its replacement as directed will be paid based on conditions of the contract relative to changes in work or by unit prices established in the bid proposal.
- I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- J. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material 1 cu. yd. (0.76 cu. m) or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2 inches (97 blows/50 mm).
- K. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

## 1.4 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for the following:
  - 1. Each type of plastic warning tape.
  - 2. Filter fabric and geo-grids.
  - 3. Any material brought on site without testing shall be rejected and removed from the site at contractor's expense.
- C. Samples: For the following:
  - 1. 30-lb (14-kg) samples, sealed in airtight containers, of each proposed soil material from on-site or borrow sources.
  - 2. 12-by-12-inch (300-by-300-mm) sample of drainage fabric.
  - 3. 12-by-12-inch (300-by-300-mm) sample of geo-grid separation fabric.

## 1.5 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

## 1.6 PROJECT CONDITIONS

- A. Existing Utilities: Locate existing underground utilities in areas of excavation work. If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations.
  - 1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
  - 2. Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Architect and then only after acceptable temporary utility services have been provided.
    - a. Provide minimum of 48-hour notice to Architect, and receive written notice to proceed before interrupting any utility.

3. Inactive or abandoned utilities encountered during excavation, whether or not indicated, shall be removed, or capped and plugged by the general contractor, as part of the work of this contract. No extra compensation will be awarded beyond the contract price for this work.
  4. The plug shall conform to Jersey City Standards. It shall be twice as deep as the diameter of the pipe or 12", whichever is greater and consist of one part Portland Cement and two parts sand; or the Contractor shall use a vitrified clay or concrete disc plug which shall be placed in the hub with the entire area cemented over.
- B. Use of Explosives: Do not bring explosives onto site or use in work without prior written permission from authorities having jurisdiction. Contractor is solely responsible for handling, storage, and use of explosive materials when their use is permitted.
- C. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.
1. Operate warning lights as recommended by authorities having jurisdiction.
  2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
  3. Perform excavation by hand within dripline of large trees to remain. Protect root systems from damage or dry out to the greatest extent possible. Maintain moist condition for root system and cover exposed roots with moistened burlap. All work in areas of root systems shall be performed under supervision of the City.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site for areas designated on drawings.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, and SP; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SM, SC, ML, MH, CL, CH, OL, OH, and PT.
- D. Backfill and Fill Materials: Satisfactory soil materials. Existing soils may be re-used if they are satisfactory soil materials and are screened to remove items larger than 2 inches.
- E. Subbase and Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve. (N.J.D.O.T. Dense Graded Aggregate acceptable.)

- F. Engineered Fill: Subbase or base materials.
- G. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57, with 100 percent passing a 1½" sieve and not more than 5 percent passing a No. 8 sieve.
- H. Class "B" Bedding: Shall consist of sand or sandy soil, all of which shall pass a 3/8 inch sieve and not more than 10 per cent of which shall pass a No. 200 sieve.

## 2.2 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored as follows:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.
- B. Geotextile Fabric in pipe trench and separation between sub-base materials (See details in back of Section): Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
  - 1. Grab Tensile Strength: 110 lbf (490 N); ASTM D 4632.
  - 2. Tear Strength: 40 lbf (178 N); ASTM D 4533.
  - 3. Puncture Resistance: 50 lbf (222 N); ASTM D 4833.
  - 4. Water Flow Rate: 150 gpm per sq. ft. (100 L/s per sq. m); ASTM D 4491.
  - 5. Apparent Opening Size: No. 50 (0.3 mm); ASTM D 4751.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

## 3.2 EXCAVATION

- A. Classified Excavation: Excavation is classified and includes excavation to required subgrade elevations. Excavation will be classified as earth excavation or rock excavation as follows:
1. Earth Excavation: Excavation shall consist of the removal of all pavement, earth, boulders, brick, stone, curb, sidewalk, concrete masonry, piles, timber, small structures, sheeting, railroad materials, timber crib, garbage, rock and other materials encountered, as required for the construction of storm drainage utility lines, structures and appurtenances as shown on the Plans. Excavation shall be performed in accordance with this Specification and the various sections of this specification. All earth excavation shall be performed as part of the lump sum contract.
    - a. Intermittent drilling, or ripping to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.
  2. Rock excavation includes removal and disposal of rock material and obstructions encountered that cannot be removed by the following heavy-duty rock excavation equipment without systematic drilling, blasting, or ripping.
    - a. Rock material includes boulders 1 cu. yd. or more in volume and rock in beds, ledges, unstratified masses, and conglomerate deposits.
  3. Rock excavating equipment for footings, trenches, and pits shall be equivalent to Caterpillar Model No. 215D LC track-mounted hydraulic excavator, equipped with a 42-inch-wide short-tip radius rock bucket, rated at not less than 120-hp flywheel power with bucket-curling force of not less than 25,000 lb and stick-crowd force of not less than 18,700 lb, measured according to SAE Standard J1179.
  4. Rock-excavating equipment for open excavations shall be equivalent to Caterpillar Model No. 973, heavy-duty, track-mounted leader, rated at not less than 210-hp flywheel power and developing minimum of 45,000-lb breakout force, measured according to SAE Standard J732c-69.
- B. Uncontaminated debris, empty tanks that are free of contaminated residue and other deleterious materials such as wood, old timber piles, abandoned utility pipes, etc. from the excavation shall be disposed of off-site in a legal manner by the Contractor as per Section 02230 - Site Clearing and this section.
- C. Special care must be taken in area where organic or soft soils are encountered at the bottom of the excavation. In such areas, the teeth of the bucket of the excavating equipment shall be shielded with a screed plate or bar to minimize the disturbance of the organic or soft materials.
- D. The Contractor shall provide sufficient survey control such that it can be verified at all times that construction is being accomplished at the proper location and grade. The elevations of the in-place utility shall not vary more than one-half (½) of an inch from the elevations shown on the Plans.

- E. All obstructions, old foundations, abandoned utilities, etc. encountered during excavations shall be removed to provide a minimum clearance of at least six (6) inches below the bedding material or as directed by the Architect. Any old piles shall be cut off rather than pulled out. The cutting of the old piles shall be done at a 45 degree chamfer with a saw in a careful manner so as to minimize the disturbance of the underlying soil. Hitting or breaking of the piles with heavy equipment is not permitted.
- F. If any adjustments to pipe/structure location or invert elevations are necessary due to conflicts with existing utilities, etc., such adjustments to the Plans shall be made by the Architect. The Contractor shall carry out such adjustments during construction at no additional cost to the City provided they are within the range of plus or minus (+/-) one (1) foot from the Plan elevations and three (3) feet from the Plan location.

### 3.3 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.
- B. Slope sides of excavations to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- C. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross braces, in good serviceable condition. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Extend shoring and bracing as excavation progresses.
  - 1. Provide permanent steel sheet piling or pressure-creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops a minimum of 2'-6" below final grade and leave permanently in place.

### 3.4 DEWATERING

- A. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
  - 1. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
  - 2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.

### 3.5 STORAGE OF EXCAVATED MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill where directed. Place, grade, and shape stockpiles for proper drainage.
  - 1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.
  - 2. Dispose of excess excavated soil material and materials not acceptable for use as backfill or fill.
- B. Where material stockpiled is to remain for more than 7 days, comply with soil stabilization standards within specification Section 02450.

### 3.6 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.
  - 1. Excavations for Footings and Curbs: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  - 2. Excavation for Drainage or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb bottom of excavations intended for bearing surface.

### 3.7 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.
- B. Excavations within existing pavements to remain shall commence with a clean, straight saw cut joint through material stratum. No exceptions will be permitted. Prepare edge of existing paving as per drawing details.

### 3.8 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated slopes, lines, depths, and minimum 6" below invert elevations.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit as detailed on drawings attached to the back of this section.

### 3.9 APPROVAL OF SUBGRADE

- A. Notify Architect when excavations have reached required subgrade.
- B. When Architect determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
  1. Unforeseen additional excavation and replacement material will be paid based on quantity and unit price established in the bid proposal.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Architect.

### 3.10 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the Architect.
  1. Fill unauthorized excavations under other construction as directed by the Architect.
- B. Where indicated widths of utility trenches are exceeded, provide stronger pipe, or special installation procedures, as required by the Architect.

### 3.11 EXCAVATION IN ROCK AREAS

- A. Should rock be encountered above contract levels, all rock surfaces shall be uncovered and the Contractor shall at his expense, hire a licensed surveyor (approved by the Architect) who shall prepare a survey at scale of  $1/8" = 1$  foot indicating the outline and contour levels of rock surface on a 10 foot square grid. The survey shall be submitted to the Architect for computing the rock quantity to be excavated. The Contractor shall be paid based on quantity and unit price established in the bid proposal.
- B. Where rock is encountered, it shall be excavated by line drilling, or as may be otherwise found necessary, and all irregularities of surface on lines under pavement areas shall be carefully examined and all loose or shaken rock removed down to a solid horizontal bearing by the Contractor at his expense. Permits and licenses must be shown to the Architect on request. The methods of drilling and blasting shall be as prescribed in the Supplementary Specifications of the N.J. Standard Specifications for Road and Bridge Construction Amended Addition.

- C. Vertical pay line for computing yardage of rock excavation is hereby established at 6" outside of and parallel to the vertical sides of the footings of the walls or piers and pipes . At piers or walls having no footings, the vertical pay line shall be 6" outside of, and parallel, to the vertical sides of the wall or piers at their lowest level.
- D. No additional compensations will be allowed for excavation or foundation work carried below the levels shown on plans unless same has been authorized in writing by the architect.

### 3.12 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
  - 1. Acceptance of construction below finish grade.
  - 2. Surveying locations of underground utilities for record documents.
  - 3. Testing, inspecting, and approval of underground utilities.
  - 4. Concrete formwork removal.
  - 5. Removal of trash and debris from excavation.
  - 6. Removal of temporary shoring and bracing, and sheeting.

### 3.13 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.
- C. Provide 4-inch-thick concrete base slab support for piping or conduit where top is less than 2'-6" below surface of roadways. After installation and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- D. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
  - 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- E. Coordinate backfilling with utilities testing.

- F. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.
- G. Place and compact final backfill of satisfactory soil material to final subgrade.
- H. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### 3.14 FILL

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
  - 1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
- B. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density.
- C. Place fill material in layers to required elevations for each location listed below.
  - 1. Under grass, use satisfactory excavated or borrow soil material.
  - 2. Under walks and pavements, use subbase or base material.

### 3.15 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.
    - a. Stockpile or spread and dry removed wet satisfactory soil material.

### 3.16 COMPACTION OF BACKFILLS & FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.

- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557:
1. Under structures, building slabs, steps, and pavements, compact the top 12 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
  2. Under walkways, compact the top 6 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
  3. Under lawn or unpaved areas, compact the top 6 inches below subgrade and each layer of backfill or fill material at 90 percent maximum dry density.

### 3.17 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
1. Provide a smooth transition between existing adjacent grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water into catch basins and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.
  2. Concrete Slab / Walks: Plus or minus 0.08 foot.
  3. Pavements: Plus or minus 1/2".

### 3.18 SUBBASE AND BASE COURSES

- A. Under pavements and walks, place subbase course material on prepared subgrades. Place base course material over subbases to pavements.
1. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections and thickness to not less than 95 percent of ASTM D 4254 relative density.
  2. Shape subbase and base to required crown elevations and cross-slope grades.
  3. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.

4. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- B. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders at least 12 inches wide of acceptable soil materials and compact simultaneously with each subbase and base layer.

### 3.19 DRAINAGE FILL

- A. Under play surface, place drainage fill course on prepared subgrade.
1. Compact drainage fill to required cross sections and thickness.
  2. When compacted thickness of drainage fill is 6 inches or less, place materials in a single layer.
  3. When compacted thickness of drainage fill exceeds 6 inches thick place materials in equal layers, with no layer more than 6 inches thick nor less than 3 inches thick when compacted.

### 3.20 FIELD QUALITY CONTROL

- A. Proof-roll subgrade with roller or approved equal, under the direct observation of the Engineer/ Owner to verify acceptability of subgrade surface and each lift afterward to achieve proper elevation. If subgrade proof-roll test is not acceptable to the Engineer / Owner, the Contractor will be directed to hire a independent testing agency to perform inspection and testing of subgrade and each backfill layer.
- B. Testing Agency: Contractor shall employ and pay for a qualified independent geotechnical engineering testing agency to perform field quality-control testing. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements. All test results are to be submitted signed and sealed by a N.J. licensed engineer.
- C. Foundation Subgrade: At foundation subgrades (building, dugouts, scoreboard, flagpole, light poles etc.), at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft.(186 sq. m) or less of paved area or building slab, but in no case fewer than three tests.

2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet (30 m) or less of wall length, but no fewer than two tests.
  3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each (150 feet (46 m) or less of trench length, but no fewer than two tests.
  4. Ballfield and Ancillary Grass Areas: At each compacted initial and final backfill layer, at least one test for each 5,000 s.f. or less of field area.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

### 3.21 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace material to depth directed by the Architect; reshape and recompact at optimum moisture content to the required density.
- C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

### 3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Contractor responsible for all testing characterization required by disposal facility. For the purposes on this bid, the surplus soil materials are considered non-RCRA hazardous, non-DOT regulated material.
- B. Disposal: Remove surplus soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION 02300

**SECTION 02450 - SOIL EROSION AND SEDIMENT CONTROL**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. General Conditions and all supplementary articles as contained in Division 1 are hereby included in this section to the same extent as though written out herein full. All work of this section shall be performed in accordance with the requirements of the Contract Documents and in accordance with Hudson Essex Passaic Soil Erosion and Sediment Control Conservation District.

**1.2 SCOPE OF WORK**

- A. The work of this section shall include all necessary labor, materials, tools and appliances required to complete, in a first quality, workmanlike manner, the work as specified in this section and as shown on the drawings.
- B. The contractor shall perform all work, furnish all materials and install all measures required to reasonably control soil erosion resulting from construction operations and prevent excessive flow of sediment from the construction site. Such work may include the installation of water diversion structures, and seeding, mulching or sodding critical areas to provide temporary protection. The contractor shall review the details attached at the end of this section for controlling erosion during construction. When no work will be performed on critical areas for more than 30 days, they shall be protected by temporary seeding, mulching, or sodding.
- C. Permanent soil protection, streets and drainage facilities should be completed as early as practicable, particularly intercepting channels and similar controls that will divert runoff from unprotected soil. The area of exposed soil and the length of exposure should be minimized by proper scheduling. Temporary protection such as fiber mats, plastic, straw and fast-growing grasses may be required. Partially completed drainage structures should be inspected carefully during construction to prevent erosion.
- D. The permanent restoration of vegetative cover such as seeding or sodding on all areas shall be accomplished within 10 days after final grading operations have been completed. Time extensions beyond the 10 days requirement may be requested in writing and are subject to written approval by the Architect.
- E. Seeding, mulching and sodding of critical area shall be in accordance with the attached vegetative standards.
- F. The contractor shall comply with applicable State and local regulations regulating to the prevention and abatement of pollution.

- G. The contractor shall protect existing trees from environmental and mechanical injury in areas affected by the construction work under this contract.
- H. All soil erosion control measures and tree protection shall comply with the standards for Soil Erosion and Sediment Control in New Jersey, latest edition.

## PART 2 - PRODUCTS (Not applicable)

## PART 3 - EXECUTION

### 3.1 EROSION CONTROL MEASURES FOR LAND GRADING:

- A. Erosion control measures should be designed and installed in accordance with the applicable standards contained herein.
- B. Installations Requirements

Timber, logs, brush, rubbish, rocks, stumps and vegetable matter which will interfere with the grading operation or affect the planned stability or fill areas shall be removed and disposed of according to the plan.

Topsoil is to be stripped and stockpiled for excavated areas only in amounts necessary to complete finish grading of all exposed areas currently on-site requiring topsoil.

Fill material is to be free of brush, rubbish, timber, logs, vegetable matter and stumps in amounts that will be detrimental; to construction stable fills. See Section 02300 - EARTHWORK for borrow material fill.

All fills shall be compacted sufficiently for their intended purposes and as required to reduce slipping, erosion or excess saturation.

All disturbed areas shall be left with a neat and finished appearance and shall be protected from erosion.

Traffic during wet weather should be minimized.

Provisions should be made to prevent tracking or flowing of mud onto public right-of way.

The following methods may be among those considered:

1. Exit ramp surfaced with materials such as large size gravel or stone, wood chips, timber, or other material. See detail at end of section.
2. Inspection and cleaning of vehicles before entering public right-of-way.

### 3.2 DUST CONTROL

#### A. Definition

The control of dust on construction sites and roads.

#### B. Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off site damage, health hazards and improve traffic safety.

#### C. Where Applicable

This practice is applicable to areas subject to dust blowing and movement where on and off site damage is likely without treatment.

#### D. Planning Criteria

The following methods should be considered for controlling dust:

1. Mulches - See standards for stabilization with mulches only.
2. Vegetative Cover - See standards for: temporary vegetative cover, permanent vegetative cover and permanent stabilization.
3. Spray-On Adhesives - On mineral soils (not effective on muck soils). Keep traffic off these areas.

Anionic asphalt emulsion	7:1	Course of Spray	1,200
Latex emulsion	12-1/2:1	Fine Spray	235
Resin in water	4:1	Fine Spray	300

4. Sprinkling - Site is sprinkled until the surface is wet.
5. Barriers - Solid board fences, snow fences, burlap fences, crate walls, bales of hay and similar material can be used to control air currents and soil blowing.

END OF SECTION 02450

**SECTION 02510 - WATER DISTRIBUTION**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including Division 1 Specifications Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes water-distribution piping, testing and specialties outside the building for the following:
  - 1. Water Services.
  - 2. Valves and Accessories.
- B. Dimensions shown on Contract Drawings are approximate only. Contractor shall verify all piping geometry in the field and shall be responsible for insuring proper alignment and fit of all piping consistent with the intent of the Contract Drawings.
- C. Related Sections include the following:
  - 1. Division 2 Section “Earthwork”.

**1.3 REFERENCES**

- A. American National Standards Institute, Inc. (ANSI) Standards:
  - 1. A21.4: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
  - 2. A21.10: Ductile-Iron and Gray-Iron Fittings, 3-inches through 48-inches, for Water and Other Liquids.
  - 3. A21.11: Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe Fittings.
  - 4. A21.15: Flanged Ductile-Iron Pipe with Threaded Flanges.
  - 5. A21.16: Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray Iron Fittings for Water Supply Service.
  - 6. A21.50: Thickness Design of Ductile-Iron Pipe.
  - 7. A21.51: Ductile-Iron Pipe, Centrifugally Cast in Metal Molds, or Sand-Lined Molds, for Water or Other Liquids.
  - 8. A21.53: Ductile-Iron Compact Fittings, 3-inches through 16-inches for Water and Other Liquids.

- 9. B16.1: Cast-Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
- 10. B16.21: Nonmetallic Flat Gaskets for Pipe Flanges.
- 11. B16.42: Ductile Iron Pipe Flanges and Flanged Fittings.

**B. American Water Works Association (AWWA) Standards:**

- 1. C105: Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.
- 2. C502: Dry-Barrel Fire Hydrants.
- 3. C504: Rubber-Seated Butterfly Valves.
- 4. C509: Resilient-Seated Gate Valves for Water Supply Service.
- 5. C550: Protective Interior Coatings for Valves and Hydrants.
- 6. C651: Disinfecting Water Mains.
- 7. C606: Grooved and Shoulder Joints.
- 8. C800: Underground Service Line Valves and Fittings.

**C. ASTM**

- 1. D1784: Type I, Grade I Polyvinyl Chloride (PVC) compound with a Cell Classification of 12454

**1.4 SUBMITTALS**

**A. Product Data: For the following:**

- 1. Piping specialties.
- 2. Valves and accessories.
- 3. PVC Schedule 40 pipe

**B. Operation and Maintenance Data: For the following:**

- 1. Valves.
  - a. Detailed shop drawing that lists applicable ASTM numbers of all components.

**1.5 QUALITY ASSURANCE**

**A. Piping materials shall bear label, stamp, or other markings of specified testing agency. The pipe shall be manufactured in the USA, using domestic materials, by an ISO 9001 certified manufacturer.**

**B. NSF Compliance:**

1. Comply with NSF 61 for materials for water-service piping and specialties for domestic water and the pipe shall carry the National Sanitation Foundation (NSF) seal of approval for potable water applications.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall be solely responsible for the safe storage of all material furnished to or by him until it has been incorporated in the completed project and accepted by the Engineer.
- B. Preparation for Transport: Prepare valves according to the following:
  1. Ensure that valves are dry and internally protected against rust and corrosion.
  2. Protect valves against damage to threaded ends and flange faces.
  3. Set valves in best position for handling. Set valves closed to prevent rattling.
- C. During Storage: Use precautions for valves according to the following:
  1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
  2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- D. Handling: Use sling to handle valves if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.
- E. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- F. Care must be taken in handling the ductile iron pipes so that the coating on the pipes is not injured. No smaller pieces or other materials of any kind shall be placed in the large pieces for transportation or any time after they receive the coating of pitch. Any material found to have inherent defects upon delivery or to have been injured in transportation will be rejected.
- G. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
- H. Protect flanges, fittings, and specialties from moisture and dirt.

**1.7 PROJECT CONDITIONS**

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by the Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Owner or Owner’s representative not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Owner or Owner’s representative’s written permission.

**1.8 INSPECTIONS**

- A. The quality of the material used, the methods of manufacturing and testing, the cleaning, inspection, testing, and cutting shall all be in conformance with the Contract Documents. All pipe and other castings contracted for must be delivered in all respects sound and conformable to the Specifications and the terms of the Contract.
- B. The Contractor shall carefully examine all material for defects. Material that is known, or thought, to be defective shall not be installed.
- C. The Engineer reserves the right to inspect all material and to reject all defective material shipped to the job site or stored on the site. Failure of the Engineer to detect damaged material shall not relieve the Contractor from his total responsibility for the completed work if it leaks or breaks after installation. Lay all defective material aside for final inspection by the Engineer to determine if corrective repairs may be made, or if the material is to be rejected. The Engineer shall determine the extent of the repairs.
- D. Contractor to classify defective pipe prior to Engineer’s inspection as follows:
  - 1. Damage to interior and/or exterior paint seal coats.
  - 2. Damage to interior cement mortar lining.
  - 3. Insufficient cement mortar lining thickness.
  - 4. Poor quality interior paint seal coat.
  - 5. Pipe out of round.
  - 6. Damaged pipe barrel area to a point where pipe class thickness is reduced.
  - 7. Denting or gouges in plain end of pipe.
- E. The Contractor shall be responsible for all material, equipment, fixtures and devices furnished and such materials, equipment, fixtures and standards of all Federal, State and local laws, ordinances, codes, rules and regulations governing safety and health.

**PART 2 - PRODUCTS**

**2.1 COPPER TUBE**

- A. Soft Copper Tube: ASTM B 88, Type K, water tube, annealed temper.

**2.2 PVC Materials:**

- A. The material used in the manufacture of the pipe shall be domestically produced rigid polyvinyl chloride (PVC) compound, Type I, Grade I, with a Cell Classification of 12454 as defined in ASTM D1784, trade name designation H707 PVC. This compound shall be gray in color as specified, and shall be approved by NSF International for use with potable water (NSF Std 61).

**2.3 END PLUGS**

- A. Where shown on the Contract Drawings, the Contractor shall furnish and install end plugs, set-screw type, as manufactured by U.S. Pipe and Foundry Co. or approved equal.

**2.4 END CAPS**

- A. Where shown on the Contract Drawings, the Contractor shall furnish and install mechanical joint end caps, as manufactured by U.S. Pipe and Foundry Co., or approved equal.

**2.5 INSERTION SLEEVES**

- A. Insertion sleeves to be used for closure of cut sections of pipe shall be ductile iron, or approved equal.

**2.6 TRANSITION CONNECTIONS**

- A. Transition connections to be used for closure of cut sections of pipe shall be cast or ductile iron couplings.
  - 1. Manufacturer:
    - a. Dresser Piping Specialties Style 38, or approved equal.

## 2.7 BURIED GATE VALVES

## A. AWWA, Cast-Iron Gate Valves, size through 12-inch:

1. Manufacturers:
  - a. M&H Metropolitan by Dresser Company, or approved equal.
2. Nonrising-Stem, Resilient Wedge Gate Valves: In accordance with AWWA C509 Resilient-Seated Gate Valves for Water Supply Service, with resilient seats, bronze stem, and stem nut. Valves shall be a full opening flow way of equal diameter of nominal size of connecting pipe. Valve body, bonnet, stuffing box, and disc castings shall be manufactured of ASTM A-126 Class B Gray Iron.
  - a. Minimum Working Pressure: 200 psig.
  - b. End Connections: Mechanical joint and furnished with all necessary joint materials.
  - c. Interior Coating: Complying with AWWA C550 Protective Interior Coatings for Valves and Hydrants.
  - d. Two-inch (2") square, right opening (clockwise) wrench nuts.
  - e. Coating: All internal ferrous metal surfaces shall be fully coated, holiday free, to a minimum thickness of four (4) mils with a two part, thermosetting epoxy coating. Said coating shall be non-toxic, impart no taste to water, and protect all seating and adjacent surfaces from corrosion and prevent buildup of scale or tuberculation. The coating shall be a two (2) part thermosetting epoxy protective coating and shall function as a physical, chemical and electrical barrier between the base metal to which it is applied and the surroundings. The coat shall be non-toxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the Food and Drug Administration Document Title 21 of the Federal Regulations on Food Additives, Section 121.2514 entitled "Resins and Polymeric Coatings." The coating shall have a satin finish and shall be suitable for field overcoating and touchup with same coating material without sanding or special surface preparation or application of heat in excess of room temperature. The coating shall have a successful record of performance in valves, pipe or other allied equipment for a minimum of two (2) years.
  - f. Sealing: The sealing mechanism shall provide ZERO leakage at working water pressures up to 200 psi with flow in either direction and shall consist of a replaceable, specially contoured rubber disc seat ring that is internally reinforced by a concentric steel ring and molded separately from the disc. The seat ring shall be secured to the disc with self-locking less steel screws and shall seal against an accurately formed surface in the valve body. The shape of the seat ring shall be such that it cannot be installed improperly. Valves shall be provided with two (2) O-ring stem seals with one (1) O-ring below the stem thrust collar and bearing surfaces and one (1) O-ring above. The area between the O-rings shall be filled with a lubricant to provide lubrication of the thrust collar bearing surfaces and O-rings each time the

- valve is operated. An anti-friction washer shall be located above the thrust collar to further minimize operating torque.
- g. Disk: The disc shall have an integrally cast ASTM B-62 Bronze stem nut to prevent twisting or angling of the stem. Designs with loose stem nuts are not acceptable. The disc casting shall be open on one side so as not to form cavities or receptacles for accumulation of solids and possible stem binding.
  - h. Manufacturer Testing:
    - 1) Seat Test -- there shall be no leakage past the seat from either side of the disc or at the bonnet flange or stem packing at 200 psi.
    - 2) Shell (bulkhead) Test -- there shall be no leakage through the metal, bonnet flange or stem packing at 400 psi.
    - 3) A falling sand abrasion test using ASTM D968 shall produce an abrasion coefficient of 25-30 liters/mil. As an alternative, a Taber Abrader Test should find 3.5 - 3.7 milligrams coating loss per 100 cycles when using a CSF 10 Wheel (100 gram weight).
  - i. The structural design of the valve shall be such that if excessive torque is applied to the stem in the closing direction with the disc seated, failure of the pressure retaining parts shall not occur. Stem failure under such conditions shall occur externally at such a point as to enable the stem to be safely turned in the opening direction by use of a pipe wrench or other such readily available tool after exposure of the valve through excavation.

## 2.8 GATE VALVE ACCESSORIES AND SPECIALTIES

- A. Wet taps shall be made at locations designated in the Contract Drawings. All wet taps shall be done in accordance with Standard Water Works Techniques and shall be done in such a manner as to not disrupt the service of an existing water main. The wet taps shall include the installation of the necessary auxiliary gate valves.
  - 1. The tapping sleeve shall be iron, mechanical joint, of two-piece bolted sleeve design with flanged outlet for new branch connection and have a minimum working pressure of 200 psi.
  - 2. When required, the tapping sleeve shall be the caulked type for either non-standard size cast iron pipe or asbestos cement pipe. These sleeves shall be installed with poured lead joints and good for 150 psi working pressure.
  - 3. The tapping valve shall be a mechanical joint, O-ring packed, double disc, parallel seat gate valve with a minimum working pressure of 200 psi. The direction of opening shall be counter-clockwise.
  - 4. Each valve shall be furnished with a valve box and cover.
  - 5. The excavated work area needed for making wet taps will be as recommended by the manufacturer. All sleeves and valves shall be set perfectly level along the centerline of the pipe tap.

6. Tapping Sleeve Manufacturers:
  - a. Mueller Company Model Number H-615 or H-616, depending on the outside diameter of the pipe being tapped, or approved equal.
7. Caulked Type Tapping Sleeve Manufacturers:
  - a. Mueller Company Model Number H-610 or H-611, or approved equal.
8. Tapping Valve Manufacturers:
  - a. Mueller Company Model Number T-2360, or approved equal.

B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes.

1. Valve box shall be cast iron, two-piece screw type with a minimum shaft diameter of 8¼ inches.
2. The cover shall indicate "Water".
3. The valve box shall not transmit shock or stress to the valves and shall be centered plumb over the wrench nut of the valve. The box cover shall be set flush with the surface of the finished grade.
4. In easement or unpaved areas, and after having been set to the final proposed grade, valve boxes shall have a 2' x 2' x 4" thick concrete pad poured around the top of the valve box.
5. Manufacturers:
  - a. Bingham and Taylor, or approved equal.

## 2.9 CORPORATION STOPS

- A. Comply with AWWA C800.
- B. Corporation stops shall be compression type and the same size as the service pipe.
- C. Manufacturers:
  1. Model B-25008 by Mueller Co., or approved equal.

## 2.10 CURB STOPS

- A. Comply with AWWA C800.
- B. Curb stops shall be compression type and the same size as the service pipe.
- C. Manufacturers:
  1. Model Mark II Oriseal H-15209 by Mueller Co., or approved equal.

D. Curb Boxes for Curb Stops shall have arch pattern base:

1. Manufacturers:
  - a. Series 6500 by Tyler Co., or approved equal.

**2.11 GROUND HYDRANT**

A. Hydrants shall be non-freeze, ground type hydrants. Hydrants shall have cast iron valve housing, galvanized steel casing, and working parts of an acceptable non-corrodible material.

B. Manufacturers:

1. Zurn Industries, model Z-1370, or approved equal.

**2.12 DRINKING FOUNTAIN**

A. Provide and install specified drinking fountain; with frost free fountain assembly

B. Manufacturers:

1. Type: Model 5400-FP, surface mount manufactured by Stern Williams Co., Inc., or approved equal.

**PART 3 - EXECUTION**

**3.1 PIPING APPLICATIONS**

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.

B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.

C. Do not use flanges, unions, or keyed couplings for underground piping.

D. Underground Water-Service Piping: Use the following piping materials for each size range:

1. NPS 3/4 to NPS 2: Soft copper tube, Type K; wrought-copper fittings; and compression joints.

2. NPS 3 and greater: Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed or mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints.

### 3.2 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
  1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, resilient -seated gate valves with valve box.

### 3.3 PIPING INSTALLATION

- A. All products shall be utilized and installed in accordance with the Manufacturer's written instructions.
- B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.
- C. Make connections larger than NPS 2 with tapping machine according to the following:
  1. Install tapping sleeve and tapping valve according to MSS SP-60.
  2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
  3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
  4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.
- D. Make connections NPS 2 and smaller with drilling machine according to the following:
  1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company standards.
  2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
  3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
  4. Install corporation valves into service-saddle assemblies.
  5. Install manifold for multiple taps in water main.
  6. Install curb valve in water-service piping with head pointing up and with service box.

- E. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
1. General Requirements:
    - a. All pipe shall be laid and maintained to the required lines and depths. Fittings, valves and hydrants shall be at the required locations with joints centered, spigots home and all valve and hydrant stems plumb and otherwise in strict accordance with the Specifications.
    - b. All buried steel lugs, rods, brackets and flanged joint bolts and nuts shall be given one (1) coat of coal tar coating prior to backfilling and polyethylene encased if the specifications require polyethylene encasement of pipe.
    - c. No deviation shall be made from the required alignment, depth or grade except with the written consent of the Engineer.
    - d. All pipe shall be laid to the depth specified. The depth shall be measured from the final surface grade to the top of the pipe barrel. The minimum pipe cover shall be as shown on the Drawings or as specified in the Specifications.
    - e. Do not lay pipe in a wet trench, on subgrade containing frost, and when trench conditions are unsuitable for such work. If all efforts fail to obtain a stable dry trench bottom and the Engineer determines that the trench bottom is unsuitable for trench foundation, he will order in writing the kind of stabilization to be constructed.
    - f. Thoroughly clean the pipes and fittings before they are installed and this material shall be kept clean until the acceptance of the completed work. Lay pipe with the bell ends facing in the direction of laying, unless otherwise shown on the Drawings, or directed by the Engineer. Exercise care to insure that each length abuts against the next in such manner that no shoulder or unevenness of any kind occurs in the pipe line.
    - g. No wedging or blocking is permitted in laying pipe unless by written order of Engineer.
    - h. Before joints are made, bed each section of pipe the full length of the barrel with recesses excavated so pipe invert forms continuous grade with invert of pipe previously laid. Do not bring succeeding pipe into position until the preceding length is embedded and securely in place.
    - i. Dig bell holes sufficiently large to permit proper joint making and to insure pipe is firmly bedded full length of its barrel.
    - j. Walking or working on completed pipeline, except as necessary in tamping and backfilling, is not permitted until trench is backfilled one foot (1') deep over top of pipes.
    - k. Take up and relay pipe that is out of alignment or grade, or pipe having disturbed joints after laying.
    - l. Take up and replace with new, such in-place pipe sections found to be defective. Replacement work shall be at the Contractor's expense.
    - m. Take necessary precautions to prevent the floating of the pipeline by the accumulation of water in the trench, or the collapse of the pipeline from any

- cause. Should floating or collapse occur, restoration will be at the Contractor's expense.
- n. Bedding materials and concrete work for the pipe bedding and thrust restraint shall be as specified.
  - o. Take every precaution to prevent foreign material from entering the pipe while it is being placed. During laying operations, do not place debris, tools, clothing, or other materials in the pipe.
  - p. Close all openings in the pipeline with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods.
  - q. Place enough backfill over the center sections of the pipe to prevent floating.
  - r. Carry out the cutting of pipe only with equipment specifically designed for that purpose such as an abrasive wheel, rotary wheel cutter, a guillotine pipe saw or a milling wheel saw. The use of chisels or hand saws will not be permitted.
  - s. In distributing material at the side of the work, each piece should be unloaded opposite or near the place where it is to be laid in the trench.
  - t. If the pipe is to be strung out, it shall be done so in a straight line or in a line conforming to the curvature of the street. Each length of pipe shall be adequately blocked to prevent movement. Stockpiled pipe shall be adequately blocked to prevent movement. No pipe, material or other object shall be placed on private property, obstruct walkways or driveways, or in any manner interfere with the normal flow of traffic.
  - u. In the case of steel, prestressed concrete, gray and ductile iron pipe, special care shall be exercised, during handling temporary storage or construction to avoid damage to the bells, spigots or flanged ends. If damaged pipe cannot be repaired to the Engineer's satisfaction, it shall be replaced at the Contractor's expense.
  - v. The Contractor shall remove all existing pipe, fittings, valves, pipe supports and blocking and all other items necessary to provide space for making connections to existing pipe and installing all piping which is to be done under this Contract.
  - w. The Contractor shall be responsible for maintaining the minimum required distance between the water line and other utility lines in strict accordance with all Federal, State and Local requirements and all right-of-way limitations.
  - x. Maximum allowable deflection at the joints for push-on joint pipe, shall be in accordance with the manufacturer's recommendations:
  - y. In case the curve is too sharp for the allowable deflection, short lengths of pipe may be used upon approval of the Engineer and at no additional cost to the Owner.
  - z. Particular care shall be exercised so that no high points are established where air can accumulate. In the event that unforeseen field conditions necessitate a change in the pipe profile and, in the opinion of the Engineer, the resulting change requires the installation of an air release valve and manhole, install the same as extra work to the Contract. If the Contractor requests a change in the pipe profile solely for ease of construction, and the

requested change requires the installation of an air release valve and manhole as determined by the Engineer, then the cost of furnishing and installing the air release valve and manhole will be at the expense of the Contractor.

2. Construction methods to avoid contamination:
  - a. Heavy particulates generally contain bacteria and prevent even very high chlorine concentrations from contacting and killing such organisms. It is essential that the procedures of this section be observed to assure that a water main and its appurtenances are thoroughly clean for the final disinfection by chlorination.
  - b. Precaution shall be taken to protect the interiors of pipes, fittings, and valves against contamination. Pipe delivered for construction shall be strung so as to minimize entrance of foreign material. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent proof plugs may be used where it is determined that watertight plugs are not practical and where thorough cleaning will be performed.
  - c. Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipe laying, the less likelihood of contamination.
  - d. Joints of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry.
  - e. Yarning or packing material shall consist of molded or tubular rubber rings, or rope of treated paper or other approved materials. Materials such as jute, asbestos or hemp shall not be used. Packing material shall be handled in a manner that avoids contamination.
  - f. No contaminated material or any material capable of supporting prolific growth of microorganisms shall be used for sealing joints. Sealing material or gaskets shall be handled in a manner that avoids contamination. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. It shall be delivered to the job in closed containers and shall be kept clean.
  - g. If dirt enters the pipe, and in the opinion of the Engineer the dirt will not be removed by the flushing operation, the interior of the pipe shall be cleaned by mechanical means and then shall be swabbed with a 1% hypochlorite disinfecting solution. Cleaning with the use of a pig, swab or "go devil" should be undertaken only when the Engineer has specified such and has determined that such operation will not force mud or debris into pipe joint spaces.
  - h. If it is not possible to keep the pipe and fittings dry during installation, every effort shall be made to assure that any of the water that may enter the pipe joint spaces contains an available chlorine concentration of approximately 25 mg/L. This may be accomplished by adding calcium

hypochlorite granules or tablets to each length of pipe before it is lowered into a wet trench, or by treating the trench water with hypochlorite tablets.

- i. If the main is flooded during construction, it shall be cleared of the flood water by draining and flushing with potable water until the main is clean. The section exposed to the flood water shall then be filled with a chlorinated potable water that, at the end of a 24 hour holding period, will have a free chlorine residual of not less than 25 mg/L. The chlorinated water may then be drained or flushed from the main.
- F. Install copper tube and fittings according to CDA's "Copper Tube Handbook."
  - G. Bury piping with depth of cover over top at least 48 inches.
  - H. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall in locations and pipe sizes indicated.
    1. Terminate water-service piping at building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.
  - I. Install underground piping with restrained joints at horizontal and vertical changes in direction in accordance with the Contract Drawings.
  - J. All valve, bends or other fittings shall be provided with at least six (6) inches of broken stone base.

### 3.4 RESTRAINTS AND THRUST BLOCKS

- A. All fittings, bends, hydrants, valves, reducers or other points of pipe direction change shall be provided with concrete thrust blocks or restrained as described below and in accordance with the Contract Drawings.
- B. Fittings may be restrained with the use of thrust blocks or with the use of Ebba Iron Series 1100 Mega-Lug retainer glands (or approved equal) in combination with restrained joint push-on pipe for the minimum length of pipe before and after the fitting as called for in the Contract Drawings.
- C. Concrete used for thrust blocks shall be NJDOT Class B and shall be placed so as to bear upon undisturbed ground. Size and placement of thrust blocks shall conform to the latest AWWA Standards and the Contract Drawings.

### 3.5 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

- B. AWWA Butterfly Valves: Comply with AWWA C504. Install each underground valve with stem pointing up and with valve box.
- C. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with valve box.

### 3.6 WET TAPS

- A. Wet taps shall be made at locations designated in the Detailed Plans. All wet taps shall be done in accordance with Standard Water Works Techniques and shall be done in such a manner as to not disrupt the service of an existing water main. The wet taps shall include the installation of the necessary auxiliary gate valves. The tapping sleeve, tapping valve, and all necessary appurtenances for a complete wet tap shall be as specified hereinbefore.
- B. The sleeve and valve shall be void of leaks before any water pipe is attached.
- C. Each valve shall be furnished with a valve box and cover.
- D. Service may not be interrupted in the water distribution system.
- E. The excavated work area needed for making wet taps will be as recommended by the manufacturer. All sleeves and valves shall be set perfectly level along the centerline of the pipe tap.

### 3.7 WATER SERVICE INSTALLATION

- A. Tapping of the main shall be carried out by men experienced in this work using equipment designed for use with the corporation stops specified.
- B. Corporation stops and curb stops shall be installed so as to insure a watertight connection.
- C. Miscellaneous service fittings, reducers and transition piping shall be provided as required. All such fittings, reducer and transition piping shall be appropriate to the intended service and shall conform to AWWA Specification C800-55.
- D. All water service connections shall not be less than four (4) feet deep.
- E. All data relative to the location of the service laterals shall be recorded by the Contractor and submitted to the Engineer.
- F. The Contractor shall use a “mole” boring device to extend all laterals under any paved or traveled way of any roadway in place of making an open-cut pipe trench. The mole will consist of a “bullet” with an internal hammer that hammers the bullet forward through the use of compressed air. The lateral will be pulled immediately behind the bullet. A Pneuma-Gopher as manufactured by Schramm, or similar device, shall be

utilized to mole under roadways. Under no circumstances is the “Air Method” (injecting compressed air into lateral, then advancing same) to be utilized in boring under roadways.

**3.8 PRESSURE AND LEAKAGE TESTING**

- A. Existing D.I.P. water systems shall be tested at a hydrostatic pressure of 50 pounds per square inch. New water systems shall be tested at a hydrostatic pressure of 150 pounds per square inch. The hydrostatic pressure test shall be applied to each valve section for a period of at least two (2) hours. Prior to the test, all entrapped air shall be blown from the line. No leakage shall be allowed in flanged or mechanical joint sections. A maximum leakage for the two (2) hour period shall not exceed the following amounts per 1,000 feet of pipe.
- B. For a two (2) hour test conducted through a 1,000 foot length of pipe at 150 psi, the allowable leakage in gallons shall not exceed:  $0.184 \times (\text{Diameter of Pipe})$ .

Pipe Size	Gallons
4"	0.8
6"	1.1
8"	1.5
10"	1.9
12"	2.2
16"	3.0

- C. If section fails pressure and leakage test, locate, uncover, and repair or replace defective pipe, fitting, or joint, at no additional expense and without time extension. Conduct additional tests and repairs until section passes test.

**3.9 DISINFECTING AND FLUSHING**

- A. Clean and disinfect water-distribution piping as follows:
  - 1. Upon completion of the work, disinfect potable water lines using procedures and materials conforming to the latest version of AWWA C651 American Water Works Association Standard for Disinfecting Water Mains.
  - 2. Following chlorination, and after an entire length of line is ready for service, all treated water shall be flushed thoroughly from the newly laid pipeline.
  - 3. The Contractor shall have chemical and bacteriological analyses made by an approved testing laboratory of both the source and a sample at the far end of the system; tests shall prove that the water at the end of the line is equal to that at the source.

4. Should the initial treatment prove ineffective, the disinfecting procedure shall be repeated until satisfactory results are obtained.

3.10 PROJECT CLOSEOUT

- A. Provide in accordance with Division 1 Section “Project Closeout.”

END OF SECTION 02510

**SECTION 02751 - CEMENT CONCRETE PAVEMENT**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes exterior cement concrete pavement for the following:
  - 1. Walkways/Slab.
- B. Related Sections include the following:
  - 1. Division 2 Section "Earthwork" for subgrade preparation, grading, and subbase course.
  - 2. Division 3 Section "Cast-in-Place Concrete " for general building applications of concrete.

**1.3 DEFINITIONS**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

**1.4 SUBMITTALS**

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
  - 1. Cementitious materials and aggregates.
  - 2. Steel reinforcement and reinforcement accessories.
  - 3. Fiber reinforcement.
  - 4. Admixtures.
  - 5. Curing compounds.
  - 6. Applied finish materials.
  - 7. Bonding agent or adhesive.
  - 8. Joint fillers.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548. Testing Agency to be retained and paid for by the Contractor and approved by the Architect.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.
- E. ACI Publications: Comply with ACI 301, unless otherwise indicated in the Contract Documents.
- F. Concrete Testing Service: Contractor to engage and pay for a qualified independent testing agency to perform material evaluation tests and to design concrete mixes.
- G. Mockups: Cast mockups of full-size sections of concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship. Joint sealant shall also be installed.
  - 1. Build mockups a minimum of 5' x 5' in the location indicated or, if not indicated, as directed by Architect.
  - 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
  - 3. Obtain Architect's approval of mockups before starting construction.

4. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
5. Demolish and remove approved mockups from the site when directed by Architect.

## 1.6 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Contractor is responsible to protect fresh concrete paving from vandalism and graffiti until said concrete cures hard enough to prevent scratching. Concrete vandalized prior to acceptance by Architect will be replaced at contractor's expense.

## PART 2 - PRODUCTS

### 2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
  1. Use flexible or curved forms for curves of a radius 100 feet (30.5 m) or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

### 2.2 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets. Rolls not permitted.
- B. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed.
- C. Plain Steel Wire: ASTM A 82, as drawn.
- D. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
- E. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.

- F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
  - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

## 2.3 CONCRETE MATERIALS

- A. General: Use the same brand and type of cementitious material from the same manufacturer throughout the Project.
- B. Portland Cement: ASTM C 150, Type I.
  - 1. Fly Ash: ASTM C 618, Class F or C.
- C. Aggregate: ASTM C 33, uniformly graded, from a single source, with coarse aggregate as follows:
  - 1. Maximum Aggregate Size: 3/4 inches (19 mm) nominal.
  - 2. Do not use fine or coarse aggregates containing substances that cause spalling.
- D. Water: Potable and complying with ASTM C 94/C 94M.

## 2.4 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494/C 494M, Type A colored.
- D. Water-Reducing and Accelerating Admixture: ASTM C 494/C 494M, Type E.
- E. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D colored.
- F. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black nonfading, and resistant to lime and other alkalis.

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. Bon Tool Co.
  - b. Brickform.
  - c. Davis Colors.
  - d. Scofield, L.M. Company. (Basis-of-Design Product).

## 2.5 CURING MATERIALS

- A. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1-D, Class B, with fugitive dye.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  1. Clear Waterborne Membrane-Forming Curing Compound:
    - a. Emulsion Konkure 309; AH Harris.

## 2.6 RELATED MATERIALS

- A. Bonding Agent: Acrylic or styrene butadiene.
- B. Epoxy Adhesive: ASTM C 881, two-component material suitable for dry or damp surfaces. Provide material type, grade, and class to suit requirements.
- C. Plastic joint material: Utilized where specified.
  1. Available Products: Subject to compliance with requirements, products that may be incorporate into the Work include, but are not limited to, the following:
    - a. Plastic Joint Material:
      1. Sealtight Snap-Cap; W.R. Meadows.
- D. Premium-grade, high performance, moisture-cured, 1-component, polyurethane-base, non-sag elastomeric sealant.
  1. Meeting Federal Specification TT-S-00230C, Type II, Class A; ASTM C-920, Type S, Grade NS, Class 25.

2. Available Products: Subject to compliance with requirements, sealants that may be incorporated into the Work include, but are not limited to the following:
  - a. Sikaflex - 1A NS; Sika Corporation, Limestone color.

## 2.7 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
  1. Do not use Owner's field quality-control testing agency as the independent testing agency.
- C. Proportion mixes to provide concrete with the following properties:
  1. Compressive Strength (28 Days): 4000 psi (24.1 MPa)
  2. Maximum Water-Cementitious Materials Ratio: 0.45.
  3. Slump Limit: 3 inches (75 mm).
- D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.
  1. Fly Ash: 25 percent.
- E. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus or minus 1.5 percent:
  1. Air Content: 5.5 percent for 3/4 inch (19-mm) maximum aggregate size.

## 2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94.
  1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

2. Batch colored concrete admixture shall be added to mix at the plant in strict accordance with manufacturer's instructions and recommendations.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.
- B. Remove loose material from compacted subbase surface immediately before placing concrete.
- C. Saw-cut existing concrete paving in all areas where new concrete paving will abut existing.

### 3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.
- C. Check completed formwork and screeds for grade and alignment to following tolerances:
  1. Top of forms: Not more than 1/8" in 10 feet.
  2. Vertical face on longitudinal axis: Not more than 1/4" in 10 feet.

### 3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

- D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch (50-mm) overlap to adjacent mats.

### 3.4 JOINTS

- A. General: Construct construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
  - 1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.
  - 1. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
  - 2. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
  - 3. Provide tie bars at sides of pavement strips where indicated.
  - 4. Use epoxy bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
  - 1. Locate expansion joints at intervals of 20 feet (6.10 m), unless otherwise indicated.
  - 2. Extend joint fillers full width and depth of joint.
  - 3. Place top of plastic joint material flush with finished concrete surface.
  - 4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  - 5. Remove protective cap after concrete has been placed on both sides of joint and after concrete has cured and just prior to sealant installation.
- D. Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

- E. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
  - 1. Grooved Joints (at non-patterned concrete pavement locations): Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to the following radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
    - a. Radius: 1/4 inch (6 mm).
  - 2. Sawcut Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
- F. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.
  - 1. Radius: 3/8 inch (10 mm).

### 3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
- D. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery, at Project site, or during placement.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

- G. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.
  - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
  
- H. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.
  - 1. Remove and replace portions of bottom layer of concrete that have been placed more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.
  
- I. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surface treatments.
  
- J. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
  - 2. Do not use frozen materials or materials containing ice or snow.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
  
- K. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:
  - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.6 CONCRETE FINISHING

- A. General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform granular texture.
  1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.
  2. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish on inclined surfaces by striating float-finished concrete surface 1/16 to 1/8 inch (1.6 to 3 mm deep with a stiff-bristled broom, perpendicular to line of traffic.

### 3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
2. Dry-Shake Colored Concrete and Batch Colored Concrete - Refer to manufacturer's instructions for curing.

### 3.8 PAVEMENT TOLERANCES

#### A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch (6 mm).
2. Thickness: Plus 3/8 inch (9 mm), minus 1/4 inch (6 mm).
3. Surface: Gap below 10-foot- (3-m-) long, unlevelled straightedge not to exceed 1/4 inch (6 mm).
4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch (25 mm).
5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch (6 mm).
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch (13 mm).
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches (6 mm per 300 mm).
8. Joint Spacing: 3 inches (75 mm).
9. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
10. Joint Width: Plus 1/8 inch (3 mm), no minus.

### 3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor to engage and pay for a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Testing Services: Testing shall be performed according to the following requirements:
  1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C 172, except modified for slump to comply with ASTM C 94.
  2. Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
  3. Air Content: ASTM C 231, pressure method; one test for each compressive-strength test, but not less than one test for each day's pour of each type of air-entrained concrete.

4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
  5. Compression Test Specimens: ASTM C 31/C 31M; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
  6. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 2 cu. yd. (1.5 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 20 cu. yd. (15 cu. m). One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.
  7. Each delivery of concrete shall be accompanied by a delivery ticket showing Mix classification, air entrainment, strength design, date, location and project title. The delivery ticket shall be submitted to the Architect's representative prior to placement for his signature. No payment for concrete products will be made without prior delivery ticket, as described above.
  8. When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, current operations shall be evaluated and corrective procedures shall be provided for protecting and curing in-place concrete.
  10. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).
  11. If individual tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that load-carrying capacity of the structures is not jeopardized. If the likelihood of low-structure concrete is confirmed and computations indicate that the load carrying capacity may be required in accordance with "Method of Obtaining and Testing Frilled Cores and Sawed Beams of Concrete" (ASTM C42) at no additional cost to the City. Three cores shall be taken for each case of a cylinder test more than 5 psi below 50%  $f_c'$ .
- C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as the sole basis for approval or rejection.

- E. Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests, and other additional testing as may be required, when unacceptable concrete is verified.

### 3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section.
- B. Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 02751

## SECTION 02764 - PAVEMENT JOINT SEALANTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:

- 1. Expansion and contraction joints within cement concrete pavement.
- 2. Joints between cement concrete and asphalt pavement.

- B. Related Sections include the following:

- 1. Division 2 Section "Hot-Mix Asphalt Paving" for constructing joints between concrete and asphalt pavement.
- 2. Division 2 Section "Cement Concrete Pavement" for constructing joints in concrete pavement.
- 3. Division 3 Section "Cast in Place Concrete" for construction joints in concrete pavement.

- C. Expansion Joints to be a 'snap-cap' or equal and sealed with Joint sealant; Polyurethane Sealant. Color to match pavement color.

- D. Expansion Joints for concrete sidewalk slab shall be located at a distance of 10' minimum to 16' maximum apart, or as designated for the pattern.

## 1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.

- B. Samples for Verification: For each type and color of joint sealant required. Install joint-sealant samples in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

- C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

- D. Qualification Data: For **Installer**.

- E. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
  - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
  - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for sealants.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing of current sealant products within a 36-month period preceding the **commencement of the Work**.
  - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 for testing indicated, as documented according to ASTM E 548.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

#### 1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
  - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (4.4 deg C).
  - 2. When joint substrates are wet or covered with frost.
  - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.

4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: **As selected by Architect from manufacturer's full range.**

### 2.2 COLD-APPLIED JOINT SEALANTS

- A. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.
  1. **Available** Products:
    - a. Crafcoc Inc.; RoadSaver Silicone.
    - b. Dow Corning Corporation; 888.
- B. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.
  1. **Available** Products:
    - a. Crafcoc Inc.; RoadSaver Silicone SL.
    - b. Dow Corning Corporation; 890-SL.
- C. Multicomponent Low-Modulus Sealant for Concrete and Asphalt: Proprietary formulation consisting of reactive petropolymer and activator components producing a pourable, self-leveling sealant.
  1. **Available** Products:
    - a. Meadows, W. R., Inc.; Sof-Seal.

### 2.3 HOT-APPLIED JOINT SEALANTS

- A. Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3406.
  - 1. **Available** Products:
    - a. Crafc0 Inc.; Superseal 444/777.
    - b. Meadows, W. R., Inc.; Poly-Jet 3406.
- B. Sealant for Concrete and Asphalt: Single-component formulation complying with ASTM D 3405.
  - 1. **Available** Products:
    - a. Koch Materials Company; Product No. 9005.
    - b. Koch Materials Company; Product No. 9030.
    - c. Meadows, W. R., Inc.; Sealtight Hi-Spec.

### 2.4 JOINT-SEALANT BACKER MATERIALS

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.
- D. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

### 2.5 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

## 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of backer materials.
  - 2. Do not stretch, twist, puncture, or tear backer materials.
  - 3. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses provided for each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealants from surfaces adjacent to joint.
  - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions, unless otherwise indicated.
- G. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

### 3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

### 3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF SECTION 02764

**SECTION 02791 – RUBBER SAFETY SURFACING**

**PART 1 – GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this Section.

**1.2 SECTION INCLUDES**

- A. Extent of work is shown on Drawings and includes but is not limited to:
  - 1. Poured-in-place safety surface.
  - 2. Clean up.

**1.3 RELATED SECTIONS**

- A. SECTION 02870 - PLAY EQUIPMENT AND SITE FURNISHINGS.

**1.4 REFERENCES**

- A. The following apply to work in this Section:
  - 1. ASTM: Specifications of the American Society for Testing and Materials, Standard Consumer Safety Performance Specification for Playground Equipment for Public Use, latest edition.
  - 2. CPSC: "A Handbook for Public Playground Safety", latest edition, published by the U.S. Consumer Product Safety Commission.
  - 3. ADA: Americans with Disabilities Act, latest edition published by the U.S. Department of Justice, Civil Rights Division.
  - 4. Qualified testing laboratory: Qualified, experienced public or private testing laboratory, capable of providing test results as specified.

**1.5 SUBMITTALS**

- A. Submit under provisions of Information to Bidders and the General Conditions prior to delivery of materials to site.
- B. Certifications:
  - 1. Safety surface installation: Written statement from Manufacturer's Representative observing installation and certifying that safety surface was installed according to manufacturer's specifications.

- C. Instructions: Submit safety surface installation/application instructions written by manufacturer.
- D. Product data: Submit safety surface product literature or tear sheets with name of product and manufacturer.
- E. Samples: Label with name of material and manufacturer.
  - 1. Safety surface: Nine (9) by nine (9) inch chips illustrating color and texture. Proposed color mixture to be based upon manufacturers color chart:

**Colors to be selected and approved by the City of Jersey City.**

- F. Shop drawings: Submit drawings clearly labeled with project name and product information.
  - 1. Safety surface: Indicate size, shape and pattern of each safety surface area.
- G. Test reports: Submit reports under provisions of the General Conditions – GC-18 clearly labeled with project name and material.

#### 1.6 QUALITY ASSURANCE

- A. Contractor shall have had experience with at least two (2) other projects of similar scope and complexity and shall perform work with personnel totally familiar with playground, poured-in-place resilient safety surface installation and construction techniques under the supervision of an experienced foreperson.
- B. Manufacturer: Company specializing in the manufacture of poured-in-place resilient safety surface with minimum three (3) years experience.
- C. **Cushioned course thickness must meet CPSC 200G guidance drop test, for heights up to eight (8') feet, and a HIC of no more than 1,000 when tested in accordance with ASTM F 1292.**

#### 1.7 REGULATORY REQUIREMENTS

- A. Comply with all rules, regulations, laws and ordinances of local, state and federal authorities having jurisdiction. Provide labor, materials, equipment and services necessary to make work comply with such requirements without additional cost to Owner.
  - 1. Coordinate work with utility companies. Notify One Call System not less than three working days prior to beginning work.

- B. Investigate the conditions of public thoroughfares and roads as to availability, clearances, loads, limits, restrictions and other limitations affecting transportation to and ingress and egress at the site.
  - 1. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.
- C. Conform to applicable code for disposal of debris.
- D. Procure and pay for permits and licenses required for work.

**1.8 DELIVERY STORAGE AND HANDLING**

- A. Deliver, store, handle and protect all materials from damage.

**1.9 PROJECT CONDITIONS**

- A. Existing conditions:

- 1. Verify all existing conditions in the field.
  - a. Should any work performed under this Section expose previously unknown conditions, immediately report the discovery to Owner. However, during this time use any measures necessary to maintain adequate safety conditions.
  - b. Should Contractor, in the course of work, find any discrepancies between Drawings and physical conditions, inform Owner immediately in writing for clarification. Work done after such discovery, unless authorized by Owner, shall be at Contractor's risk.

- B. Protection of existing conditions adjacent to and within construction zone:

- 1. All necessary precautions for safety including barricades and other protection measures shall be taken during all work.
- 2. All heavy equipment shall be driven or parked on the site only where approved by Owner.
- 3. Existing pavements, lawns, structures, walls, etc. damaged or disturbed during construction shall be repaired or replaced to the satisfaction of the Owner at no additional cost.
- 4. Repair and replace all active utility lines, above and below grade, damaged in the course of construction operations at no additional cost to Owner.

- C. Environmental requirements:

- 1. Place safety surface during dry weather and when the temperature is 35 degrees F or above.

## 1.10 SEQUENCING AND SCHEDULING

- A. Coordinate work of this Section with work of all other Sections of Specification.

## PART 2 – PRODUCTS

## 2.1 MANUFACTURERS

- A. Substitutions: Under provisions of SECTION 01600.

- 1. Filter fabric: Reemay Inc. or approved equal.

## 2.2 POURED-IN-PLACE SAFETY SURFACE MATERIALS

- A. Meet or exceed current: CPSC guidelines, ADA guidelines and ASTM F-1292-93, F-1487-93 requirements.
- B. Cushion course: Monolithic poured-in-place cushion pad made from a field mixed blend of select styrene butyrene rubber (SBR) fiber and a single component polyurethane binder (not containing toluene isocyanate (TDI) with a minimum weight of 8.5 lbs/gal.).
- C. Wearing course: Monolithic poured-in-place top surface made from a blend of ethylene propylene diene monomer (EPDM) colored rubber particles measuring one (1) to three (3) mm and a polyurethane binder with aliphatic binder for UV stabilization.
  - 1. Shore hardness 50-55.
  - 2. Tensile strength 200 PSI.
  - 3. Elongation at break 145%.
  - 4. Meet Class 1 fire rating.
  - 5. Meet Taper Abrasive Test of 0.1.
  - 6. Color: **Colors to be selected and approved by the City of Jersey City.**

## PART 3 – EXECUTION

## 3.1 EXAMINATION

- A. Verify that previously installed protection measures are in place.
- B. Verify that play equipment is in place.
  - 1. Begin installation of safety surface immediately upon completion of play equipment installation.

- C. Verify that existing crushed stone and drainage is ready to receive poured-in-place safety surface.
  - 1. Verify gradients and elevations are correct.
- D. Beginning of installation means acceptance of existing conditions.

**3.2 PREPARATION**

- A. Remove all debris and other obstructions from area to receive safety surface.

**3.3 INSTALLATION OF POURED-IN-PLACE SAFETY SURFACE**

- A. Secure manufacturer's representative to observe all phases of safety surface installation and provide Owner with a written statement certifying compliance with manufacturer's drawings and specifications.
- B. Install safety surface according to manufacturer's instructions and specifications in locations shown on Drawings.
  - 1. Meet or exceed current: CPSC guidelines, ADA guidelines and ASTM F-1292-93 requirements.
    - a. Cushion course minimum depth of 3 1/2" or greater to satisfy fall height under play equipment
    - b. Wearing course minimum depth: 1/2".

**3.4 PROTECTION AND GUARANTEE**

- A. Immediately after placement, protect safety surface under provisions of SECTION 01500 from all traffic.
  - 1. Provide watchman to guard safety surface until adequately cured, for a minimum of 24 hours. Installer shall be responsible for any damage until surface has been approved by Owner.

**3.5 CLEAN UP**

- A. Maintain the site in an orderly condition during the progress of work. Promptly remove debris and trash. Leave the site in a neat, orderly condition, broom clean.

END OF SECTION 02791

**SECTION 02861 – SPRAY EQUIPMENT SYSTEM**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to work of this section.

**1.2 SECTION INCLUDES**

- A. Aquatic play equipment.
- B. Activation devices for aquatic play equipment.
- C. Controllers for aquatic play equipment.
- D. Distribution Manifold

**1.2 DESCRIPTION OF WORK**

- A. Furnish and install aquatic playground materials, apparatus, tools, equipment, transportation, temporary construction, and special or occasional services as required to effect a complete working installation, as shown on the Drawings and described in the Specifications and in accordance with manufacturers recommendations.
- B. Work included:
  - 1. Aquatic playground equipment, valves, and piping.
  - 2. Plumbing and electrical services including water, waste, bonding (grounding) and power supply (if specified) to designated points of connection with site utilities.
- C. All items in this section, and as shown on drawings to be furnished and installed in accordance with the plans and specifications, manufacturer's recommendations or as directed by Architect.

**1.3 SUMMARY**

- A. Spray Equipment System shall consist of all labor, materials, and equipment necessary for the furnishing and installation of Spray Equipment components as shown and listed. This includes but is not limited to all necessary excavation, installation of concrete footings, installation of components, and installation of equipment vault all in accordance with manufacturer specifications, and as shown on the plans.

**1.4 QUALITY ASSURANCE**

- A. Source Limitations: Obtain each type of site furnishing(s) through one source from a single manufacturer.
- B. Use an adequate number of skilled workmen approved and/or licensed by the manufacturer and with a minimum of 5 years experience, unless otherwise indicated, regularly engaged in installation procedures of product application similar to that required for this project.
- C. In addition to complying with pertinent regulations of governing agencies having jurisdiction, comply with pertinent provision of testing in accordance with trade practices and manufacturer’s listed standards.
- D. Performance Guarantee: Contractor shall furnish a written guarantee, it shall be a certificate of product liability insurance, guaranteeing replacements (parts and labor) of any items or components found to be defective up to one year.
- E. All structures shall carry a lifetime warranty against corrosion.
- F. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than five (5) years of documented experience.
- G. Installer Qualifications: Company specializing in performing the work of this section with minimum of three (3) years experience.
- H. Products Requiring Electrical Connection: Listed and classified by Underwriters’ laboratories (UL) as suitable for the purpose specified and indicated.

**1.5 REFERENCES**

- A. This installation shall comply with all applicable provisions of the latest edition of the following codes:

NEC	National Electrical Code
NFPA	National Fire Protection Association
UBC	Uniform Building Code
UPC	Uniform Plumbing Code

- B. Materials furnished hereunder shall comply with the latest edition of applicable standard specifications published by the following organizations:

ASTM	American Society for Testing and Materials
ANSI	American National Standards Institute

ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
AWWA	American Water Works Association
CS	Commercial Standards
NEMA	National Electrical Manufacturers Association
NSF	National Sanitation Foundation

**1.6 SUBMITTALS**

A. Any and all substitutions (not limited to this section) must be submitted in accordance with INFORMATION TO BIDDERS, Article 21. SUBSTITUTIONS.

B. Product Data:

Submit manufacturers’ technical data for each product indicated including recommendations for their applications and use. Include test reports and/or certifications substantiating that products comply with requirements.

C. Shop Drawings:

Contractor shall submit shop drawings in accordance with the requirements of General Condition GC-35. They must include the following drawings as a minimum:

1. General layout.
2. Dimensions.
3. Materials.
4. Finishes.
5. Support (including any special footing or foundation requirements for same as required by manufacturer).
6. Hardware.
7. Fittings and accessories.

D. Certificates: Certify that products of this section meet or exceed specified requirements.

E. Manufacturer’s Instructions: Indicate installation instructions for specified equipment including each component.

F. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance instruction for specified equipment.

**1.7 PRODUCT HANDLING**

**A. Protection:**

1. Equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. Equipment shall be protected from exposure to the elements and shall be kept thoroughly dry at all times prior to installation. Pumps motors, electrical equipment, and other equipment having anti-friction or sleeve bearings shall be stored in weather-tight warehouses that are maintained at a temperature of at least 60 degrees F.
2. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted surfaces that are damaged prior to acceptance of equipment shall be repainted to the satisfaction of the owner.
3. Electrical equipment controls, and insulation shall be protected against moisture or water damage. Space heaters and sump pumps provided in the equipment shall be kept connected and operating at all times until the equipment is placed in service.
4. Store materials under cover and elevated above grade.

**B. Replacements:**

1. In the event of damage, immediately make all repairs and replacements necessary to the approval of Architect at no additional cost to the Owner.

**C. Contractor is responsible for equipment until acceptance by Architect.**

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. Spray Equipment System components and all structures are to be designed in such a way that they comply with the current ASTM and ADA standards for playground equipment. The following spray equipment system features and components shall be installed as shown on the contract drawings.
- B. Contractor shall provide shop drawings for all spray equipment system components for review and approval prior to purchase and installation.
- C. Colors for the spray equipment system features shall be as selected and approved by the City of Jersey City. Contractor shall submit color chart for final review and approval by Landscape Architect and City of Jersey City prior to purchase and installation of spray equipment features.

- D. Equipment not listed within these Specifications or on Drawings as furnished by the equipment supplier, but required for the complete installation of the water feature mechanical or electrical systems, shall be furnished by the Contractor.
- E. Products shown on the Drawings, but not listed in this Section, shall be provided in accordance with information shown on the Drawings and the General Provisions of this part of the Specification.

**2.2 AQUATIC PLAY EQUIPMENT MANUFACTURER**

- A. Aquatic play equipment manufacturer shall be: Water Odyssey™ by Fountain People, Inc., or approved equal.

**2.3 AQUATIC PLAY EQUIPMENT MANUFACTURER’S RESPONSIBILITY**

- A. Aquatic playground materials and component parts shall be guaranteed to be free from defects of materials and workmanship, for a period (two years) from date of shipment. Additional warranties shall include;
  - 1. Coating system shall be warranted for a period of (two years) against peeling or fading under normal environmental conditions.
  - 2. Stainless steel pipe and anchor bases shall be guaranteed against structural failure for a period of (twenty-five) years under normal usage.
  - 3. Controller shall be guaranteed against failure for a period of (three years) under normal usage.

**2.4 AQUATIC PLAY EQUIPMENT**

- A. Spray components shall be designed to operate at the specified flow rates.
- B. Anchoring, mounting and assembly hardware shall be constructed of 304/304L Stainless Steel, cast Bronze or Red Brass. All anchoring systems shall include an integrated leveling system facilitating a flat surface installation free of non-compliant protrusions. Exposed and accessible hardware shall be tamper resistant, vandal deterring, theft resistant and shall require a special tool for removal
- C. Top Plates, Component Heads and Spray Nozzles shall be constructed of materials resistant to vandalism, deterrent to theft, require special tools for removal and free from degradation in transmitting pressurized, chemically treated, potable water. Top Plates, Component Heads and Nozzles constructed of Stainless Steel, Bronze or Red Brass shall be given preference.

- D. Where color coated finishes are appropriate or specified, the color coating shall be Aqua Armor™; an elastomeric polymer that is vandal resistant, UV resistant and resistant to degradation in the presence of chemicals at measureable levels typically used to maintain proper water quality levels in swimming pools.
- E. Accessible edges shall be rounded, beveled or otherwise designed to prevent safety hazards. All components and component parts shall be designed to ensure a safe play environment with no pinch points, head entrapments or protrusion hazards. All products shall be designed in accordance and compliant with ASTM F1487, ASTM F2461 and CSA Z614-98 standards for public playgrounds and aquatic playgrounds.
- F. All play equipment shall be bonded/grounded per the requirements of NEC article 680 and the codes of the local jurisdiction of authority concerning non-residential, permanently installed swimming pools or fountains.
- G. Concrete footings shall be as recommended and specified by the manufacturer. The Contractor shall provide all labor, material and equipment to construct the concrete footings as shown and shall conform with concrete design specifications.

1. Play Feature Equipment List (or approved equal):

1 Each	W012C	Water Odyssey™	Water Cage™
1 Each	W036C	Water Odyssey™	Baby Long Legs™
1 Each	W057	Water Odyssey™	Water Sprout™
1 Each	W071	Water Odyssey™	Water Flower™
1 Each	W093	Water Odyssey™	Water Weave™
1 Each	W097C-5	Water Odyssey™	Over N' Under™
1 Each	W326C-2	Water Odyssey™	Mission Hill Shower™
1 Each	W326C-3	Water Odyssey™	Mission Hill Spill™

2.5 **FEATURE**

A. W012C Water Cage™ water conserving version

- 1. Housing: The below grade linear manifold shall be constructed of schedule 40 red brass pipe with bonding/grounding connection and (2) 1 1/2" MPT inlets. It shall be supplied with 3/8" threaded, 18/8 stainless steel anchor/leveling bolts with nuts and washers. Bonding/grounding shall be compliant with codes of the jurisdiction having authority.
- 2. Construction Covers: Each orifice temporary cover shall be a reusable 1/2" diameter HDPE (high density polyethylene) plug.
- 3. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
- 4. Nozzles: The Water Cage™ nozzle shall be constructed of stainless steel

5. Interactive water effect: The spray pattern shall be a circle of vertical water streams.
  6. Hydraulic Requirements: The designed operational water supply shall be a maximum 18GPM @ 3PSI and produce a 4 High spray pattern.
  7. Finish: Each nozzle shall have a natural stainless steel finish.
  8. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.
- B. W036C Baby Long Legs™ water conserving version
1. Housing: The below grade canister shall be constructed of 20 gauge deep-drawn type 304 stainless steel with bonding/grounding connection and 1" FPT inlet. It shall be supplied with 3/8" threaded anchor/leveling bolts with nuts, washers and a wooden pour template. Bonding/grounding shall be compliant with codes of the jurisdiction having authority.
  2. Top Plate Anchors: The housing stabilizers and plate anchors shall be ½" x 5" machined brass with 30° hook bend
  3. Construction Cover: The temporary cover shall be a reusable flat 7" diameter HDPE (high density polyethylene) plate.
  4. Top Plate: The operational cover shall be a 7" diameter, slightly domed, cast bronze plate with interchangeable nozzle assembly.
  5. Gaskets: The leak preventing seal shall be an O-Ring of 70 durometer EPDM
  6. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
  7. Nozzle: The interchangeable nozzle for 7" diameter operational plates shall be constructed of precision machined brass.
  8. Interactive water effect: The spray pattern shall be an array of outward arching streams or water.
  9. Hydraulic Requirements: The designed operational water supply shall be a maximum 2.5GPM @ 2PSI and produce a 10' High x 10' Throw spray pattern.
  10. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
  11. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.
- C. W057 Water Sprout™
1. Housing: The below grade canister shall be constructed of 20 gauge deep-drawn type 304 stainless steel with bonding/grounding connection and 1" FPT inlet. It shall be supplied with 3/8" threaded anchor/leveling bolts with nuts, washers and a wooden pour template. Bonding/grounding shall be compliant with codes of the jurisdiction having authority.
  2. Top Plate Anchors: The housing stabilizers and plate anchors shall be ½" x 5" machined brass with 30° hook bend
  3. Construction Cover: The temporary cover shall be a reusable flat 7" diameter HDPE (high density polyethylene) plate.

4. Top Plate: The operational cover shall be a 7" diameter, slightly domed, cast bronze plate with interchangeable nozzle assembly.
5. Gaskets: The leak preventing seal shall be an O-Ring of 70 durometer EPDM
6. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
7. Nozzle: The interchangeable nozzle for 7" diameter operational plates shall be constructed of precision machined brass.
8. Interactive water effect: The spray pattern shall be an array of small outward arching streams of water.
9. Hydraulic Requirements: The designed operational water supply shall be 4GPM @ 1PSI and produce a 2' x 6' spray pattern.
10. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
11. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.

D. W071 Water Flower™

1. Housing: The below grade canister shall be constructed of 20 gauge deep-drawn type 304 stainless steel with bonding/grounding connection and 1" FPT inlet. It shall be supplied with 3/8" threaded anchor/leveling bolts with nuts, washers and a wooden pour template. Bonding/grounding shall be compliant with codes of the jurisdiction having authority.
2. Top Plate Anchors: The housing stabilizers and plate anchors shall be 1/2" x 5" machined brass with 30° hook bend
3. Construction Cover: The temporary cover shall be a reusable flat 7" diameter HDPE (high density polyethylene) plate.
4. Top Plate: The operational cover shall be a 7" diameter, slightly domed, cast bronze plate with interchangeable nozzle assembly.
5. Gaskets: The leak preventing seal shall be an O-Ring of 70 durometer EPDM
6. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
7. Nozzle: The interchangeable nozzle for 7" diameter operational plates shall be constructed of precision machined brass.
8. Interactive water effect: The spray pattern shall be a sheet effect in the shape of a morning glory flower.
9. Hydraulic Requirements: The designed operational water supply shall be 10GPM @ 1PSI and produce a 1' x 2' spray pattern.
10. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
11. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.

## E. W093 Water Weave™

1. Housing: The below grade canister shall be constructed of 20 gauge deep-drawn type 304 stainless steel with bonding/grounding connection and 2" FPT inlet. It shall be supplied with 3/8" threaded, 18/8 stainless steel anchor/leveling bolts with nuts, washers and a wooden pour template. Bonding/grounding shall be compliant with codes of the jurisdiction having authority.
2. Top Plate Anchors: The housing stabilizers and plate anchors shall be 1/2" x 5" machined brass with 30° hook bend
3. Construction Cover: The temporary cover shall be a reusable flat 13" diameter HDPE (high density polyethylene) plate.
4. Top Plate: The operational cover shall be a 13" diameter, slightly domed, cast bronze plate with interchangeable nozzle assembly.
5. Gaskets: The leak preventing seal shall be an O-Ring of 70 durometer EPDM
6. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
7. Nozzle: The 18 nozzles for the operational plate shall be constructed of precision machined brass.
8. Interactive water effect: The spray pattern shall be a basket weave pattern of water streams.
9. Hydraulic Requirements: The designed operational water supply shall be a maximum 14GPM @ 2PSI and produce a 4' High x 8' Diameter spray pattern.
10. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
11. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.

## F. W097C-5 Over N' Under™ water conserving version

1. Housing: The below grade linear manifold shall be constructed of schedule 40 red brass pipe with bonding/grounding connection and (2) 1 1/2" MPT inlets. It shall be supplied with 3/8" threaded, 18/8 stainless steel anchor/leveling bolts with nuts and washers. Bonding/grounding shall be compliant with codes of the jurisdiction having authority.
2. Construction Covers: Each orifice temporary cover shall be a reusable 2 3/4" diameter HDPE (high density polyethylene) plate.
3. Construction Covers: Each orifice's temporary cover shall be a reusable 2 3/4"
4. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
5. Nozzles: The Over N' Under™ nozzle shall be constructed of precision machined brass. There shall be one nozzle per foot of manifold length
6. Interactive water effect: The spray pattern shall be a row of water streams. There shall be one stream per foot of manifold length. Each stream shall have 360 degree horizontal adjustability and vertical adjustability from vertical to 60 degrees off vertical.

7. Hydraulic Requirements: The designed operational water supply shall be 5-15GPM @ 4PSI and produce a 2' to 6' High x 2' to 6' Throw spray pattern.
8. Finish: Each nozzle shall have a natural brass finish.
9. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.

G. W326-2C Mission Hill Shower – Water Conserving

1. Anchor Base: The (1) below grade anchor base shall be constructed of type 304 stainless steel to mate with a component's shaft base plate. The anchor base shall each have a bonding/grounding connection and 2" FPT inlet. The anchor base shall be supplied with 3/8" threaded, 18/8 stainless steel anchor/leveling bolts with nuts, washers and a wooden pour template.
2. Construction Cover: The temporary cover shall be an adhesive polyethylene tape.
3. Shaft: The above grade frame shall be constructed of 4" type 304 stainless steel pipe with 4" machined type 304 flanged base plate.
4. Gasket: The leak preventing seal shall be an O-Ring of 70 durometer EPDM
5. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
6. Dimensions: Approximate dimensions shall be 8'8" H x 2'2" W.
7. Nozzles: The Nozzles shall be machined cast bronze and brass construction.
8. Interactive water effect: The spray pattern shall be a gentle shower of streams.
9. Hydraulic Requirements: The designed operational water supply shall be 10GPM @ 8PSI.
10. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
11. Safety and Compliance: the spray feature meets ASTM safety standards, is ADA compliant, and inspected by a Certified Playground Safety Inspector prior to shipment of product.
12. Age Group Design Standards: The spray feature shall be designed for all ages.
13. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.

H. W326C-3 Mission Hill Spill

1. Anchor Base: The (1) below grade anchor base shall be constructed of type 304 stainless steel to mate with a component's shaft base plate. The anchor base shall each have a bonding/grounding connection and 2" FPT inlet. The anchor base shall be supplied with 3/8" threaded, 18/8 stainless steel anchor/leveling bolts with nuts, washers and a wooden pour template.
2. Construction Cover: The temporary cover shall be an adhesive polyethylene tape.
3. Shaft: The above grade frame shall be constructed of 4" type 304 stainless steel pipe with 4" machined type 304 flanged base plate.
4. Gasket: The leak preventing seal shall be an O-Ring of 70 durometer EPDM

5. Fasteners: All accessible fasteners shall be tamper-resistant 18/8 stainless steel.
6. Nozzles: The Nozzles shall be machined cast bronze and brass construction.
7. Interactive water effect: The spray pattern shall be a gentle shower of streams.
8. Hydraulic Requirements: The designed operational water supply shall be 10GPM @ 8PSI.
9. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
10. Safety and Compliance: the spray feature meets ASTM safety standards, is ADA compliant, and inspected by a Certified Playground Safety Inspector prior to shipment of product.
11. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.

**2.6 DISTRIBUTION, ACTIVATOR AND DRAINAGE**

**A. Equipment List:**

1 Each	HLP-6	Water Odyssey™ Launch Pod
1 Each	W345	Water Odyssey™ Hydro Pad

**B. HLP-6 Hydraulic Launch Pod**

1. Housing: Shall be heavy-duty FRP (fiberglass reinforced polyester) with inlet, discharges and drain connection.
2. Grate: Shall be heavy-duty FRP (fiberglass reinforced polyester) with skid resistant surface urethane coating. Must meet ADA guidelines.
3. Grate Access: shall have a quarter turn with a flat head lock screw.
4. Grate Fasteners: Shall be type 18/8 stainless steel.
5. Discharge Outlets: Shall have a PVC male connection.
6. Drain Connection: Shall be 4" PVC female connection, total flow not to exceed 125 gpm.
7. Activation Time: Adjustable up to 55 seconds.
8. Activator Housing: Shall be machined from PVC stock.
9. Activator Valve: Shall be brass construction, and chrome plated.
10. Balancing Valves: The distribution manifold header shall include true union ball valves constructed of schedule 80 PVC for balancing and throttling the discharges.
11. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.
12. As manufactured by Water Odyssey™/ Fountain People, Inc., or approved equal.

## C. W345 Hydro Pad

1. Housing: The below grade canister shall be constructed of 20 gauge deep-drawn type 304 stainless steel with bonding/grounding connection and two 1 1/2" FPT inlet. It shall be supplied with 3/8" threaded, 18/8 stainless steel anchor/leveling bolts with nuts, washers and a wooden pour template. Bonding/grounding shall be compliant with codes of the jurisdiction having authority
2. Stab Connectors: Shall be machined PVC construction and supplied with EPDM O-Rings.
3. Coupling Assembly: Shall be constructed of 304 stainless steel and include bonding lug.
4. Fasteners: Shall be tamper resistant and be constructed of type 18/8 stainless steel.
5. Activator Valve: The activator valve shall be of brass construction and shall have a chrome plated button.
6. Activation Time: Adjustable up to 55 seconds.
7. Finish: When specified for solid, patterned or theme painted coloring the component shall be coated with Aqua Armor™; a UV stabilized, textured structural elastomeric polymer with a UV and chlorine resistant sealer coat.

As manufactured by Water Odyssey™/ Fountain People, Inc, or approved equal.

## PART 3 - EXECUTION

## 3.1 SITE AND DRAWING EXAMINATION

- A. Contractors submitting a proposal for this work shall first examine the site of the proposed work that they may fully understand facilities, difficulties, and restrictions attending the execution of the contract. No subsequent allowances shall be made because of omission, error, or negligence in connection with this provision.
- D. Contractors submitting a proposal for this work shall carefully examine the architectural and structural Drawings and Specifications.
- E. Questions pertaining to work that do not appear to be sufficiently detailed or explained, or pertaining to the true meaning of any part of the Drawings or Specifications, or discrepancies found existing in or between the Specifications and Drawings, shall be referred to the Architect for clarification or correction.

**3.2 COORDINATION AND INSPECTION**

- A. Examine the subgrade, finish surfaces and installation conditions. Do not commence work until all unsatisfactory conditions are corrected.
- B. The Contractor shall cooperate with subcontractors of other trades, whose work is in anyway affected by, or affects the work under this Section.
  - 1. The Contractor shall coordinate the work under this Section with that of other trades to effect a complete installation consistent with the requirements and intent of the Drawings and Specifications.
- C. The Contractor shall furnish materials so as to avoid delay in the progress of the work and shall store them as to prevent interference with other work.

**3.3 LAYING OUT THE WORK**

- A. The trade performing the work of this section assumes full and sole responsibility for the accuracy and correctness of all layouts, lines, levels, grades and other aspects of the work under this Section. Lay out all work in accordance with the manufacturers requirements, shop drawings and/or, as indicated in the drawings.

**3.4 INSTALLATION**

- A. The Contractor shall furnish, Install and connect all equipment as listed above and shown on contract drawings including anchoring hardware and concrete footings in accordance with manufacturer's instructions and recommendations unless otherwise noted. If specified installation is contrary to manufacturer's instructions, cease installation of affected components or systems.  
Notify Project Manager and the Architect and do not resume installation without clear instructions.
  - 1. Installation of anchors and/or anchor concrete bases for all spray equipment that requires embedment in or under the designated spray pad area reinforced concrete pavement shall be the responsibility of the Contractor.
  - 2. The Contractor shall be responsible for anchorage placement, and spray equipment assembly, erection, bonding, grounding and installation.
  - 3. All construction shall be in accordance with standard industry practices, using new materials to produce a quality-finished product.
  - 4. All Spray Equipment components shall be installed by an installer certified by the manufacturer.

5. Once construction of the Spray Equipment System is complete and operable, the contractor shall be responsible to coordinate the following with the manufacturer of the spray equipment system:
6. Schedule a meeting to perform a test of all operating systems to ensure that touch pad controller, spray equipment features, valves, and all water pressure is regulated and functions in accordance with the manufacturer’s specifications.
7. Schedule a separate meeting with the City of Jersey City to instruct City Employees on how to operate and maintain the system and all its components.

**3.5 CLEANING**

- A. Perform cleaning during installation of the work and upon completion of the work.
- B. Remove from the project site all excess material and equipment at the completion of the work of this section.
- C. Repair damage resulting from spray equipment work.

**3.6 TESTS AND ADJUSTMENTS**

- A. General: The Contractor shall test equipment installed by him to show that it complies with specified requirements. Testing shall be done in a manner approved by the Architect.
- B. Electrical tests:
  1. Electrical circuits, feeders, and equipment shall be tested and proven free of faulty grounds, open circuits, or shorts, as required by local codes.
  2. Contractor shall, at his expense, make the aquatic playground operational and make tests, adjustments, and corrections, until it is shown to be in proper operating condition.

END OF SECTION 02861



**SECTION 02870 - SITE FURNISHING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to work of this section, as if written out herein full.

**1.2 DESCRIPTION OF WORK**

- A. Extent of furnishings is indicated on drawings and is herein specified. List of items include the following:
  - 1. Site Benches
  - 2. Playground Equipment (see sketches and map of layout attached at the end of section).
  - 3. Trash Receptacle.
- B. All items in this section, and as shown on drawings to be furnished and installed in accordance with the plans and specifications, manufacturer's recommendations or as directed by Architect.

**1.3 RELATED SECTIONS**

- A. The following sections contain requirements that relate to this section:
  - 1. Division 2 Section "Earthwork" for excavation and preparation of subgrade.
  - 2. Division 3 Section "Cast in Place Concrete" for curbs, footings, etc.

**1.4 QUALITY ASSURANCE**

- A. Use an adequate number of skilled workmen approved and/or licensed by the manufacturer and with a minimum of 5 years experience, unless otherwise indicated, regularly engaged in installation procedures of product application similar to that required for this project.

In addition to complying with pertinent regulations of governing agencies having jurisdiction, comply with pertinent provision of testing in accordance with trade practices and manufacturer's listed standards.

- B. Performance Guarantee: Contractor shall furnish a written guarantee, it shall be a certificate of product liability insurance, guaranteeing replacements (parts and labor) of any items or components found to be defective up to one year.
- C. Bench Manufacturer's Warranty: 5 Year Warranty for structural failure.

## 1.5 SUBMITTALS

- A. Any and all substitutions (not limited to this section) must be submitted in accordance with INFORMATION TO BIDDERS, Article 21. SUBSTITUTIONS.

- B. Product Data:

Submit manufacturers' technical data for each product indicated including recommendations for their applications and use. Include test reports and/or certifications substantiating that products comply with requirements.

- C. Shop Drawings:

Contractor shall submit shop drawings in accordance with the requirements of General Condition GC-35. They must include the following drawings as a minimum:

1. General layout.
2. Dimensions.
3. Materials.
4. Finishes.
5. Support (including any special footing or foundation requirements for same as required by manufacturer).
6. Hardware.
7. Fittings and accessories.

## 1.6 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect listed items before, during and after installation and to protect the installed work and materials of all other trades. Contractor is responsible for equipment until acceptance by Architect.
- B. Replacement: In the event of damage, immediately make all repairs and replacement necessary to Architects' approval and at no additional cost to owner.

## PART 2 - PRODUCTS

### 2.1 SITE FURNISHINGS

#### A. Benches:

1. Contractor to provide and install benches Model #425-34/S-5, 424-34/S-5 by Dumor, Inc or approval equal. Install units as indicated on drawings.

#### B. Playground Equipment:

1. Pre-fabricated modular play structures are required. All structures are as manufactured by Kompan. Attached to the back of this specification section is a plan with a material list for the structure and color selections for each piece of play equipment, to be verified prior to order, from manufacturers' standards as published in their year 2014 catalog.

All play equipment shall meet guidelines as defined in the Consumer Product Safety Commission's Handbook for Public Playground Safety; and shall meet structural testing requirements and guidelines set forth by ASTM F 1487.

If the contractor intends to provide an equivalent structure as part of his bid, it must comply in all aspects with the specified limits. See Information to Bidders, Article 21 "Substitutions" for requirements.

Performance criteria or equivalents must match or surpass specified units, and note certain key conditions:

- \* Tube slides or tunnels are not permitted in any proposal.
- \* Basic layout with arrangement of play units of specified units must be adhered to.

#### C. Picnic Table:

1. Provide and install picnic tables Model #464-60RB by Dumor, Inc. or approved equal. Supply units in models, sizes and quantities as indicated.

#### D. Trash Receptacle:

1. Provide and install flare top receptacles Model #158-32-FTO, 32 Gallon by Dumor, Inc. or approved equal. Supply units in models, sizes and quantities as indicated.

## PART 3 - EXECUTION

### 3.1 INSTALLATIONS

- A. Site Benches shall be installed as per drawings at locations directed by Architect.
- B. Playground Equipment: The steel play equipment shall be assembled and installed in accordance with detailed erection drawings and the detailed coding on each member and direction of manufacturer.

In accordance with construction schedule, deliver equipment accessories required for concrete embedment in sufficient time to avoid delays. Coordinate with shop drawings.

The units shall be set accurately to the positions indicated on the plans. All vertical members shall be set plumb and true. All cross members and platforms shall be truly horizontal unless otherwise indicated or required.

All connections shall be securely made with the size and type of connectors and hardware required by the plans. Concrete footings of the sizes indicated on submitted and approved shop drawings. Concrete footings shall comply with contract drawings and Division 3 specification.

Equipment shall be assembled to configuration as shown on the drawings. All fastenings shall be made as shown on the shop drawings and shall be securely tightened. All work shall be done so that no hazardous projections shall be left in the finished work. All bolts to be cut so exposed threads project less than 1/4" from nut. Peen all threads to prevent removal.

END OF SECTION 02870

**Pershing Fields**



Project: Overall \_\_\_\_\_ Date: 01/23/15 \_\_\_\_\_  
 Model: As Noted \_\_\_\_\_ PSC: \_\_\_\_\_  
 Rep: KOMPAN - Chris Valdez \_\_\_\_\_ Designer: JenMei \_\_\_\_\_

SCALE: Custom



**FOR QUOTING ONLY  
 NOT FOR CONSTRUCTION**

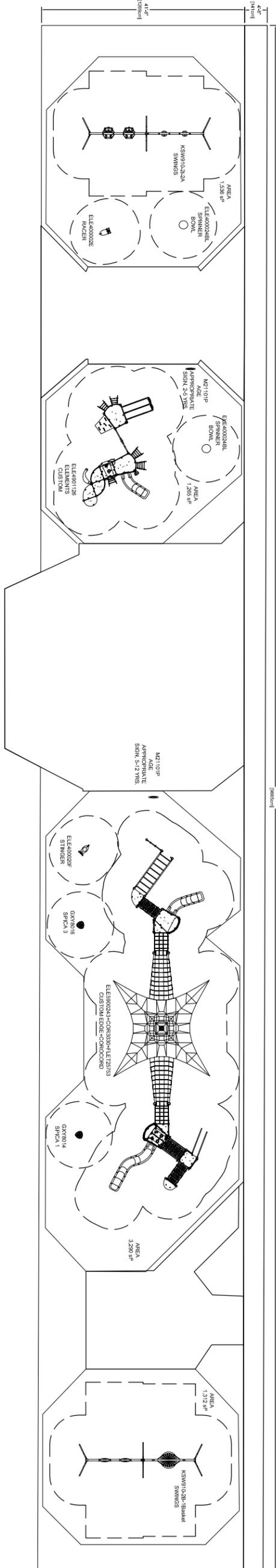
Printed in USA by KOMPAN. © 2010 KOMPAN, Inc., Tacoma, WA, USA.

All composite structures shown require a site grade of 1% maximum.

For surface mount options, the concrete requirements may be up to 5½" of 3,500 psi minimum compressive strength. Contact KOMPAN for specific product requirements.

Site representation is based upon estimated site dimensions and cannot be used as an accurate way of determining site area.

Layout is in accordance with ASTM F1487-11



**Pershing Fields**



Project: Areas 1 & 2 \_\_\_\_\_ Date: 01/23/15 \_\_\_\_\_  
Model: As Noted \_\_\_\_\_ PSC: \_\_\_\_\_  
Rep: KOMPAN - Chris Valdez \_\_\_\_\_ Designer: JenMei \_\_\_\_\_

SCALE: 1/8" = 1'-0"



**FOR QUOTING ONLY  
NOT FOR CONSTRUCTION**

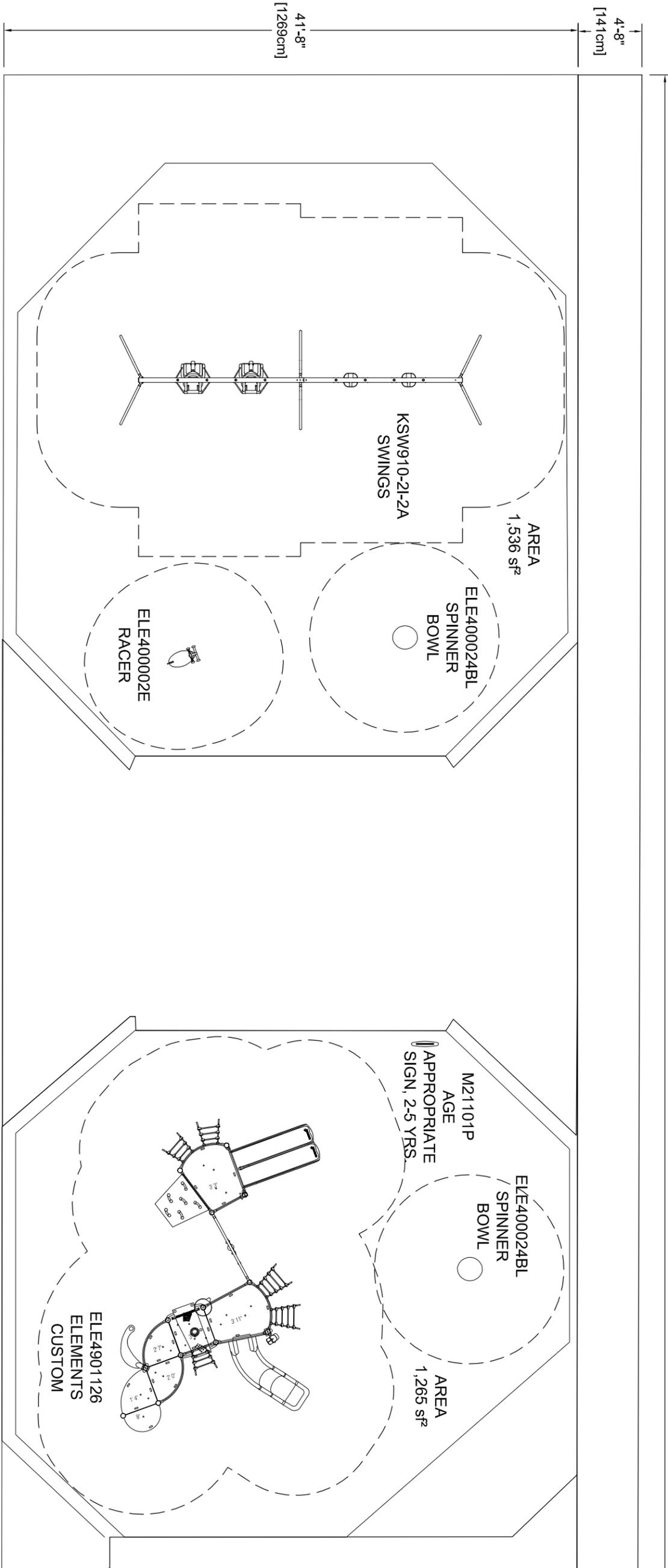
Printed in USA by KOMPAN. © 2010 KOMPAN, Inc., Tacoma, WA, USA.

All composite structures shown require a site grade of 1% maximum.

For surface mount options, the concrete requirements may be up to 5½" of 3,500 psi minimum compressive strength. Contact KOMPAN for specific product requirements.

Site representation is based upon estimated site dimensions and cannot be used as an accurate way of determining site area.

Layout is in accordance with ASTM F1487-11



**Pershing Fields**



Project: Areas 3 Date: 01/23/15  
Model: As Noted PSC:  
Rep: KOMPAN - Chris Valdez Designer: JenMei

SCALE: 1/8" = 1'-0"



**FOR QUOTING ONLY  
NOT FOR CONSTRUCTION**

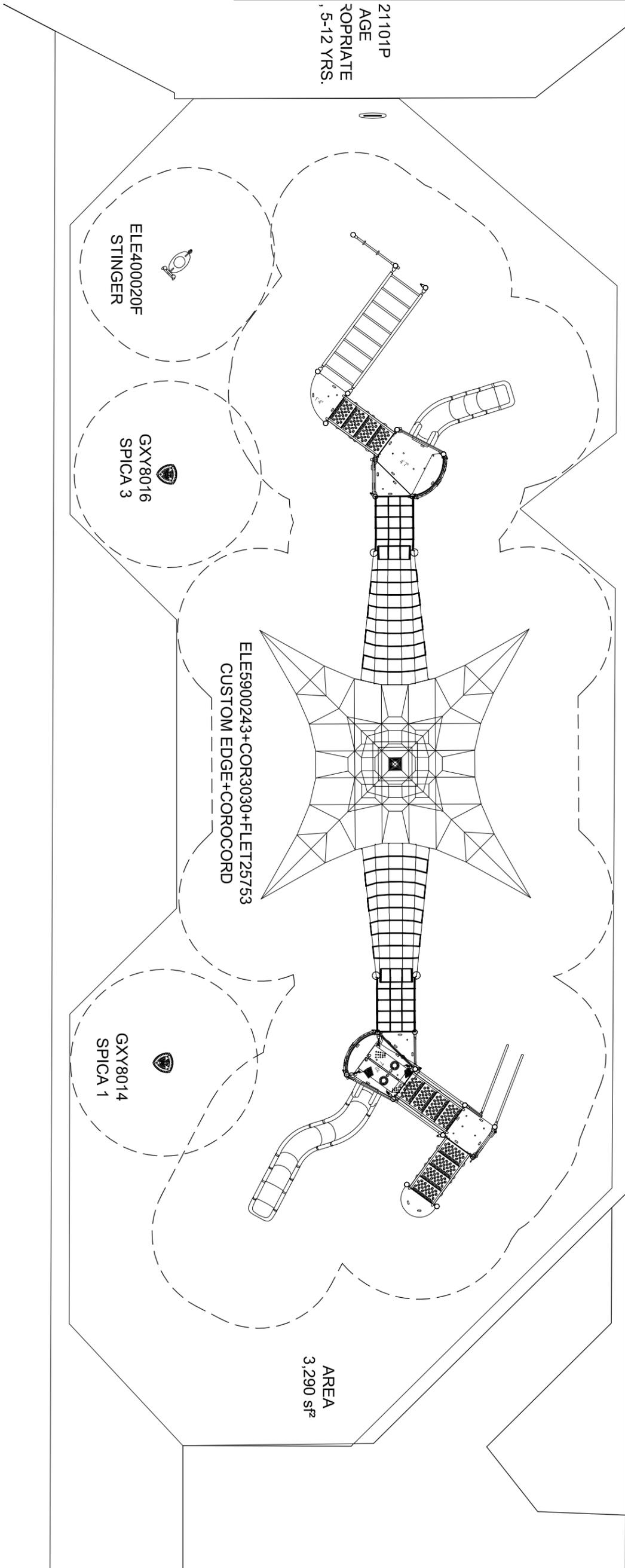
Printed in USA by KOMPAN. © 2010 KOMPAN, Inc., Tacoma, WA, USA.

All composite structures shown require a site grade of 1% maximum.

For surface mount options, the concrete requirements may be up to 5½" of 3,500 psi minimum compressive strength. Contact KOMPAN for specific product requirements.

Site representation is based upon estimated site dimensions and cannot be used as an accurate way of determining site area.

Layout is in accordance with ASTM F1487-11



317'-1"  
[9665cm]

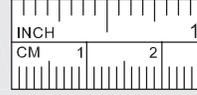
AREA  
3,290 sf²

# Pershing Fields



Project: Area 4 Date: 01/23/15  
Model: As Noted PSC:  
Rep: KOMPAN - Chris Valdez Designer: JenMei

SCALE: 1/8" = 1'-0"



**FOR QUOTING ONLY  
NOT FOR CONSTRUCTION**

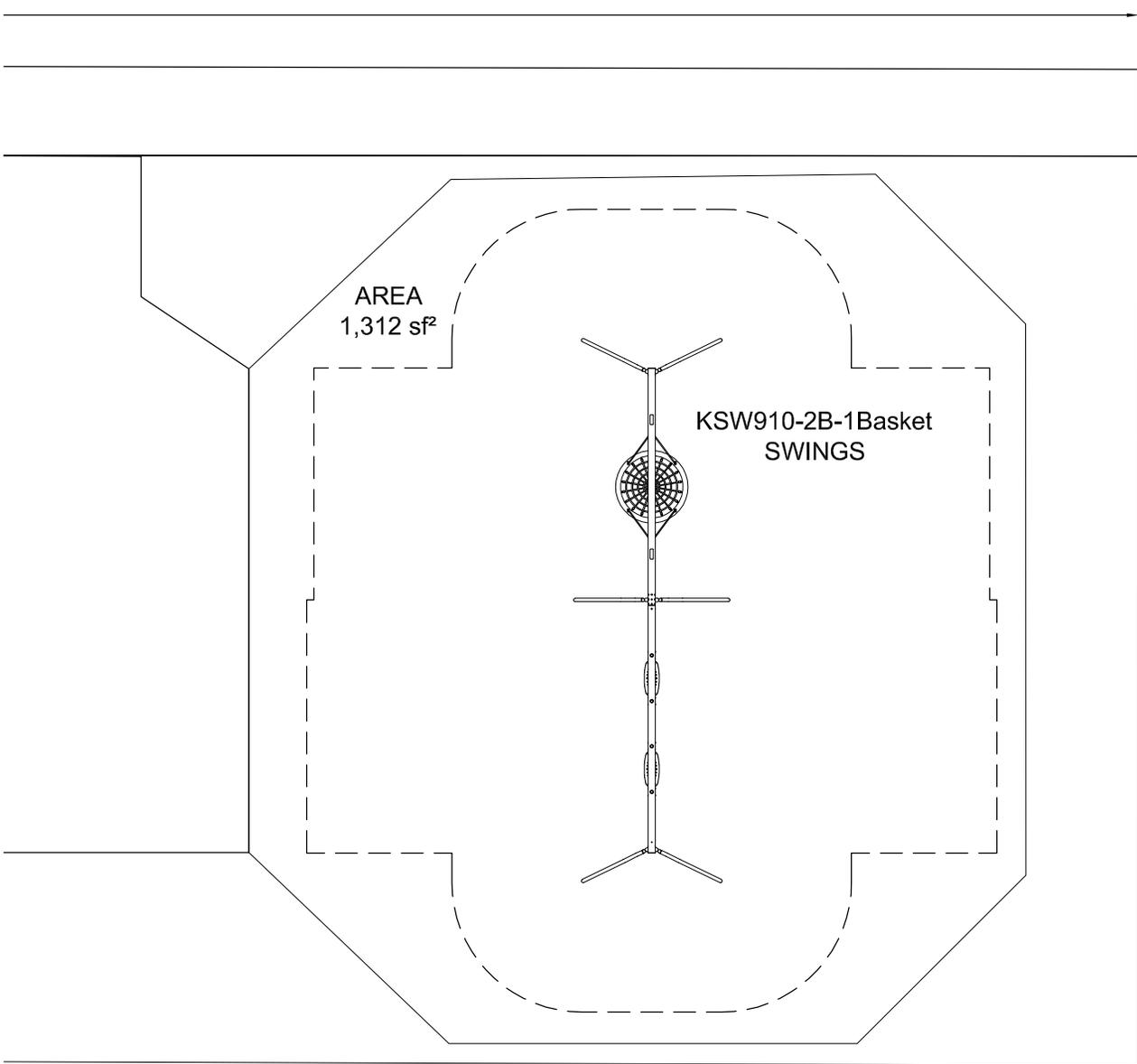
Printed in USA by KOMPAN. © 2010 KOMPAN, Inc., Tacoma, WA, USA.

All composite structures shown require a site grade of 1% maximum.

For surface mount options, the concrete requirements may be up to 5½" of 3,500 psi minimum compressive strength. Contact KOMPAN for specific product requirements.

Site representation is based upon estimated site dimensions and cannot be used as an accurate way of determining site area.

Layout is in accordance with ASTM F1487-11



**SECTION 02930 – LANDSCAPE PLANTING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Trees
  - 2. Shrubs
  - 3. Groundcover
  - 4. Soil Amendments
  - 5. Weed Barrier
  - 6. Mulch
- B. Related Sections: The following sections contain requirements related to this Section
  - 1. Site Clearing as specified in Division 2 Section “Site Clearing”.

**1.3 DEFINITIONS**

- A. Balled and Burlapped Stock: Exterior plants dug with firm, natural root balls of earth in which they are grown, with ball size not less than diameter and depths as recommended by ANSI Z60.1. Root ball shall be wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.
- B. Balled and Potted Stock: Exterior plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size shall not be less than sizes indicated with diameter and depth recommended by ANSI Z60.1 for type and size of exterior plant required.
- C. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.

- D. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted exterior plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of exterior plant.
- E. Finish Grade: Elevation of finished surface of planting soil.
- F. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil; and free of hazardous materials.
- G. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments; and free of hazardous materials.
- H. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each of the following:
  - 1. 5 lb of mulch for each color and texture of stone or organic mulch is required, in labeled plastic bags.
  - 2. Weed barrier fabric, 8”x 11” rectangle swatch, with manufacturer's information, specified tensile strength, thickness and weight in ounces / square yard.
- C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
  - 1. Manufacturer's certified analysis for standard products, i.e. Soil Analysis.
  - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- D. Qualification Data: For landscape Installer and sub contractors operating heavy equipment.
- E. Material Test Reports: Soil analysis for existing soils in proposed planting areas shall be submitted. Samples should be taken at various depths. The first sample shall be the surface soil, 6” depth; the second depth shall be 15”. All imported off site soils for planting shall have a Soil Analysis Report submitted. In both instances Soil Analysis reports shall be conducted by an accredited Soil Lab as approved by the Architect.
- F. Planting Schedule: Indicating anticipated planting dates for exterior plants.

- G. Maintenance Instructions: Maintain trees for the duration of installation process, until acceptance. Recommended maintenance procedures to be established for maintenance of exterior plants during a calendar year. Submit before maintenance period.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful planting and establishment of exterior plants.
  - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when exterior planting is in progress.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, such as State University Agricultural Extension Office, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; hazardous material; pH; and mineral and plant-nutrient content of topsoil.
  - 1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.
- D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
  - 1. Selection of some of the exterior plants will be made by Architect or Landscape Architect, who will tag plants at their place of growth before they are prepared for transplanting.
- E. Tree Measurements: Measure according to ANSI Z60.1 with branches and trunks in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch, caliper size, and 12 inches above ground for larger sizes. Measure main body of tree for height and spread; do not measure branches or roots tip-to-tip.
- F. Observation: Landscape Architect or Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Landscape Architect or Architect retains right to observe trees, further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees immediately from Project site.
  - 1. Notify Landscape Architect or Architect of sources of planting materials seven (7) seven days in advance of delivery to site.

- G. Preinstallation Conference: Conduct conference at Project Site.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver exterior plants freshly dug.
- B. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sunscald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
- C. Handle planting stock by root ball, do not use trunk to lift tree or maneuver root ball within tree pit. Ensure root ball is intact, compacted and whole.
- D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist
  - 1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
  - 2. Set balled stock on ground and cover ball with soil, peat moss, wood chips, mulch, sawdust, or other acceptable material.
  - 3. Do not remove container-grown stock from containers before time of planting. Water root systems of exterior plants stored on-site with a fine-mist spray or with slow trickling hose.
  - 4. Water as often as necessary to maintain root systems in a moist condition.

**1.7 COORDINATION**

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
  - 1. Spring Planting: Mid-March to End of April.
  - 2. Fall Planting: Mid-September- Early November.
  - 3. As directed by the Landscape Architect, Engineer or the City.
- B. Coordinate with Architect for access to site; locate material staging areas, delivery locations and scheduling so as to not interfere with other activities.
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

**1.8 WARRANTY**

- A. Warranty: Warranty plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
  - 1. Warranty Period for Plants: Twelve (12) months from date of Substantial Completion.
  - 2. Remove dead plants immediately, unless required to plant in the succeeding planting season, with same type, variety, and size with appropriate staking and guying as initially specified herein.
  - 3. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.

**1.9 MAINTENANCE**

- A. Plants: Maintain for the following maintenance period by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree wrappings.
  - 1. Maintenance Period: Twelve (12) months from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 PLANT MATERIAL**

- A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sunscald, injuries, abrasions, and disfigurement.
- B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Landscape Architect or Architect, with a proportionate increase in size of roots or balls.
- C. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.

**2.2 SHADE AND FLOWERING TREES**

- A. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.
  - 1. Provide balled and burlapped trees.
- B. Upright, Spreading Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:
  - 1. Stem Form: Single stem.
  - 2. Provide balled and burlapped trees.

**2.3 TOPSOIL**

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, and a minimum of (6) six percent organic material content. Topsoil shall be natural, friable, fertile, fine loamy soil free from subsoil, stones 1/2 inch or larger in any dimension, litter sod, stiff clay, stumps, roots, toxic or hazardous substances, or any other extraneous materials harmful to plant growth and planting operations.
  - 1. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Submit Soil Analysis as described in above section. 1.5 (B-C). Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

**2.4 INORGANIC SOIL AMENDMENTS**

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
  - 1. Class: Class O, with a minimum 95 percent passing through No. 8 sieve and a minimum 55 percent passing through No. 60 sieve.
  - 2. Provide lime in form of dolomitic limestone if magnesium is required.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 sieve and a maximum 10 percent passing through No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.

- E. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
- F. Sand: Clean, washed, natural or manufactured, free of toxic materials.
- G. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

## 2.5 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens / m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  - 1. Organic Matter Content: (50) fifty percent of dry weight.
- B. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.
- C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

## 2.6 FERTILIZER

- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 20 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
  - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

**2.7 MULCHES**

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
  - 1. Type: Double to triple shredded hardwoods mulch, shredded bark, wood and bark chip mulch.

**2.8 WEED-CONTROL BARRIERS**

- A. Nonwoven Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum.

**2.9 TREE STABILIZATION MATERIALS**

- A. Stakes and Guys:
  - 1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2 by 2 inches by 6' length, pointed at one end.
  - 2. Guy and Tie Wire: ASTM A 641/A 641M, Class 1, galvanized-steel wire, 2-strand, twisted, 0.106 inch in diameter.
  - 3. Guy Cable: 5-strand, 3/16-inch- diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches long, with two 3/8-inch galvanized eyebolts.
  - 4. Hose Chafing Guard: Reinforced rubber or plastic hose at least 1/2 inch in diameter, black, cut to lengths required to protect tree trunks from damage.
  - 5. Flags: Standard surveyor's plastic flagging tape, orange or yellow, 6 inches (150 mm) long.

**2.10 MISCELLANEOUS PRODUCTS**

- A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturers' written instructions.
- B. Trunk-Wrap Tape: Two layers of crinkled paper cemented together with bituminous material, 4-inch wide minimum, with stretch factor of 33 percent.
- C. Trunk Guard: 12" long black corrugated pipe with slit the entire length. Install and locate at the base of trunk protecting tree flare.

**2.11 PLANTING SOIL MIX**

- A. Planting Soil Mix: Mix topsoil with the following soil amendments and fertilizers in the following quantities:
  - 1. Ratio of Loose Compost to Topsoil by Volume: (1:3) one to three.
  - 2. Ratio of Loose Peat to Topsoil by Volume: (1:3) one to three.
  - 3. Weight of Lime per 1000 Sq. Ft as per submitted Soil Analysis Recommendations.
  - 4. Weight of Sulfur per 1000 Sq. Ft. as per submitted Soil Analysis Recommendations.
  - 5. Weight of Agricultural Gypsum per 1000 Sq. Ft as per submitted Soil Analysis Recommendations.
  - 6. Volume of Sand Plus 10 as per submitted Soil Analysis Recommendations.
  - 7. Weight of Bonemeal per 1000 Sq. Ft. (92.9 Sq. m): as per submitted Soil Analysis Recommendations.
  - 8. Weight of Superphosphate per 1000 Sq. Ft. (92.9 Sq. m): as per submitted Soil Analysis Recommendations.
  - 9. Weight of Commercial Fertilizer per 1000 Sq. Ft. (92.9 Sq. m): as per submitted Soil Analysis Recommendations.
  - 10. Weight of Slow-Release Fertilizer per 1000 Sq. Ft. (92.9 Sq. m): as per submitted Soil Analysis Recommendations.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Flag, mark, spray paint all underground utilities. Contact New Jersey ONE CALL, system for aiding in mark out, phone number 1-800-272-1000. Maintain all markings, flags and their locations for the duration of the installation.
- B. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, existing sloped lawn areas and other facilities, and lawns and existing exterior plants from damage caused by planting operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

- C. Lay out individual tree locations for plantings. Stake locations and outline areas; adjust locations when requested, and obtain Architect or Owner approval of layout before planting. Make minor adjustments as required.
- D. Apply antidesiccant to trees using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
  - 1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

### 3.3 PLANTING BED ESTABLISHMENT

- A. Loosen subgrade of planting beds to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off City's property.

### 3.4 TREE AND SHRUB EXCAVATION

- A. Preparing Shade Tree Planting Pit:
  - 1. Excavate a shallow broad planting hole. The Hole shall be approximately (3) Three times the diameter of the root ball and no deeper than the height of the root ball or as indicated on the bid documents.
  - 2. Place tree in center of the planting pit. Place on firmly packed soil to prevent settling. The trunk flare, the portion of the trunk where the roots spread at the base of the tree, shall be 1-2" above the edge of the planting pit. The flare shall be partially visible and not wholly covered by planting soil.
  - 3. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
  - 4. Thoroughly blend planting soil mix and amendments on-site before placing.
    - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
  - 5. Mix lime with dry soil before mixing fertilizer.
  - 6. Do not install planting soil or subgrade if frozen, muddy or excessively wet.
  - 7. Backfill planting soil mix around root ball in layer, water in soil with hoses to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat

watering until no more water is absorbed. Water again after placing and final layer of planting soil mix.

- B. Organic Mulching: Apply 3 inches average thickness of organic mulch extending to the edge of planting. Do not place mulch within 6 inches of trunks or stems.
- C. Wrap trees with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width, and securely attach without causing girdling. Inspect tree trunks for injury, improper pruning, and insect infestation; take corrective measures required before wrapping.
- D. Subsoil removed from excavations may be used as backfill after the required amendments are added in accordance with soil tests.
- E. Obstructions: Notify Landscape Architect or Architect if unexpected rock or obstructions detrimental to trees are encountered in excavations.
  - 1. Hardpan Layer: Drill 6-inch- diameter holes into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.
- F. Drainage: Notify Landscape Architect or Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.
- G. Fill excavations with water and allow to percolate away before positioning trees.

**3.5 TREE AND SHRUB PRUNING**

- A. Prune, thin, and shape trees and shrubs as directed by Landscape Architect.

**3.6 GUYING AND STAKING**

- A. Upright Staking and Tying: Stake trees of 1.5-5 inch caliper use a minimum of 2 stakes of length required to penetrate at least 24 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- B. Guying and Staking: Guy and stake trees exceeding 18 feet in height and more than 4 inches in caliper, unless otherwise indicated. Securely attach no fewer than 4 guys to stakes 36 inches long, driven to grade.
  - 1. For trees more than 6 inches in caliper, anchor guys to pressure-preservative-treated deadmen buried at least 36 inches below grade. Provide turnbuckles for each guy wire and tighten securely.
  - 2. Attach flags to each guy wire, 30 inches (760 mm) above finish grade.
  - 3. Remove after two (2) growing seasons.

**3.7 PLANTING BED MULCHING**

- A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches (150 mm).
  - 1. Material and Seam Treatment: Non-woven fabric with seams pinned, Composite fabric with seams pinned.
- B. Mulch backfilled surfaces of planting beds and other areas indicated.
  - 1. Organic Mulch: Apply 4 inch minimum thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

**3.8 CLEANUP AND PROTECTION**

- A. During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition.
- B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.
- C. Re-assemble and attach all fencing that may be removed during construction to pre-construction condition or better.

**3.9 DISPOSAL**

- A. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 02930

**SECTION 03300 - CAST-IN-PLACE CONCRETE**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.
- B. Related Sections include the following:
  - 1. Division 2 Section "Earthwork" for drainage fill under slabs-on-grade.
  - 2. Division 2 Section "Cement Concrete Pavement" for concrete pavement and walks.

**1.3 SPECIAL REQUIREMENTS**

- A. The design shall strive to maintain dimensions as shown in order to fit into the design and existing conditions.

**1.4 SUBMITTALS**

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
  - 1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
  - 1. ACI 301, "Specification for Structural Concrete."
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.
  - 1. Avoid damaging coatings on steel reinforcement.
  - 2. Repair damaged epoxy coatings on steel reinforcement according to ASTM D 3963/D 3963M.

## PART 2 - PRODUCTS

### 2.1 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Epoxy-Coated Reinforcing Bars (for non bent conditions): ASTM A 775/A 775M, and as follows:

- C. Epoxy-Coated Fabricated Reinforcing Bars (for all bent locations): ASTM A 934/A 934M, and as follows:
  - 1. Steel Reinforcement: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- D. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

## 2.2 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
  - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.
  - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
- B. Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars.

## 2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
  - 1. Fly Ash: ASTM C 618, Class F.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
  - 1. Class: Severe weathering region, but not less than 4S.
  - 2. Nominal Maximum Aggregate Size: 1-1/2 inches (38 mm).
  - 3. Nominal Maximum Aggregate Size: 3/4 inch (19 mm) at concrete monument location.
- C. Water: Potable and complying with ASTM C 94.

## 2.4 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- E. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
- F. Splash Pad Colors: Scofield chromix in color to be selected from full range.
- G. Curing and Sealing Materials.

## 2.5 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- F. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Clear, Waterborne, Membrane-Forming Curing Compound:
    - a. Aqua-Cure VOX; Euclid Chemical Co.

## 2.6 RELATED MATERIALS

- A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
  - 1. Type: Class II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.
- C. Waterstops:
  - 1. Elastic waterstops to be Everlastic EJ-2000 as manufactured by Williams Products or approved equal.
  - 2. Cast-in-place waterstops to be TW-618 as manufactured by Bo Metals, Inc. or approved equal.

## 2.7 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
  - 1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.
- C. Slab-on-Grade, Play Equipment and Other Footings: Proportion normal-weight concrete mix as follows:
  - 1. Compressive Strength (28 Days): 4000 psi (24.1 MPa), Class B.
  - 2. Minimum Cementitious Materials Content: 540 lb/cu. yd. (320 kg/cu. m).
  - 3. Maximum Slump: 3 inches (75 mm).
- D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  - 1. Fly Ash: 25 percent.
- E. Maximum Water-Cementitious Materials Ratio: 0.45 for concrete exposed to deicers or subject to freezing and thawing while moist, including all footings and new splash pad.

- F. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus 1 or minus 1.5 percent, unless otherwise indicated:
  - 1. Air Content: 6 percent for 1-inch- (25-mm-) nominal maximum aggregate size.
- G. Do not air entrain concrete to trowel-finished interior floors and suspended slabs. Do not allow entrapped air content to exceed 3 percent.
- H. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- I. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
  - 4. Use corrosion-inhibiting admixture in concrete mixes where indicated.

## 2.8 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."
- B. Splash Pad reinforcement to be shop fabricated and epoxy coated.

## 2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.
  - 1. Delete references for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.

## PART 3 - EXECUTION

### 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
  - 1. Class A, 1/8 inch (3 mm) at concrete exposed to view.
  - 2. Class C, 1/2 inch (13 mm) at all other locations.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
  - 1. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### 3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor bolts, accurately located, to elevations required.
  - 2. Install piping and waterstops prior to concrete placement.

### 3.3 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

### 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Shop- or field-weld reinforcement according to AWS D1.4, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

### 3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
  3. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  4. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:
  1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  1. Terminate full-width joint-filler strips not less than 1/2 inch (12 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Division 7 Section "Joint Sealants," are indicated.
  2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

- E. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.
  - 1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

### 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
- D. Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
  - 1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
  - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
  2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm) in height.
1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.

- C. Rubbed Finish: Apply the following to smooth-formed finished concrete:
1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
  2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system
  2. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E 1155/E 1155M for a randomly trafficked floor surface:

- a. Specified overall values of flatness, F(F) 35; and levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and levelness, F(L) 17; for slabs-on-grade.
3. Finish and measure surface so gap at any point between concrete surface and an unlevleed freestanding 10-foot- (3.05-m-) long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed the following:
  - a. 3/16 inch (4.8 mm).
- D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
  1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

### 3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
- B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

### 3.10 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
    - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### 3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor to engage and pay for a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix up to 25 cu. yd. (19 cu. m), plus one set for each additional 25 cu. yd. (19 cu. m) or fraction thereof.

2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
  4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
  5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
  6. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
    - a. Cast and field cure one set of four standard cylinder specimens for each composite sample.
  7. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.
    - a. Test two field-cured specimens at 7 days and two at 28 days.
    - b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.
- C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
- E. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.

- F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
  
- G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION 03300

**SECTION 05721 - ORNAMENTAL RAILINGS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Ornamental fence and gates around play areas fabricated from custom shapes and stock shapes.
- B. Related Sections include the following:
  - 1. Division 2 Section "Cast in Place Concrete" for items set in concrete curbs.
  - 2. Division 9 Section "High-Performance Coatings" for fabricated metal components.

**1.3 DEFINITIONS**

- A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor areas, pedestrian guidance and support, visual separation, or wall protection.

**1.4 PERFORMANCE REQUIREMENTS**

- A. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
  - 1. Stainless Steel: 60 percent of minimum yield strength.
  - 2. Steel: 72 percent of minimum yield strength.
- B. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails:

- a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
  - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
  - c. Uniform and concentrated loads need not be assumed to act concurrently.
2. Top Rails of Guards:
- a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction
  - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
  - c. Uniform and concentrated loads need not be assumed to act concurrently.
3. Infill of Guards:
- a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
  - b. Infill load and other loads need not be assumed to act concurrently.
- C. Thermal Movements: Provide exterior railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

## 1.5 SUBMITTALS

- A. Product Data: For the following:
1. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Indicate materials and profiles of each ornamental metal member, castings, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design, including mechanical finishes.

- D. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- E. Welding certificates.

## 1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing through one source from a single manufacturer.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of railings and are based on the specific system indicated.
  - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- C. Installer Qualifications: Arrange for installation of ornamental metal specified in this Section by the same firm that fabricated it.
  - 1. Fabricator Qualifications: A firm experienced in producing ornamental metal similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
  - 2. Available Fabricator: Subject to compliance with requirements, fabricators suitable to perform work of this section, but are not limited to, the following:
    - a. Maza and Maza
- D. Welding: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1, "Structural Welding Code--Steel."
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Build mockups for each form and finish of railing consisting of two posts, top rail, infill area, and anchorage system components that are full height and are not less than 24 inches (600 mm) in length.

## 1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.
  - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating railings without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

## 1.8 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Steel and Iron Ornamental Railings:
    - a. Architectural Iron Designs, Inc.
    - b. Blum, Julius & Co., Inc.
    - c. Wagner, R & B, Inc.; a division of the Wagner Companies.

## 2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails, unless otherwise indicated.

## 2.3 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold formed).
- B. Bars: Hot-rolled, carbon steel complying with ASTM A 29/A 29M, Grade 1010.
- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- D. Castings: Either gray or malleable iron, unless otherwise indicated.
  - 1. Gray Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.
  - 2. Malleable Iron: ASTM A 47/A 47M.

## 2.4 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Shop Primers: Provide primers that comply with Division 9 Section "High-Performance Coatings."
- C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for exterior applications.

## 2.5 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 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 flux immediately.
  - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- H. Form changes in direction as follows:
  - 1. As detailed.
- I. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- J. Close exposed ends of hollow railing members with prefabricated end fittings.
- K. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work, unless otherwise indicated.
- L. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

- M. For railing posts set in concrete, set as indicated on drawings.

## 2.6 GATES

- A. Gates shall be fabricated using fence panel material and gate ends as detailed on drawings. All connections shall be joined by welding. Each picket and rail intersection shall also be joined by welding.
- B. Completed gate sections shall be capable of supporting a 600 lb. load applied at Midspan without permanent deformation.
- C. Hardware Materials: Stainless Steel shapes to suit gate size and as specified.
- D. Hinges: Structurally capable of supporting gate leaf and allow opening and closing without binding. Non-lift-off ball bearing type hinge design stainless steel, shall permit gate to swing 180 degrees. Min. 1 pair hinges each leaf.
- E. Latch Assembly: Fulcrum latch with strike strap, heavy duty, welded to post and finished to match fence.
- F. Finish: Same as specified for fence components.

## 2.7 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

## 2.8 STEEL AND IRON FINISHES

- A. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed railings:
  - 1. Exterior Railings (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- B. Apply shop primer to prepared surfaces of railings, unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
- C. High-Performance Coating Finish: Comply with Division 9 Section "High-Performance Coatings."

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  - 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
  - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (5 mm in 3 m).
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

### 3.2 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in Part 2 "Fabrication" Article whether welding is performed in the shop or in the field.
- B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches (50 mm) beyond joint on either side, fasten internal sleeve securely to 1 side, and locate joint within 6 inches (150 mm) of post.

### 3.3 ANCHORING POSTS

- A. Core-drill holes not less than indicated on drawings for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout mixed and placed to comply with anchoring material manufacturer's written instructions.

- B. Leave anchorage joint exposed; wipe off surplus anchoring material; and leave 1/8-inch (3-mm) buildup, sloped away from post.

#### 3.4 ANCHORING RAILING ENDS

- A. Anchor railing ends to concrete and masonry with brackets on underside of rails connected to railing ends and anchored to wall construction with anchors and bolts.

#### 3.5 GATES

- A. Install gate posts in accordance with manufacturers instructions.
  1. Install gates plumb, level, and secure for full opening without interference.
  2. Attach hardware by means which will prevent unauthorized removal.
  3. Adjust hardware for smooth operation.

#### 3.6 CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 painting Sections.

#### 3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by ornamental metal fabricator. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05721

## SECTION 07920 - JOINT SEALANTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes sealants for the following applications:
  - 1. Exterior joints in the following horizontal traffic surfaces:
    - a. Control, expansion, and isolation joints in cast-in-place concrete slabs.
    - b. Other joints as indicated.
- B. Related Sections include the following:
  - 1. Division 2 Section "Pavement Joint Sealants" for sealing joints in pavements, walkways, and curbing.

## 1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

## 1.4 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each type and color of joint sealant required. Install joint sealants in **1/2-inch- (13-mm-)** wide joints formed between two **6-inch- (150-mm-)** long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

## 1.5 QUALITY ASSURANCE

- A. **Installer Qualifications:** An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.
- B. **Source Limitations:** Obtain each type of joint sealant through one source from a single manufacturer.

## 1.6 PROJECT CONDITIONS

- A. **Environmental Limitations:** Do not proceed with installation of joint sealants under the following conditions:
  - 1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer.
  - 2. When joint substrates are wet.
- B. **Joint-Width Conditions:** Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- C. **Joint-Substrate Conditions:** Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

## 1.7 WARRANTY

- A. **General Warranty:** Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. **Special Installer's Warranty:** Written warranty, signed by Installer agreeing to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. **Warranty Period:** Two years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PRODUCTS AND MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified in the sealant schedules at the end of Part 3.

### 2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range for this characteristic. Special color will be required to match the existing gazebo colored concrete slab.

### 2.3 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant in the Elastomeric Joint-Sealant Schedule at the end of Part 3, including those referencing ASTM C 920 classifications for type, grade, class, and uses.
- B. Additional Movement Capability: Where additional movement capability is specified in the Elastomeric Joint-Sealant Schedule, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C 920 for uses indicated.

### 2.4 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

- B. Cylindrical Sealant Backings: ASTM C 1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
  - 1. Type C: Closed-cell material with a surface skin.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

## 2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous joint surfaces include the following:
    - a. Concrete.
  3. Remove laitance and form-release agents from concrete.
  4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
    - a. Metal.
- B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.
- E. Install sealants by proven techniques to comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses provided for each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealants from surfaces adjacent to joint.
  2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
  4. Provide flush joint configuration, per Figure 5B in ASTM C 1193, where indicated.

### 3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### 3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

### 3.6 ELASTOMERIC JOINT-SEALANT SCHEDULE

- A. Mildew-Resistant Silicone Sealant [ES-1]: Where joint sealants of this type are indicated, provide products formulated with fungicide that are intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and temperature extremes, and that comply with the following:
1. Products: Available products include the following:
    - a. 786 Mildew Resistant; Dow Corning.
    - b. 898 Silicone Sanitary Sealant; Pecora Corporation.
  2. Type and Grade: S (single component) and NS (nonsag).
  3. Class: 25.
  4. Use Related to Exposure: NT (nontraffic).
  5. Uses Related to Joint Substrates: G, A, and, as applicable to joint substrates indicated, O.
    - a. Use O Joint Substrates: Coated glass, color anodic aluminum, aluminum coated with a high-performance coating, galvanized steel, and ceramic tile.
- B. Multicomponent Nonsag Urethane Sealant [ES-2]: Where joint sealants of this type are indicated, provide products complying with the following:
1. Products: Available products include the following
    - a. Dynatred; Pecora Corporation.
    - b. NP 2; Sonneborn Building Products Div., ChemRex Inc.
  2. Type and Grade: M (multicomponent) and NS (nonsag).
  3. Class: 25.
  4. Use[s] Related to Exposure: T (traffic) and NT (nontraffic).
  5. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.
  6. Applications: Concrete wing walls, gazebo slab and foundation wall joints, perimeter of openings, brick joints.
- C. Single Component Butyl Rubber Sealant [ES#3]: Where joint sealants of this type are indicated, provide products complying with the following:
1. Products: Available products include the following:
    - a. BC-158; Pecora Corporation
  2. Type and Grade: S (Single Component) and NS (nonsag).

3. Class: 25
4. Use Related to Exposure: NT (nontraffic).
5. Use Related to Joint Substates: M,A
6. Applications: Thresholds set in sealant.

END OF SECTION 07920

**SECTION 09960 - HIGH-PERFORMANCE COATINGS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes surface preparation and field application of high-performance coating systems to items and surfaces scheduled.

**1.3 DEFINITIONS**

- A. Standard coating terms defined in ASTM D 16 apply to this Section.
- B. Gloss ranges used in this Section include the following:
  - 1. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
  - 2. High gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.
- C. Environments: The following terms are used in Part 2 of this Section to distinguish between different corrosive exposures:
  - 1. "Severe environments" are highly corrosive industrial atmospheres with sustained exposure to high humidity and condensation and with frequent cleaning using strong chemicals. Environments with heavy concentrations of strong chemical fumes and frequent splashing and spilling of harsh chemical products are severe environments.
  - 2. "Moderate environments" are corrosive industrial atmospheres with intermittent exposure to high humidity and condensation, occasional mold and mildew development, and regular cleaning with strong chemicals. Environments with exposure to heavy concentrations of chemical fumes and occasional splashing and spilling of chemical products are moderate environments.

3. "Mild environments" are industrial atmospheres with normal exposure to moderate humidity and condensation, occasional mold and mildew development, and infrequent cleaning with strong chemicals. Environments with low levels of mild chemical fumes and occasional splashing and spilling of chemical products are mild environments. Normal outdoor weathering is also considered a mild environment.

#### 1.4 SUBMITTALS

- A. Product Data: For each coating system indicated. Include block fillers and primers.
  1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference the specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
  2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each material specified.
- B. Certification by manufacturer that products supplied comply with requirements indicated that limit the amount of VOCs in coating products.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.
  1. After color selection, Architect will furnish color chips for surfaces to be coated.
- D. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.
  1. Provide stepped Samples defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
  2. List of material and application for each coat of each sample. Label each sample for location and application.
  3. Submit samples on the following substrates for Architect's review of color and texture:
    - a. Concrete: Provide two 4-inch- (100-mm-) square samples for each color and finish.
    - b. Wood: Provide two 12-inch- (300-mm-) square samples of each color and material on hardboard.
    - c. Ferrous and Nonferrous Metal: Provide two 4-inch- (100-mm-) square samples of flat metal and two 8-inch- (200-mm-) long samples of solid metal for each color and finish.

- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

## 1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed high-performance coating system applications similar in material and extent to those indicated for Project and whose work has a record of successful in-service performance.
- B. Source Limitations: Obtain primers and undercoat materials for each coating system from the same manufacturer as the finish coats.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label with the following information:
  - 1. Name or title of material.
  - 2. Product description (generic classification or binder type).
  - 3. Manufacturer's stock number and date of manufacture.
  - 4. Contents by volume, for pigment and vehicle constituents.
  - 5. Thinning instructions.
  - 6. Application instructions.
  - 7. Color name and number.
  - 8. Handling instructions and precautions.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
  - 1. Protect materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and applying coatings.

## 1.7 PROJECT CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 45 and 95 deg F (7 and 35 deg C).

- B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
  - 1. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before proceeding with or continuing coating operation.
  - 2. Work may continue during inclement weather only if areas and surfaces to be coated are enclosed and temperature within the area can be maintained within limits specified by manufacturer during application and drying periods.

## 1.8 EXTRA MATERIALS

- A. Furnish extra high-performance coating materials from the same production run as materials applied and in quantities described below. Package coating materials in unopened, factory-sealed containers for storage and identify with labels describing contents.
  - 1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.785 L) or 1 case, as appropriate, of each material and color applied.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products indicated in the coating system descriptions.
- B. Manufacturers' Names: The following manufacturers are referred to in the coating system descriptions by shortened versions of their names shown in parenthesis:
  - 1. Moore: Benjamin Moore & Co. (Moore).

### 2.2 COATINGS MATERIALS, GENERAL

- A. Material Compatibility: Provide primers, undercoats, and finish-coat materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's highest grade of the various high-performance coatings specified. Materials not displaying manufacturer's product identification are not acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. VOC Classification: Provide high-performance coating materials, including primers, undercoats, and finish-coat materials, that have a VOC classification of 450 g/L or less.

## 2.3 COLORS

- A. Colors: As selected by Architect from manufacturer's full range.

## 2.4 EXTERIOR HIGH-PERFORMANCE COATING SYSTEMS

- A. Ferrous Metal: Provide the following finish systems over exterior ferrous-metal surfaces:
  1. Mild Environment (Semigloss Finish): One finish coat over an intermediate coat over a primer. (Total 3 coats)
    - a. Primer: Acrylic primer applied at spreading rate recommended by manufacturer.
      - 1) Benjamin Moore: DTM P04-01.
    - b. Intermediate Coat: Semigloss acrylic enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 1.5 to 4.0 mils (0.038 to 0.102 mm).
      - 1) Benjamin Moore: D.T.M. M29 Acrylic Semi-Gloss.
    - c. Topcoat: Semigloss acrylic enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 1.5 to 4.0 mils (0.038 to 0.102 mm).
      - 1) Benjamin Moore: D.T.M. M29 Acrylic Semi-Gloss.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. With Applicator present, examine substrates and conditions under which high-performance coatings will be applied, for compliance with coating application requirements.

1. Apply coatings only after unsatisfactory conditions have been corrected and surfaces to receive coatings are thoroughly dry.
  2. Start of application is construed as Applicator's acceptance of surfaces within that particular area.
- B. Coordination of Work: Review other Sections in which primers or other coatings are provided to ensure compatibility of total systems for various substrates. On request, furnish information on characteristics of specified finish materials to ensure compatible primers.
1. If a potential incompatibility of primers applied by others exists, obtain the following from the primer Applicator before proceeding:
    - a. Confirmation of primer's suitability for expected service conditions.
    - b. Confirmation of primer's ability to be top coated with materials specified.
  2. Notify Architect about anticipated problems before using the coatings specified over substrates primed by others.

### 3.2 PREPARATION

- A. General: Remove plates, machined surfaces, and similar items already in place that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.
1. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved.
- B. Cleaning: Before applying high-performance coatings, clean substrates of substances that could impair bond of coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's written instructions for each substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove primers and reprime substrate.
  2. Ferrous-Metal Substrates: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC recommendations.
    - a. Blast-clean steel surfaces according to SSPC-SP 10/NACE No. 2.

- b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
    - c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire brush, solvent clean, and touch up with same primer as the shop coat.
  - 3. Ferrous-Metal Substrates: Clean existing coated ferrous metal surfaces using cleaning methods that comply with SSPC recommendations
    - a. Power tool clean steel surfaces according to SSPC-SP-3.
    - b. Rusted areas shall be treated with Moore M84. Wipe off loose powder with rags and solvent.
- D. Material Preparation: Carefully mix and prepare coating materials according to manufacturer's written instructions.
  - 1. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue.
  - 2. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating material before using.
  - 3. Use only the type of thinners approved by manufacturer and only within recommended limits.
- E. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

### 3.3 APPLICATION

- A. General: Apply high-performance coatings according to manufacturer's written instructions.
  - 1. Use applicators and techniques best suited for the material being applied.
  - 2. Do not apply high-performance coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film.
  - 3. Coating colors, surface treatments, and finishes are indicated in the coating system descriptions.
  - 4. Provide finish coats compatible with primers used.
  - 5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, grilles, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

- a. Coat surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
  - b. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- B. Scheduling Coating: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required is the same regardless of application method.
    - a. Omit primer on metal surfaces that have been shop primed and touchup painted.
    - b. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
    - c. Where manufacturer's written instructions require sanding, sand between applications to produce a smooth, even surface.
    - d. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until coating has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause undercoat to lift or lose adhesion.
  2. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance. Give special attention to edges, corners, crevices, welds, exposed fasteners, and similar surfaces to ensure that they receive a dry film thickness equivalent to that of flat surfaces.
- C. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brush Application: Use brushes best suited for material applied and of appropriate size for the surface or item being coated.
    - a. Apply primers and first coats by brush unless manufacturer's written instructions permit using roller or mechanical applicators.
    - b. Brush out and work brush coats into surfaces in an even film.
    - c. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw glass lines and color breaks.
  2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for the material and texture required.

3. Spray Equipment: Use mechanical methods to apply coating if permitted by manufacturer's written instructions and governing regulations.
  - a. Use spray equipment with orifice size recommended by manufacturer for material and texture required.
  - b. Apply each coat to provide the equivalent hiding of brush-applied coats.
  - c. Do not double back with spray equipment building-up film thickness of two coats in one pass, unless recommended by manufacturer.
- D. Minimum Coating Thickness: Apply each material no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
- E. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by manufacturer, to material required to be coated or finished that has not been prime coated by others.
  1. Recoat primed and sealed substrates if there is evidence of suction spots or unsealed areas in first coat, to ensure a finish coat with no burn-through or other defects caused by insufficient sealing.
- G. Completed Work: Match approved Samples for color, texture, and coverage. Remove, refinish, or recoat work that does not comply with specified requirements.

### 3.4 CLEANING

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
  1. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

### 3.5 PROTECTION

- A. Protect work of other trades, whether being coated or not, against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

1. Provide "Wet Paint" signs to protect newly coated finishes. After completing coating operations, remove temporary protective wrappings provided by others to protect their work.
2. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces. Comply with procedures specified in PDCA P1.

END OF SECTION 09960

**BID PROPOSAL**

CITY OF JERSEY CITY  
DEPARTMENT OF ADMINISTRATION  
DIVISION OF ARCHITECTURE, ENG.,  
TRAFFIC AND TRANSPORTATION

Date \_\_\_\_\_

Project No. 2013-024

**SUBMIT AN ORIGINAL BID PROPOSAL DOCUMENT AND ONE (1) COPY WITH ALL NECESSARY ATTACHMENTS IN A SEALED ENVELOPE MARKED ON BOTH SIDES WITH THE PROJECT TITLE.**

Proposal of \_\_\_\_\_ (hereinafter called "Bidder" organized and existing under the laws of the State of \_\_\_\_\_ doing business as \_\_\_\_\_\*)

Gentlemen:

The Bidder, in compliance with your invitation for bids for the:

PERSHING FIELD - PLAYGROUND RENOVATIONS

JERSEY CITY, NEW JERSEY

having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents; within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents of which this proposal is part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" of the City and to fully complete the project within 180 consecutive calendar days. Furthermore, it is understood and agreed in accordance with Article GC-36 "Time for Completion, Liquidated Damages and Extension of Time," that liquidated damages in the amount set forth in Article GC-36 will be charged to the Bidder for each consecutive calendar day of delay until the work is completed and accepted.

Bidder acknowledges receipt of the following addendum:

Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_

Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_

Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_

\*Insert "a corporation, "a partnership", or "an individual" as applicable.

## BID PROPOSAL CHECK LIST

The following documents are to be completed and submitted with the bid proposal. Compliance shall be indicated by placing initials on the line preceding each item attached:

- \* List of Prices
- \* Grand Total Bid Price
- Alternate(s), if applicable, with supporting documentation, if applicable.
- Substitutions, if applicable, are attached in conformance with the Information to Bidders, Article 21, Substitutions
- \* Certificate of Experience of General Contractor
- Certificate of Experience for subcontractors required to be named pursuant to N.J.S.A. 40A:11-16
- \*  Plant and Equipment Questionnaire completed by General Contractor
- Plant and Equipment Questionnaire completed by subcontractors required to be named pursuant to N.J.S.A. 40A:11-16
- Non-Collusion Affidavit
- \*  Corporation or Partnership Statement
- Form MWBE - Minority/Women Business Compliance Plan (3 Forms)
- Exhibit B: Mandatory Equal Employment Opportunity Language (N.J.S.A. 10.5-31 et seq.) (N.J.A.C. 17:27) Construction Contracts **must be signed.**
- State of New Jersey, Division of Contract Compliance Equal Employment Opportunity in Public Contracts' Initial Project Workforce Report Construction (Form AA-201). **Must be submitted after notification of award but prior to signing a construction contract.** Form AA-201 maybe obtained and must be submitted to Jersey City's Public Agency Compliance Officer (P.A.C.O.) at Office of EEO/AA, 280 Grove Street, Room - 103, Jersey City, NJ 07302, Telephone 201-547-4533 and Fax 201-547-5088.
- \*  Bid Bond
- \*  Consent of Surety
- Public Works Contractor Registration Certificates for General Contractor and all Subcontractors listed on page P-8.
- New Jersey Business Registration Certificates of General Contractor and all Subcontractors listed on page P-8.
- \*  Written acknowledgment of addendum (if issued), on Page P-1 of the Bid Form, pursuant to N.J.S.A. 40A:11-23.2(e).

**Failure to include the bid documents listed immediately above that are marked with an asterisk(\*) hall result in automatic rejection of the bid at the time of the bid reception.**

BID PROPOSAL  
Continued

TOTAL BASE BID PRICE

**Base Bid:** The Bidder agrees to perform and provide all labor, materials, equipment and services required to complete all work as described in the Specifications and shown on the drawings for the Lump Sum Price of:

\_\_\_\_\_  
(In Writing)

\_\_\_\_\_  
(In Figures)

**UNIT PRICE:**

The Specifications and Drawings represent the Base Bid, and contain specific quantities of work based on good faith estimates. If during project construction, the quantities contained in the specifications and drawings are exceeded, payment for excess quantities shall be based on the prices set forth below:

**Item No. 1:** Unforeseen excavation and replacement with engineered fill in accordance with Section 02300 - Earthwork

20 C.Y. @ \$ \_\_\_\_\_ Per C.Y. for a Total Cost of \$ \_\_\_\_\_  
(Unit Price in Figures) (Total Cost Item 1 in Figures)

20 C.Y. @ \_\_\_\_\_  
(Write Unit Price)

Per C.Y. for a Total Cost of: \_\_\_\_\_  
(Write Total Cost - Item No. 1)

**Item No. 2:** Rock removal in accordance with Section 02300 - Earthwork. Removal shall be based on line drilling method.

25 C.Y. @ \$ \_\_\_\_\_ Per C.Y. for a Total Cost of \$ \_\_\_\_\_  
(Unit Price in Figures) (Total Cost Item 2 in Figures)

25 C.Y. @ \_\_\_\_\_  
(Write Unit Price)

Per C.Y. for a Total Cost of: \_\_\_\_\_  
(Write Total Cost - Item No. 2)

BID PROPOSAL  
(Continued)  
PROJECT NO. 2013-024

The Unit Price bid shall cover all costs of whatever nature, incidental to that item. In explanation but not in limitation thereof, these costs shall include the cost of all work, labor, material, equipment, transportation and all else necessary to execute the Contract, and all incidental expenses in connection therewith, including all costs on account of loss by damage or destruction encountered for settlement of damages, and including all cost for replacement of defective materials.

The Estimate of material quantities specified is approximate only and is given solely to be used as a uniform basis for comparison of basis. The minimum quantity for any item shall be zero (0). The maximum quantity shall be as stated in the Bid Proposal for each item.

Should the final quantity be less than the maximum quantity stated in the Bid Proposal for any item, the Supplier shall have no claim for loss incurred by him/her for commitments made by him/her in anticipation of the work contemplated, or for loss of anticipated profits, or for work done prior to his/her having been authorized to proceed therewith.

**GRAND TOTAL BID PRICE: (Base Bid Plus Total Cost for Items Nos. 1 and 2)**

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(In Figures)

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(In Writing)

The Contract will be awarded based on the Grand Total bid price. However, it is understood that the Total Cost for quantities are based upon a good faith estimate of the quantity of materials needed; therefore, the actual contract price, which cannot be determined until completion of the project may be for a sum either greater than or less than the Grand Total Bid Price above in accordance with the above Unit Price(s).

PROPOSAL - Continued

It is understood and agreed that the total price stated by the undersigned in the "Schedule of Prices" is based on estimated quantities and will only control in the awarding of the contract. It is further understood that the quantities stated in the "Schedule of Prices" for the items are estimated only and may be increased or decreased as provided in the specifications.

Attached herewith is a (cashier's check)  
(certified check) (Check one)  
(bid bond)

in the amount of \$ \_\_\_\_\_ representing 10% of the total amount bid, but not exceeding \$20,000.00 as stated in Article 8, Page 4.

The undersigned agrees that this check or bond is to be forfeited as liquidated damages and not as a penalty, if the contract is awarded to the undersigned and he shall fail to execute the contract for the project or forward the bond required within the stipulated time. Otherwise, the check or bond will be returned to the undersigned.

Choice of Retainage:

If the Total Price bid for the Contract Work exceeds \$100,000. the undersigned elects the following option for retainage in accordance with the General Conditions: (check one only)

2% Cash from each payment  
2% of Contract amount deposited as approved negotiable securities

The undersigned is (an individual)  
(a corporation) under the laws  
(a partnership)

of the State of \_\_\_\_\_ having offices  
at \_\_\_\_\_.

Signed \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_

Fax (\_\_\_\_) \_\_\_\_\_

(Seal if Bid is by a Corporation)

1. CERTIFICATE OF EXPERIENCE

\_\_\_\_\_ hereby certifies that \_\_\_\_\_  
 has performed the following work within the past three (3) years:

Name of Owner	Amount of Contract	Type of Work	Owner's Representative in charge of Work (Inc. Address and Phone)	Approximate Dates

\_\_\_\_\_  
 Name of Bidder

\_\_\_\_\_  
 By

\_\_\_\_\_  
 Witness

\_\_\_\_\_  
 Title

\_\_\_\_\_

**IMPORTANT: THIS FORM MUST BE FILLED IN BY BIDDER.**

2. PLANT AND EQUIPMENT QUESTIONNAIRE

Submitted to City of Jersey City

By \_\_\_\_\_  
A Corporation  
A Co-partnership  
An Individual

Principal Office \_\_\_\_\_

The signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to interrogatories hereinafter made.

a. In what manner have you inspected the proposed work? Explain in detail.

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b. Explain your plan or layout for performing the proposed work.

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c. The work, if awarded to you, will have the personal supervision of whom?

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d. Do you intend to do the grading on the proposed work with your own forces?  
\_\_\_\_\_ If so, give type of equipment to be used.

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e. Do you intend to sublet any portions of the work? \_\_\_\_\_

If so, it is mandatory pursuant to N.J.S.A. 40A:11-16 that you list the names of those subcontractors under each discipline below, failure to do so will automatically result in rejection of the bid.

<u>Trade</u>	<u>Name of Subcontractor</u>	<u>Address</u>
Plumbing and Gas Fitting and all kindred work	_____	_____
Steam Power Plants, Steam and Hot Water Heating and Ventilating and Refrigeration Apparatus and all kindred work	<u>Not Applicable to this project</u>	_____
Electrical Work, including any Electrical Power Plants, Tele-data, Fire Alarm, or Security System	<u>Not Applicable to this project</u>	_____
Structural Steel and Ornamental Iron Work	_____	_____

Each subcontractor listed above shall fill out and submit a Certificate of Experience (as shown in this Bid Proposal) and items a, b, c, f, g, h, i and the remaining affidavit, duly executed, on the last page of the "Plant and Equipment Questionnaire". The General Contractor shall supply each subcontractor with duplicate pages of this proposal to be filled out by the subcontractor and then submitted with the bid proposal.

Whenever a bid sets forth more than one subcontractor for any of the specialty trade categories listed above, the bidder shall submit to the contracting unit a certificate signed by the bidder listing each subcontractor named in the bid for that category. The certificate shall set forth the scope of work for which the subcontractor has submitted a price quote and which the bidder has agreed to award to each subcontractor should the bidder be awarded the contract. The certificate shall be submitted to the contracting unit simultaneously with the list of the subcontractors. The certificate may take the form of a single certificate listing all subcontractors or, alternatively, a separate certificate may be submitted for each subcontractor. If a bidder does not submit a certificate or certificates to the contracting unit, the contracting unit shall award the contract to the next lowest responsible bidder.



g. What equipment do you own that is available for and intended to be used on the proposed project?

QTY	ITEM	DESCRIPTION, SIZE, CAPACITY, ETC.	COND.	YRS. OF SERVICE	PRESENT LOCATION

h. What equipment do you intend to purchase or lease for use on the proposed project?

QUANTITY	ITEM	DESCRIPTION, SIZE, CAPACITY, ETC	APPROXIMATE COST	
			PURCHASE	LEASE

i. Have you made contracts or received firm offers for all materials within prices used in preparing your proposal? Do not give name of dealers or manufacturers.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The undersigned hereby declare(s) \_\_\_\_\_ that the items of equipment in Table g. are owned by \_\_\_\_\_, and are available for and intended to be used on the Project, if \_\_\_\_\_ awarded the Contract, and that he/they propose(s) to purchase or lease for the Project the additional items of equipment stated in Table h.

Dated at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Name of Organization

By \_\_\_\_\_

\_\_\_\_\_  
Title of Person Signing

STATE OF \_\_\_\_\_

ss:

COUNTY OF \_\_\_\_\_

\_\_\_\_\_, Being duly sworn, deposes and says that he is \_\_\_\_\_ of the above \_\_\_\_\_  
Name of Organization

and that the answers to the foregoing questions and all statements therein contained are true and correct.

Sworn to before me this \_\_\_\_\_

day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Notary Public

My commission expires \_\_\_\_\_

PROJECT TITLE: PERSHING FIELD - PLAYGROUND RENOVATIONS

3. NON-COLLUSION AFFIDAVIT

STATE OF NEW JERSEY)

ss:

COUNTY OF HUDSON )

I, \_\_\_\_\_ of the City of \_\_\_\_\_, in the County of \_\_\_\_\_ and the State of \_\_\_\_\_, of full age, being duly sworn according to law, upon my oath depose and say that:

I am \_\_\_\_\_ of the firm of \_\_\_\_\_ the bidder making the Proposal for the above named project and that I executed the said Proposal with full authority so to do; that said bidder has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said Proposal and in this affidavit are true and correct, and made with full knowledge that the City of Jersey City relies upon the truth of the statements contained in said Proposal and in the statements contained in this affidavit in awarding the contract for the said project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by:

\_\_\_\_\_  
(Name of Contractor

\_\_\_\_\_  
(Also type or print name of affiant  
under signature)

ATTEST:

\_\_\_\_\_  
Secretary

(Affix Corporate Seal)

Sworn and subscribed to before me  
this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

My commission expires on: \_\_\_\_\_

CITY OF JERSEY CITY  
COUNTY OF HUDSON  
STATE OF NEW JERSEY

4. CORPORATION OR PARTNERSHIP STATEMENT

Chapter 33 of the Public Laws of 1977 provides that no corporation or partnership shall be awarded any State, County, Municipal or School Districts contract for purposes of any work or the furnishing of any materials or supplies unless prior to the receipt of the bid or accompanying the bid of said corporation or partnership there is submitted a statement. The statement shall set forth the names and addresses of all stockholders in the corporation or partnership who own ten (10) percent of its stock of any class or of all individual partners in the partnership who own a ten (10) percent or greater interest therein.

Date: \_\_\_\_\_ 20 \_\_\_\_

Legal Name of Bidder: \_\_\_\_\_

Incorporated \_\_\_\_\_ Partnership \_\_\_\_\_

Business Address:

Street \_\_\_\_\_

City \_\_\_\_\_

State & Zip Code \_\_\_\_\_

Telephone \_\_\_\_\_

Listed below are the names and addresses of all stockholders in the corporation or partnership who own ten (10) percent or more of its stock of any class, or of all individual partners in the partnership who own a ten (10) percent or greater interest therein.

Name: \_\_\_\_\_ Address: \_\_\_\_\_

Name: \_\_\_\_\_ Address: \_\_\_\_\_

Name: \_\_\_\_\_ Address: \_\_\_\_\_

Name: \_\_\_\_\_ Address: \_\_\_\_\_

We have no one person who owns ten (10) percent or more of the corporation or partnership.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

If extra space is required, add sheets as necessary.

1/2015

**EQUAL EMPLOYMENT OPPORTUNITY (EEO)/  
AFFIRMATIVE ACTION (AA) REQUIREMENTS  
FOR CONSTRUCTION CONTRACTS**

Questions in reference to EEO/AA requirements for Construction  
Contracts should be directed to:

Jeana F. Abuan  
EEO/AA Officer, P.A.C.O.  
Department of Administration  
Office of EEO/AA  
280 Grove Street Room-103  
Jersey City NJ 07302  
Tel. # 201-547-4533  
Fax# 201-547-5088  
E-Mail Address: [abuanj@jcnj.org](mailto:abuanj@jcnj.org)

Minority/Women Business Participation  
In City Construction Contracts  
City of Jersey City  
Department of Administration  
Office of Equal Opportunity/Affirmative Action

## **I Policy**

The City of Jersey City has a policy of equal opportunity and nondiscrimination in public contracting based on race, national origin or gender. Further, the City's policy is to encourage increased participation of minority owned businesses in city contracts. This is in accordance with N.J.S.A. 10:5-32, which provides that public works contracts shall provide for equality in opportunity by any contractor engaged in a public works project.

The City has determined that a "responsible" bidder does not engage in unlawful race or gender discrimination in its awarding of subcontracts or the purchase of supplies used in construction, and does make reasonable efforts to solicit and award subcontracts to minority and female businesses.

## **II Purpose**

The city has adopted regulations to assure that bidders receiving City Constructions are not engaged in unlawful discrimination and make reasonable good faith to include persons of color and women owned businesses as subcontractors. The intent and purpose of these procedures is not to require that a specific proportion of every contract be allocated to minority and women owned businesses, but to assure that they are included in the competitive process and have opportunities to participate in the city's publicly contracted projects. Pursuant to this policy, contractor is expected to include minority/women owned businesses in all formal or informal invitations to quote, etc, and to make every reasonable effort to provide subcontracting opportunities to qualified minority and women owned businesses.

The purpose of the "participation levels" referred to herein is to help the city determine whether the contractor has met the requirements of nondiscrimination and of good faith efforts to make subcontracting opportunities available to minority and woman owned businesses. These regulations presume that contractors who have attained or exceeded the suggested participation levels for minority and female subcontractor participation on particular City construction contracts are not engaging in unlawful sex or racial discrimination and have engaged in reasonable efforts to involve minority and female subcontractors. A contractor who is unable to attain or exceed such levels may have its subcontracting practices examined by the city to determine if it is engaging in unlawful discrimination in subcontracting practices or has failed to engage in reasonable outreach efforts.

**III Suggested participation level for minority and women owned subcontractors:**

- A. Suggested levels of participation for minority owned subcontractors and women owned subcontractors are determined based on estimates of the dollar value of the work in the various disciplines which may be subcontracted and the availability of minority and woman owned prospective subcontractors in the applicable work areas as reflected in the "SAVI II" database maintained by the State of new Jersey, Department of Commerce & Economic Development, Division of Small, Women & Minority Businesses. The Office of the Minority & Women Business Enterprise Program maintains and updates a listing of minority and women owned businesses (M/WB's) providing various categories of goods and services. Minority and/ or women owned businesses (M/WB's) are those registered as such with the State of New Jersey, Department of Commerce & Economic Development, Division of Small, Women & Minority Businesses (SAVI II database). In addition, bona fide minority or women owned businesses that are not so registered will be accepted as such pending completion of the registration process, on recommendation of the Minority/ Women Business Enterprise Development Program (MWBE Director).
- B. In the event the contractor who is awarded the contract elects to perform in-house, with its own personnel and resources, parts of the job included in the subcontracting estimate, the participation levels will be adjusted accordingly.
- C. Suggested participation levels for this project are:

Minority Owned .....20% of the total dollar amount of the contract

Woman owned .....20% of the total dollar amount of the contract

**IV Availability of information/referral lists of minority/women businesses**

- A. To assist the successful bidder in identifying prospective M/WB subcontractors for various areas of work included in the project, after notification that the City Council has awarded the contract but prior to the execution of the contract, the successful bidder should contact the M/WBE Director with regard to meeting the City's suggested participation levels of M/WB contractors in the specific disciplines involved in the project.

Identification and/or establishment of prospective subcontractors in various specialties by the M/WBE Director or any City employee are not to be construed as making any representation as to the qualification of any such contractor to perform. Such identification/establishment are made for the sole purpose of identifying minority and women owned businesses in the required areas of work. Determination of qualifications for the particular project remains the responsibility of the contractor. Nothing in these requirements is to be construed as changing in

any way the provision that "bidder will be required to establish to the satisfaction of the Architect (Engineer) the reliability and responsibility of the proposed subcontractors to furnish and perform the work . . . ", or any other provision of these specifications.

**V. Bidders will submit with bid proposal:**

1. Plan for outreach to and utilization of minority and/or women owned businesses as subcontractors, including bidder's anticipated level for M/WB's in each specialty, which parts of the contract bidder plans to subcontract, and which parts of the contract bidder anticipates subcontracting to M/WB's (Form MWB-3)
2. As to subcontractors required to be submitted with the bid proposal pursuant to NJSA 40A:11-16, or any additional subcontractors requested for bid submission by the architect Engineer, bidder will indicate, on Form WMB-3, if any, are minority or woman owned, and what efforts were made to offer subcontracting opportunities to MWB's in these disciplines, including "solicitation list" of contractors solicited to quote on the job and "commitment lists" of those awarded or to be awarded subcontracts.
3. Bidders will provide a separate copy of items 1 and 2 above, which the Purchasing Agent will forward to the MWB director for review.

**VI. The following applies to the apparent lowest responsive bidder, or three lowest responsive bidders, after results of bid reception have been announced by the Purchasing Agent:**

- A. MWBE director will review forms/information submitted by apparent lowest responsible bidder ( or three lowest responsible bidders ) as part of the bid/proposal, for compliance with nondiscrimination and minority/ women business outreach requirements. These will be preliminary findings, subject to receipt and review of further information/documentation indicated below.
- B. MWBE Director may communicate with apparent lowest responsible bidder ( or three lowest ) requesting further information about subcontractors solicited and subcontractors engaged, and which if any are minority or woman owned, and if appropriate, offering assistance in identifying prospective minority/women subcontractors. (See Form MWB-5). Contractor will have one week to respond. If contractor fails to respond this may resulted in the bid being found non-responsive, on recommendation of the MWBE Director in consultation with the Corporation Counsel.
- C. MWBE review will include

1. Verifying that proposed subcontractors listed as M/WB's are listed in the State of NJ SAVI II database or other recognized MWBE listings, e.g., New Jersey Transit, Port Authority, etc. If not, director will attempt to ascertain whether said subcontractors are in fact person of color and/or woman owned and controlled, and provide assistance to proposed subcontractors in registering with SAVI II If MWBE Director has reason to believe the proposed subcontractor is not a bona fide or woman owned and operated business he/she will inform the bidding contractor and the city officials referred to in this section, and may require further verification.
2. Verifying whether bidder has achieved the suggested levels of MWB participation.
3. If not, reviewing the contractor's efforts as documented and the contractor's reasons for not achieving such levels.

**D. Findings/Recommendations as to compliance**

1. If the bidder's MWB targeted participation levels are achieved, bidder will be presumed not to be engaging in unlawful racial and gender discrimination in the selection of subcontractors and suppliers and will be presumed to have engaged in reasonable outreach efforts.

If the participation levels are not achieved by the bidder, the MWBE director in consultation with the Corporation Counsel will review the contractor's outreach efforts and subcontracting practices to determine if it has engaged in reasonable efforts to provide subcontracting opportunities to minority owned businesses, or if it has engaged or is engaging in unlawful race or sex discrimination.

3. If said review indicates that the bidder has made reasonable efforts to include minority as subcontractors and suppliers and has not engaged in unlawful race and sex discrimination, the bidder will be in compliance with the requirements of these provisions.
4. If said review indicates that the bidder has failed to make reasonable efforts to provide opportunities to minority businesses as subcontractors and suppliers, has or has engaged in unlawful race and sex discrimination, the bidder will be deemed not responsible under the provisions of these regulations and the provisions of the specifications. Such recommendation will be made by the MWBE director to the Purchasing Agent in consultation with the Corporation Counsel. Any bidder whose bid is rejected based on finding of discrimination may request and receive a hearing in accordance with applicable law (local, state and federal).
5. The review and recommendation process referred to in sections C and D should be completed within two weeks.

**VII Awarding of contract**

- A. The contract will include a provision that Contractor will continue to comply with the provisions of the Minority/Women Business Program requirements and the MWB participation levels agreed upon.
- B. The MWBE Director will monitor contractor's compliance. In the event that additional or other subcontracting awards become necessary during the course of the project, the MWBE Director will continue to assist in identification of prospective minority/ women subcontractors as appropriate.

(REVISED 4/13)

**EXHIBIT B**  
**MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE**  
**N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127)**  
**N.J.A.C. 17:27**  
**CONSTRUCTION CONTRACTS**

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. 17:27-7.2; provided, however, that the Dept. of LWD, Construction EEO Monitoring Program may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B and C, as long as the Dept. of LWD, Construction EEO

## **EXHIBIT B (2 of 4)**

Monitoring Program is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Dept. of LWD, Construction EEO Monitoring Program, that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

(1) To notify the public agency compliance officer, the Dept. of LWD, Construction EEO Monitoring Program, and minority and women referral organizations listed by the Dept. of LWD, Construction EEO Monitoring Program pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

(2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;

## EXHIBIT B (3 of 4)

(4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

(6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

(i) The contractor or subcontractor shall interview the referred minority or women worker.

(ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Dept. of LWD, Construction EEO Monitoring Program. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.

(iii) The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Dept. of LWD, Construction EEO Monitoring Program, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.

(iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Dept. of LWD, Construction EEO Monitoring Program.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Dept. of LWD, Construction EEO Monitoring Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program upon request.

**EXHIBIT B (4 of 4)**

(C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Dept. of LWD, Construction EEO Monitoring Program an initial project workforce report (Form AA 201) electronically provided to the public agency by the Dept. of LWD, Construction EEO Monitoring Program, through its website, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Dept. of LWD, Construction EEO Monitoring Program and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on the job and/or off the job programs for outreach and training of minorities and women.

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Dept. of LWD, Construction EEO Monitoring Program for conducting a compliance investigation pursuant to **Subchapter 10 of the Administrative Code (NJAC 17:27)**.

The undersigned vendor certifies on their company's receipt, knowledge and commitment to comply with:

**EXHIBIT B**

**N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127) and N.J.A.C. 17:27  
MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE  
Construction Contracts**

The undersigned vendor further agrees to furnish the required forms of evidence and understands that their contract/company's bid shall be rejected as non-responsive if said contractor fails to comply with the requirements of N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127) and N.J.A.C. 17:27 .

Representative's Name/Title (Print): \_\_\_\_\_

Representative's Signature: \_\_\_\_\_

Name of Company: \_\_\_\_\_ Tel. No.: \_\_\_\_\_ Date: \_\_\_\_\_

**STATE OF NEW JERSEY**  
 DEPARTMENT OF LABOR & WORKFORCE DEVELOPMENT  
 CONSTRUCTION WEO COMPLIANCE MONITORING PROGRAM

FORMAA-201  
 Revised 12/11

**INITIAL PROJECT WORKFORCE REPORT CONSTRUCTION**

**Official Use Only**

Assignment \_\_\_\_\_

Code \_\_\_\_\_

For instructions on completing the form, go to: [http://www.state.nj.us/treasury/contract\\_compliance/pdf/aa201ins.pdf](http://www.state.nj.us/treasury/contract_compliance/pdf/aa201ins.pdf)

<b>1. FID NUMBER</b>		<b>2. CONTRACTOR ID NUMBER</b>		<b>5. NAME AND ADDRESS OF PUBLIC AGENCY AWARDCG CONTRACT</b>					
<b>3. NAME AND ADDRESS OF PRIME CONTRACTOR</b>				Name:					
				Address:					
(Name)				CONTRACT NUMBER		DATE OF AWARD			
(Street Address)				DOLLAR AMOUNT OF AWARD					
(City)		(State)		(Zip Code)					
<b>4. IS THIS COMPANY MINORITY OWNED ( ) OR WOMAN OWNED ( )</b>				<b>6. NAME AND ADDRESS OF PROJECT</b>		<b>7. PROJECT NUMBER</b>			
				Name:					
				Address:					
				COUNTY		<b>8. IS THIS PROJECT COVERED BY A PROJECT LABOR AGREEMENT (PLA)? YES <input type="checkbox"/></b>			
<b>9. TRADE OR CRAFT</b>		<b>PROJECTED TOTAL EMPLOYEES</b>		<b>PROJECTED MINORITY EMPLOYEES</b>				<b>PROJECTED PHASE-IN DATE</b>	<b>PROJECTED COMPLETION DATE</b>
		MALE FEMALE		MALE FEMALE					
		J AP J AP		J AP J AP					
1. ASBESTOS WORKER									
2. BRICKLAYER OR MASON									
3. CARPENTER									
4. ELECTRICIAN									
5. GLAZIER									
6. HVAC MECHANIC									
7. IRONWORKER									
8. OPERATING ENGINEER									
9. PAINTER									
10. PLUMBER									
11. ROOFER									
12. SHEET METAL WORKER									
13. SPRINKLER FITTER									
14. STEAMFITTER									
15. SURVEYOR									
16. TILER									
17. TRUCK DRIVER									
18. LABORER									
19. OTHER									
20. OTHER									

I hereby certify that the foregoing statements made by me are true. I am aware that if any of the foregoing statements are willfully false, I am subject to punishment.

\_\_\_\_\_  
 (Signature)

10. (Please Print Your Name)

(Title)

(Area Code)

(Telephone Number)

(Ext.)

(Date)

# Sample Initial Project Workforce Report Form AA201

## Instructions

### INSTRUCTIONS FOR COMPLETING THE INITIAL PROJECT WORKFORCE REPORT - CONSTRUCTION (AA201)

DO NOT COMPLETE THIS FORM FOR GOODS AND/OR SERVICE CONTRACTS

1. Enter the Federal Identification Number assigned to the contractor by the Internal Revenue Service, or if a Federal Employer Identification Number has been applied for but not yet issued, or if your business is such that you have not or will not receive a Federal Identification Number, enter the social security number assigned to the single owner or one partner, in the case of a partnership.
2. Note: The Department of Labor & Workforce Development, Construction EEO Monitoring Program will assign a contractor ID number to your company. This number will be your permanently assigned contractor ID number that must be on all correspondence and reports submitted to this office.
3. Enter the prime contractor's name, address and zip code number.
4. Check box if Company is Minority Owned or Woman Owned
5. Enter the complete name and address of the Public Agency awarding the contract. Include the contract number, date of award and dollar amount of the contract.
6. Enter the name and address of the project, including the county in which the project is located.
7. Note: A project contract ID number will be assigned to your firm upon receipt of the completed Initial Project Workforce Report (AA201) for this contract. This number must be indicated on all correspondence and reports submitted to this office relating to this contract.
8. Check "Yes" or "No" to indicate whether a Project Labor Agreement (PLA) was established with the labor organization(s) for this project.
9. Under the Projected Total Number of Employees in each trade or craft and at each level of classification, enter the total composite workforce of the prime contractor and all subcontractors projected to work on the project. Under Projected Employees enter total minority and female employees of the prime contractor and all subcontractors projected to work on the project. Minority employees include Black, Hispanic, American Indian and Asian, (J=Journeyworker, AP=Apprentice). Include projected phase-in and completion dates.
10. Print or type the name of the company official or authorized Equal Employment Opportunity (EEO) official include signature and title, phone number and date the report is submitted.

This report must be submitted to the Public Agency that awards the contract and the Department of Labor & Workforce Development, Construction EEO Compliance Monitoring Program after notification of award, but prior signing the contract.

THE CONTRACTOR IS TO RETAIN A COPY AND SUBMIT COPY TO THE PUBLIC AGENCY AWARDING  
THE CONTRACT AND FORWARD A COPY TO:

NEW JERSEY DEPARTMENT OF LABOR & WORKFORCE DEVELOPMENT  
CONSTRUCTION EEO COMPLIANCE MONITORING UNIT  
P.O. BOX 209  
TRENTON, NJ 08625-0209  
(609) 292-9550



# Sample Monthly Project Workforce Report Form AA202

## Instructions

### INSTRUCTIONS FOR COMPLETING MONTHLY PROJECT WORKFORCE REPORT- ( AA202)

1. Enter the prime contractor's name, address and zip code number.
2. Enter the **CONTRACTOR ID NUMBER** assigned by the Dept. of Labor & Workforce Development Construction EEO Compliance Monitoring Program.
3. Enter the Federal Identification Number assigned to the contractor by the Internal Revenue Service, or if a Federal Employer Identification Number has not been applied for or issued, or if your business is such that it will not receive a Federal Identification Number, enter the Social Security Number of the owner or of one partner, in the case of a partnership.
4. Reporting Period - enter the beginning and ending dates of the month for the report being submitted. (i.e., 1/1/00 - 1/31/00).
5. Enter the complete name of the public agency awarding the contract. Include the date of contract award.
6. Enter the name and location of the project, including the county in which the project is located.
7. Enter the **PROJECT NUMBER** assigned by the Dept. of Labor & Workforce Development Construction EEO Compliance Monitoring Program.
8. Enter the company name(s) of the contractor(s) performing work at the construction site. List the prime contractor first with subcontractor(s) following.
9. Enter the total percent (%) of project work the contractor or subcontractor has completed, to date.
10. Identify the trades or crafts applicable to the prime contractor and each subcontractor listed in column #8. Use a single line for each trade or craft.
11. Enter the total number of employees for each contractor at each level of classification (J=Journeyworker, AP=Apprentice) and the total number of each minority group - Black, Hispanic, American Indian, Asian and Female. Note: Column A shall include Total Number of employees. Columns B-E shall also include minority females. Column F shall include both non-minority and minority females.
12. Enter the total number of minority employees for each employer at each level of classification. Note: This shall be the sum of columns B-E.
13. Enter the Total Monthly work hours for all employees in each craft at each level of classification.  
(A) Enter the Total Monthly minority work hours for each craft at each level of classification (Columns B-E).  
(B) Enter the Total Monthly female work hours for each craft at each level of classification (Column F).
14. (A) Enter the Total Monthly PERCENT of minority work hours for each craft at each level of classification.  
(B) Enter the Total Monthly PERCENT of female work hours for each craft at each level of classification.
15. Enter the Total Cumulative work hours for each craft at each level of classification.  
(A) Enter the Total Cumulative minority work hours for each craft at each level of classification.  
(B) Enter the Total Cumulative female work hours for each craft at each level of classification.
16. (A) Enter the Cumulative Percent of minority work hours for each craft at each level of classification.  
(B) Enter the Cumulative Percent of female work hours for each craft at each level of classification.
17. Print or type the name of the company official submitting the report; include signature, title, telephone number, and date the report is submitted.

THE CONTRACTOR SHOULD RETAIN ONE COPY AND SUBMIT A COPY TO THE PUBLIC AGENCY WHICH AWARDED THE CONTRACT. ANOTHER COPY MUST BE FORWARDED TO:

New Jersey Department of Labor & Workforce Development  
Construction EEO Compliance Monitoring Program  
PO Box 209  
Trenton, NJ 08625-0209  
609 292-9550

**APPENDIX A**  
**AMERICANS WITH DISABILITIES ACT OF 1990**  
**Equal Opportunity for Individuals with Disability**

The contractor and the \_\_\_\_\_ of \_\_\_\_\_, (hereafter "owner") do hereby agree that the provisions of Title 11 of the Americans With Disabilities Act of 1990 (the "Act") (*42 U.S.C. 5121 01 et seq.*), which prohibits discrimination on the basis of disability by public entities in all services, programs, and activities provided or made available by public entities, and the rules and regulations promulgated pursuant there unto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event that the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages, of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the owner's grievance procedure, the contractor agrees to abide by any decision of the owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the owner, or if the owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The owner shall, as soon as practicable after a claim has been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim. If any action or administrative proceeding is brought against the owner or any of its agents, servants, and employees, the *owner shall* expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or other process received by the owner or its representatives.

It is expressly agreed and understood that any approval by the owner of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the owner pursuant to this paragraph.

It is further agreed and understood that the owner assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractor's obligations assumed in this Agreement, nor shall they be construed to relieve the contractor from any liability, nor preclude the owner from taking any other actions available to it under any other provisions of the Agreement or otherwise at law.

Representative's Name/Title Print): \_\_\_\_\_

Representative's Signature: \_\_\_\_\_

Name of Company: \_\_\_\_\_

Tel. No.: \_\_\_\_\_ Date: \_\_\_\_\_

**SAMPLE LETTER TO THE UNION**

(CONTRACTOR'S LETTER HEAD)

Date:

Local Union: \_\_\_\_\_

Re: \_\_\_\_\_ Project, Jersey City, NJ

This company is about to enter into a contract with the City of Jersey City for the above project. A condition of the contract is compliance with the state approved affirmative action program, which requires that we make a good faith effort to use minority workers in each construction trade to the extent of \_\_\_\_% of the total work hours, and female workers to the extent of 6.9% of total work hours.

We are further required to submit a statement from an authorized union official, that the union will take such actions as may be necessary with respect to the referral and employment of minority group persons in order to enable this contractor to meet its obligations under the affirmative action plan.

We solicit your help and cooperation, by engaging in aggressive recruitment of minority workers, providing us with the statement requested, and advising whether the union will be able to fulfill our work force needs as indicated.

Very Truly Yours,

\_\_\_\_\_

## Minority/Woman Business Enterprise (MWBE) Questionnaire for Bidders

Jersey City Ordinance C-829 establishes a goal of awarding 20% of the dollar amount of total city procurement to minority and woman owned business enterprises.

To assist us in monitoring our achievement of this goal, please indicate below whether your company is or is not a minority owned and/or woman owned business, and return this form with your bid proposal.

Business Name : \_\_\_\_\_

Address : \_\_\_\_\_

Telephone No. : \_\_\_\_\_

Contact Name: \_\_\_\_\_

Please check applicable category :

\_\_\_\_\_ Minority Owned Business (MBE)

\_\_\_\_\_ Minority & Woman Owned  
Business (MWBE)

\_\_\_\_\_ Woman Owned business (WBE)

\_\_\_\_\_ Neither

### Definitions:

#### Minority Business Enterprise

Minority Business Enterprise means a business which is a sole proprietorship, partnership or corporation at least 51% of which is owned and controlled by persons who are African American, Hispanic, Asian American, American Indian or Alaskan native, defined as follows:

**African American:** a person having origins in any of the black racial groups of Africa

**Hispanic:** a person of Mexican, Puerto Rican, Central or South American or other non-European Spanish culture or origin regardless of race.

**Asian:** a person having origins in any of the original peoples of the Far East, South East Asia, Indian subcontinent, Hawaii or the Pacific Islands.

**American Indian or Alaskan Native:** a person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.

#### Woman Business Enterprise

Woman Business Enterprise means a business which is a sole proprietorship, partnership or corporation at least 51% of which is owned and controlled by a woman or women.

**OFFICE OF EQUAL EMPLOYMENT OPPORTUNITY/AFFIRMATIVE ACTION COPY**

## Minority/Woman Business Enterprise (MWBE) Questionnaire for Bidders

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To assist us in monitoring our achievement of this goal, please indicate below whether your company is or is not a minority owned and/or woman owned business, and return this form with your bid proposal.

Business Name : \_\_\_\_\_

Address : \_\_\_\_\_

Telephone No. : \_\_\_\_\_

Contact Name: \_\_\_\_\_

Please check applicable category :

\_\_\_\_\_ Minority Owned Business (MBE)

\_\_\_\_\_ Minority & Woman Owned  
Business (MWBE)

\_\_\_\_\_ Woman Owned business (WBE)

\_\_\_\_\_ Neither

### Definitions:

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#### Woman Business Enterprise

Woman Business Enterprise means a business which is a sole proprietorship, partnership or corporation at least 51% of which is owned and controlled by a woman or women.

**DIVISION OF PURCHASING COPY**



Form MWBE Contractor's Compliance Plan to be submitted with bid document.  
**CONTRACTOR: PROVIDE TWO (2) COMPLETED COPIES OF THIS FORM WITH YOUR PROPOSAL (or within 24 hours thereafter)**

**City of Jersey City  
 Department of Administration  
 Office of Equal Opportunity/Affirmative Action**

Project: \_\_\_\_\_ # \_\_\_\_\_

Contractor: \_\_\_\_\_ Bid Amt. \$ \_\_\_\_\_

**Please list what portions of the work, if any you intend to sublet, the approximate value of the same, and whether you anticipate subletting it to a minority or woman owned contractor, or neither.**

Trade	Approx. \$ Value	Minority or Woman Owned Business Check appropriate column		
		Minority	Woman	Neither

**Receipt of this report by the City does not constitute acceptance by the City of minority business participation goals less than 20% or women business participation goals less than 20% unless specifically agreed to by the Office of Equal Opportunity/Affirmative Action**

CONTINUED ON NEXT PAGE

DIVISION OF PURCHASING COPY

2. As to subcontracted trade mandated to be included in proposal pursuant to N.J.S.A. 40A:11-16, please list name of proposed subcontractor, trade, and whether minority woman, or not:

Trade	Contractor Name & Address	Approx \$ Value	Minority or Woman Owned Business Check appropriate column		
			Minority	Woman	Neither

3. What is your policy and practice with respect to outreach and consideration of minority and women-owned vendors/contractors as contractors and/or suppliers?

\_\_\_\_\_

\_\_\_\_\_

Name of Contractor \_\_\_\_\_

By: Signature \_\_\_\_\_

Type or print name/title: \_\_\_\_\_

Telephone No: \_\_\_\_\_ Date \_\_\_\_\_

.....  
For City Use:

Acceptable M/W Business Participation levels for this Project: \_\_\_\_\_

By \_\_\_\_\_ Date: \_\_\_\_\_

2. As to subcontracted trade mandated to be included in proposal pursuant to N.J.S.A. 40A:11-16, please list name of proposed subcontractor, trade, and whether minority woman, or not:

Trade	Contractor Name & Address	Approx. \$ Value	To Minority or Woman Owned Business		
			Check appropriate column		
			Minority	Woman	Neither

3. What is your policy and practice with respect to outreach and consideration of minority and women-owned vendors/contractors as contractors and/or suppliers?

\_\_\_\_\_

\_\_\_\_\_

Name of Contractor

By: Signature \_\_\_\_\_

Type or print name/title: \_\_\_\_\_

Telephone No: \_\_\_\_\_ Date \_\_\_\_\_

.....  
For City Use:

Acceptable M/W Business Participation levels for this Project: \_\_\_\_\_

By \_\_\_\_\_ Date: \_\_\_\_\_

**PURCHASING COPY**

## "New Jersey Business Registration Requirements" For Construction Contracts

The contractor shall provide written notice to its subcontractors of the responsibility to submit proof of business registration to the contractor.

Before final payment on the contract is made by the contracting agency, the contractor shall submit an accurate list and the proof of business registration of each subcontractor or supplier used in the fulfillment of the contract, or shall attest that no subcontractors were used.

For the term of the contract, the contractor and each of its affiliates and a subcontractor and each of its affiliates [N.J.S.A. 52:32-44(g)(3)] shall collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act on all sales of tangible personal property delivered into this State, regardless of whether the tangible personal property is intended for a contract with a contracting agency.

A business organization that fails to provide a copy of a business registration as required pursuant to section 1 of P.L.2001, c.134 (C.52:32-44 et al.) or subsection e. or f. of section 92 of P.L.1977, c.110 (C.5:12-92), or that provides false business registration information under the requirements of either of those sections, shall be liable for a penalty of \$25 for each day of violation, not to exceed \$50,000 for each business registration copy not properly provided under a contract with a contracting agency."

STATE OF NEW JERSEY  
BUSINESS REGISTRATION CERTIFICATE  
FOR STATE AGENCY AND CASINO SERVICE CONTRACTORS

TAXPAYER NAME:  
TAX REGISTRATION TEST ACCOUNT  
TAXPAYER IDENTIFICATION:  
210-617-1234567  
ADDRESS:  
1234 MAIN ST  
TRENTON, NJ 08611  
ISSUANCE DATE:  
02/15/04

TRADE NAME:  
CLIENT REGISTRATION NUMBER:  
ISSUANCE DATE:  
02/15/04

*John S. Kelly*

STATE OF NEW JERSEY  
BUSINESS REGISTRATION CERTIFICATE

Employer Name:  
Trade Name:  
Address:  
1234 MAIN ST  
TRENTON, NJ 08611  
ISSUANCE DATE:  
October 14, 2004

TAX REG TEST ACCOUNT  
1092987

For Office Use Only:  
2041664712813533