

## ADVERTISEMENT FOR BIDS

**Project No:** P1155-01 – Re-Build By Design, Sewer System Modification  
**Location:** Hoboken, Jersey City, Weehawken, NJ – Hudson County

**A NON-MANDATORY VIRTUAL PRE-BID MEETING IS SCHEDULED FOR 10:00 A.M. SEPTEMBER 24, 2020. THE VIRTUAL PRE-BID MEETING WILL BE HELD VIA THE MICROSOFT TEAMS APP. CONTRACTORS CAN ACCESS THE MEETING VIA THE FOLLOWING LINK: [Join Microsoft Teams Meeting](#) OR USE THE FOLLOWING CALL-IN INFORMATION TO JOIN VIA TELEPHONE: 856-338-7074, CONFERENCE ID 545 340 052#. CONTACT PERSON: WILLIAM BYSTER (609) 984-4705.**

**IT IS HIGHLY RECOMMENDED CONTRACTORS PARTICIPATE IN THIS NON-MANDATORY VIRTUAL PRE-BID MEETING.**

### **\*\*ATTENTION\*\***

#### **CONTRACTOR PRE-REGISTRATION REQUESTED - SEE BELOW FOR INSTRUCTIONS**

The non-mandatory pre-bid meeting (**there will not be a formal site visit**) is scheduled for September 24, 2020 at 10:00 AM. Contractors are requested to **PRE-REGISTER** via email to Shawn Taylor at [shawn.taylor@treas.nj.gov](mailto:shawn.taylor@treas.nj.gov) **NO LATER THAN 3PM ON September 22, 2020** if they plan to participate.

**Sealed proposals must be received and time-stamped in the Plan Room, Division of Property Management & Construction, 33 West State Street, 9<sup>th</sup> Floor, (PO Box 034) Trenton, NJ 08625 until 2:00 p.m. on October 29, 2020 for:**

**Total of Base Bid Unit Prices  
Sewer Piping & Storm Drains (C056)  
\$16,311,717**

**Bid Documents may be obtained by overnight delivery service only.** Bid Documents may be obtained for a fee of \$90.00 for mailing of bid documents via United States Postal Service (document and mailing fee included) or for a fee of \$65.00 for mailing of the bid documents via Fedex or UPS (Firm's UPS or Fedex account number must be provided). All fees are non-refundable and must be received by the Division before documents will be released. A company check payable to the "Treasurer, State of New Jersey" is required. Contact **Anthony Mangine at [Anthony.Mangine@treas.nj.gov](mailto:Anthony.Mangine@treas.nj.gov)** for further information. Mailing address is as follows: Regular Mail (DPMC, P.O. Box 034, Trenton, NJ 08625) or Overnight Mail (DPMC, 33 West State St, 9<sup>th</sup> Fl, Trenton, NJ 08608).

Bidders must be classified by the Division under N.J.S.A. 52:35-1 et seq. and must submit bid security as provided in Instructions to Bidders and General Conditions for Hudson River Rebuild by Design dated Revised July 2020. No bidder may withdraw his bid for 60 calendar days after the opening. The State may reject any and all bids.

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.

<http://nj.gov/comptroller/sandytransparency/contracts/sandy/>.

The contract resulting from this RFQ/RFP is subject to the requirements of Executive Order No. 125. Accordingly, the OSC will post a copy of the contract, including the RFQ/RFP, the winning bidder's proposal and other related contract documents for the above contract on the Sandy Transparency website.

In submitting its proposal, a bidder may designate specific information as not subject to disclosure. However, such bidder must have a good faith legal and/ or factual basis to assert that such designated portions of its proposal (i) are proprietary and confidential financial or commercial information or trade secrets or (ii) must

not be disclosed to protect the personal privacy of an identified individual. The location in the proposal of any such designation should be clearly stated in a cover letter, and a redacted copy of the proposal should be provided.

The State reserves the right to make the determination as to what is proprietary or confidential, and will advise the winning bidder accordingly. The State will not honor any attempt by a winning bidder to designate its entire proposal as proprietary, confidential and/or to claim copyright protection for its entire proposal. In the event of any challenge to the winning bidder's assertion of confidentiality with which the State does not concur, the bidder shall be solely responsible for defending its designation.

This project is funded in whole or in part by Community Development Block Grant- Disaster Recovery (CDBG-DR) funds received from the U.S. Department of Housing and Urban Development (HUD). Bidder agrees to comply with all applicable Federal CDBG-DR laws, guidelines and standards in a manner satisfactory to the State of New Jersey and HUD, including but not limited to the requirements of Section 3 of the HUD Act of 1968.

#### **Notice of Requirement for DUNS Number Registration**

In accordance with 2CFR Part 200.213 "Suspension and Debarment", all vendors, contractors and subcontractors submitting proposals on federal FEMA and HUD funded projects will be required to register for a Data Universal Numbering System (DUNS) number in order to be eligible for a contract award. These regulations restrict awards, sub-awards and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participating in federal assistance programs or activities. In order to comply with this requirement, each consultant, prime contractor and sub-contractor must register in the System of Award Management (SAM) at <http://www.sam.gov> and register for a DUNS number at <http://www.dnb.com/duns-number.html>.

Be advised that firms doing work for the government or bidding on government contracts or proposals will need to get a D-U-N-S Number for each physical location of their business. Firms can get a D-U-N-S Number expedited for free if they are required to register with the federal government for a government funded contract and the firm may have the D-U-N-S number expedited at no cost.

Successful bidders will be required to submit to the Division of Property Management and Construction (DPMC) their DUNS number immediately after the bid due date and prior to contract award.

RICHARD S. FLODMAND, DEPUTY DIRECTOR  
CONTRACTS & PROCUREMENT  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
STATE OF NEW JERSEY  
DEPARTMENT OF THE TREASURY  
P. O. BOX 034  
TRENTON, NJ 08625-0034

# **SPECIFICATIONS**

## **REBUILD BY DESIGN HUDSON RIVER PROJECT**

### **COASTAL DEFENSE Sewer System Modification**

Hoboken, Jersey City, Weehawken, Hudson County, NJ

## **DPMC PROJECT #P1155-01**

## **STATE OF NEW JERSEY**

Honorable Philip D. Murphy, Governor  
Honorable Sheila Oliver, Lt. Governor

**DEPARTMENT OF THE TREASURY**  
Elizabeth Maher Muoio, State Treasurer



**DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION**  
Christopher Chianese, Director

**AECOM Technical Services, Inc.**  
125 Broad Street, 15th Floor, New York, NY 10004  
Certificate of Authorization No. 24GA28042700

**April 2020**

**Karen L. Appell**  
New Jersey Professional Engineer  
Lic. 24GE044900

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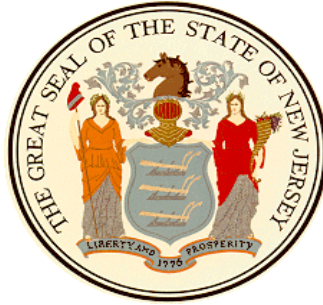
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**STATE OF NEW JERSEY**  
**DEPARTMENT OF THE TREASURY**  
**DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION**



**REVISED**  
**APRIL 2020**

**INSTRUCTIONS TO BIDDERS**  
**AND**  
**GENERAL CONDITIONS**  
**FOR HUDSON RIVER REBUILD BY DESIGN**  
**DPMC PROJECT P1155-01**

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## State of New Jersey

DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O Box 034  
TRENTON NJ 08625-0034

PHILIP D. MURPHY  
*Governor*

SHEILA Y. OLIVER  
*Lt. Governor*

ELIZABETH MAHER MUOIO  
*State Treasurer*

CHRISTOPHER CHIANESE  
*Director*

November 17, 2020

SUBJECT: **Bulletin "G" Dated November 17, 2020**

PROJECT #: **P1155-01**

DESCRIPTION: Re-Build by Design  
Sewer System Modification  
Hoboken, Hudson County, NJ

To Whom It May Concern:

WE ARE FORWARDING A COPY OF THE ABOVE REFERENCED BULLETIN. PLEASE  
ACKNOWLEDGE RECEIPT BY RETURNING THIS FORM TO:

Division of Property Management and Construction  
**Attention:** S. Taylor  
Contracts & Procurement  
PO Box 034  
Trenton NJ 08625-0034  
**Fax #: 609-777-1970**

Sincerely,

A handwritten signature in black ink, appearing to read "S. Taylor".

Shawn Taylor  
Property Management Services Specialist  
Contracts and Procurement

\_\_\_\_\_  
Date Received

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION  
PO BOX 034, TRENTON, NJ 08625-0034

PROJECT #: P1155-01  
Rebuild by Design Hudson River Project  
Sewer System Modification  
Hoboken, Hudson County, NJ

A/E: AECOM

DATE: November 17, 2020

**BULLETIN “G”**

Bidder must acknowledge receipt of this Bulletin on bid form in the space provided therefore. This Bulletin is issued for the purpose of amending certain requirements of the original Contract Documents, as noted hereinafter, and is hereby made part of and incorporated in full force as part of the Contract Documents. Unless specifically noted or specified hereinafter, all work shall comply with the applicable provisions of the Contract Documents.

**A) CONTRACT CLARIFICATIONS**

**NHSA Discharge Fees**

Bulletin F of this Contract provided clarification on dewatering for the project. Information regarding sewer connection procedures, forms, applications and fees for North Hudson Sewerage Authority (NHSA) can be found at their website.

The website includes information regarding fees, application documents, and other reference material that may be useful to the Contractor in estimating dewatering discharge fees. If the Contractor has questions regarding the information provided within the NHSA web page, the Contractor shall contact NHSA directly.

**B) REVISIONS TO THE SPECIFICATIONS**

**SECTION 012901**

**MEASUREMENT AND PAYMENT**

**3.01 SCHEDULE OF BID PRICES**

**DELETE THE FOLLOWING:**

Paragraph 3.01 F. – Item 6: Sealing Existing Manholes, in its entirety.

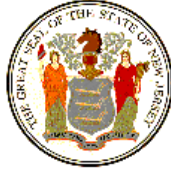
**REPLACE WITH THE FOLLOWING:**

**F. Item 6: Sealing Existing Manholes**

1. Description: Furnish and install butyl rubber gasket and interior sleeve as indicated on the drawings and in accordance with the Contract Documents. Price includes cleaning existing cover, frame and manhole chimney remove all rust, loose mortar or concrete, accumulated dirt or debris and repairing honeycombing, offsets and voids to provide a smooth sealing surface.

2. Unit of Measure: Each completed installation of a sealed manhole.

**END OF BULLETIN “G”**



## State of New Jersey

DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O Box 034  
TRENTON NJ 08625-0034

PHILIP D. MURPHY  
*Governor*

SHEILA Y. OLIVER  
*Lt. Governor*

ELIZABETH MAHER MUOIO  
*State Treasurer*

CHRISTOPHER CHIANESE  
*Director*

November 10, 2020

SUBJECT: **Bulletin "F" Dated November 10, 2020**

PROJECT #: **P1155-01**

DESCRIPTION: Re-Build by Design  
Sewer System Modification  
Hoboken, Hudson County, NJ

To Whom It May Concern:

WE ARE FORWARDING A COPY OF THE ABOVE REFERENCED BULLETIN. PLEASE  
ACKNOWLEDGE RECEIPT BY RETURNING THIS FORM TO:

Division of Property Management and Construction  
**Attention:** S. Taylor  
Contracts & Procurement  
PO Box 034  
Trenton NJ 08625-0034  
**Fax #: 609-777-1970**

Sincerely,

A handwritten signature in black ink, appearing to read "S. Taylor".

Shawn Taylor  
Property Management Services Specialist  
Contracts and Procurement

\_\_\_\_\_  
Date Received

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION  
PO BOX 034, TRENTON, NJ 08625-0034

PROJECT #: P1155-01  
Rebuild by Design Hudson River Project  
Sewer System Modification  
Hoboken, Hudson County, NJ

A/E: AECOM

DATE: November 10, 2020

BULLETIN "F"

Bidder must acknowledge receipt of this Bulletin on bid form in the space provided therefore. This Bulletin is issued for the purpose of amending certain requirements of the original Contract Documents, as noted hereinafter, and is hereby made part of and incorporated in full force as part of the Contract Documents. Unless specifically noted or specified hereinafter, all work shall comply with the applicable provisions of the Contract Documents.

**A) REVISED BID DUE DATE**

- **The bid due date has been extended to 2:00 PM on Tuesday, November 24 2020. A revised bid proposal form is attached to this bulletin.**

**B) CONTRACT CLARIFICATIONS**

**Road Opening Permit Fees**

Contractor shall refer to Bulletin F, SECTION 012901 MEASUREMENT AND PAYMENT, Paragraph 1.17 A., which states that the Contractor shall not be responsible for road opening permit fees for the City of Hoboken and Hudson County. Contractor shall not include costs for Road Opening permit fees for the City of Hoboken and Hudson County in their bid amount. The Contractor will be responsible for all other requirements in obtaining said road opening permits with the exception of the road opening permit fees.

**NHSA Discharge Fees**

As stated in Bulletin E, REVISIONS TO DRAWINGS, G003 DRAINAGE GENERAL NOTES, ENVIRONMENTAL & SITE CONTROLS notes, "18. North Hudson Sewerage Authority (NHSA) has noted that they will accept groundwater dewatering discharges into existing storm water system. Contractor shall contact NHSA for conditions and fees required to discharge groundwater dewatering into NHSA's system."

Contractor shall refer to Bulletin F, REVISIONS TO THE SPECIFICATIONS, SECTION 012901 MEASUREMENT AND PAYMENT, which states that an allowance in the amount of \$60,000 will be provided for one-time connection fees to discharge groundwater into the North Hudson Sewerage Authority (NHSA) system. Payment under this item is not to include other fees paid on a "per service unit" basis, or any

other permit fees, application fees, and associated governmental fees, licenses and inspections necessary for the proper execution and completion of the Work, and which are legally required at the time of receipt of the bid.

The Contractor should use methods during dewatering operations to minimize the amount of groundwater dewatering being discharged into the NHSA systems in an effort to minimize costs associated with fees. As such, it is the Contractor's responsibility to determine the most appropriate means and methods to limit additional fees.

Contractor shall refer to the specification, SECTION 021600 EXCESS CLEAN FILL, CONTAMINATED SOIL AND GROUNDWATER MANAGEMENT AND DISPOSAL, Paragraph F. 1. for assumptions regarding groundwater. Analytical results for soil and groundwater samples collected within the vicinity of the project area were also presented, for the Contractor's information only, in the "*Rebuild by Design Hudson River Project Environmental Results Report* (October 2019)", which was provided as an attachment on the thumb drive issued with Bulletin E. Note that the Environmental Results Report is not a part of the Contract Documents, and is provided for the Contractor's information only.

## **C) REVISIONS TO GENERAL CONDITIONS**

### **General Conditions**

#### **ARTICLE 13 – OTHER REQUIREMENTS**

##### **13.4 INSURANCE**

##### **13.4.1 Insurance To Be Carried By The Contractor:**

##### **ADD THE FOLLOWING:**

After the first sentence in the first unnumbered paragraph add "The insurance provided herein shall have an AM Best's rating of at least A-Class VII. The State of New Jersey, City of Hoboken, Hudson County, and Port Authority of New York and New Jersey shall be included as additional insured for all policies referenced under Section 13.4.1 of the General Conditions."

##### **13.4.1 Insurance To Be Carried By The Contractor:**

##### **DELETE THE FOLLOWING:**

The entire first sentence of paragraph 13.4.1 a(2).

##### **REPLACE WITH THE FOLLOWING:**

The State of New Jersey, City of Hoboken, Hudson County, and Port Authority of New York and New Jersey shall be included as additional insured under the CGL using ISO additional insured endorsement CG 20 10 and CG 20 37 or a substitute providing equivalent coverage, which endorsement shall include coverage for the State of New Jersey arising out of the completed operations of the contractor, and which coverage shall be maintained in effect for the benefit of the State of New Jersey for a period of three (3) years following the completion of the work specified in section 7.3 of this contract.

DELETE THE FOLLOWING:

Paragraph 13.4.1 b(2).

REPLACE WITH THE FOLLOWING:

The limits of liability shall not be less than \$2,000,000 per occurrence for both bodily injury and property damage liability.

ADD THE FOLLOWING:

At the end of paragraph 13.4.1 d(1) add “(2) The limits of liability under the umbrella policy shall not be less than \$5,000,000 per occurrence and per project or location aggregate.

ADD THE FOLLOWING:

- e Pollution Legal Liability Insurance providing coverage of \$1,000,000 per occurrence and \$2,000,000 annual aggregate.

## **D) REVISIONS TO THE SPECIFICATIONS**

### **SECTION 011100**

#### **SUMMARY OF WORK**

##### **1.04 FUTURE WORK**

DELETE THE FOLLOWING:

The entire first sentence of paragraph 1.04 A.

REPLACE WITH THE FOLLOWING:

- A. The Contract Documents include requirements that will allow the DEP and Hudson County to carry out future work following completion of this Project.

ADD THE FOLLOWING:

- 2. Hudson County repaving work on Hudson Street.

##### **1.07 WORK RESTRICTIONS**

ADD THE FOLLOWING:

- H. Hudson County has indicated that it is planning to perform repaving work on Hudson Street beginning on or around early June 2021. The Contractor shall take all reasonable measures to complete all work on Hudson Street by May 30, 2021 to accommodate Hudson County. Contractor shall take appropriate measures to coordinate work on Hudson Street with Hudson County.

## **SECTION 012901**

### **MEASUREMENT AND PAYMENT**

#### **1.17 PERMITTING**

**DELETE THE FOLLOWING:**

The entire first sentence of paragraph of 1.17 A.

**REPLACE WITH THE FOLLOWING:**

- A. Contractor shall not be responsible for road opening permit fees for the City of Hoboken and Hudson County. Contractor shall not include costs for Road Opening permit fees for the City of Hoboken and Hudson County in their bid amount. The Contractor will be responsible for all other requirements in obtaining said road opening permits with the exception of the fees.

**ADD THE FOLLOWING:**

- B. An allowance for one-time connection fees for discharging groundwater into the North Hudson Sewerage Authority (NHSA) existing systems with an established bid amount of \$60,000.00 is included in the bid items. Contractor shall not modify or change this amount in its Bid. The actual amount to be paid under this item shall consist of one-time fees to be paid to NHSA for the purposes of discharging groundwater into their existing systems, and is not to include other fees paid on a “per service unit” basis, or any other permit fees, application fees, and associated governmental fees, licenses and inspections necessary for the proper execution and completion of the Work, and which are legally required at the time of receipt of the bid. The Contractor will be responsible for coordinating with NHSA to set up payment terms and accounts as required. The Contractor will be required to submit sufficient backup to DEP, including invoices from NHSA.

No separate payment shall be made for any other permit fees, application fees, and associated governmental fees, licenses and inspections necessary for the proper execution and completion of the Work, and which are legally required at the time of receipt of the bid. No separate payment shall be made for the Contractor’s implementation of their dewatering plan or dewatering activities. Dewatering activities shall be considered incidental to the payment item that requires dewatering. Payment shall include in the unit price or lump sum price for the payment item requiring Dewatering, in accordance with Section 012901.

#### **3.01 SCHEDULE OF BID PRICES**

**ADD THE FOLLOWING:**

After paragraph 3.01 TT. 2., add

UU. Item 47: Groundwater Discharge One-Time Connection Fees

- 1. Description: One-time connection fees to be paid to NHSA for the purposes of discharging groundwater into their existing systems. Payment under this item is not to include other fees paid on a “per service unit” basis, or any other permit fees, application fees, and associated governmental fees, licenses and inspections necessary for the proper execution and completion of the Work, and which are legally required at the time of receipt of the bid.



2. The NHSA fee structure is intentionally designed to encourage Contractors to minimize their discharge through means and methods so as not to require additional permits or incur additional “per service unit” fees from NHSA. The Contractor shall submit a dewatering plan prior to submitting application to NHSA per SECTION 312319 DEWATERING, Paragraph 1.03 A., which shall include detailed description of methods used to limit the amount of water generated during dewatering operations.
3. The Contractor is to be reimbursed for actual costs paid. No mark up on costs is allowed. Contractor to notify Construction Manager when projected allowance item costs are at 50%, 75% and 90% used.
4. Payment – An allowance for this item with an established amount of \$60,000.00 is included in the bid items.”

## **SECTION 312319**

### **DEWATERING**

#### **1.03 SUBMITTALS**

##### **ADD THE FOLLOWING:**

After paragraph 1.03 A. 2. h., add

- i. Detailed description of methods used to limit amount of water generated during dewatering operations. The Contractor shall be prepared to implement different methods to limit the amount of water generated depending upon site conditions, which may vary at different locations within the work area.

## **E) REVISIONS TO THE BID PROPOSAL FORM**

### **UNIT PRICES**

##### **ADD THE FOLLOWING:**

After the first sentence of paragraph of A. 13. on page 3 of 18, add “Groundwater Discharge One-Time Connection Fees for NHSA shall be paid for under an allowance bid item.” **See revised bid proposal form is attached to this bulletin.**

##### **ATTACHMENTS:**

1. Revised Bid Proposal Form

END OF BULLETIN “F”

**\*\* Revised via Bulletin F\*\***

**BID PROPOSAL FORM**

STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O BOX 034  
TRENTON NEW JERSEY 08625-0034

The bid proposal is to be returned in the pre-addressed envelope and will be accepted no later than 2:00 p.m.,

**November 24, 2020** after which time the bid proposals will be publicly opened and read.

FIRM NAME:

(Please Type or Print)

(Business Street Address ONLY – No P  
O Box)

PROJECT NO P1155-01

PROJECT: Re-Build By Design – Sewer System Modifications, Hudson River Project

LOCATION: Hoboken, NJ

COUNTY: Hudson

The undersigned Single Prime Contractor proposes to be responsible for all work shown in the contract plans and specifications and provide a unit cost sum bid, including allowances, for materials and labor to install the Storm Sewer Modifications, for the unit price total of:

☒ Total of Base Bid Unit \$  
Prices from the attached  
Unit Price List:

(Numerical Figures Only)

In accordance with N.J.S.A. 52:35-1 et seq., the Contractor will be classified with the Division of Property Management and Construction (DPMC) in one of the following trades: **Sewer Piping & Storm Drains (C056)**

The proposal is based upon the bid documents listed below.

1. Instructions to Bidders and General Conditions dated **July 2020**
2. Specifications dated **August 2020**
3. Drawing(s)#: See Cover Sheet Dated **August 2020**

This project will be fully completed and ready for occupancy within **480** calendar days.

Liquidated damages will be assessed at \$3,000.00 per day.

The above price is good through sixty (60) days after the bid opening date.

Submit only one bid proposal and bid bond form.

A bid bond in the amount of fifty percent (50%) of the TOTAL bid, including alternates if applicable, must accompany this proposal form.

The Contractor must submit a fully completed bid form with prices for all unit price items and allowances, otherwise the bid may be considered non-responsive.

Having examined the bid 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, the Contractor hereby proposes to furnish all labor, materials and supplies, and to construct the project as submitted, within the time set forth therein, and at the price stated. This price is to cover all expenses incurred in performing the work required, of which this proposal is a part.

The Contractor acknowledges and affirms that it has personal knowledge of or has obtained and reviewed a copy of the valid prevailing wage rates for all trades involved in the project for the geographical location of the project as issued by the Commissioner of the Department of Labor, P O Box 389, Trenton, New Jersey, 08625 (609) 292-2259.

The Contractor acknowledges receipt of the following Bulletins:

<b><u>BULLETIN NUMBER</u></b>	<b><u>DATE OF BULLETIN</u></b>
A	August 21, 2020
B	September 9, 2020
C	September 24, 2020
D	October 21, 2020
E	October 30, 2020
F	November 10, 2020

## **UNIT PRICES**

- A. Unit Prices, unless otherwise noted, are to include incidental work included in connection with the particular type of work involved and are to include, but not necessarily be limited to, the following:
1. Engineering, including calculations, detailing, coordination, and shop drawings.
  2. Material costs, including an allowance for pipe, connections, etc.
  3. Necessary accessories, e.g., hangers, inserts, clips, bolts, painting, labeling, testing, etc.
  4. Fabrication and shop costs.
  5. Shop and field labor, including supervision and engineering layout costs.
  6. Temporary utilities required, including safety precautions.

7. Costs of standby trades during or beyond normal working hours.
  8. Transportation, storage, hoisting, rigging, freight, taxes of any kind, fringe benefits, overhead and profit (excluding Insurance Cost).
  9. Tools and equipment.
  10. Testing, cleaning, balancing and controlled inspection.
  11. Overhead.
  12. Profit.
  13. All permitting required to complete the work, with the exception of road opening permit fees for the City of Hoboken and Hudson County. Groundwater Discharge One-Time Connection Fees for NHSA shall be paid for under an allowance bid item.
- B. Provide unit prices based upon the specification standards and as noted herein. Unit prices shall apply to work when added and also to work when deleted, as indicated in the Bid Proposal Form, and applied as detailed in the Project specifications.

Contractor is to provide unit cost and total cost for each item listed below and as defined in Section 012901 – Measurement and Payment, for each item listed below. All unit costs shall be filled out in numbers and words, if there is a difference between the numbers and words, the written price shall govern.

<u>UNIT PRICES ITEM #</u>	<u>DESCRIPTION OF ITEM</u>	<u>BID ITEMS QUANTITY</u>	<u>TOTAL COST</u>
1	Mobilization/Demobilization See Specification Section 012901.	Per 1 LS	
	Dollars		
	Cents		
	\$		
2	Temporary Facilities Maintenance, See Specification Section 012901.	Per 18 MO	
	Dollars		
	Cents		
	\$		

3	Sawcut Existing Roadway See Specification Section 012901.	11874 LF	
	Dollars		
	Cents		
	\$		
4	Demolish Existing Roadway See Specification Section 012901.	24778 SF	
	Dollars		
	Cents		
	\$		
5	Connect to Existing Manhole See Specification Section 012901.	7 EA	
	Dollars		
	Cents		
	\$		
6	Sealing Existing Manholes See Specification Section 012901.	102 EA	
	Dollars		
	Cents		
	\$		
7	Plug Existing Pipe, Where Required. See Specification Section 012901.	38 EA	
	Dollars		
	Cents		
	\$		

8	Abandon Existing Manholes in Place See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
9	Abandon Existing Inlets in Place See Specification Section 012901.	3 EA	
	Dollars		
	Cents		
	\$		
10	Type A Catch Basin/Inlet See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
11	Type B Catch Basin/Inlet See Specification Section 012901.	31 EA	
	Dollars		
	Cents		
	\$		
12	Type Double B Catch Basin/Inlet See Specification Section 012901.	5 EA	
	Dollars		
	Cents		
	\$		

13	New manhole 4 ft Diameter See Specification Section 012901.	21 EA	
	Dollars		
	Cents		
	\$		
14	New manhole 5 ft Diameter See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
15	New manhole 6 ft Diameter See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
16	10-in Ductile Iron Pipe Storm Sewer See Specification Section 012901.	179 LF	
	Dollars		
	Cents		
	\$		
17	12-in RCP Storm Sewer See Specification Section 012901.	588 LF	
	Dollars		
	Cents		
	\$		

18	15-in RCP Storm Sewer See Specification Section 012901.	949 LF	
	Dollars		
	Cents		
	\$		
19	18-in RCP Storm Sewer See Specification Section 012901.	1469 LF	
	Dollars		
	Cents		
	\$		
20	24-in RCP Storm Sewer See Specification Section 012901.	740 LF	
	Dollars		
	Cents		
	\$		
21	30-in RCP Storm Sewer See Specification Section 012901.	85 LF	
	Dollars		
	Cents		
	\$		
22	12-in DGA Roadway Base Course See Specification Section 012901.	2753 SY	
	Dollars		
	Cents		
	\$		



23	8-in Asphalt Base Course See Specification Section 012901.	2753 SY	
	Dollars		
	Cents		
	\$		
24	2-in Asphalt Top Course See Specification Section 012901.	3200 SY	
	Dollars		
	Cents		
	\$		
25	Remove and Reinstall Cobblestone Pavers See Specification Section 012901.	225 SY	
	Dollars		
	Cents		
	\$		
26	Remove and Replace Curb See Specification Section 012901.	841 LF	
	Dollars		
	Cents		
	\$		
27	Remove and Replace 4-in thick Concrete SW See Specification Section 012901	4,682 SF	
	Dollars		
	Cents		
	\$		

28	Remove and Replace 6-in thick Concrete Driveway See Specification Section 012901.	200 SF	
	Dollars		
	Cents		
	\$		
29	Dispose of Non-Hazardous Excavation See Specification Section 012901	1460 TON	
	Dollars		
	Cents		
	\$		
30	Dispose of Hazardous Excavation See Specification Section 012901.	730 TON	
	Dollars		
	Cents		
	\$		
31	Excavation of Test Pits, If and Where Directed See Specification Section 012901.	100 CY	
	Dollars		
	Cents		
	\$		
32	Additional Excavation, If and Where Directed See Specification Section 012901.	500 CY	
	Dollars		
	Cents		
	\$		

33	Additional Excavation – Rock, If and Where Directed See Specification Section 012901.	100 CY	
	Dollars		
	Cents		
	\$		
34	Water Quality Control Unit – CDS 3ft. Dia. See Specification Section 012901.	1 EA	
	Dollars		
	Cents		
	\$		
35	Water Quality Control Unit – CDS 4 ft. Dia. See Specification Section 012901.	1 EA	
	Dollars		
	Cents		
	\$		
36	Water Quality Control Unit – CDS 6 ft. Dia. See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
37	Water Quality Control Unit – CDS 7 ft. Dia. See Specification Section 012901.	1 EA	
	Dollars		
	Cents		
	\$		

38	Water Quality Control Unit – CDS 8 ft. Dia. See Specification Section 012901.	1 EA	
	Dollars		
	Cents		
	\$		
39	Water Quality Control Unit – CDS 12 ft. Dia. See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
40	Utility Relocations, If and where Directed See Specification Section 012901 <b>Four Hundred Twenty Five Thousand Dollars</b>	1 Allowance	<b>\$425,000</b>
	<b>Zero Cents</b>		
	<b>\$425,000</b>		
41	Service of Uniformed Special Officers See Specification Section 012901 <b>Seven Hundred Sixty Thousand Dollars</b>	1 Allowance	<b>\$760,000</b>
	<b>Zero Cents</b>		
	<b>\$760,000</b>		
42	Misc. Concrete Pavement Repair, If and Where Directed See Specification Section 012901	100 SF	
	Dollars		
	Cents		
	\$		

43	Sheeting Left in Place, If and Where Directed. See Specification Section 012901	300 SF	
	Dollars		
	Cents		
	\$		
44	Sand fill, If and Where Directed. See Specification Section 012901	500 CY	
	Dollars		
	Cents		
	\$		
45	$\frac{3}{4}$ " Clean Stone, If and Where Directed See Specification Section 012901	350 CY	
	Dollars		
	Cents		
	\$		
46	Subsurface Utility Exploration (SUE) See Specification Section 012901	10 EA	
	Dollars		
	Cents		
	\$		
47	Groundwater Discharge Water One-Time Connection Fee See Specification Section 012901	1 Allowance	<b>\$60,000</b>
	<b>Sixty Thousand Dollars</b>		
	<b>Zero Cents</b>		
	<b>\$60,000</b>		

**NOTE: If the unit prices are left blank, the bid will be deemed non-responsive.**

**EXECUTION OF CONTRACT**

Upon receipt of written notice of the acceptance of this bid, the Contractor shall execute the formal contract within 10 calendar days and deliver a Performance and Payment Bond as well as other information as required in the bid solicitation.

**COMMENCEMENT OF WORK**

Contractor acknowledges that the work is to commence upon receipt of the Notice to Proceed with the exception of permit activities.

**BID SECURITY**

Bid Bond is fifty percent (50%) of the TOTAL bid, including allowances if applicable, and is to become the property of the State in the event the contract and bond are not executed within the time set forth as liquidated damages for the delay and additional expense incurred by the Owner.

**CERTIFICATION**

I certify that the below named firm is classified by the Division of Property Management and Construction in the approved amount of \$ \_\_\_\_\_ for (trade) \_\_\_\_\_ until \_\_\_\_\_ (expiration date).

I further certify that this firm's bid for this project does not cause the firm to exceed its aggregate rating limit, including consideration of uncompleted construction work (please refer to N.J.A.C. 17:19-2.13, which describes how certain major trade subcontract work is discounted 85% for purposes of calculating whether a contractor is within its rating).

Respectfully submitted,

(Seal-if Bid proposal is by a corporation)

By: \_\_\_\_\_  
(Name of Firm)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Business Street Address ONLY – No P O Box)

\_\_\_\_\_  
(City State County Zip)

Phone No. \_\_\_\_\_

Fax No. \_\_\_\_\_

Federal Identification No. \_\_\_\_\_

Any change in ownership information since filing your Request for Classification (Form DPMC 27)

☐ Yes

☐ No

If yes, attach explanation.

**STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION**

**NON-COLLUSION AFFIDAVIT**

PROJECT: P1155-01

Rebuild by Design – Hudson River Project

Hoboken, Hudson County, NJ

Bid Due Date November 24, 2020 02:00 PM

STATE OF NEW JERSEY [   
 [ SS.   
 COUNTY OF [

I, \_\_\_\_\_ of the City of \_\_\_\_\_   
 in the County of \_\_\_\_\_ and the State of \_\_\_\_\_   
 of full age, being duly sworn according to law on my oath depose and say that:

I am \_\_\_\_\_   
 of the firm of \_\_\_\_\_

the Contractor making the Bid Proposal for the above named project, and that I execute the said Bid Proposal with full authority so to do; that said Contractor has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said bid proposal and in this affidavit are true and correct, and made with full knowledge that the State of New Jersey relies upon the truth of the statements contained in said Bid Proposal and in the statements contained in this affidavit in awarding the contract for the said project.

\_\_\_\_\_  
**SIGNATURE OF PRINCIPAL**

Subscribed and sworn to before me this \_\_\_\_\_ day   
 of \_\_\_\_\_ 20\_\_\_\_, \_\_\_\_\_,

\_\_\_\_\_  
Notary Public

My Commission expires \_\_\_\_\_, \_\_\_\_\_.



## Public Law 2005, Chapter 92

Formerly: Executive Order 129

In accordance with Public Law 2005, Chapter 92 (N.J.S.A. 52:34-13.2 et seq., superseding Executive Order 129 (2004)) all bidders submitting a proposal shall be required to submit a Source Disclosure Certification that all services will be performed in the United States. The bidder shall disclose the location by country where services under the contract will be performed and any subcontracting of services under the contract and the location by country where any subcontracted services will be performed.

### SOURCE DISCLOSURE CERTIFICATION FORM

Bidder: \_\_\_\_\_

I hereby certify and say:

I have personal knowledge of the facts set forth herein and am authorized to make this Certification on behalf of the Bidder.

The Bidder submits this Certification as part of a bid proposal in response to the referenced solicitation issued by the State of New Jersey, Department of Treasury, Division of Property Management and Construction (DPMC), in accordance with the requirements of Public Law 2005, Chapter 92, (N.J.S.A. 52:34-13.2 et seq., superseding Executive Order 129 (2004)).

The following is a list of every location where services will be performed by the bidder and all subcontractors.

<u>Bidder or Subcontractor</u>	<u>Description of Services</u>	<u>Performance Location(s) by Country</u>
--------------------------------	--------------------------------	---

Any changes to the information set forth in this Certification during the term of any contract awarded under the referenced Project Number will be immediately reported by the Bidder to the Contract Compliance Unit in the DPMC, Department of Treasury, State of New Jersey, PO Box 034, Trenton, NJ 08625.

I understand that, after award of a contract to the Bidder, it is determined that the Bidder has shifted services declared above to be provided within the United States to sources outside the United States, prior to a written determination by the Director, Division of Property Management and Construction, that extraordinary circumstances require the shift of services or that the failure to shift the services would result in economic hardship to the State of New Jersey, the Bidder shall be deemed in breach of contract, which contract will be subject to termination for cause under its contract with DPMC.

I further understand that this Certification is submitted on behalf of the Bidder in order to induce DPMC to accept a bid proposal, with knowledge that the State of New Jersey and DPMC are relying upon the truth of the statements contained herein.

I certify that, to the best of my knowledge and belief, the foregoing statements by me are true. I am aware that if any of the statements are willfully false, I am subject to punishment.

Bidder: \_\_\_\_\_  
[Name of Organization or Entity]

By: \_\_\_\_\_

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

**STATE OF NEW JERSEY**  
**DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION**  
**DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN**

BIDDER \_\_\_\_\_

*Pursuant to Public Law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that neither the person or entity, nor any of its parents, subsidiaries, or affiliates, is identified on the Department of Treasury's Chapter 25 list as a person or entity engaging in investment activities in Iran. The Chapter 25 list is found on the Division of Purchase and Property's website at <http://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf>. Bidders **must** review this list prior to completing the below certification. **Failure to complete the certification may render a bidder's proposal non-responsive.** If the Director finds a person or entity to be in violation of law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.*

PLEASE CHECK THE APPROPRIATE BOX:

☐ I certify, pursuant to Public Law 2012, c. 25, that neither the bidder listed above nor any of the bidder's parents, subsidiaries, or affiliates is listed on the N.J. Department of the Treasury's list of entities determined to be engaged in prohibited activities in Iran pursuant to P.L. 2012, C. 25 ("Chapter 25 List"). I further certify that I am the person listed above, or I am an officer or representative of the entity listed above and am authorized to make this certification on its behalf. I will skip Part 2 and sign and complete the Certification below.

OR

☐ I am unable to certify as above because the bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the Department's Chapter 25 list. I will provide a detailed, accurate and precise description of the activities in Part 2 below and sign and complete the Certification below. Failure to provide such will result in the proposal being rendered as non-responsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

Part 2: PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN

You must provide a detailed, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the box(es) below.

Name \_\_\_\_\_ Relationship to Bidder/Offeror \_\_\_\_\_  
Description of Activities \_\_\_\_\_  
Duration of Engagement \_\_\_\_\_ Anticipated Cessation Date \_\_\_\_\_  
Bidder/Offeror Contract Name \_\_\_\_\_ Contact Phone Number \_\_\_\_\_

List Additional Activities on Separate Sheet

**P.L. 2012 c. 25**

CERTIFICATION: I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above-referenced person or entity. I acknowledge that the State of New Jersey is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the State to notify the State in writing of any changes to the answers of information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with the State of New Jersey and that the State at its option may declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print): \_\_\_\_\_ Signature: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_



## State of New Jersey

DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O Box 034  
TRENTON NJ 08625-0034

PHILIP D. MURPHY  
*Governor*

SHEILA Y. OLIVER  
*Lt. Governor*

ELIZABETH MAHER MUOIO  
*State Treasurer*

CHRISTOPHER CHIANESE  
*Director*

October 30, 2020

SUBJECT: **Bulletin "E" Dated October 30, 2020**

PROJECT #: **P1155-01**

DESCRIPTION: Re-Build by Design  
Sewer System Modification  
Hoboken, Hudson County, NJ

To Whom It May Concern:

WE ARE FORWARDING A COPY OF THE ABOVE REFERENCED BULLETIN. PLEASE  
ACKNOWLEDGE RECEIPT BY RETURNING THIS FORM TO:

Division of Property Management and Construction  
**Attention:** S. Taylor  
Contracts & Procurement  
PO Box 034  
Trenton NJ 08625-0034  
**Fax #: 609-777-1970**

Sincerely,

A handwritten signature in black ink, appearing to read "S. Taylor", written over a light gray rectangular background.

Shawn Taylor  
Property Management Services Specialist  
Contracts and Procurement

\_\_\_\_\_  
Date Received

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION  
PO BOX 034, TRENTON, NJ 08625-0034

PROJECT#: P1155-01  
Rebuild by Design Hudson River Project  
Sewer System Modification  
Hoboken, Hudson County, NJ

A/E: AECOM

DATE: October 30, 2020

**BULLETIN “E”**

Bidder must acknowledge receipt of this Bulletin on bid form in the space provided therefor.

This Bulletin is issued for the purpose of amending certain requirements of the original Contract Documents, as noted hereinafter, and is hereby made part of and incorporated in full force as part of the Contract Documents. Unless specifically noted or specified hereinafter, all work shall comply with the applicable provisions of the Contract Documents.

**A) BIDDING INFORMATION**

1. Contractors are advised that bids are due on **Thursday, November 19, 2020 by 2:00 PM at the DPMC Plan Room**. Firms planning to submit a bid can drop off the bid to the DPMC Plan Room or use an overnight delivery service. However, bids not received by the bid deadline will be deemed non-responsive. **Bidders are permitted to attend the bid opening in person (limit one representative per firm to ensure proper social distancing measures) but are strongly urged due to the current COVID-19 pandemic emergency to view the bid opening via the ZOOM videoconferencing app instead of attending in person. The bid results will be posted on the DPMC website promptly after the opening.**

**a) To Join the Bid Opening via the Zoom app:**

- You can connect with a PC/laptop or with an iOS or Android phone.
- Download and Launch the app on your computer or smart phone. Select the JOIN A MEETING blue bar (you do not need to create an account). Then enter the meeting ID number at the top of the next page. You can edit your name, then select “Join”. You will be permitted to allow the app to access your camera and mic. You will

also be permitted to select internet audio or call. You can select internet call/audio.

- The bid opening meeting ID# for Zoom is **496-704-7177** for this project.
- The password to join the meeting is **195286**.
- Or use the following link to access the meeting:

<https://us04web.zoom.us/j/4967047177>

- Tutorials on how to join the opening can be found at the following link:  
<https://support.zoom.us/hc/en-us/categories/200101697>

**\*\*Please note that setting up Zoom before the meeting will be helpful.\*\***

**b) Overnight Delivery:**

- The address for overnight delivery (UPS, Fedex, etc) is as follows:

**Division of Property Management and Construction  
33 West State Street, 9<sup>th</sup> Floor  
Trenton, NJ 08608  
ATTN: Shawn Taylor**

## **B) REVISIONS TO SPECIFICATIONS**

### **TABLE OF CONTENTS**

### **PART II: TECHNICAL CONTRACT SECTIONS**

#### **Division 02 – Existing Conditions**

#### **ADD THE FOLLOWING:**

023214 VIBRATION & NOISE MONITORING

### **SECTION 011100**

#### **SUMMARY OF WORK**

##### **1.05 ACCESS TO SITE**

#### **ADD THE FOLLOWING:**

At the end of paragraph 1.05 B.2.b., add

C. Contractor to be responsible for snow removal for work areas.

- D. Contractor shall not perform any SSM construction work on State and Federal holidays. Contractor shall coordinate with the City of Hoboken on any other restriction of construction activity due to local events or holidays.

## **SECTION 012901**

### **MEASUREMENT AND PAYMENT**

#### **1.03 MEASUREMENT AND PAYMENT - GENERAL**

##### **REPLACE THE FOLLOWING:**

In the first sentence of 1.03 F., replace “excavation dewatering and disposal” with “excavation dewatering, disposal of water generated from dewatering operations”.

#### **1.13 SERVICES OF UNIFORMED SPECIAL OFFICERS**

##### **DELETE THE FOLLOWING:**

The entire first sentence in paragraph 1.13 A.

##### **REPLACE WITH THE FOLLOWING:**

- A. Under this item, the Contractor shall be reimbursed for certain charges for the services of uniformed special officers and NJT uniformed officers (shown as traffic enforcement agents (TEA) and NJ Transit Agents on the MPT plans) rendered in connection with traffic control, as noted on the Contract Drawings or as required by the Municipalities, New Jersey Transit or the Port Authority of New York and New Jersey.

##### **ADD THE FOLLOWING:**

#### **1.17 PERMITTING**

- A. Contractor shall not be responsible for road opening permit fees for the City of Hoboken and Hudson County. Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work, and which are legally required at the time of receipt of bids.

#### **3.01 SCHEDULE OF BID PRICES**

##### **REPLACE THE FOLLOWING:**

In 3.01 A., replace “Item 1: Mobilization” with “Item 1: Mobilization/Demobilization”.

##### **REPLACE THE FOLLOWING:**

In the second sentence of paragraph 3.01 A.3., replace “1.11” with “1.13”.

##### **ADD THE FOLLOWING:**

After the first sentence of paragraph 3.01 A.4.e., add “No separate payment shall be made to perform vibration control and settlement monitoring. Vibration control and settlement monitoring shall be

considered incidental to the payment item that requires this monitoring. Payment shall include in the unit price or lump sum price for the payment item requiring vibration control and settlement monitoring, in accordance with Section 012901”.

**ADD THE FOLLOWING:**

After the first sentence of paragraph 3.01 A.4.f., add “No separate payment shall be made to perform noise monitoring. Noise monitoring shall be considered incidental to the payment item that requires this monitoring. Payment shall include in the unit price or lump sum price for the payment item requiring noise monitoring, in accordance with Section 012901”.

**ADD THE FOLLOWING:**

After paragraph 3.01 A.4.i. add the following paragraph “j. Traffic Control Plan – This plan is to detail project specific maintenance and protection of traffic (MPT) measures to assure compliance with the Plans and Specifications. Contractor MPT Plans shall be coordinated with the City of Hoboken, New Jersey Transit, and public entity stakeholders. Proposed MPT Plans must be approved by the City of Hoboken prior to initiating construction.”

**REPLACE THE FOLLOWING:**

In 3.01 J., replace “Item 10: Type A Catchbasin” with “Item 10: Type A Catch Basin/Inlet”.

**REPLACE THE FOLLOWING:**

In 3.01 K., replace “Item 11: Type B Catchbasin” with “Item 11: Type B Catch Basin/Inlet”.

**REPLACE THE FOLLOWING:**

In 3.01 L., replace “Item 12: Type Double B Catchbasin” with “Item 12: Type Double B Catch Basin/Inlet”.

**REPLACE THE FOLLOWING:**

In the first sentence of paragraph 3.01 L.1., replace “Type B castings” with “Type B double castings”.

**REPLACE THE FOLLOWING:**

In 3.01 M., replace “Item 13: Manhole, 4 foot interior diameter” with “Item 13: New manhole 4 ft Diameter”.

**REPLACE THE FOLLOWING:**

In 3.01 N., replace “Item 14: Manhole, 5 foot interior diameter” with “Item 14: New manhole 5 ft Diameter”.

**REPLACE THE FOLLOWING:**



In 3.01 O., replace “Item 15: Manhole, 6 foot interior diameter” with “Item 15: New manhole 6 ft Diameter”.

**ADD THE FOLLOWING:**

After the first sentence in 3.01 X.1, add “Contractor shall be responsible for disposal of all asphalt millings. All costs associated with disposal shall be included in the bid unit price for this item.”.

**REPLACE THE FOLLOWING:**

In 3.01 Y., replace “Item No. 25: Remove, Store and Re-install Cobblestone Pavers” with “Item 25: Remove and Reinstall Cobblestone Pavers”.

**DELETE THE FOLLOWING:**

The entire second sentence in paragraph 3.01 Y.1.

**REPLACE WITH THE FOLLOWING:**

When directed by the Construction Manager, remove and dispose the temporary bituminous pavement and install the sand bedding and re-install the Pavers per the Details. All costs associated with disposal shall be included in the bid unit price for this item.

**REPLACE THE FOLLOWING:**

In 3.01 Z., replace “Item 26: Remove and Replace Concrete Curb” with “Item 26: Remove and Replace Curb”.

**REPLACE THE FOLLOWING:**

In 3.01 AA., replace “Item 27: Remove and Replace Concrete Sidewalk, 4-inch Thick” with “Item 27: Remove and Replace 4-in thick Concrete SW”.

**REPLACE THE FOLLOWING:**

In the third sentence of paragraph 3.01 DD.1., replace “and disposal of non-hazardous excavation” with “and disposal of hazardous excavation”.

**REPLACE THE FOLLOWING:**

In 3.01 HH., replace “Item 34: Storm Water Treatment Devices, 3 foot diameter” with “Item 34: Water Quality Control Unit – CDS 3ft. Dia.”.

**REPLACE THE FOLLOWING:**

In 3.01 II., replace “Item 35: Storm Water Treatment Devices, 4 foot diameter” with “Item 35: Water Quality Control Unit – CDS 4 ft. Dia.”.

**REPLACE THE FOLLOWING:**

In 3.01 JJ., replace “Item 36: Storm Water Treatment Devices, 6 foot diameter” with “Item 36: Water Quality Control Unit – CDS 6 ft. Dia.”.

**REPLACE THE FOLLOWING:**

In 3.01 KK., replace “Item 37: Storm Water Treatment Devices, 7 foot diameter” with “Item 37: Water Quality Control Unit – CDS 7 ft. Dia”.

**REPLACE THE FOLLOWING:**

In 3.01 LL., replace “Item 38: Storm Water Treatment Devices, 8 foot diameter” with “Item 38: Water Quality Control Unit – CDS 8 ft. Dia”.

**REPLACE THE FOLLOWING:**

In 3.01 MM., replace “Item 39: Storm Water Treatment Devices, 12 foot diameter” with “Item 39: Water Quality Control Unit – CDS 12 ft. Dia”.

**ADD THE FOLLOWING:**

After the last sentence in 3.01 NN. 1., add “Payment shall include the cost for work performed by the Contractor for utility relocation. Costs incurred directly by utility companies or third-party contractors designated by a utility company to relocate their utilities are excluded from this allowance amount.”.

**SECTION 013443**

**ENVIRONMENTAL PROCEDURES**

**REPLACE THE FOLLOWING:**

The specification section in its entirety, replace with the attached Specification Section 013443 Environmental Procedures which is provided as an attachment on the thumb drive issued with this bulletin.

**1.02 REFERENCES**

**ADD THE FOLLOWING:**

D. Rebuild by Design Hudson River Project Sewer System Modification - Field Testing Plan (October 2020).

**SECTION 013543**

**ENVIRONMENTAL ENGINEERING CONTROLS**

**REPLACE THE FOLLOWING:**

The specification section in its entirety, replace with the attached Specification Section 013543 Environmental Engineering Controls which is provided as an attachment on the thumb drive issued with this bulletin.

## **SECTION 014300**

### **QUALITY REQUIREMENTS**

#### **1.01 DESCRIPTION**

DELETE THE FOLLOWING:

The language in its entirety in paragraph 1.01 C.

REPLACE WITH THE FOLLOWING:

C. Refer to the General Conditions Article 4.4 - Responsibility For The Work.

D. Refer to the General Conditions Article 4.10 - Testing.

## **SECTION 015000**

### **TEMPORARY FACILITIES**

#### **1.01 SCOPE OF WORK**

ADD THE FOLLOWING:

At the end of paragraph 1.01 A.1.d. (2), add “, NJDEP, and EOR.”

#### **2.03 OFFICE FOR CONSTRUCTION MANAGER**

REPLACE THE FOLLOWING:

The language in its entirety in paragraph 2.03, replace with the attached Word Document for 2.03 which is provided as an attachment on the thumb drive issued with this bulletin.

## **SECTION 020804**

### **DUST AND VOLATILE EMISSION CONTROL**

REPLACE THE FOLLOWING:

The specification section in its entirety, replace with the attached Specification Section 020804 Dust and Volatile Emission Control which is provided as an attachment on the thumb drive issued with this bulletin.

## **SECTION 021600**

### **EXCESS CLEAN FILL, CONTAMINATED SOIL, AND GROUNDWATER MANAGEMENT AND DISPOSAL**

REPLACE THE FOLLOWING:

The specification section in its entirety, replace with the attached Specification 021600 Excess Clean Fill, Contaminated Soil, and Groundwater Management and Disposal which is provided as an attachment on the thumb drive issued with this bulletin.

## **SECTION 023214**

### **VIBRATION AND NOISE MONITORING**

#### **1.01 DESCRIPTION**

##### **ADD THE FOLLOWING:**

At the end of paragraph 1.01 A. 7. add "8. Vibration control for historic structures."

#### **1.02 REFERENCES**

##### **ADD THE FOLLOWING:**

D. Rebuild by Design Hudson River - Historic Resource Construction Protection Plan for Sewer System Modifications (October 2020).

#### **1.05 SUBMITTALS**

##### **ADD THE FOLLOWING:**

At the end of paragraph 1.05 B.8. add "Location of historic structures and its associated construction zones as indicated in Table 1.05-1 Previously Identified Historic Architectural Resources in SSM Construction Zone".

**Table 1.05-1 Previously Identified Historic Architectural Resources in SSM Construction Zone**

<b>ID NO.</b>	<b>RESOURCE NAME</b>	<b>LOCATION</b>	<b>CLOSEST STRUCTURE</b>	<b>UPSTREAM STRUCTURE REFERENCE</b>	<b>DOWNSTREAM STRUCTURE REFERENCE</b>
8.	Hoboken Historic District	Hudson Place, Newark Street and River Street	Entire SSM Southern Alignment	Entire SSM Southern Alignment	Entire SSM Southern Alignment
9.	Hoboken Land and Improvement Company Building	1 Newark Street	T_MH-S-20	T_CB-20	T_MH-S-16
10.	Hoboken-North Hudson YMCA	1301 Washington Street	N_MH-S-17	N_MH-S-17	N_MH-S-18
12.	Machine Shop (Bethlehem Steel Corp. Shipyard)	1201-1321 Hudson Street	N_MH-1 / N_MH-S-11	N_CB-1	N_MH-6
23.	Factory Terminal	Hudson at	N_MH-S-24	N_CDS-1	N_MH-11

	Loft Buildings (Standard Brands and Lipton Tea Plant)	15th Street			
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*Note: The historic resources are identified by the number provided in the Programmatic Agreement among the New Jersey Department of Community Affairs, the Advisory Council on Historic Preservation and the New Jersey Historic Preservation Office regarding the Rebuild by Design-Hudson River Project in Hudson County, NJ (September 2017).*

## 1.08 SITE CONDITIONS

### REPLACE THE FOLLOWING:

The language in its entirety in paragraph 1.08 A., replace with “Geotechnical Investigation Results Report (Draft): The report is for information only and is not part of the Contract Documents. This report was prepared for the “Rebuild By Design - Hudson River Project” and does not reflect the conditions of the subsurface materials in the Sewer System Modification project. No soil borings were conducted in the area of this Contract. This report shall not be construed as to guarantee that other subsurface materials will not be present or that proportions of materials will not vary from that shown in that report.”.

## PART 3 - EXECUTION

### ADD THE FOLLOWING:

#### 3.12 HISTORIC RESOURCE CONSTRUCTION PROTECTION PLAN

##### A. PRECONSTRUCTION DOCUMENTATION AND ACTIVITIES

1. Contractor shall notify existing property owners of historic properties of undertaking that requires the inspection of their property to facilitate the preconstruction inspection process. Said notification should inform owners of the scheduled time for the inspection of their property, be distributed in a timely manner to allow for comment and include the contact information of the appropriate Project Team member.
2. Contractor shall perform a preconstruction inspection of each potentially affected historic property(s) listed in Table 1.05-1 undertaken by a third-party professional engineer(s) licensed to practice in the State of New Jersey (the “Inspecting Engineer”), to ascertain any pre-existing damage, existing structural distress, and any potential weakness of the historic property’(s) foundations or structures. The Inspecting Engineer must meet the approval of the NJDEP’s professional archaeologist (Archaeologist/WSP).
  - a. The pre-construction surveys will include all interior floors and basements and a complete exterior survey. Installation of exterior crack monitors (real-time) shall be placed on readily accessible existing exterior cracks greater than 2 mm (0.08 inch) in

width with the consent of the property owner. Readily accessible shall mean up to 7 feet from the sidewalk or adjacent to a fire escape or balcony within arm's reach.

- b. The location of all cracks greater than 2 mm (0.08 inch) in aperture width shall be recorded with a positional accuracy of +/- 2 ft. Installation of grid crack monitors may be required on selected readily accessible cracks with an aperture width greater than 2 mm (0.08 inch).
  - c. Use a professional (non-digital) camera to take photographs of the interior, exterior, or other areas using appropriate lenses capable of producing archival negatives and prints. Interior details and subsurface photographs may be taken using a professional grade camera with appropriate lenses capable of producing archival 35 mm negatives.
3. The Inspection Engineer shall produce a written report that documents any potential weakness or structural distress, assesses the stability of any applied ornament and exterior architectural features, together with a protocol addressing any recommended remediation to secure problem areas prior to the commencement of any construction activities that may affect the historic property(s).
- a. Individual Property Reports shall be prepared for all historic property(s) where a pre-construction survey was performed. The written report will be supplemented with photographic documentation in the form of 8 inch x 10 inch black-and-white photographs keyed to a map or plan in order to provide a concise record of the existing condition of the structure and any potential problems that appear evident. All photographs shall contain the project record identification number and date and time of exposure, printed integrally during processing.
  - b. The technical report shall be carefully and objectively written outlining the history, occupancy, type of construction, materials and other pertinent details of the structure. In the report adequately and logically detail all evidence of structural and non-structural distress, covering framing, exteriors, interiors, roof, basement interiors, details and ornaments/features, sidewalks and curbs and other elements of the structure, which have been surveyed. Include sketches as necessary.
  - c. Submit the pre-construction survey report to the NJDEP for review and retention. Upon request, the reports shall also be given to the owner of the historic property surveyed and any subcontractor who may cause potentially adverse vibrations during construction.
  - d. The NJDEP shall submit the pre-construction survey report for review by the SHPO.

4. Contractor shall install crack displacement monitoring and vibration control equipment prior to construction to record initial readings and gather baseline data. Preconstruction crack and vibration readings provide a reference data set (or ambient in the case of vibration and noise) from which future readings can be compared. All of the installed instrumentation will use real-time monitoring capabilities to transmit information regarding the movement, settlement, tilt, strain and induced vibration of the historic property(s) as a result of the Project's excavation, construction or tunneling. The purpose of monitoring instrumentation (i.e. seismograph, crack gauges) is to measure any induced or excessive movements as a result of tunneling, excavation and construction activities which may have the potential of causing an adverse effect on the historic property(s).

- a. Install crack displacement monitoring gauges across structural cracks identified the preconstruction survey.
- b. Install seismographs in the basement and/or the first floor of the historic property(s) or other locations deemed most beneficial for readings. Locate the units discreetly away from the public but accessible to the monitoring technician responsible for management of their readings. Seismographs measure vibration levels during demolition, excavation, and construction.
- c. SPECIAL PROVISION: Based on the pre-construction survey reports, additional geotechnical and structural instrumentation shall be installed on surfaces of, or nearby to, the identified historic property(s) for particularly sensitive historic properties or those with a high "importance factor." The installation of additional equipment may require owner's consent, especially if it must be installed inside or on the exterior of the historic property(s).

The purpose of additional geotechnical and/or structural control instrumentation is to measure any movement, settlement, tilt, and strain that may be caused by excessive vibration and may also be a result of tunneling, excavation and construction activities. Movement of any type caused by numerous reasons may have the potential of causing an adverse effect on the historic property(s).

5. Program the vibration monitoring equipment to trigger a system alert upon the detection of a critical movement level readings. Most vibration control equipment is designed to provide an alert (i.e. sonic alarm, system alert within the monitoring program) upon the detection of a review or alert level reading. See Section 3.12 B.1. below for the recommended critical movement level thresholds.

## B. VIBRATION CONTROL DURING CONSTRUCTION

1. The vibration limits for each historic property within the construction zones shall adhere to the limits specified in Section 3.04 A.2.a.. The criteria adheres to the APT recommended range for the vibration control threshold, which limits construction vibration to a PPV range of 0.12 in/sec to 0.5 in/sec. More stringent vibration criteria may be adopted for specific historic structures, based upon the findings of the preconstruction surveys. These limits will be adhered to and monitored during construction to aid in the preservation of the historic property(s).

Monitor firm (retained by the Construction Contractor) will thereafter ensure that the appropriate vibration limits and any other criteria deemed appropriate by the Archaeologist/WSP are administered during construction. The Monitor firm is responsible that equipment is in working condition at all times and/or the replacement of faulty equipment. Monitor firm will be responsible for monitoring these controls, with oversight provided by the Construction Management team (CMF) and with periodic inspection by Archaeologist/WSP.

- a. Review and Alert Levels with respect to different types of movement.

**Table 3.12-1: Review and Alert Levels for Various Movement**

Type of Movement	Response Level	
	Review	ALERT
Shifting	0.125 in.	<b>0.25 in.</b>
Settlement	0.125 in.	<b>0.25 in.</b>
Tilt	1:500	<b>1:250</b>
Vibration (PPV)	> 0.50 in/sec	<b>&gt; 0.50 in/sec</b>

- b. Report Critical Level Readings with respect to the different types of movement. The flowchart below outlines the steps in the event of a critical level monitor reading (see Figure 1). If damage is sustained, refer to the structural damage categories outlined in Table 3.12-2 when describing the level of damage observed after the critical level reading.

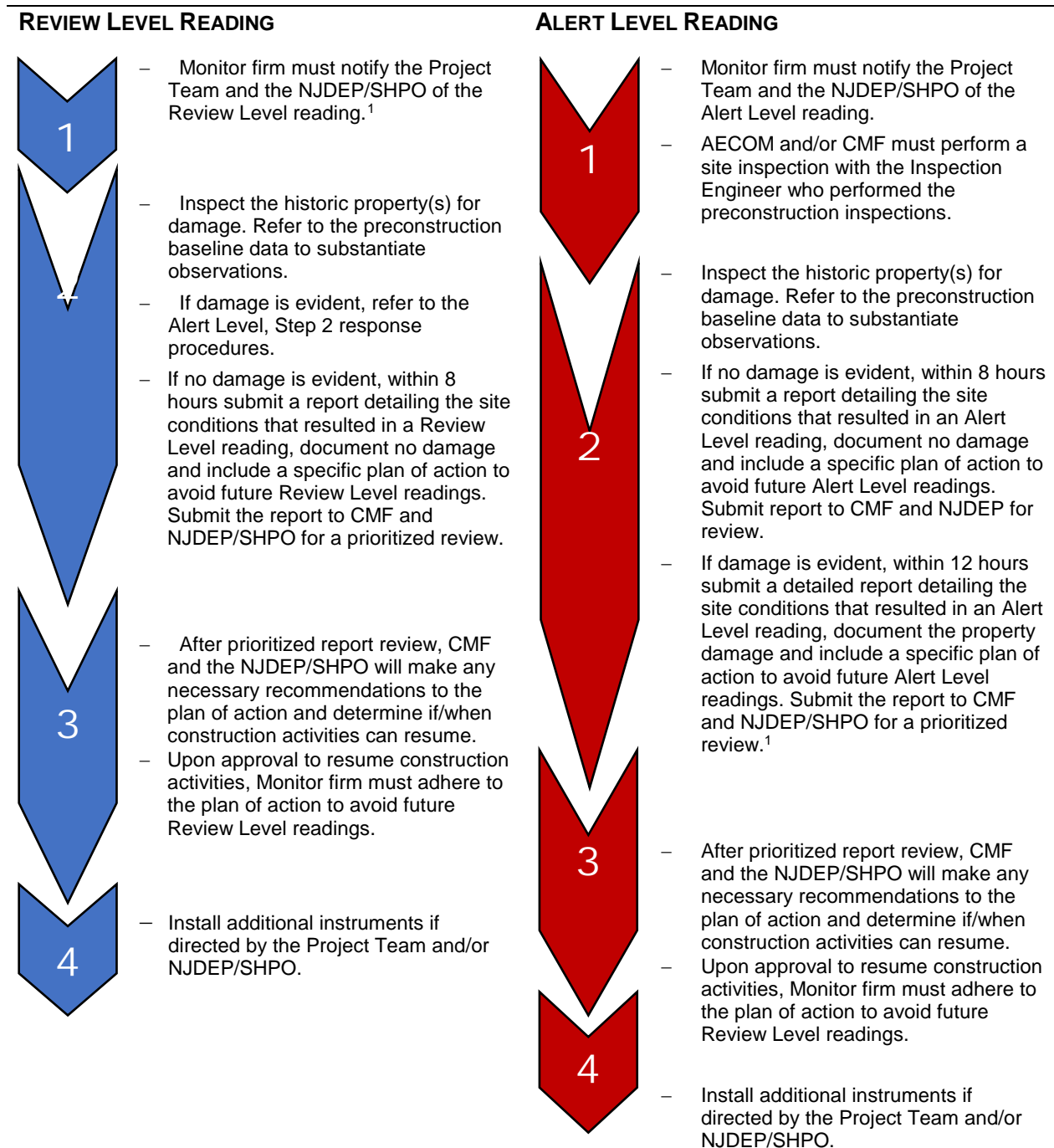
**Table 3.12-2: Damage Categories to Determine Damage Sustained by Historic Structures**

Damage Category		Damage Sustained
1	Cosmetic	The formation of hairline cracks on drywall surfaces or the growth of existing cracks in plaster or drywall surfaces; formation of hairline cracks in mortar joints of brick/concrete blocks.
2	Minor	The formation of large cracks or loosening and falling of plaster or drywall surfaces, or cracks through bricks/concrete blocks.



3	Major	Damage to structural elements of the building, cracks in support columns, loosening of joints, splaying of masonry cracks, etc.
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**Figure 1: Response Level Actions due to Critical Level Reading**



<sup>1</sup> Prioritized SHPO review due to critical level readings will aid in the timely stabilization of impacted historic buildings and help reduce excessive stop time that may adversely delay a construction schedule.

- c. Response Level Action Plan, If a historic property(s) sustains any damage as a result of an exceedance, the historic property(s) will be secured and the work that caused any damage will be altered to reduce the vibration, movement, settlement and/or tilt levels to within acceptable limits as approved by the Archaeologist/WSP assuming acceptable limits do not cause further damage. If acceptable limits cause further damage to the historic property(s), a special provision specific to that property will need to be executed by the Contractor as directed by the Archaeologist/WSP. Following the corrective measure to ensure that the vibration, movement, settlement and/or tilt levels are reduced and/or cause no further damage, construction may resume. This effort outlined above requires the coordination of the entire Project Team (Contractor, Archaeologist/WSP, CMF, NJDEP).
2. In the event of a response level reading due to excessive movement, settlement, tilt and/or vibration, the Contractor shall immediately stop all activity. Monitor firm will determine if said movement, settlement, tilt, and/or vibration requires a review or an alert level response action outlined in Section 3.12 B. 1.b.
3. Perform continuous real-time vibration and crack gauge monitoring. Under supervision of CMF, Monitor firm will provide continuous real-time vibration and crack gauge monitoring of the historic property(s) pursuant to Section 3.12 during demolition, excavation, and construction operations . NJDEP through their consultant(s) may perform offsite readings or on-site visits to review the real-time monitoring data to ensure that movement levels remain below the established thresholds during demolition, excavation, and construction.
4. Maintain daily logs of all monitoring equipment. Monitoring data shall be subject to review at any time by the on-site contractor and/or the Archaeologist/WSP, the CMF, and NJDEP through their consultant(s). Property owners may also obtain a copy of monitoring reports upon request. The Archaeologist/WSP, CMF, and NJDEP will have the capabilities of reviewing the data remotely or on site. Identify the construction equipment and their locations in relation to monitoring equipment.
5. Submit weekly monitoring readings to the NJDEP. Upon written request, the NJDEP and/or the SHPO may request a copy of interim readings. Monitoring firm shall submit monitoring logs to the NJDEP on a monthly basis for their review or by the SHPO upon written request.

#### C. DAMAGE REPAIRS

1. Repairs to the historic property(s) required as a result of construction activities are at the expense of the Contractor. The preconstruction inspection reports performed by the Inspection Engineer, which shall be included in the Vibration and Noise Monitoring Plan, will assist in substantiating repairs and processing claims for sustained damages. Substantiated repairs shall be to pre-construction condition and performed in a timely manner. Required work shall be detailed and administered under separate contract between the property owner and the Contractor.
2. All repairs to the historic property(s) identified in this HRCPP must be in compliance with the Secretary of the Interior's Standards for Rehabilitation and/or if damages adversely impacted character-defining architectural features of a historic property(s). All repairs will be completed in consultation with the SHPO.

#### D. REQUIRED DOCUMENTATION

##### 1. Pre-construction Report

Prior to Construction, a third-party reviewer shall conduct photo-documentation of existing conditions for the historic structures listed in Table 1.05-1. Historic architectural features that should receive particular attention during visual inspections should be highlighted.

##### 2. Construction Reporting

During construction the Contractor shall submit monthly status reports to the NJDEP summarizing the daily log data with special emphasis given to any abnormalities. Bi-annual reports shall be provided for the SHPO. Reports shall contain information on the status of historic resources/structures and information pertinent to the excavation and construction activities required to implement the SSM project. Supplement reports with plans, cross-sections, photographs, and summary instrumentation monitoring data relevant to the period of the report in question.

In the event of critical level readings, reporting is required to: i) document the condition of the historic property(s) especially if damage is present; ii) document the conditions which caused said readings; and iii) provide a detailed plan to mitigate any potential future critical level readings. The NJDEP and SHPO review this report before construction activities can resume.

##### 3. Final Post-construction Report

Produce a final post construction report summarizing the information of the interim reports, noting any significant findings to include:

- a. a summation of all instrumentation monitoring results as well as key plans and cross sections showing key stages and/or the advancement of the works throughout the duration of the project in the final report;
- b. a general discussion that summarizes the work completed, progress, problems encountered and all incidences and occurrences, which were recorded over the duration of the contract; and
- c. photo-documentation of changes to the condition of historic structures in the report.

## **SECTION 024100**

### **DEMOLITION**

#### **3.01 PREPARATION**

##### **ADD THE FOLLOWING:**

At the end of paragraph 3.01 F add "and in accordance with the Contractor's approved MPT plan."

## **SECTION 025100**

### **DECONTAMINATION**

##### **REPLACE THE FOLLOWING:**

The specification section in its entirety, replace with the attached Specification Section 025100 Decontamination which is provided as an attachment on the thumb drive issued with this bulletin.

## **SECTION 031000**

### **CONCRETE FORMWORK**

#### **2.04 FORM MATERIAL LOCATIONS**

##### **DELETE THE FOLLOWING:**

The language in its entirety in paragraph 2.04 B.

## **SECTION 310519**

### **GEOTEXTILES**

##### **ADD THE FOLLOWING:**

After paragraph 1.06 H. 3. add the following paragraph "1.07 MEASUREMENT AND PAYMENT

- A. No separate payment shall be made for Geotextiles. Geotextile shall be considered incidental to the payment item that requires these materials. Payment shall include in the unit price or lump sum price for the payment item requiring Geotextiles, in accordance with Section 012901."

## **SECTION 312300**

### **EXCAVATION AND FILL**

#### **1.06 SUBMITTALS**

##### **ADD THE FOLLOWING:**

At the end of the first sentence in paragraph 1.06 A.3., add “No separate dewatering plan shall be submitted for this payment item. Refer to Section 312319 – Dewatering for dewatering plan submittal requirements.”

#### **1.07 QUALITY ASSURANCE**

##### **REPLACE THE FOLLOWING:**

In paragraph 1.07 B., replace the first sentence in its entirety with “In addition to testing performed by the Contractor, the Construction Manager shall perform quality assurance testing as specified.”

#### **2.01 FILL MATERIALS**

##### **ADD THE FOLLOWING:**

At the end of paragraph 2.01 B. 5. add the sentence “6. Alternative fill as described in the NJDEP Guidance for Alternate Fill and Clean Fill.”

#### **3.08 UNAUTHORIZED EXCAVATION**

##### **ADD THE FOLLOWING:**

At the end of the first sentence in paragraph 3.08 A. add “at no additional cost to the Owner.”.

## **SECTION 312319**

### **DEWATERING**

#### **1.08 SITE CONDITIONS**

##### **REPLACE THE FOLLOWING:**

The language in its entirety in paragraph 1.08 A., replace with “Geotechnical Investigation Results Report (Draft): The report is for information only and is not part of the Contract Documents. This report was prepared for the “Rebuild By Design - Hudson River Project” and does not reflect the conditions of the subsurface materials in the Sewer System Modification project. No soil borings were conducted in the area of this Contract. This report shall not be construed as to guarantee that other subsurface materials will not be present or that proportions of materials will not vary from that shown in that report.”.

##### **ADD THE FOLLOWING:**

After paragraph 1.08 A. add the following paragraph “1.09 MEASUREMENT AND PAYMENT

- A. No separate payment shall be made for Dewatering. Dewatering shall be considered incidental to the payment item that requires dewatering. Payment shall include in the unit price or lump sum price for the payment item requiring Dewatering, in accordance with Section 012901.”

## **SECTION 312333**

### **TRENCHING AND BACKFILL**

#### **1.06 SUBMITTALS**

##### **ADD THE FOLLOWING:**

At the end of the first sentence in paragraph 1.06 A.4., add “No separate dewatering plan shall be submitted for this payment item. Refer to Section 312319 – Dewatering for dewatering plan submittal requirements.”

## **SECTION 315000**

### **EXCAVATION SUPPORT SYSTEMS**

##### **ADD THE FOLLOWING:**

After paragraph 1.07 A. add the following paragraph “1.08 MEASUREMENT AND PAYMENT

- A. No separate payment shall be made for Excavation Support Systems. Excavation Support Systems shall be considered incidental to the payment item that requires excavation support. Payment shall include in the unit price or lump sum price for the payment item requiring Excavation Support Systems, in accordance with Section 012901.”

## **SECTION 321300**

### **RIGID PAVING**

##### **DELETE THE FOLLOWING:**

The entirety of Section 1.08.

## **C) REVISIONS TO DRAWINGS**

### **G003 DRAINAGE GENERAL NOTES**

##### **ADD THE FOLLOWING:**

In ENVIRONMENTAL & SITE CONTROLS notes, add

18. North Hudson Sewerage Authority (NHSA) has noted that they will accept groundwater dewatering discharges into the existing storm water system. Contractor shall contact NHSA for conditions and fees required to discharge groundwater dewatering into NHSA’s system.

### **C303 DRAINAGE PROPOSED CONDITIONS 2**

Pipe run on Hudson Place between T\_MH-4 and T\_MH-5 shall be labeled as 18-in RCP.

## **T001 MAINTENANCE OF TRAFFIC LEGEND, NOTES, & ABBREVIATIONS**

### **DELETE THE FOLLOWING:**

In MAINTENANCE OF TRAFFIC NOTES 12., delete the word “SUGGESTED”.

### **REPLACE THE FOLLOWING:**

The language in its entirety in MAINTENANCE OF TRAFFIC NOTES 13., replace with “13. COORDINATE TRAFFIC ENFORCEMENT AGENTS (TEAS) USAGE WITH CITY OF HOBOKEN AND NJ TRANSIT AGENTS USAGE WITH NEW JERSEY TRANSIT. TEAS AND NJ TRANSIT AGENTS SHALL BE DEPLOYED DURING CONSTRUCTION HOURS. REFER TO PLANS FOR LOCATION AND QUANTITY.

### **ADD THE FOLLOWING:**

In MAINTENANCE OF TRAFFIC NOTES, add

21. Contractor shall place all detour signage in the roadway to ensure 5’ ADA access on sidewalk is maintained.

## **T101 HUDSON ST SOUTH END DETOUR**

### **ADD THE FOLLOWING:**

- Contractor shall note where the northbound detour refers to Hudson Street, all northbound detour signs shall read “To Hudson Place”.
- Contractor shall provide an additional detour D4-1 modified sign at Hudson Street & Newark Street for the southbound detour plan stating “Hoboken Terminal” with an upward pointing arrow. This note is applicable when construction affects locations south of Hudson Place as shown on Drawings T201 and T203.
- Contractors shall provide additional detour D4-1 modified signs “Hoboken Terminal” to be installed above the “Hudson St” detour signs for northbound detour.

## **T201 WORK ZONE 1 – OBSERVER HIGHWAY LANE CLOSURE**

### **ADD THE FOLLOWING:**

- Contractor shall provide additional bicyclist detour signage to guide bicyclists traveling in the westbound direction towards Observer Highway allowing bicyclists to use the crosswalk at Observer Highway and Washington Street to access cycle track if barricades are preventing access near NJT Bus Terminal entrance.
- Contractor shall add signage on Observer Highway cycle track directing bicyclists to use Washington Street or follow detour signs for Hoboken Terminal for eastbound access. Contractor shall refer to T-101 for Hudson Street detour plan for signage layout. If bicyclists enter the work area, the Traffic Enforcement Agents and NJ Transit Agents shall safely direct them away from the work zone.

## **T207 WORK ZONE 7 – NEWARK ST AND SINATRA DRIVE CLOSURES**

ADD THE FOLLOWING:

- Contractor shall make note of School loading zone on south side of Newark Street between Sinatra Drive and River Street. Contractor shall coordinate with Traffic Enforcement Agent at Newark Street/ River Street intersection whom shall keep Newark Street open to vehicular, bicycle and pedestrian traffic. The Traffic Enforcement Agent along Newark Street shall direct school loading vehicles downstream of restricted parking zone (150').

## **T227 WORK ZONES 27 WASHINGTON ST 14<sup>TH</sup> ST LANE CLOSURES**

ADD THE FOLLOWING:

- Contractor shall move the cones delineating the northbound and southbound lanes located south of the Washington Street and 14th Street intersection if a larger vehicle (emergency vehicle, bus or truck) turns right from eastbound 14th Street onto southbound Washington Street.

## **D) RESPONSES TO CONTRACTOR QUESTIONS**

### **Tomco Construction Co.**

#### **Question #1:**

From our supplier

I am the Oldcastle Infrastructure Stormwater Rep for NY/NJ and this project recently came across my desk for us to provide the contractor with a competitive quote for all the drainage structures and WQ units specified on the above referenced project.

I'm showing six (6) CDS units as follows:

1. CDS-1 (12' Dia) Rim = 8.43; Invert = -0.60; WQ flow = x.xx cfs? Peak flowrate = x.xx cfs?
2. CB-23 (6' Dia) Rim = 10.48; Invert = 8.20; WQ flow = x.xx cfs? Peak flowrate = x.xx cfs?
3. CB-25 (8' Dia) Rim = 9.13; Invert = 7.07; WQ flow = x.xx cfs? Peak flowrate = x.xx cfs?
4. CB-26 (4' Dia) Rim = 8.67; Invert = 6.42; WQ flow = x.xx cfs? Peak flowrate = x.xx cfs?
5. CB-27 (3' Dia) Rim = 11.75; Invert = 9.50; WQ flow = x.xx cfs? Peak flowrate = x.xx cfs?
6. CB-29 (7' Dia) Rim = 11.30; Invert = 9.05; WQ flow = x.xx cfs? Peak flowrate = x.xx cfs?

I have the Rims, pipe inverts & sump elevations for each but in order to show that our equivalent hydro-dynamic separator (DVS-Dual Vortex Separator) meets the NJCAT/DEP requirements for TSS removal I need both the WQ flowrate & peak design flow rate for the outlet pipe for each of the above referenced structure. Without this information I cannot size our system accordingly.

**Answer:**

1. CDS-1 (12' Dia) Rim = 8.43; Invert = -0.60; WQ flow = 10.4 cfs; Peak flowrate = 20.1 cfs
2. T\_CB-23 (6' Dia) Rim = 10.48; Invert = 8.20; WQ flow = 1.61 cfs; Peak flowrate = 3.8 cfs
3. T\_CB-25 (8' Dia) Rim = 9.13; Invert = 7.07; WQ flow = 5.7 cfs; Peak flowrate = 9.9 cfs
4. T\_CB-26 (4' Dia) Rim = 8.67; Invert = 6.42; WQ flow = 0.85 cfs; Peak flowrate = 2.0 cfs



5. T\_CB-27 (3' Dia) Rim = 11.75; Invert = 9.50; WQ flow = 0.24 cfs; Peak flowrate = 0.5 cfs
6. T\_CB-29 (7' Dia) Rim = 11.30; Invert = 9.05; WQ flow = 3.09 cfs; Peak flowrate = 4.5 cfs

There are also 2 more CDS units in the North Model, which were not included in this RFI. The data for these structures are as follow:

1. N\_CDS-1 (12' Dia) Rim = 8.43; Invert = -0.60; WQ flow = 7.69 cfs Peak flowrate = 18.8 cfs
2. N\_CB-13 WQ flow = 0.6 cfs, Peak flowrate = 2.0 cfs

**Question #2:**

Regarding the removals of manholes & inlets – Several existing drainage structures shown on Shts. C307 & C308 lack the information to determine the depth of the unit. Without this information we cannot accurately determine the cost for removal and disposal. Please provide the necessary information or a payment option to address this issue.

**Answer:**

**Information was not available to the Architect/Engineer as the inverts were not accessible or available during inspections for design development.**

**Question #3:**

Section 012901 Measurement and Payment  
Heading 1.14 Subsurface Utility Exploration  
Paragraph A

We are to provide a Quality A Level locating service, but for what duration? Normally these companies are hired per day, but the number of days is not given. How many days should we include in our bid?

**Answer:**

**It is anticipated that the surveys will be performed at the initiation of the Contract in one mobilization. Duration will depend on the depth and location of the search.**

**Question #4:**

Please clarify if field offices are required for:

Contractor  
DEP  
CMF  
A/E

For a total of 4 offices?

**Answer:**

**Total field office area for the DEP, CMF and A/E shall be a minimum of 1,000 SF. Refer to revised Section 015000; 2.03, for field office requirements. The revised Section 015000; 2.03 is provided as an attachment on the thumb drive issued with this bulletin.**

The Contractor shall determine their space needs to complete the project. There is no separate payment for the Contractor's field office(s) or ancillary office support items.

**Question #5:**

Please provide quantity of Project Signs required – 2 for the project and 1 at each Construction Office location?

**Answer:**

**Two (2) project signs are required for the project. The Construction Manager will advise the Contractor as to the location of the signs.**

**Question #6:**

Please provide Analytical documentation for the unknown but anticipated contamination of the existing groundwater present throughout the project locations. Without this information we are unable to establish the proper procedures for approved groundwater treatment for disposal to include in our bid proposal. Please provide the requested information or an Allowance as a payment vehicle.

**Answer:**

**Analytical results for soil and groundwater samples collected within the vicinity of the project area are presented, for the Contractor's information only, in the "Rebuild by Design Hudson River Project Environmental Results Report (October 2019)", which is provided as an attachment on the thumb drive issued with this bulletin. Note that the Environmental Results Report is not a part of the Contract Documents, and is provided for the Contractor's information only.**

**In regard to groundwater, the following note will be added to the Contract Documents;  
"Sheet G003 – Under Environmental and Site Conditions, add**

***18. North Hudson Sewerage Authority (NHSA) has noted that they will accept groundwater dewatering discharges into the existing storm water system. Contractor shall contact NHSA for conditions and fees required to discharge groundwater dewatering into NHSA's system."***

**No Allowance for this item will be provided.**

**Question #7:**

Please provide Analytical documentation for the unknown but anticipated contamination of the existing soils present throughout the project locations. Without this information we are unable to obtain accurate pricing for approved disposal of hazardous soils per Bid Item 30. Please provide analytical information or an Allowance as a payment vehicle.

**Answer:**

**Please see the response to Tomco Construction Co. Question #6 above.**

**Question #8:**

Please provide a source for the proposed manhole lid gaskets specified for Bid Item 6, Sealing Existing Manholes. We have not found a source that sell a gasket for the many different size manhole lids present in the project area. We could provide Butyl Tape as a sealing material. A link to the product:

<http://www.hamiltonkent.com/resources/sds-files/kent-seal-no-2-sds/>

**Answer:**

**Butyl tape is not an acceptable alternative. Gaskets by:**

- Neenah Foundry;
- Cretex Specialty Products;
- East Jordan Water Products Duoseal watertight assembly;
- US Foundry T-Gaskets or O-Rings (depending on casting);
- Campbell Foundry “Flow-Seal”;
- or an approved equal are to be used.

**Question #9:**

Please provide a detail for the abandonment of manholes and inlets as per Bid Items 8 & 9.

**Answer:**

No detail for this work is available.

Abandonment work shall proceed as follows for abandonment of manholes and inlets:

- Remove existing casting, frame or grate
- Demolish and remove existing structure to a minimum of 3 feet below grade
- Plug all existing pipe penetrations
- Fill to top of structure with CLSM in accordance with Specification Section 033400.
- Backfill and compact to grade as directed by Construction Manager
- Perform site restoration as necessary.

## **MONTANA CONSTRUCTION**

**Question #1:**

Is there any geotechnical report on this project? Contract drawings C001 & C009 show soil borings B-30, B-31, B-32, B-35, B-37& B-38. Please provide us all the soil borings on this project.

**Answer:**

Those soil bores were performed for a separate project and are not applicable to this project. Note that soil borings were not performed in the area of work for the Sewer System Modification project.

The “Geotechnical Investigations Results Report (Draft)”, which was produced for other work and is for the Contractor’s information only, is provided as an attachment on the thumb drive issued with this bulletin.

**Question #2:**

Please advise us any staging areas for stockpiling of the excavated materials, testing, field offices for the engineers,

**Answer:**

The State has no designated areas for stockpiling, testing or field offices. Contractor is to make their own arrangements for sufficient areas for staging and stockpiling of materials and field offices. See the revised Section 015000; 2.03 for revised field office requirements. The revised Section 015000; 2.03 is provided as an attachment on the thumb drive issued with this bulletin.

**Question #3:**

Match line from drawing C302 shows 18-inch RCP on Hudson Place on C303 it shows 24-inch RCP. Please advise what is the correct size to be used.

**Answer:**

**New pipe is to be 18-inch diameter. Plan C303 will be corrected to 18-inch RCP.**

**Question #4:**

On drawing C02, Hatch Mark (symbol indicate demolition & removal) of underground electric north of Newark Street which continues on C03 showing removal of underground telephone duct banks on River Street. Similarly hatch mark north of First Street shows sanitary sewer & water main. Fiber optics, water main & gas main north of the second street. Due to so many existing utilities, it is confusing what exactly is being removed to build this extremely difficult sewer project. We request that the engineer provide all the bidders detailed drawings for all areas of work to scale of 1:10 so that extent of scope of work becomes clear.

**Answer:**

**Plan sheets C001 to C009 inclusive, indicate existing conditions. The “hatching” referred to are surface traffic striping and NOT an indication of utilities to be removed. Sheets C301 to C311 inclusive, indicate new work. AECOM will not be providing drawings at a scale of 1:10.**

**Question #5:**

This project shows Hudson River Sewer system modification work in Hoboken, Weehawken & Jersey City, however all the work is shown in the City of Hoboken. I just want to make sure that we did not miss anything.

**Answer:**

**All work in this Contract is within the City of Hoboken.**

**PILLARI BROS. CONSTRUCTION**

**Question #1:**

With respect to Specification Section 312319, 1.08 Site Conditions, states to “Refer to the Geotechnical Investigations Results Report and the Geotechnical Plans”, however no reports could be found in the specifications or bulletins. Please provide the geotechnical reports and plans.

**Answer:**

**The “Geotechnical Investigations Results Report (Draft)”, which was produced for other work and is for the Contractor’s information only, is provided as an attachment on the thumb drive issued with this bulletin. No separate Geotechnical Plans are included in this Contract.**

**Refer to revised Specification Section 312319, 1.08 Site Conditions below:**

**“Geotechnical Investigation Results Report (Draft): The report is for information only and is not part of the Contract Documents. This report was prepared for the “Rebuild By Design - Hudson**

**River Project” and does not reflect the conditions of the subsurface materials in the Sewer System Modification project. No soil borings were conducted in the area of this Contract. This report shall not be construed as to guarantee that other subsurface materials will not be present or that proportions of materials will not vary from that shown in that report.”**

**Question #2:**

Specification Section 012901, 3.01. TT 1. Describes the work required for Item 46 Subsurface Utility Exploration Quality Level A Service as “To provide Level I (potholing) test pit...as detailed in paragraph 1.14. Section 012901, 1.14. A states the “Contractor to provide services of a prequalified utility locating service to provide Quality A level utility locations...through nondestructive exposure of underground utilities...”. Please confirm the use of ground penetrating radar or other trenchless technology is not required and vacuum/hand excavation will be permitted.

**Answer:**

**Level A utility location refers to vacuum system excavation utility location. Ground penetrating or any other trenchless technology is not required.**

**Question #3:**

Please provide existing roadway asphalt thickness and locations where concrete roadway and/or cobblestone pavers can be expected below existing asphalt.

**Answer:**

**Cobblestone pavers are generally expected in the area around Hoboken Terminal but could be found in other areas of the project. Soil bores were not performed for this Contract and the Architect/Engineer does not have information on the existing pavement thicknesses.**

## **E) REVISIONS TO THE BID PROPOSAL FORM**

### **1. UNIT PRICES**

The bid proposal form has been revised to add the following after paragraph A.12. on page 3 of 18, “13. All permitting required to complete the work, with the exception of road opening permit fees for the City of Hoboken and Hudson County.”

**THE REVISED BID PROPOSAL FORM HAS BEEN ATTACHED TO THIS BULLETIN FOR CONTRACTOR USE.**

**ATTACHMENTS:**

1. Revised Bid Proposal Form
2. Schedule of Submittals
3. Non-Mandatory Pre-Bid Meeting Minutes and Attendance sheet dated September 24, 2020
4. Revised Specification 013443 – Environmental Procedures
5. Revised Specification 013543 – Environmental Engineering Controls
6. Revised Specification 015000 – Temporary Facilities, 2.03 Office for Construction Manager
7. Revised Specification 020804 – Dust and Volatile Emissions Controls
8. Revised Specification 021600 – Excess Clean Fill, Contaminated Soil and Ground Water Mgmt. and Disposal
9. Revised Specification 025100 - Decontamination
10. Geotechnical Investigation Results Report (Draft) dated December 7, 2018
11. Environmental Results Report (Final) dated October 22, 2019
12. Field Testing Plan dated October 15, 2020
13. Historic Resource Construction Protection Plan dated October 2020

**END OF BULLETIN “E”**

**\*\* Revised \*\***  
**BID PROPOSAL FORM**

STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O BOX 034  
TRENTON NEW JERSEY 08625-0034

The bid proposal is to be returned in the pre-addressed envelope and will be accepted no later than 2:00 p.m.,  
**November 19, 2020** after which time the bid proposals will be publicly opened and read.

FIRM NAME:  
(Please Type or Print)  
(Business Street Address ONLY – No P  
O Box)

PROJECT NO P1155-01

PROJECT: Re-Build By Design – Sewer System Modifications, Hudson River Project

LOCATION: Hoboken, NJ

COUNTY: Hudson

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The undersigned Single Prime Contractor proposes to be responsible for all work shown in the contract plans and specifications and provide a unit cost sum bid, including allowances, for materials and labor to install the Storm Sewer Modifications, for the unit price total of:

☒ Total of Base Bid Unit \$  
Prices from the attached  
Unit Price List:

\_\_\_\_\_  
(Numerical Figures Only)

In accordance with N.J.S.A. 52:35-1 et seq., the Contractor will be classified with the Division of Property Management and Construction (DPMC) in one of the following trades: **Sewer Piping & Storm Drains (C056)**

The proposal is based upon the bid documents listed below.

1. Instructions to Bidders and General Conditions dated **July 2020**
2. Specifications dated **August 2020**
3. Drawing(s)#: See Cover Sheet Dated **August 2020**

This project will be fully completed and ready for occupancy within 480 calendar days.

Liquidated damages will be assessed at \$3,000.00 per day.

The above price is good through sixty (60) days after the bid opening date.

Submit only one bid proposal and bid bond form.

A bid bond in the amount of fifty percent (50%) of the TOTAL bid, including alternates if applicable, must accompany this proposal form.

The Contractor must submit a fully completed bid form with prices for all unit price items and allowances, otherwise the bid may be considered non-responsive.

Having examined the bid 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, the Contractor hereby proposes to furnish all labor, materials and supplies, and to construct the project as submitted, within the time set forth therein, and at the price stated. This price is to cover all expenses incurred in performing the work required, of which this proposal is a part.

The Contractor acknowledges and affirms that it has personal knowledge of or has obtained and reviewed a copy of the valid prevailing wage rates for all trades involved in the project for the geographical location of the project as issued by the Commissioner of the Department of Labor, P O Box 389, Trenton, New Jersey, 08625 (609) 292-2259.

The Contractor acknowledges receipt of the following Bulletins:

<b><u>BULLETIN NUMBER</u></b>	<b><u>DATE OF BULLETIN</u></b>
A	August 21, 2020
B	September 9, 2020
C	September 24, 2020
D	October 21, 2020
E	October 30, 2020

### **UNIT PRICES**

- A. Unit Prices, unless otherwise noted, are to include incidental work included in connection with the particular type of work involved and are to include, but not necessarily be limited to, the following:
1. Engineering, including calculations, detailing, coordination, and shop drawings.
  2. Material costs, including an allowance for pipe, connections, etc.
  3. Necessary accessories, e.g., hangers, inserts, clips, bolts, painting, labeling, testing, etc.
  4. Fabrication and shop costs.
  5. Shop and field labor, including supervision and engineering layout costs.
  6. Temporary utilities required, including safety precautions.



7. Costs of standby trades during or beyond normal working hours.
8. Transportation, storage, hoisting, rigging, freight, taxes of any kind, fringe benefits, overhead and profit (excluding Insurance Cost).
9. Tools and equipment.
10. Testing, cleaning, balancing and controlled inspection.
11. Overhead.
12. Profit.
13. All permitting required to complete the work, with the exception of road opening permit fees for the City of Hoboken and Hudson County

- B. Provide unit prices based upon the specification standards and as noted herein. Unit prices shall apply to work when added and also to work when deleted, as indicated in the Bid Proposal Form, and applied as detailed in the Project specifications.

Contractor is to provide unit cost and total cost for each item listed below and as defined in Section 012901 – Measurement and Payment, for each item listed below. All unit costs shall be filled out in numbers and words, if there is a difference between the numbers and words, the written price shall govern.

<u>UNIT PRICES ITEM #</u>	<u>DESCRIPTION OF ITEM</u>	<u>BID ITEMS QUANTITY</u>	<u>TOTAL COST</u>
1	Mobilization/Demobilization See Specification Section 012901.	Per 1 LS	
	Dollars		
	Cents		
	\$		
2	Temporary Facilities Maintenance, See Specification Section 012901.	Per 18 MO	
	Dollars		
	Cents		
	\$		
3	Sawcut Existing Roadway See Specification Section 012901.	11874 LF	

	Dollars		
	Cents		
	\$		
4	Demolish Existing Roadway See Specification Section 012901.	24778 SF	
	Dollars		
	Cents		
	\$		
5	Connect to Existing Manhole See Specification Section 012901.	7 EA	
	Dollars		
	Cents		
	\$		
6	Sealing Existing Manholes See Specification Section 012901.	102 EA	
	Dollars		
	Cents		
	\$		
7	Plug Existing Pipe, Where Required. See Specification Section 012901.	38 EA	
	Dollars		
	Cents		
	\$		
8	Abandon Existing Manholes in Place See Specification Section 012901.	2 EA	

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	Dollars		
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	Cents		
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	\$		
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9	Abandon Existing Inlets in Place See Specification Section 012901.	3 EA	
	Dollars		
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	Cents		
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	\$		
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10	Type A Catch Basin/Inlet See Specification Section 012901.	2 EA	
	Dollars		
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	Cents		
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11	Type B Catch Basin/Inlet See Specification Section 012901.	31 EA	
	Dollars		
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	Cents		
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	\$		
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12	Type Double B Catch Basin/Inlet See Specification Section 012901.	5 EA	
	Dollars		
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	Cents		
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	\$		
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13	New manhole 4 ft Diameter See Specification Section 012901.	21 EA	

	Dollars		
	Cents		
	\$		
14	New manhole 5 ft Diameter See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
15	New manhole 6 ft Diameter See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
16	10-in Ductile Iron Pipe Storm Sewer See Specification Section 012901.	179 LF	
	Dollars		
	Cents		
	\$		
17	12-in RCP Storm Sewer See Specification Section 012901.	588 LF	
	Dollars		
	Cents		
	\$		
18	15-in RCP Storm Sewer See Specification Section 012901.	949 LF	

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	Dollars		
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19	18-in RCP Storm Sewer See Specification Section 012901.	1469 LF	
	Dollars		
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	Cents		
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20	24-in RCP Storm Sewer See Specification Section 012901.	740 LF	
	Dollars		
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	Cents		
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	<hr/>		
21	30-in RCP Storm Sewer See Specification Section 012901.	85 LF	
	Dollars		
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	Cents		
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	\$		
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22	12-in DGA Roadway Base Course See Specification Section 012901.	2753 SY	
	Dollars		
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	Cents		
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23	8-in Asphalt Base Course See Specification Section 012901.	2753 SY	

	Dollars		
	Cents		
	\$		
24	2-in Asphalt Top Course See Specification Section 012901.	3200 SY	
	Dollars		
	Cents		
	\$		
25	Remove and Reinstall Cobblestone Pavers See Specification Section 012901.	225 SY	
	Dollars		
	Cents		
	\$		
26	Remove and Replace Curb See Specification Section 012901.	841 LF	
	Dollars		
	Cents		
	\$		
27	Remove and Replace 4-in thick Concrete SW See Specification Section 012901	4,682 SF	
	Dollars		
	Cents		
	\$		
28	Remove and Replace 6-in thick Concrete Driveway See Specification Section 012901.	200 SF	

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	Dollars		
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	Cents		
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	\$		
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29	Dispose of Non-Hazardous Excavation See Specification Section 012901	1460 TON	<hr/>
	Dollars		
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	Cents		
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	\$		
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30	Dispose of Hazardous Excavation See Specification Section 012901.	730 TON	<hr/>
	Dollars		
	<hr/>		
	Cents		
	<hr/>		
	\$		
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31	Excavation of Test Pits, If and Where Directed See Specification Section 012901.	100 CY	<hr/>
	Dollars		
	<hr/>		
	Cents		
	<hr/>		
	\$		
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32	Additional Excavation, If and Where Directed See Specification Section 012901.	500 CY	<hr/>
	Dollars		
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	Cents		
	<hr/>		
	\$		
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33	Additional Excavation – Rock, If and Where Directed See Specification Section 012901.	100 CY	<hr/>

	Dollars		
	Cents		
	\$		
34	Water Quality Control Unit – CDS 3ft. Dia. See Specification Section 012901.	1 EA	
	Dollars		
	Cents		
	\$		
35	Water Quality Control Unit – CDS 4 ft. Dia. See Specification Section 012901.	1 EA	
	Dollars		
	Cents		
	\$		
36	Water Quality Control Unit – CDS 6 ft. Dia. See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
37	Water Quality Control Unit – CDS 7 ft. Dia. See Specification Section 012901.	1 EA	
	Dollars		
	Cents		
	\$		
38	Water Quality Control Unit – CDS 8 ft. Dia. See Specification Section 012901.	1 EA	



	Dollars		
	Cents		
	\$		
39	Water Quality Control Unit – CDS 12 ft. Dia. See Specification Section 012901.	2 EA	
	Dollars		
	Cents		
	\$		
40	Utility Relocations, If and where Directed See Specification Section 012901 <b>Four Hundred Twenty Five Thousand Dollars</b>	1 Allowance	<b>\$425,000</b>
	<b>Zero Cents</b>		
	<b>\$425,000</b>		
41	Service of Uniformed Special Officers See Specification Section 012901 <b>Seven Hundred Sixty Thousand Dollars</b>	1 Allowance	<b>\$760,000</b>
	<b>Zero Cents</b>		
	<b>\$760,000</b>		
42	Misc. Concrete Pavement Repair, If and Where Directed See Specification Section 012901	100 SF	
	Dollars		
	Cents		
	\$		
43	Sheeting Left in Place, If and Where Directed. See Specification Section 012901	300 SF	

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	Dollars		
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	Cents		
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	\$		
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44	Sand fill, If and Where Directed. See Specification Section 012901	500 CY	<hr/>
	Dollars		
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	Cents		
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	\$		
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45	$\frac{3}{4}$ " Clean Stone, If and Where Directed See Specification Section 012901	350 CY	<hr/>
	Dollars		
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	Cents		
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	\$		
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46	Subsurface Utility Exploration (SUE) See Specification Section 012901	10 EA	<hr/>
	Dollars		
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	Cents		
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	\$		
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**NOTE:** If the unit prices are left blank, the bid will be deemed non-responsive.

**EXECUTION OF CONTRACT**

Upon receipt of written notice of the acceptance of this bid, the Contractor shall execute the formal contract within 10 calendar days and deliver a Performance and Payment Bond as well as other information as required in the bid solicitation.

**COMMENCEMENT OF WORK**

Contractor acknowledges that the work is to commence upon receipt of the Notice to Proceed with the exception of permit activities.

**BID SECURITY**

Bid Bond is fifty percent (50%) of the TOTAL bid, including allowances if applicable, and is to become the property of the State in the event the contract and bond are not executed within the time set forth as liquidated damages for the delay and additional expense incurred by the Owner.

**CERTIFICATION**

I certify that the below named firm is classified by the Division of Property Management and Construction in the approved amount of \$ \_\_\_\_\_ for (trade) \_\_\_\_\_ until \_\_\_\_\_ (expiration date).

I further certify that this firm's bid for this project does not cause the firm to exceed its aggregate rating limit, including consideration of uncompleted construction work (please refer to N.J.A.C. 17:19-2.13, which describes how certain major trade subcontract work is discounted 85% for purposes of calculating whether a contractor is within its rating).

Respectfully submitted,

(Seal-if Bid proposal is by a corporation)

By: \_\_\_\_\_  
(Name of Firm)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Business Street Address ONLY – No P O Box)

\_\_\_\_\_  
(City State County Zip)

Phone No. \_\_\_\_\_

Fax No. \_\_\_\_\_

Federal Identification No. \_\_\_\_\_

Any change in ownership information since filing your Request for Classification (Form DPMC 27)

☐ Yes

☐ No

If yes, attach explanation.

**STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION**

**NON-COLLUSION AFFIDAVIT**

PROJECT: P1155-01

Rebuild by Design – Hudson River Project

Hoboken, Hudson County, NJ

Bid Due Date November 19, 2020 02:00 PM

STATE OF NEW JERSEY [ \_\_\_\_\_ ]  
[ SS. \_\_\_\_\_ ]  
COUNTY OF [ \_\_\_\_\_ ]

I, \_\_\_\_\_ of the City of \_\_\_\_\_  
in the County of \_\_\_\_\_ and the State of \_\_\_\_\_  
of full age, being duly sworn according to law on my oath depose and say that:

I am \_\_\_\_\_  
of the firm of \_\_\_\_\_

the Contractor making the Bid Proposal for the above named project, and that I execute the said Bid Proposal with full authority so to do; that said Contractor has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said bid proposal and in this affidavit are true and correct, and made with full knowledge that the State of New Jersey relies upon the truth of the statements contained in said Bid Proposal and in the statements contained in this affidavit in awarding the contract for the said project.

\_\_\_\_\_  
**SIGNATURE OF PRINCIPAL**

Subscribed and sworn to before me this \_\_\_\_\_ day  
of \_\_\_\_\_ 20\_\_\_\_, \_\_\_\_\_

\_\_\_\_\_  
Notary Public

My Commission expires \_\_\_\_\_, \_\_\_\_\_.

**Public Law 2005, Chapter 92**  
**Formerly: Executive Order 129**

In accordance with Public Law 2005, Chapter 92 (N.J.S.A. 52:34-13.2 et seq., superseding Executive Order 129 (2004)) all bidders submitting a proposal shall be required to submit a Source Disclosure Certification that all services will be performed in the United States. The bidder shall disclose the location by country where services under the contract will be performed and any subcontracting of services under the contract and the location by country where any subcontracted services will be performed.

**SOURCE DISCLOSURE CERTIFICATION FORM**

Bidder: \_\_\_\_\_

I hereby certify and say:

I have personal knowledge of the facts set forth herein and am authorized to make this Certification on behalf of the Bidder.

The Bidder submits this Certification as part of a bid proposal in response to the referenced solicitation issued by the State of New Jersey, Department of Treasury, Division of Property Management and Construction (DPMC), in accordance with the requirements of Public Law 2005, Chapter 92, (N.J.S.A. 52:34-13.2 et seq., superseding Executive Order 129 (2004)).

The following is a list of every location where services will be performed by the bidder and all subcontractors.

<u>Bidder or Subcontractor</u>	<u>Description of Services</u>	<u>Performance Location(s) by Country</u>
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Any changes to the information set forth in this Certification during the term of any contract awarded under the referenced Project Number will be immediately reported by the Bidder to the Contract Compliance Unit in the DPMC, Department of Treasury, State of New Jersey, PO Box 034, Trenton, NJ 08625.

I understand that, after award of a contract to the Bidder, it is determined that the Bidder has shifted services declared above to be provided within the United States to sources outside the United States, prior to a written determination by the Director, Division of Property Management and Construction, that extraordinary circumstances require the shift of services or that the failure to shift the services would result in economic hardship to the State of New Jersey, the Bidder shall be deemed in breach of contract, which contract will be subject to termination for cause under its contract with DPMC.

I further understand that this Certification is submitted on behalf of the Bidder in order to induce DPMC to accept a bid proposal, with knowledge that the State of New Jersey and DPMC are relying upon the truth of the statements contained herein.

I certify that, to the best of my knowledge and belief, the foregoing statements by me are true. I am aware that if any of the statements are willfully false, I am subject to punishment.

Bidder: \_\_\_\_\_  
[Name of Organization or Entity]

By: \_\_\_\_\_

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

**STATE OF NEW JERSEY**  
**DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION**  
**DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN**

BIDDER \_\_\_\_\_

*Pursuant to Public Law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that neither the person or entity, nor any of its parents, subsidiaries, or affiliates, is identified on the Department of Treasury's Chapter 25 list as a person or entity engaging in investment activities in Iran. The Chapter 25 list is found on the Division of Purchase and Property's website at <http://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf>. Bidders **must** review this list prior to completing the below certification. **Failure to complete the certification may render a bidder's proposal non-responsive.** If the Director finds a person or entity to be in violation of law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.*

PLEASE CHECK THE APPROPRIATE BOX:

☐ I certify, pursuant to Public Law 2012, c. 25, that neither the bidder listed above nor any of the bidder's parents, subsidiaries, or affiliates is listed on the N.J. Department of the Treasury's list of entities determined to be engaged in prohibited activities in Iran pursuant to P.L. 2012, C. 25 ("Chapter 25 List"). I further certify that I am the person listed above, or I am an officer or representative of the entity listed above and am authorized to make this certification on its behalf. I will skip Part 2 and sign and complete the Certification below.

OR

☐ I am unable to certify as above because the bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the Department's Chapter 25 list. I will provide a detailed, accurate and precise description of the activities in Part 2 below and sign and complete the Certification below. Failure to provide such will result in the proposal being rendered as non-responsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

Part 2: PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN

You must provide a detailed, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the box(es) below.

Name \_\_\_\_\_ Relationship to Bidder/Offeror \_\_\_\_\_  
Description of Activities \_\_\_\_\_  
Duration of Engagement \_\_\_\_\_ Anticipated Cessation Date \_\_\_\_\_  
Bidder/Offeror Contract Name \_\_\_\_\_ Contact Phone Number \_\_\_\_\_

List Additional Activities on Separate Sheet

**P.L. 2012 c. 25**

CERTIFICATION: I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above-referenced person or entity. I acknowledge that the State of New Jersey is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the State to notify the State in writing of any changes to the answers of information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with the State of New Jersey and that the State at its option may declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print): \_\_\_\_\_ Signature: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_



## REBUILD BY DESIGN - HUDSON RIVER PROJECT

### Subject to Change - SCHEDULE OF SUBMITTALS

*This is not an all inclusive Schedule of Submittals. Contractor shall comply with all required Contractual submissions.*

<b>COLOR INDEX</b>	<b>RED Submittals must be completed and received prior to contract award</b>
	<b>YELLOW Submittals are required within 14 calendar days of NTP.</b>
	<b>NO SITE WORK CAN COMMENCE UNTIL YELLOW SUBMITTALS HAVE BEEN SUBMITTED AND APPROVED AS COMPLETE.</b>

Submittal Number	Specification	Section	Submittal
1	Bulletin A	Attachment B	Section 3 Requirements and Certifications
2	Bulletin A	Attachment C	Section 3 Utilization Plan
3	Bulletin B	Attachment A	Contractor Information Form
4	Bulletin B	Attachment B	Section 3 Business Contact Log
5	Bulletin B	Attachment C	Section 3 Community Outreach Contact Log
6	Bulletin B	Attachment D	Certification for Business Concerns Seeking Section 3
7	Bulletin B	Attachment E	Section 3 Resident Certification Form
8	Bulletin B	Attachment F	Section 3 Compliance Checklist
9	General Conditions	4.7.1	Shop drawings and sample submission schedule
10	012901	1.04 2.	Lump Sum Schedule of Values
11	012901	3.01 A.4.	a. Project Logistics Plan b. Contractor Health and Safety Plan c. Construction Quality Control and Assurance Plan d. Environmental Pollution Control Plan e. Construction Vibration Control Monitoring and Settlement Monitoring Plans f. Noise Control and Mitigation Plan g. Storm Water Management Plan h. Pre-construction nest survey i. Pre-construction photos and videos
12	013443	1.03 A.1.	Excavated Soil Handling Plan
13	013443	1.03 A.2.	Procedures for Protection and Removal of Historic and Scientific Specimens
14	013543	1.04 B.	Clean fill certification with corresponding analytical data
15	013543	1.04 D.	Clean fill samples - 5 gallon bucket/source
16	014150	1.04 B.	Health and Safety Plan (HASP)
17	014150	1.04 E.	Employee health and safety training certifications
18	014150	1.04 F.	Designated excavation competent employee training certification.
19	014300	1.06 C.	Contractor's Quality Control Plan
20	014300	1.06 D.	Qualification Data for QA/QC personnel
21	014300	1.06 F.	Testing Agency Qualifications
22	015000	1.06 B.	Temporary Facilities Site Plan
23	015000	1.06 C.	Temporary Facilities Soil Erosion & Sediment Control Plan
24	015000	1.06 F.	Dust Control Plan
25	015713	1.03 B.	Soil Erosion and Sediment Control Plan
26	020804	1.02 B.	An area wide monitoring program and engage an air monitoring consultant or Certified Industrial Hygienist (CIH) to develop an area-wide monitoring program
27	020804	1.02 C.	Dust Control and VOC emission Control Plan
28	020804	2.01 A.	MSDS and product literature for dust control agents and materials
29	021600	1.05 A.	Materials Handling Plan (MHP) if contaminated soil/groundwater will be handled during construction
30	021600	1.06 C.1.b	Disposal facility permit
31	021600	1.06 C.1.c	Agreement of facility to accept site waste
32	023214	1.05 A.1.	Qualifications of the Contractor's vibration consulting firm, Acoustical Engineer, and Engineering Technician
33	023214	1.05 B.	Vibration and Noise Monitoring Plans
34	023219	1.04 C.	Traffic Control Plan
35	024100	1.04 A.1.	Demolition Plan
36	025100	1.04 B.	Personnel decontamination procedures as part of the Contractor's HASP
37	315000	1.03 A.3.	Construction Contingency Plan
38	013443	1.04 1.	Certification of compliance with project environmental controls.
39	013543	1.04 C.	Clean fill receipts and/or weight tickets
40	013543	1.04 E.	Shop drawings showing typical details of engineering controls over impacted soil to remain within the excavation.
41	013543	1.04 F.	Figures and surveyed coordinates identifying the locations of the engineering controls.

## REBUILD BY DESIGN - HUDSON RIVER PROJECT

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Submittal Number	Specification	Section	Submittal
42	013543	1.04 G.	As-built drawing showing the surveyed locations of the completed engineering controls.
43	013543	1.04 H.	Reports, correspondence and communications provided to the REC's LSRP.
44	013543	1.04 I.	Reports and correspondence to the NJDEP Bureau of Operation, Maintenance, and Monitoring Deed Notice Inspection
45	014150	1.04 C.	Contractor's Daily Construction Report
46	014150	1.04 D.	Monthly health and safety report
47	014150	1.04 H.	Hot Work Permit
48	014150	1.04 I.	Job Safety and Hazard Analysis (JSHA) for significant activities
49	014150	1.04 J.	Crane and drill rig inspections
50	014300	1.06 B.	Shop Drawings
51	014300	1.06 E.	Contractor's Statement of Responsibility
52	014300	1.06 G.	Schedule of Testing and Inspections
53	014300	1.08 A.	Test and Inspection Reports
54	014300	1.08 D.	Permits, Licenses, and Certificates
55	014300	1.09 J.	Preconstruction Testing
56	015000	1.04 A.2.	Drawing of proposed sign
57	015000	1.06 D.	Fire Safety Program
58	015000	1.06 E.	Moisture-Protection Plan
59	015300	1.05 B.	Temporary Retaining Structures Site Plan
60	015300	1.06	Temporary Retaining Structures Design Calculations
61	017700	1.03 B.	As-Built
62	017700	1.03 C.	Contractor's List of Incomplete Items (Initial)
63	017700	1.03 D.	Contractor's List of Incomplete Items (Final)
64	017700	1.03 E.	Certificates of Release
65	017700	1.03 F.	Certificates of Insurance
66	017700	1.03 G.	Warranties
67	017700	1.03 H.	Operation and Maintenance Manuals (CDS units)
68	017700	1.03 I.	Spare Parts
69	017823	1.04 A.	Operation and Maintenance Manuals (CDS units)
70	020120	1.04 A.1.	Record Drawings of existing utility coordinates and elevations
71	020120	1.04 A.2.	Record Drawings of test pit locations
72	020804	1.02 D.	Photographs of dust and VOC emission control mitigation measures to Construction Manager.
73	021600	1.05 A.3.b.	Results of material sampling and analysis, waste facility applications and acceptance documentation, and fee payment requirements
74	021600	1.05 A.5.b.	A bill of lading for each truckload of regulated material removed from the Project Limits
75	021600	1.06 C.1.a.	Waste characterization sampling logs with location and laboratory analysis reports.
76	021600	1.06 C.1.d.	Transportation manifests
77	021600	1.06 C.1.e.	Waste disposal recycling documentation (weight tickets)
78	023214	1.05 C.	Vibration and noise measurement equipment calibration certificates for equipment used on site by the Contractor.
79	023214	1.05 D.	The procedure for tracking peak particle velocity throughout construction activities (e.g., Pile Driving Operations).
80	023214	1.05 E.	Equipment Sound Level Data Reporting Firm for each item of construction equipment to be used.
81	023214	1.05 F.	Laboratory calibration conformance certificate for all noise monitoring equipment used by the Contractor.
82	023214	1.05 G.	Manufactures Certificate of Compliance that equipment is noise attenuated.
83	023214	1.05 H.	Daily reports, while performing vibration-inducing operations, detailing each source of vibration, location of monitoring, and the vibration records highlighting peak particle velocities. Must indicate a site plan drawing showing the location of the instrument and maximum and average vibration recorded during the work day period.

## REBUILD BY DESIGN - HUDSON RIVER PROJECT

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Submittal Number	Specification	Section	Submittal
84	023214	1.05 I.	Final report summarizing the collected data upon completion of each construction operation.
85	023219	1.04 B.	Test Pit Location Map
86	023219	1.04 D.	Method of Potholing/Excavating.
87	023219	1.04 E.	Field logs
88	023219	1.04 F.	Temporary bridging/closure details
89	023219	1.04 G.	Controlled Low Strength Material (CLSM) mix design
90	023219	1.03.H	Hot Mix Asphalt design
91	031000	1.06 A.	Product data for form ties, form coatings, etc.
92	031000	1.06 B.	Samples of form ties, etc.
93	032100	1.04 C.	Reinforcement shop drawings
94	032100	1.04 D.	Welder certification
95	032100	1.04 E.	Mill test certifications
96	032100	1.04 F.	Material testing data
97	033000	1.03 B.	MSDS for concrete admixtures and curing agents
98	033000	1.03 C.	Shop Drawings
99	033000	1.03 D.	Testing Reports
100	033000	1.03 E.	Manufacturer's Instructions
101	033000	1.03 F.	Field Quality Control Submittals
102	033400	1.03 A.1.	Mix Design
103	033400	1.03 A.2.	Product Data
104	033400	1.03 A.3.	Test and Performance Data
105	310519	1.04 A.1.	Manufacturer's certifications
106	310519	1.04 A.2.	Manufacturer's Instructions
107	310519	1.04 A.3.	Manufacturer's catalogue data
108	312300	1.06 A.1.	Temporary Excavation & Shoring Drawings
109	312300	1.06 A.2.	Gradation analysis
110	312300	1.06 A.3.	Dewatering Plan including disposal of groundwater.
111	312300	1.06 A.4.	Manufacturer's catalog data and a sample of filter fabric with manufacturer's installation instructions and details
112	312300	1.06 A.5.	Material sources
113	312300	1.06 A.6.	Testing and Evaluation Reports
114	312300	1.06 A.7.	Geotextile manufacturer's certificate of compliance and physical property data sheet
115	312319	1.03 A.1.	Dewatering Personnel Qualifications
116	312319	1.03 A.2.	Dewatering Plan
117	312319	1.03 A.3.	Monitoring Records
118	312319	1.03 A.4.	Modified dewatering plan within 24 hours, if open pumping from sumps and ditches results in boils, loss of fines or softening of the ground.
119	312333	1.06 A.1.	Qualifications of Independent Testing Laboratory
120	312333	1.06 A.2.	Temporary Excavation & Shoring Drawings
121	312333	1.06 A.3.	Gradation analysis
122	312333	1.06 A.4.	Dewatering plan including disposition of groundwater
123	312333	1.06 A.5.	Manufacturer's catalog data and a sample of filter fabric with manufacturer's installation instructions and details
124	312333	1.06 A.6.	Material sources
125	312333	1.06 A.7.	Testing & Evaluation Reports
126	312333	1.06 A.8.	Geotextile manufacturer's certificate of compliance and physical property data sheet
127	312333	1.06 A.9.	Compaction methods and sequence of shoring removal
128	315000	1.03 A.1.a.	Qualifications of Excavation Support Designer
129	315000	1.03 A.1.b.	Qualifications of Excavation Support Installer
130	315000	1.03 A.1.c.	Qualifications of Excavation Support Installation Supervisor
131	315000	1.03 A.1.d.	Qualifications of Vacuum Excavation Subcontractor
132	315000	1.03 A.2.	Support of Excavation Plan
133	315000	1.03 A.4.	Monitoring Data
134	315000	1.03 A.5.	Excavation Support System As-Built (if left in place)

## REBUILD BY DESIGN - HUDSON RIVER PROJECT

### Subject to Change - SCHEDULE OF SUBMITTALS

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Submittal Number	Specification	Section	Submittal
135	321200	1.04 A.1.	Sustainable Design Submittals
136	321200	1.04 A.2.	Hot Mix Asphalt (HMA) mix design
137	321200	1.04 A.3.	Asphalt weight tickets per truckload, signed and sealed by a certificate scale master
138	321200	1.04 B.1.	Base course testing results
139	321200	1.04 C.	Haul Routes & Schedule of Operations
140	321300	1.05 A.1.	Concrete product data
141	321300	1.05 A.2.	Joint material product data
142	321300	1.05 A.3.	Compound product data
143	321300	1.05 A.4.	Concrete test results
144	321300	3.10 B.	Compaction test results
145	321600	3.07 B.	Compaction test results
146	331000	1.04 A.	Water main materials, including pipe, fittings, couplings, valves, etc.
147	331000	1.04 B.	Manufacturer's certificate
148	331000	1.04 C.	Manufacturer's installation instructions
149	331000	1.04 D.	Field Test Reports
150	331000	1.04 E.	Project Record Documents (as-builts)
151	333000	1.05 A.	Sanitary sewer materials, including pipes, manholes, structures, castings, etc.
152	333000	1.05 B.	Manufacturer's certificate
153	333000	1.05 C.	Manufacturer's installation instructions
154	333000	1.05 D.	Field Test Reports
155	333000	1.05 E.	Project Record Documents (as-builts)
156	333915	1.05 A.1.	Shop Drawings
157	333915	1.05 A.2.	Product Data
158	333915	1.05 A.3.	Test results and certification report for each shipment
159	333915	1.05 A.4.	Reinforcing steel certification
160	333915	1.05 A.5.	Concrete certification
161	333915	1.05 A.6.	Aggregate certification
162	333915	1.05 A.7.	CLSM: Certificate of compliance with specifications
163	334000	1.05 A.1.	Shop Drawings
164	334000	1.05 A.2.	Product Data
165	334000	1.05 A.3.	Manufacturer's certificate
166	334000	1.05 A.4.	Project Record Documents (as-builts)
167	334000	1.05 A.5.	Testing Reports
168	334215	1.04 A.1.	Shop Drawings
169	334215	1.04 A.2.	Product Data
170	334215	1.04 A.3.	Test results and certification report for each shipment
171	334215	1.04 A.5.	Reinforcing steel certification
172	334215	1.04 A.6.	Concrete certification
173	334215	1.04 A.7.	Aggregate certification
174	335000	1.04 A.	Shop Drawings
175	335000	1.04 B.	Field Test Reports
176	337000	1.03 A.	Shop Drawings
177	338000	1.03 A.	Shop Drawings
178	338101	1.03 A.	Shop Drawings
179	340113	1.05 A.1.	Product Data
180	340113	1.05 A.2.	Manufacturer's Test Reports
181	340113	1.05 A.3.	Warranties
182	344116	1.06 A.	Shop Drawings
183	344116	1.06 B.	Catalog Cuts
184	344116	1.06 C.	Calculations
185	347113	1.03 B.	Shop Drawings

**NON-MANDATORY PRE-BID MEETING MINUTES**  
**PROJECT #P1155-01 REBUILD BY DESIGN HUDSON RIVER COASTAL DEFENSE –**  
**SEWER SYSTEM MODIFICATION**

**Date: 09/24/2020**

**PROJECT # P1155-01:**  
Hoboken, NJ

**1. Introductions:**

- a. Roll Call
- b. State Project Team Members
  - 1) Bill Byster
  - 2) Dennis Reinknecht
  - 3) Frank Schwarz
- c. Project Design Consultant & Staff
  - 1) AECOM – Christopher Benosky
  - 2) AECOM – Karen Appell
  - 3) AECOM – Thomas Vargo
- c. Project Construction Management Consultant
  - 1) Berger Hill Joint Venture will serve as the Construction Management Firm for the project.

**2. Administrative Items**

- a. All attendees of this meeting are requested to provide contact information, if not pre-registered, to Shawn Taylor via email at [shawn.taylor@treas.nj.gov](mailto:shawn.taylor@treas.nj.gov) by 12PM on 09/25/2020.
- b. Nothing said here is a part of the contract unless specifically issued in writing by Bulletin.
- c. Minutes of this meeting & a list of attendees will be distributed as part of a subsequent Bulletin along with other info that may be required including answers to all Bidders' questions.
- d. All prime bidders must be DPMC Classified in **Sewer Piping and Storm Drains (C056)**.
  - o Any questions regarding contractor classification, contact Katie Karr from DPMC Classification at [Katie.Karr@treas.nj.gov](mailto:Katie.Karr@treas.nj.gov).
- e. Contract is Total of Base Bid Unit Prices.
- f. There are Allowances.

- g. This is a HUD CDBG-DR project:
  - 1) The Prime Contractor is to familiarize themselves with Bulletin A, Bulletin B, and Plans & Specifications.
  - 2) HUD compliance training will be provided to the Contractor.
- h. Bid Documents can be obtained by contacting Anthony Magine from the DPMC Plan Room at [Anthony.Magine@treas.nj.gov](mailto:Anthony.Magine@treas.nj.gov). Documents may be obtained by overnight delivery service only (Fedex or UPS).
- i. Questions regarding the Bid Proposal form, Bidding procedures, Bonding, etc., contact Shawn Taylor of the DPMC Contracts Procurement Group via email at [shawn.taylor@treas.nj.gov](mailto:shawn.taylor@treas.nj.gov).
- j. Bid Bond is 50% of bid amount.
- k. Contractors bid must be good for 60 days after the bid due date.
- l. Contract Performance Period is **480 calendar days** from issuance of the NTP by the State for Project #P1155-01.
- m. Liquidated Damages of \$3,000 per day.
- n. If submitting a bid on this project, do not leave any blanks on the bid proposal form. Only a completed, signed and executed bid proposal form and 50% bid bond are needed within the pink bid envelope that is provided with the bid documents.
- m. **Bids Due: 10/29/2020 by 2:00 pm** at 33 West State Street, Trenton unless modified by Bulletin:
  - **If bid is mailed** through the US Postal Service the address is:  
Division of Property Management and Construction  
PO Box 034  
Trenton, NJ **08625-0034**
  - **If bid is delivered by delivery service** (UPS, FedEx, etc.) the physical address is:  
Division of Property Management and Construction  
33 West State Street, 9<sup>th</sup> Floor  
Trenton, NJ **08608**
  - **If bidding, it is highly recommended that Contractors walk bids in for drop-off at the DPMC Plan Room located on the 9<sup>th</sup> Floor of 33 W. State Street in Trenton, NJ.**

### **3. NOTICE OF REQUIREMENT FOR A DUNS NUMBER REGISTRATION**

- a. In accordance with 2CFR Part 200.213 “Suspension and Debarment”, all vendors, contractors and subcontractors submitting proposals on federal FEMA and HUD

funded projects will be required to register for a Data Universal Numbering System (DUNS) number in order to be eligible for a contract award. These regulations restrict awards, sub-awards and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in federal assistance programs or activities. In order to comply with this requirement, each consultant, prime contractor and sub-contractor must register in the System of Award Management (SAM) at <http://www.sam.gov> and register for a DUNS number at <http://www.dnb.com/duns-number.html>.

- b. Be advised that firms doing work for the government or bidding on government contracts or proposals will need to get a D-U-N-S Number for each physical location of their business. Firms can get a D-U-N-S Number expedited for free if they are required to register with the federal government for a government funded contract and the firm may have the D-U-N-S number expedited for no cost.
- c. Successful bidders will be required to submit to the Division of Property Management and Construction (DPMC) their DUNS number immediately after the bid due date and prior to contract award.

**4. Mandatory Post Bid Review with Apparent Low bidder:**

- a. Apparent Low Bidder should be prepared for a meeting with the Project Engineer and State Project Team on **11/04/2020 at 10:00 am for P1155-01** to review your bid.
  - 1) Location: TBD
- b. Apparent Low Bidder must bring their estimator to the meeting.

**5. Additional Questions after today's meeting:**

- a. E-mail to: [William.Byster@treas.nj.gov](mailto:William.Byster@treas.nj.gov)
- b. **No later than: 10/08/2020 by 12 Noon**
- c. All questions/Requests for Information (RFI's) in WORD format, not PDF.
- d. No verbal questions or phone calls to DPMC, client or engineer.
- e. Responses will be made to all via a subsequent Bulletin.

**6. Project Description/Special Features/Requirements Bullet Points:**

- a. This project involves installation of a new storm sewer system, removal and disconnection of existing combined sewer inlets, and sealing and lining of existing manholes.
- b. Work will be conducted in two discrete areas within Hoboken (one north and one south work zone).
- c. The Prime Contractor will submit the HUD forms and other information necessary to comply with all requirements outlined in Bulletin A and B during the course of the work to demonstrate their actual conformance with the guidelines.

- d. On-Site Working Hours vary based on location of work. Daytime hours: 8:00 am to 6:00 pm Monday through Friday. Overnight hours pending approval from the Municipality: 9:00 pm to 5:00 am. Weekend work is **not** permitted.
- e. Contractor to adhere to all maintenance and protection of traffic measures as required by the Specifications and the local municipalities.
- f. Contractor to maintain access to existing driveways at all times.
- g. Location of all utilities indicated on the plans are approximate. Contractor to contact respective utility companies for field mark-outs. Contractor to verify locations of all utilities both horizontally and vertically prior to start of any work to determine if any conflicts will occur.
- h. Contractor to adhere to all soil erosion and sediment control measures as required by the Specifications and the local Soil Conservation District.
- i. Contractor shall cover/protect all excavated areas at the end of each work day.
- j. Contractor to coordinate the location of stockpile areas with Construction Manager prior to the start of work.
- k. Substantial Completion must occur within the Contract Time Frame and this storm sewer project will only be considered substantially complete when all required deliverables have been delivered to and accepted.
- l. Safety – Personal Protection/Safety Plan.
- m. Contractor shall be responsible for compliance with all Federal, State, County and Municipal Laws, Ordinances and Regulations regarding transportation of solid wastes and or debris.
- n. The Contractor shall employ a FULL-TIME COMPETENT SUPERINTENDENT and necessary foremen and assistants, who shall be in attendance on the Project Site during the progress of the Work. The superintendent shall represent the Contractor, and all communications given to the superintendent shall be binding upon the Contractor. The State reserves the right to require a change in superintendent if the superintendent's performance, as judged by the DEP or DPMC, is deemed to be inadequate.
- o. Any changes to site supervision by the Contractor must be submitted in writing and approved by the Project Team prior to taking effect.

## **7. Submittals:**

- a. Submittals #1 and #2, outlined in Bulletin A, must be completed and received prior to contract award.
- b. Submittals #3 through #37 are required within 14 calendar days of NTP. **No site work** can commence until submittals #3 through #37 have been submitted and approved as complete.
- c. Submittals must include the DPMC 12/13 form cover sheet or will not be considered.
- d. A third (3<sup>rd</sup>) review of submittals will require a back charge in the form of a credit change order by the contractor.



**8. Review of Contractor Invoicing:**

- a. DPMC will provide the contractor with the Schedule of Values (SOV) after Contractor's submitted Schedule of Values is approved.
- b. It may be in the best interest of the Contractor to submit the first invoice ASAP to ensure the Contractor information is updated properly in the system.

**9. Review Schedule of Values / Submittal Log:**

- a. Contractor is responsible to provide detailed Schedule of Values as part of the submittal process.
- b. HUD submittals outlined in Bulletin B must be reviewed/approved within 14 calendar days of NTP.

**10. Highlight General Conditions Clauses:**

- a. Paragraph IB1.5 **FULL KNOWLEDGE OF SITE**
- b. **Bidders are encouraged to visit site prior to submitting proposals; thorough examination of conditions of site: Reasonably observable conditions.**
- c. Paragraph IB8.3 **THOROUGH REVIEW OF CONTRACT DOCUMENTS**
- d. Prior to submission of bid. No claims unless written request in compliance with IB8.2 and the matter has not been addressed by issuance of bulletin(s).
- e. Paragraph IB10.2 **NO SALES TAX FOR MATERIAL, SUPPLIES, OR SERVICES.**
- f. Paragraph IB10.4 PURCHASES OR RENTALS OF EQUIPMENT ARE NOT EXEMPT FROM ANY TAX UNDER STATE SALES TAX ACT.
- g. **4.6.2 The Contractor shall employ a FULL-TIME COMPETENT SUPERINTENDENT and necessary foremen and assistants, who shall be in attendance on the Project Site during the progress of the Work. The superintendent shall represent the Contractor, and all communications given to the superintendent shall be binding upon the Contractor.** The State reserves the right to require a change in superintendent if the superintendent's performance, as judged by the DEP or DPMC, is deemed to be inadequate.

**11. Project progress:** The Construction Management Firm will schedule, attend, chair and issue record minutes of bi-weekly progress meetings.

**12. Site Walk-Thru:**

- a. There will be no official site walk-through due to the ongoing COVID-19 concerns. All contractors are welcome to visit the site on their own as work is located in public Right of Way. Contractor is responsible for understanding the site as this is a project in a dense urban environment, spanning several linear miles.

**13. Consultant- Review Plan & Specifications**

- a. Key work items:
  - 1) Installation of storm sewer pipe
  - 2) Catch basins

- 3) Sediment treatment units
- 4) Sealing of existing manholes
- b. This is not a linear project. There are separate north and south areas that can be worked on concurrently and there are multiple work zones in each of the north and south areas.
- c. Carefully review the work zones and associated Maintenance & Protection of Traffic plans

**End of Meeting Minutes**

# NON-MANDATORY PRE-BID MEETING ATTENDANCE SHEET

**DPMC PROJECT # P1155-01**

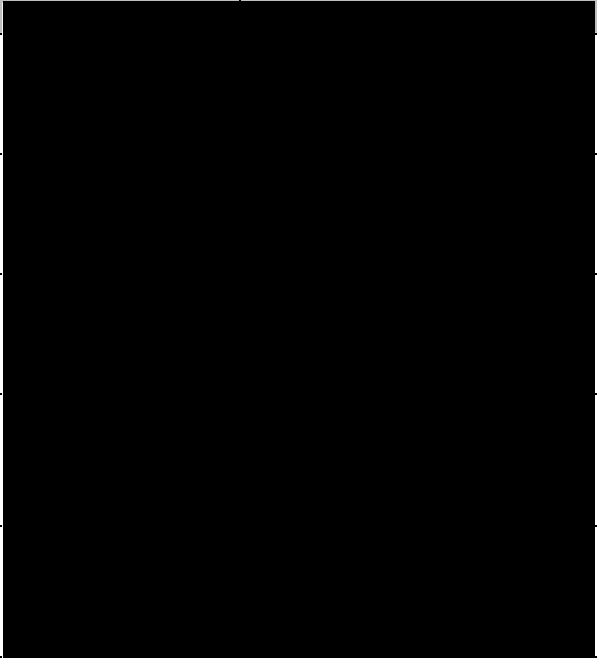
**DATE:** September 24, 2020

**PROJECT TITLE:** Re-Build by Design – Sewer System Modification, Hoboken, NJ

COMPANY NAME	REPRESENTATIVE	Firm or Individual from Firm Present During Meeting	TELEPHONE NUMBER	E-MAIL
STATE OF NJ DEPT. OF TREASURY DPMC DESIGN	Jamie Langsdorf	Yes		
STATE OF NJ DEPT. OF TREASURY DPMC CONSTRUCTION	Bill Byster	Yes		
STATE OF NJ, DEPT. OF TREASURY, DPMC, PROCUREMENT	Rick Flodmand	Yes		
STATE OF NJ, DEPT. OF TREASURY, DPMC, PROCUREMENT	Shawn Taylor	Yes		
Department of Environmental Protection	Dennis Reinknecht	Yes		
Department of Environmental Protection	Jonathan Miller	Yes		
Department of Environmental Protection	Frank Schwarz	Yes		
Department of Environmental Protection	Clay Sherman	Yes		
Department of Environmental Protection	Kristi Tallone	Yes		
Department of Environmental Protection	Linda Fisher	Yes		
Department of Environmental Protection	Taylor Coppa	Yes		

COMPANY NAME	REPRESENTATIVE	Firm or Individual from Firm Present During Meeting	TELEPHONE NUMBER	E-MAIL
Berger-Hill Joint Venture	Maureen Green-Rabbitt	Yes		
Berger-Hill Joint Venture	Marc Zaretsky	Yes		
Berger-Hill Joint Venture	Christopher Corliss	Yes		
AECOM	Karen Appell	Yes		
AECOM	Tom Vargo	Yes		
AECOM	Colby Seibert	Yes		
AECOM	Chris Benosky	Yes		
Railroad Construction Company, Inc.	Peter Dunn	No		
Pillari Bros. Construction Corp.	Michael Pillari	Yes		
Pillari Bros. Construction Corp.	Bill Garrabrants	No		
Posillico	Joe Trapani	Yes		
Posillico	Amanda Jankelovics	No		
D'Annunzio Group, Inc.	Joe Freglette	Yes		

COMPANY NAME	REPRESENTATIVE	Firm or Individual from Firm Present During Meeting	TELEPHONE NUMBER	E-MAIL
George Harms Construction Co., Inc.	Michael Ondic	Yes		
Roman E&G Corp.	Mark Mattheiss	No		
Montana Construction Inc.	Roger Setya	Yes		
Montana Construction Inc.	Todd Ressler	Yes		
Montana Construction Inc.	Armando Vaguez	Yes		
Montana Construction Inc.	Vincent Santaite	Yes		
Carbro Constructors Corp.	Scott Griguoli	No		
Northeast Remsco Construction, Inc.	Dominic Pillari	Yes		
Northeast Remsco Construction, Inc.	Kenny Gilbertsom	Yes		
Inter Contracting Corp.	Evan Koehler	Yes		
Inter Contracting Corp.	Miguel Ramirez	Yes		
Union Paving & Construction Co., Inc	Arthur Aquino Jr.	Yes		
Union Paving and Construction Co., Inc.	Dan Lemmon	Yes		

COMPANY NAME	REPRESENTATIVE	Firm or Individual from Firm Present During Meeting	TELEPHONE NUMBER	E-MAIL
APS Contracting, Inc.	Slobodan Tortoski	Yes		
Persistent Construction Company	Carlos Harnandez	Yes		
Persistent Construction Company	Anthony Grano	Yes		
Kyle Conti Construction	Frank Olivo III	No		
Tomco Comstruction, Inc.	Jim Leach	No		

## SECTION 013443 – ENVIRONMENTAL PROCEDURES

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Environmental protection considerations for the Project, including:
  - 1. Submittals;
  - 2. General Requirements;
  - 3. Protection of Natural Resources;
  - 4. Temporary Erosion and Sedimentation Control;
  - 5. Toxic Substances;
  - 6. Control and Disposal of Excess Material, Trash, and Debris;
  - 7. Control and Disposal of Chemical and Sanitary Wastes
  - 8. Handling and Management of Contaminated Materials; and
  - 9. Dust Control.

#### 1.02 REFERENCES

- A. Code of Federal Regulations (CFR):
  - 1. 40 CFR Part 761 – Identification and Listing of Hazardous Waste.
  - 2. 40 CFR 61 Subpart M - National Emission Standards for Asbestos.
- B. New Jersey Department of Environmental Protection (NJDEP):
  - 1. New Jersey Flood Hazard Area Control Act rules (N.J.A.C. 7:13).
- C. National Registers of Historic Places (16 U.S.C., paragraph 470a).

#### 1.03 RELATED SECTIONS

- A. Section 015713 - Erosion Control, Sedimentation, and Containment of Construction Materials.
- B. Section 020804 - Dust and Volatile Emission Control.

- C. Section 021600 – Excess Clean Fill, Contaminated Soil, and Groundwater Management and Disposal.

#### 1.04 SUBMITTALS

- A. Submit the following in accordance with General Conditions Article 4.7 – Shop Drawings and Other Submittals.
  - 1. Materials Management Plan (MMP). This plan shall detail the contractor's plans and methods for either, a.) pre-excavation soil sampling plan or b.) excavated soil stockpiling plan. Both plans are to detail the methods to sample and characterize the soils, disposal of excess material and identification of disposal facility.
  - 2. Proposed protection and removal procedures for historic and scientific specimens. Provide procedures for the identification and protection of historic architectural features to be removed, safe conduct of the Work, careful removal and disposition of preserved features, and the protection and storage of preserved features. Include Contractor's proposed schedule of removal of designated items.
  - 3. A certificate that all materials and operating equipment installed as a part of this Contract, the installation thereof and all equipment used in the construction, are in compliance with all applicable Federal, State, and local laws, ordinances, regulations, and permits concerning environmental pollution control and abatement.

#### PART 2 - PRODUCTS

(Not Used)

#### PART 3 - EXECUTION

##### 3.01 GENERAL REQUIREMENTS

- A. Provide and maintain environmental protection defined herein.
- B. Comply with all Federal, State, and local laws, ordinances and regulations pertaining to environmental protection.
- C. Ensure compliance by subcontractors with the provisions of this and various other sections of these Contract Sections.
- D. Use of equipment from which factory-installed, anti-pollution and noise control devices are removed or rendered ineffective, either intentionally or through lack of proper maintenance is prohibited.



- E. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations to minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions noted in individual Sections.

### 3.02 PROTECTION OF NATURAL RESOURCES

- A. General: It is intended that the natural resources within the Project boundaries and outside the limits of permanent work performed be preserved in their existing condition or be restored to an equivalent of the existing condition upon completion of the Work. Confine onsite construction activities to areas defined by the Contract Drawings and Contract Sections.
- B. Protection of Existing Waterways and Highways:
  - 1. Do not dump debris or rubbish of any kind into or allow to fall into drainage swales, waterways, onto adjacent banks, or onto highways. Take care to prevent damage and injury to personnel, vessels, and vehicles using rivers, highways, or pedestrian ways. Provide devices and maintain as required to prevent such occurrences. Promptly remove any material or items falling into a river, onto adjacent banks, or onto highways and immediately report to the Construction Manager and the jurisdictional agency.
- C. Land Resources:
  - 1. Except in areas indicated to be cleared, do not remove, cut, deface, injure, or destroy trees, shrubs, and vegetation without special permission from the Construction Manager. Do not fasten or attach ropes, cables, or guys to any existing nearby trees for anchorage.
  - 2. The use of herbicides is not permitted unless otherwise specified.
  - 3. Protect existing trees and vegetation to remain and that could be injured, bruised, defaced, and otherwise damaged by construction operations. Remove rocks that are displaced into areas not cleared.
  - 4. Protect monuments, markers, and works of art prior to the start of operations.
  - 5. Repair and restoration:
    - a. All trees and other landscape features scarred or damaged by the Contractor's equipment and operations shall be repaired and restored to their original condition.

6. Construction facilities:

- a. The location of the Contractor's staging area, storage area and other construction buildings on public or privately-owned property required temporarily in the performance of the Work, require review by the Construction Manager. Store equipment and materials at the job site in conformance with applicable local statutes, ordinances, regulations, and rulings of the proper jurisdictional authority. Do not store unnecessary materials or equipment on the jobsite and take care to prevent any structure from being loaded with a weight that will endanger its structural integrity or the safety of persons. Do not store materials on or encroach upon private property without the written consent of the owners of such private property.
- b. Storage of equipment or materials will not be allowed on any public right-of-way without the expressed approval by the municipality and Construction Manager.
- c. Storage of equipment or materials will not be allowed on any easement running through private property without the expressed approval of the property owner and Construction Manager.

D. Water Resources:

1. At all times, take measures to prevent oil or other hazardous substances from entering the ground, drainage areas, and local bodies of water. Do not discharge the waste material from the washing out of concrete mixing trucks, concrete pumping and grouting operation equipment into sewer manholes, catch basins, sewers, streets or sidewalks.
2. Protection of Existing Wetlands and Watercourses:
  - a. Plan, schedule, and undertake work in a manner that will ensure the protection and preservation of existing wetlands and watercourses.
  - b. Undertake work in and around wetlands and water courses in a manner to prevent any impact upon health, safety, and welfare.
3. Storm Water Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

E. Flood Plain Management:

1. Design and undertake work that may involve floodplains in full compliance with the New Jersey Flood Hazard Area Control Act rules at N.J.A.C. 7:13.

F. Staging Areas:

1. Do not use in connection with this Contract, for storage, as a staging area, or as a preparation site, any cultural resource facility, building, site, or cleared area that is, as of the date of this Contract, on or eligible for listing on the State or National Registers of Historic Places (16 U.S.C., paragraph 470a), without the prior approval of the Construction Manager.
2. For the purpose of the preceding paragraph, the term “cultural resource” includes districts, sites, building, structures, and objects significant in American history, architecture, archaeology, or culture.

G. Historical and Scientific Specimens:

1. Protect and preserve intact all historic architectural features indicated on the Drawings and designated by the Construction Manager. Protect these features from damage, including, but not limited to that resulting from the elements, vandalism, and effects of excavation, demolition, removal, and construction operations. Remove reserved features in a manner to prevent damage and pack or crate in a manner to protect from damage. Mark all containers with proper identification and deliver to designated onsite areas for storage or transfer to a warehouse. Replace or repair lost, or damaged designated architectural features as directed by the Construction Manager. Protect the right of ownership of the property owner with regard to all preserved items.
2. If during the course of Work, artifacts or other evidence of archaeologic, historic, or scientific value are discovered or accidentally exposed, report such artifacts or evidence immediately to the Construction Manager. Halt work in the immediate area and protect the artifacts or other evidence from damage, including that resulting from the elements, vandalism, and the effects of excavation, demolition, removal, and construction operations until such time as qualified officials from the NJDEP are able to conduct appropriate investigations. Do not proceed with Work in the immediate area until authorization to proceed is obtained from the Construction Manager. Deliver any such evidence or artifacts found during construction operations or subsequent investigations required by this Section into the custody of the Construction Manager. Such evidence or artifacts do not become the property of the Contractor. Any delay in the progress of the Work as a result of encountering archaeological or historic artifacts on the project is to be mitigated by the Contractor.

H. Field Testing Plan for NJDEP Historic Preservation Office Compliance

The Contractor shall excavate the following locations shown in Table 013443-1 (below) in a manner controlled by NJDEP’s professional archaeologist (Archaeologist). The Archaeologist will direct the Contractor’s excavator to excavate in a slow and

controlled manner and have the ability to stop the excavator during the excavation process to record the excavation and to photo document the excavation and excavated materials. The Contractor shall provide access for the Archaeologist to hand dig within the excavation if necessary. The excavation shall measure 3LF X 6LF by the depth indicated on Table 013443-1. The Contractor shall assume that it will take up to 4 hours to complete the excavation to the bottom depths at each of the locations in Table 013443-1. This time duration is based on the time starting once the existing asphalt material is excavated and removed. Once the excavation has progressed below a depth at which archaeological remains may be anticipated, the Archaeologist will recommend that the individual work site be declared a Cleared Site and the Contractor will be able to continue with their work. The Contractor shall provide a minimum of 72 hours advance notice in writing to the Construction Manager prior to performing the work in the areas identified in Table 013443-1.

If the artifacts and/or features are identified and assessed by the Archaeologist to be potentially significant archaeological remains, the NJDEP and the New Jersey Historic Preservation Office (NJHPO) will be notified. No work by the Contractor will be allowed to continue within that area until it has been cleared by the Archaeologist, NJDEP, and NJHPO. The extent of the area to be protected will be defined by the Archaeologist and will include sufficient space to adequately sample the cultural deposits and stage the workspace for further archaeological investigation. Representatives of NJDEP and NJHPO will be responsible for attending all necessary field views, meetings, or phone conferences to make timely decisions, which in most cases will not exceed two business days.

**Table 013443-1 – Archaeologist Excavation Locations**

<b>Closest Structure</b>	<b>Street</b>	<b>Depth Below Grade</b>	<b>Resource</b>	<b>Upstream Structure Reference</b>	<b>Downstream Structure Reference</b>	<b>Distance from Downstream Structure</b>
T-CB-1	Intersection of Observer Highway and Hudson Street	4 ft	Mid to late-nineteenth to early twentieth century DLWRR & Erie-Lackawanna Terminal Deposits; Late nineteenth to early-twentieth century sewer line.	T-CB-1	T-MH-1	6 LF of trench from Station 0+35 to Station 0+41 from downstream structure
T-CB-16	Approximately 60' south of intersection of Hudson Street and Newark Street	9 ft	Late nineteenth to early-twentieth century sewer line.	T-CB-15	T-CB-16	6 LF of trench from Station 0+14 to Station 0+20 from downstream structure
T-MH-13	Approximately 75' south of intersection of River and Newark Street	8 ft	Late nineteenth to early-twentieth century sewer line.	T-MH-13	T-MH-13	Center of 6 ft trench to be located at T-MH-13 and extend in both directions
T_CB-23	Intersection of First and River Street	3.5 ft	Mid to late-nineteenth century slip/basin	T-CB-23	T-EX-MH-1	6 LF of trench from Station 0+17 to Station 0+23 from downstream structure

T_CO-36	Intersection of Newark Street and Sinatra Drive	9.5 ft	Late nineteenth to early-twentieth century sewer line.	T-CDS-1	T-MH-S-16	6 LF of trench from Station 0+30 to Station 0+36 from downstream structure
T_MH-S53	Intersection of Third and River Street	3.5 ft	Late nineteenth to early-twentieth century sewer line.	T-CB-27	T-MH-S-53	6 LF of trench from Station 0+05 to Station 0+11 from downstream structure
N_MH-S-10	Hudson Street and Fourteenth Street	8.5 ft	Late nineteenth to early-twentieth century sewer line.	N_MH-3	N_MH-4	6 LF of trench from Station 0+10 to Station 0+16 from downstream structure

No separate payment shall be made for the work identified under Field Testing Plan for NJDEP Historic Preservation Office Compliance. Payment shall be included in the various unit prices bid for excavation.

### 3.03 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Temporary Erosion and Sedimentation Control: Comply with requirements of the Soil Erosion and Sediment Control Plan (SESC Plan) as approved by the Hudson-Essex-Passaic (HEP) Soil Conservation District and the associated New Jersey Pollutant Discharge Elimination System (NJPDES) Stormwater General Permit for Construction Activities (5G3 Permit). Upon receipt of the final SESC Plan approval from HEP SCD, Contractor shall apply to NJDEP for Request for Authorization under the 5G3 Permit.
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to Section 015713 and requirements of the approved SESC Plan or authorities having jurisdiction, whichever is more stringent.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the Work.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.04 TOXIC SUBSTANCES

- A. Contractor is responsible for collecting representative samples of the contaminated soil and submitting the samples to a New Jersey State certified laboratory for analysis for off-site disposal purposes as described in Section 021600, in accordance with the Material's Management Plan.. Contractor will have three options for excavated materials;
  1. Replace excavated material in the trench as backfill at the location where it was excavated, in accordance with NJDEP Linear Construction Guidelines. Material reused in this manner cannot contain any free or residual product.
  2. Pre-sample the soils along the alignment for waste classification and disposal using test pits, vacuum truck or other soil extraction means approved by the Construction Manager.
  3. If excess material is not immediately removed from the site to the designated disposal facility, stockpile excess excavated material at a suitable site controlled by the Contractor for sampling, waste classification, and disposal.
- B. Asbestos and Hazardous Materials Procedure: In the event the Contractor, during the course of the Work, encounters the presence of asbestos or any materials containing asbestos, or PCBs or any other hazardous materials not previously identified, promptly notify the Construction Manager. Do not perform any work pertinent to the asbestos or hazardous material prior to receipt of special instructions from the Construction Manager. Any delay in the progress of the Work as a result of encountering either asbestos or hazardous materials on the project will be mitigated by the Contractor. Within 24 hours of this notification to the Construction Manager of the encountering of the presence of asbestos or hazardous materials, the Contractor will meet with the Construction Manager to re-plan and work around the affected area.
- C. Comply with all applicable provisions of the National Emission Standards for Asbestos (40 CFR 61 Subpart M).

- D. Comply with the local regulations of PCBs. Since these chemicals are used in some existing insulation, existing fixed and vehicular transformers, assure proper marking, handling, and disposal of any PCBs in accordance with the regulations of 40 CFR 761.
  - 1. Do not use PCB chemical substance, mixture, equipment, container, sealant, coating, or dust-control agent except in accordance with regulations of 40 CFR 761.
  - 2. Immediately report in writing any PCB chemical substance, mixture, equipment, container, sealant, coating or dust control agent, found stored within the Work Site to the Construction Manager and stop work in the area.

### 3.05 CONTROL AND DISPOSAL OF EXCESS MATERIAL, TRASH, AND DEBRIS

- A. Excess excavated material must be sampled, analyzed for waste classification purposes, and disposed of in an off-site facility licensed to receive such material as described in Section 021600. Prior to shipping any material, Contractor shall provide all licenses, permits of the identified facility (facilities), and the facility's agreement to accept this material to the Construction Manager for review.
- B. Dispose of rubbish and debris in accordance with all local ordinances.
- C. Waste Materials: No waste or erosion materials shall be allowed to enter natural or manmade water courses. Erosion materials from excavations and borrow areas shall be contained within the affected work area. The Contractor shall develop methods for controlling waste and erosion.
- D. Burning: No burning of waste will be allowed.

### 3.06 CONTROL AND DISPOSAL OF CHEMICAL AND SANITARY WASTES

- A. Dispose of sewage through connection to municipal sanitary sewage systems. Where such systems are not available, use chemical toilets or comparably effective units with wastes periodically emptied. Include provisions for pest control and for masking or elimination of odors.
  - 1. Maintaining Sewers and Drains: The Contractor shall provide for and maintain the flow in all sewers, drains, house or inlet connections, and all water courses that may be encountered during progress of the work, at the Contractor's cost. Unless otherwise directed, the Contractor shall not allow the contents of any sewer, drain, house, or inlet connection to flow into trenches. The Contractor shall immediately remove from the proximity of the work all offensive matter, using such means as may be required at the Contractor's cost.



- B. Store chemical waste in corrosion-resistant containers, remove from the Project site, and dispose of as necessary, but not less frequently than monthly. Provide for disposal of chemical waste in accordance with standard established practices as approved by the Construction Manager. Conduct fueling and lubricating of equipment and motor vehicles onsite in a manner that affords the maximum protection against spills and evaporation. Dispose of lubricants to be discarded, including burned oil, in accordance with approved procedures meeting state, and local regulations. For oil and hazardous material spills that may be large enough to violate state, and local regulations, notify the Construction Manager immediately.

3.07 DUST CONTROL

- A. Refer to Section 020804.

3.08 CONSTRUCTION NOISE CONTROL

- A. Noise Control: The Contractor shall take every action possible to minimize the noise caused by its operation. Conduct all operations in compliance with the latest requirements of the local noise control code for maximum noise levels due to construction work. Noise-producing work shall be performed in less sensitive hours of the day or week as directed by the Construction Manager or local ordinance.

END OF SECTION 013443

## SECTION 013543 – ENVIRONMENTAL ENGINEERING CONTROLS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Section includes specifications and requirements for the disturbance and restoration of environmental engineering controls previously installed to protect human health and the environment from soils impacted with contaminants above New Jersey Department of Environmental Protection (NJDEP) Soil Remediation Standards (N.J.A.C. 7:26D) and historic fill.
- B. The Contractor Scope of Work is subject to oversight by the Construction Manager's Licensed Site Remediation Professional (LSRP) In addition to NJDEP Linear Construction Project requirements, some Recognized Environmental Condition (REC) locations have existing Remedial Action Permits (RAP), Deed Notices and engineering controls, which will require separate notification, coordination and approval with the LSRP of Record for the REC locations (REC's LSRP) prior to disturbance.
- C. The Construction Manager's LSRP will review and confirm that the alterations, improvements, and disturbances to engineering controls are conducted in accordance with requirements in the Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C) and any existing RAP requirements in place for the REC location. Contractor is responsible for coordinating alterations, improvements, disturbances and restoration to engineering controls with each REC's LSRP of Record in advance of any disturbance.

#### 1.02 REFERENCES

- A. Code of Federal Regulations (CFR)
  - 1. 40 CFR Part 261 - Identification and Listing of Hazardous Waste.
  - 2. 29 CFR 1910.120 – Hazardous Waste Operations and Emergency Response.
- B. New Jersey Department of Environmental Protection (NJDEP)
  - 1. Administrative Requirements for the Remediation of Contaminated Sites (NJAC 7:26C).
  - 2. Remediation Standards (N.J.A.C. 7:26D).
  - 3. Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

4. Well Construction and Maintenance, Sealing of Abandoned Wells (N.J.A.C. 7:9D).
  5. Linear Construction Technical Guidance (January 2012).
  6. Fill Material Guidance for SRP Sites (April 2015).
  7. Guidance Document for the Remediation of Contaminated Soils (January 1998).
  8. Technical Guidance on the Capping of Site Undergoing Remediation (July 2014).
  9. Historic Fill Material Technical Guidance (April 2013).
  10. Presumptive and Alternative Remedy Technical Guidance (February 2018).
  11. Remedial Action Permits for Soils Guidance (February 2010).
  12. Guidance for Characterization of Concrete and Clean Material Certification for Recycling (January 2010).
  13. Field Sampling Procedures Manual (August 2005, as updated).
- C. Reference Documents – Not part of the Contract Documents, for the Contractor’s information only.
1. Rebuild by Design Hudson River Project *Environmental Results Report* (November 2019).

#### 1.03 RELATED SECTIONS

- A. Section 013443 – Environmental Procedures.
- B. Section 020804 – Dust and Volatile Emission Control.
- C. Section 021600 – Excess Clean Fill, Contaminated Soil, and Groundwater Management and Disposal.

#### 1.04 QUALITY ASSURANCE

- A. In accordance with the NJDEP Linear Construction Technical Guidance, the LSRP hired by the Construction Manager (Construction Manager’s LSRP) will serve at the LSRP of Record for the Linear Construction Project and will be responsible for compliance with the Linear Construction requirements in Subchapter 16 of the Administrative Requirements for the Remediation of Contaminated Sites, N.J.A.C. 7:26C-16.1 et. seq.

- B. The Contractor shall conduct environmental work in accordance with NJDEP Technical Guidance and local, State, and Federal requirements, in conjunction with the requirements of these Specifications. The Contractor shall notify the Construction Manager no less than 24 hours in advance if the environmental requirements of this work cannot be met.
- C. Work conducted by the Contractor that is not in accordance with this Section and Section 013443 shall be rejected by the Construction Manager.
- D. The Contractor shall conduct the work in accordance with the Material Management Plan (MMP) and Air Monitoring Plan (AMP) in conjunction with this Section and Sections 020804 and 021600.

#### 1.05 SUBMITTALS

- A. Submit the following items in accordance with General Conditions Article 4.7 – Shop Drawings and Other Submissions.
- B. Analytical data (collected within one (1) year prior to placement) and a clean fill certification letter (if acceptable to the Construction Manager's LSRP and REC's LSRP) for imported clean fill that is proposed to be used for construction purposes. A clean fill certification letter and analytical data is required from each supplier providing the clean fill. Provide analytical data and clean fill certification letters with each Material Certification that is submitted for geotechnical/construction purposes.
- C. Receipts and/or weight tickets for imported clean fill that will be used for construction purposes. , including thermal fill, asphalt, concrete, and imported clean stone, and imported clean fill.
- D. The Contractor must retain a clearly labeled 5-gallon bucket of each clean fill material used at each REC location until released by the Construction Manager's LSRP or up to a maximum period of 60 days after installation of the material. The bucket must be a new, clean, 5-gallon plastic or metal bucket with a tight-fitting lid.
- E. Shop drawings showing details of engineering controls utilized by the Contractor to restore engineering controls at each REC, as approved by the REC's LSRP.
- F. Figures and surveyed coordinates identifying the locations disturbance to the engineering controls.
- G. As-built drawing showing the surveyed locations of the completed engineering control restoration. The thickness and type of each engineering control shall be denoted on the drawing.
- H. Copies of reports, correspondence and communications provided to the REC's LSRP.

- I. Copies of reports and correspondence provided to the NJDEP Bureau of Operation, Maintenance, and Monitoring Deed Notice Inspection.

#### 1.06 DEFINITIONS

- A. “Construction Manager’s LSRP” means the Licensed Site Remediation Professional (LSRP) retained by the Construction Manager to comply with the Linear Construction Project requirements in Subchapter 16 of the Administrative Requirements for Site Remediation, N.J.A.C. 7:26C-16.1 et. seq.
- B. “Recognized Environmental Condition” shall be as defined in the Rebuild by Design Hudson River Project Environmental Results Report (November 2019).
- C. “REC’s LSRP” means the Licensed Site Remediation Professional retained by the Person Responsible for Conducting the Remediation for the REC location.

### PART 2 - PRODUCTS

#### 2.01 EQUIPMENT

- A. Equipment shall be free of contamination or decontaminated to comply with Section 021600 prior to contacting materials used for engineering controls to prevent cross contamination.
- B. Equipment shall comply and be operated in accordance with applicable OSHA, federal, state and local regulations.

#### 2.02 MATERIALS

- A. Imported clean materials for engineering controls, restoration, or backfill.
- B. Additional materials as identified.

### PART 3 - EXECUTION

#### 3.01 ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES TO EXISTING ENGINEERING CONTROLS

- A. No person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Property which disturbs any engineering control at the Property without first obtaining the express written consent of the LSRP for the REC site. Nothing herein shall constitute a waiver of the obligation of any person to comply with applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration.

- B. The Contractor shall certify any soils proposed for backfilling excavations, and that engineering controls are returned to pre-construction/disturbance conditions or equivalent engineering control and provide the certification in writing to the Construction Manager's LSRP.
- C. The Contractor shall be responsible for restoring the Work area to match pre-existing conditions or an equivalent engineering control as directed by the REC's LSRP within 60-days of initiation of the disturbance. Approval by the REC's LSRP is required for placement of certified clean fill materials.
- D. Work conducted in wetlands shall be restored back to original conditions as per Land Use Regulation Program (LURP), United States Coast Guard (USCG), and United States Army Corps of Engineers (USACE) permits. The site shall be cleared of any debris, equipment, garbage, etc. as part of the site restoration activities. It will be the Contractor's responsibility to protect existing monitoring wells at the site including any repair or replacement due to any damages during field activities. Any permanent closure of existing monitoring wells will require prior approval of the REC's LSRP and well decommissioning by a New Jersey licensed driller to comply with Well Construction and Maintenance, Sealing of Abandoned Wells, N.J.A.C. 7:9D.
- E. Pursuant to the Administrative Requirements for the Remediation of Contaminated Sites (NJAC 7:26C, last amended August 6, 2018 ), a formal soil remedial action permit modification is not required for a minor disruption of an engineering control if the site is returned to its original condition within 60 days. For any disturbance lasting more than 60 days, or permanent alteration or improvement, the REC's LSRP shall submit the following within 30 days after the occurrence of the permanent alteration, improvement, or disturbance:
  - 1. A Remedial Action Work plan or Linear Construction Project notification and Final Report Form, whichever is applicable;
  - 2. A Remedial Action Report and Termination of Deed Notice Form;
  - 3. A revised recorded Deed Notice with revised Exhibits, and
  - 4. A Remedial Action Permit Modification or Remedial Action Permit Termination form and Remedial Action Report.

In order to meet the regulatory requirements, the contractor shall provide as-built drawings to the Construction Manager's LSRP within 15 days of the alterations.

- F. No responsible party, lessor, lessee or operator shall be required to obtain a Remedial Action Permit Modification for any temporary alteration, improvement, or disturbance, provided that the site is restored to the condition described in the REC's

Deed Notice, and the responsible party, lessee, or operator complies with the following:

1. Restores any disturbance of an engineering control to pre-disturbance conditions within 60 calendar days after the initiation of the alteration, improvement or disturbance;
2. Ensures that applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance, and during the restoration;
3. Ensures that human exposure to contamination in excess of the Remediation Standards, N.J.A.C. 7:26D, does not occur; and
4. Describes, in the next biennial certification the nature of the temporary alteration, improvement, or disturbance, the dates and duration of the temporary alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the temporary alteration, improvement, or disturbance, the notice the owner gave to those persons prior to the disturbance.
5. In order to meet the regulatory requirements, the Contractor shall provide as-built drawings of the engineering control restoration to the Construction Manager's LSRP for submittal to the REC's LSRP within 60 days of the initiation of the alternation, improvement, or disturbance or two weeks after completion of the restoration, whichever is sooner.

### 3.02 INSTALLATION OF ENGINEERING CONTROLS

- A. Restore any disturbance of an engineering control to pre-disturbance conditions within 60 calendar days after the initiation of the alteration, improvement or disturbance.
- B. Restoration plans for all engineering controls must be approved by the REC's LSRP prior to implementation. Final restoration of the engineering controls must be approved by the REC's LSRP.
- C. Any soils with contaminant concentrations above the most stringent NJDEP soil Remediation Standards, N.J.A.C. 7:26D, that are left in-place by the Contractor shall use the following caps for engineering controls to protect human health and the environment or equivalent engineering control:
  1. Clean fill (6" thick minimum), as determined by the NJDEP Fill Material Guidance for SRP Sites;

2. Asphalt and Concrete (6" thick minimum), including imported clean sub-base materials; and
  3. Retaining walls.
- D. If clean fill is utilized as a cap for the engineering and the fill contains fines that are susceptible to erosion than the surface of the fill shall be stabilized in accordance with soil erosion and sediment control measures.
- E. If clean fill is utilized as a cap for the engineering control the Contractor shall install a visible warning layer (demarcation) at the bottom of the cap/top of impacted soil covering the entire footprint of the cap. The visible warning layer (demarcation) may include one of the following:
1. High visibility vinyl construction fence; or
  2. Geotextile fabric.
- No plastic poly shall be utilized for the warning layer (demarcation).
- F. If excavated soils are not fully characterized as clean fill pursuant to the NJDEP Fill Material Guidance for SRP Sites and Contractor intends to reuse the material in the immediate excavation area then the Contractor must prepare a more extensive sampling and soil reuse work plan to be reviewed and approved by the Construction Manager's LSRP.

END OF SECTION 013543



## 2.03 OFFICE FOR CONSTRUCTION MANAGER

- A. Promptly after starting work at the site, the Contractor shall provide and equip 1,000 square footage of office space for the exclusive use of the Construction Manager, NJDEP, and EOR. The Contractor shall maintain these office spaces thereafter until the completion of the Work to be done under this Contract. The office shall be separate from the Construction Contractor, located near the work (within Hoboken and no further than half a mile from the limits of the project area), but where it will not interfere with the progress of the Work. This office space can be in the form of an acceptable, suitably constructed and equipped trailer of adequate size and design for the purpose or rented office space in an existing building.
  - 1. If a trailer is furnished, it shall have a minimum width of 12 feet, a length as required to obtain the square footage specified, and an insulated floor.
  - 2. The office and furniture shall be relatively new and in good condition.
  - 3. The equipment, supplies, and services furnished shall be acceptable to the Construction Manager.
- B. The Contractor shall furnish insurance coverage of adequate amount to replace not only the Contractor's equipment, but all property belonging to the Construction Manager and the Construction Manager's staff, at replacement cost.
- C. The office shall be of suitable height and of ample size to accommodate the furniture and equipment listed below, without crowding. It shall be weathertight and acceptably insulated and suitably ventilated; the floor shall be tight and of sufficient construction to withstand the loads imposed upon it.
  - 1. The office shall be partitioned so as to provide separate rooms, as follows.
    - a. Two (2) private offices.
    - b. Four (4) offices in open area complete with partition walls.
    - c. One (1) private conference/meeting room.
    - d. One (1) lunch area/kitchenette complete with sink, counter, and storage cabinets.
    - e. Two (2) private washrooms (1 male and 1 female).
    - f. One (1) storage closet.
  - 2. Each room will have a door, with lock and key. If a trailer is provided, each room will have a minimum of two (2) screened windows which can be both opened and locked shut.

3. If a trailer is provided, the office shall have two (2) exterior doors, with cylinder locks and keys. If rented office space in an existing building is provided, each office shall have an exterior door, with lock and keys.
  4. If a trailer is provided, the exterior doors shall also be provided with a hasp, for which the Construction Manager will furnish his own locks.
  5. The office shall contain acceptable toilet facilities, to include a toilet, sink with hot and cold water, exhaust fan, and mirror.
  6. The Contractor shall make arrangements and pay all costs associated with tying the office water system into utility water supply system.
  7. The Contractor shall make arrangements and pay all costs associated with tying the office sanitary system into an approved disposal system.
- D. The Contractor shall furnish a parking area large enough to accommodate a minimum of five (5) cars within the vicinity of the office, for the exclusive use of the Construction Manager, NJDEP, and EOR.
- E. The Contractor shall furnish the following furniture, equipment, supplies, and services:
1. One (1) plan table or sloping plan shelf, about 3 feet by 6 feet, with a reasonably smooth top, and one (1) suitable swivel stool.
  2. Eight (8) additional folding chairs.
  3. Shelves, tables, and bookcases as recommended by the Construction Manager.
  4. Electric lights and outlets. The Contractor shall pay for installation and all charges for the energy used.
  5. Broom and dustpan.
  6. Two (2) desks for general office use. Each about 3 feet by 5 feet, all with a desk chair of the armchair swivel type.
  7. Plan rack accepted by the Construction Manager.
  8. Plan storage cabinet as accepted by the Construction Manager.
  9. Two (2) four-drawer, legal size, metal filing cabinets each with locks. The Contractor shall furnish up to two (2) additional filing cabinets if so requested by the Construction Manager.
  10. Private line, touch-tone telephones with internal electronic that allows the telephone to be used on both touch-tone and digital pulse services. Telephone to be ATT or equal. Provide touch-tone service where available. A phone shall be

furnished for each conference/meeting room. One-line service and intercom feature shall be provided. The Contractor shall pay all charges for local calls.

11. Class ABC type fire extinguisher of at least 4-pound capacity.
12. Insulated waterproof chest for storage and moist curing of concrete cylinders; size and construction with capability of maintaining required curing temp.
13. Supply of drinking water in a suitable dispenser, with hot and cold supply and refrigerator space.
14. Refrigerator (Frigidaire 4.5 Cu. Ft. Compact Refrigerator or approved equal).
15. Coffee maker with supply of coffee and insulated cups.
16. Microwave.
17. Supply of Paper cups, paper towels, liquid soap, and toilet paper; each with suitable dispenser or holder.
18. A waste basket for each desk, and a supply of appropriately sized plastic trash bags.
19. A four-drawer, lockable file cabinet for each office.
20. One (1) four-drawer fireproof file cabinet.
21. Thermostatically controlled heating unit or system of adequate capacity to maintain a minimum temperature of not less than 68 degrees F under all cold weather conditions. The Contractor shall provide all fuel used and service necessary.
22. Thermostatically controlled, refrigerant type, air conditioner of adequate capacity to maintain a maximum temperature of not more than 72 degrees F under all hot weather conditions. The Contractor shall provide all service necessary and provide all power used.
23. Metal clothing locker, or closet, 36-inches wide by 18-inches deep by 72-inches high, minimum dimensions.
24. Metal storage cabinet 36-inches wide, by 18-inches deep by 72-inches high, with a minimum of five (5) adjustable shelves, and a door lock.
25. The Contractor shall arrange for complete janitor service to be provided on a weekly basis.
26. One (1) color copying and scanning machine with supplies and service. Machine shall be capable of copying 8.5x11, 8.5x14, and 11x17 paper sizes and in color. Copy rate shall be at least 20 copies per minute for 8.5x11 paper size.

27. Outdoor minimum-maximum thermometer with range of -40 degrees F to +120 degrees F and reset provisions.
  28. Printer: “All-in-one” unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions. Printer shall be capable of wireless printing.
  29. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 200 Mbps upload and 200 Mbps download speeds at each computer, and works with Microsoft Windows 10 and higher. Wireless (WiFi) internet service shall be provided.
  30. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
- F. The Contractor shall provide office space and facilities until the office, furnishings, and equipment described above are ready for use, but by so doing he shall not be relieved of his obligation to provide and equip the specified Construction Manager, NJDEP, and EOR’s office as promptly as possible.
- G. Unless otherwise directed by the Construction Manager, after the date of completion of the Work as stated in the final estimate, the Contractor shall remove the offices and all such temporary facilities from the site, the same to become his property, and leave the premises in a condition acceptable to the Construction Manager.
- H. The printer and copying machine furnished as part of the office for the Construction Manager, NJDEP, and EOR shall become the property of the Contractor at final completion of the Project.
- I. Remove snow and ice as required to minimize accumulations and for the safety of all personnel.
- J. Contractor shall provide office space and facilities in compliance with guidelines and directives issued by the New Jersey Department of Health, the CDC, and the Occupational Health and Safety Administration, as applicable, for maintaining a clean, safe, and healthy work environment. Contractor shall be aware that office space and facilities may require changes throughout the duration of the project based on current guidelines and directives.

## SECTION 020804 - DUST AND VOLATILE EMISSION CONTROL

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. The Contractor shall conduct excavation operations and maintain the Project site in a manner that minimizes the creation and dispersion of dust and limits volatile organic compound (VOC) emissions. Dust control shall be used during the entire Project. VOC emission control shall be used during contaminated soil excavation and handling as directed by the Construction Manager. The Contractor is responsible for control of dust and VOC Emissions at all times during Contract, 24 hours a day, seven (7) days a week, including nonworking hours, weekends, and holidays.
- B. The Contractor shall be responsible for preparing and complying with an area-wide air monitoring program. This responsibility shall include provision of a control system to monitor atmospheric releases and impact on workers and local receptors. Control and monitoring program shall consider contaminants in soil, groundwater and sediment that could be released during work including contaminants at Recognized Environmental Concern (REC) Sites and Known Contaminated Sites (KCS).
- C. Monitor perimeter and exclusion zone air quality in accordance with the Contractor's Air Monitoring Plan to ensure compliance with applicable regulations and requirements.
- D. The purpose of these measures is to minimize the potential exposure of non-Project personnel to airborne contaminants emanating from Project activities.

#### 1.02 SUBMITTALS

- A. Submit the following in accordance with General Conditions Article 4.7 – Shop Drawings and Other Submittals.
- B. Submit an area-wide Air Monitoring Plan for review and approval by the Construction Manager.
- C. Submit a dust control and VOC emission control plan that outlines in detail sources of dust and VOCs and the measures to be implemented by the Contractor to comply with this Section, including suppression, windscreens and barriers, prevention, cleanup, and other measures. Measurement and verification process shall be clearly stated.
- D. Submit photographs of dust and VOC emission control mitigation measures to Construction Manager.

## PART 2 - PRODUCTS

### 2.01 DUST AND VOLATILE EMISSIONS CONTROL

- A. Submit product literature and Material Safety Data Sheets for dust suppression wetting agents and stabilizers and for VOC mitigation materials.
- B. Dust suppression wetting agents shall be water soluble, non-toxic, non-reactive, non-volatile, and non-foaming. Windscreens shall be a durable fabric mesh of 50 percent porosity, attached to a construction fence. Wind barriers shall be solid wood fences, solid durable fabric attached to a construction fence, or other solid barriers intended to block the passage of wind.
- C. Covers for stockpiles shall be plastic tarps or other material covering. Contaminated soil covers are not permitted.
- D. The Contractor shall use the following materials to control VOC emissions at the Project site. All materials shall be applied by the Contractor in accordance with the manufacturer's recommendations.
  - 1. The Contractor shall provide and apply foam concentrate that is designed for and is capable of suppressing VOC emissions at the project site. The Contractor shall submit product information to the Construction Manager for review and approval.
  - 2. The Contractor shall provide foam stabilizer that is designed to extend the duration of effectiveness of the foam concentrate in areas where prolonged emission suppression is required. Foam stabilizer shall not contain per- and polyfluoroalkyl substances (PFAS), perfluorooctanesulfonic acid (PFOS), and/or perfluorononanoic acid (PFNA). The Contractor shall submit product information to the Construction Manager for approval.

## PART 3 - EXECUTION

### 3.01 DUST AND VOLATILE EMISSIONS CONTROL

- A. The Contractor shall apply water or other approved dust suppression materials to the site when dust control is necessary, according to all Federal, State, and local rules, regulations, and guidelines. These materials shall be applied without interfering with excavation equipment or site operations and without creating nuisance conditions such as ponding or runoff.
- B. If VOC emissions, as measured at the perimeter of the site, exceed an action level of 10 ppm total VOCs, a temporary foam blanket shall be applied to the source area. Areas where temporary foam may be necessary include the open active excavation, the excavating bucket, and the soil stockpile. The temporary foam shall be capable of

suppressing vapors for a period up to 24 hours. Permanent foam shall be applied to the open inactive excavation if warranted by VOC levels in exceedance of 10 ppm total VOCs. If the 10 ppm action level is exceeded and an open excavation exists at the completion of the work day, permanent foam capable of suppressing vapors for a period in excess of 24 hours shall be applied to the excavation. Foam application shall be made as often as necessary to maintain airborne concentrations below the action level.

END OF SECTION 020804

SECTION 021600 - EXCESS CLEAN FILL, CONTAMINATED SOIL, AND  
GROUNDWATER MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. It is essential that any contaminated soil or groundwater encountered during the Project be handled in a manner that is protective of human health, safety, and the environment and in compliance with Contract Documents and regulatory requirements.
- B. This Section describes procedures for the management of regulated material (contaminated or potentially contaminated soil and/or groundwater) that may be encountered throughout the project area. The Work shall include the excavation, handling, stockpiling, sampling, analysis, and the ultimate disposal or reuse of contaminated soil, if encountered. The Work shall also include the dewatering, treatment, sampling, analysis, and the ultimate disposal of contaminated groundwater, if encountered.
  - 1. Remove and dispose of contaminated fill, as defined in this Section and Section 012901.

1.02 REGULATORY REQUIREMENTS

- A. The Contractor shall comply with all Federal, State, and local codes, standards, ordinances, guidance, and permits, including, but not limited to, the following:
  - 1. United States Department of Labor (USDOL) OSHA 29 CFR 1910 General Industry.
  - 2. USDOL OSHA 29 CFR 1926 Safety and Health Regulations for Construction.
  - 3. United States (US) Department of Transportation (DOT) 49 CFR 171-180 and amendments.
  - 4. New Jersey DOT - Updated 2007 Standard Specifications for Road and Bridge Construction.
  - 5. Surface Water Quality Standards (NJAC 7:9B).
  - 6. Ground Water Quality Standards (NJAC 7:9C).
  - 7. New Jersey Pollutant Discharge Elimination System (NJPDES) Rules (NJAC 7:14A).
  - 8. Solid Waste Regulations (NJAC 7:26).



9. Hazardous Waste Regulations (N.J.A.C. 7:26G).
  10. Underground Storage Tanks (NJAC 7:14B).
  11. Soil Erosion and Sediment Control Act of 1975 as amended (NJAC 2:90-1.1 et seq.).
- B. The Contractor shall comply with the following if the Work involves handling of contaminated media:
1. Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C 7:26C).
  2. Remediation Standards (N.J.A.C. 7:26D).
  3. Technical Requirements for Site Remediation (N.J.A.C. 7:26E).
  4. New Jersey Department of Environmental Protection (NJDEP) - Field Sampling Procedures Manual (August 2005, as updated).
  5. Protocol for Addressing Extractable Petroleum Hydrocarbons (Version 5.0, August 9, 2010).
  6. NJDEP - Historic Fill Material Technical Guidance (April 2013).
  7. NJDEP - Linear Construction Technical Guidance (January 2012).
  8. NJDEP - Fill Material Guidance on SRP Sites (April 2015).
  9. Guidance for the Characterization of Concrete and Clean Material Certification for Recycling (January 12, 2010).
  10. The Standards for Soil Erosion and Sediment Control in New Jersey (Revised July 2017).

#### 1.03 RELATED SECTIONS

- A. Section 012901 - Measurement and Payment.
- B. Section 014150 – Health and Safety Requirements
- C. Section 014300 - Quality Requirements.
- D. Section 025100 - Decontamination.

1.04 SUBMITTALS

- A. All submittals shall be in accordance with General Conditions Article 4.7 and the requirements of Subsections 1.05, 1.06 and 1.07.

1.05 HEALTH AND SAFETY PLAN

- A. This project shall be conducted under the requirements of Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1910 and 29 CFR 1926. The Contractor shall prepare a Site-Specific Health and Safety Plan in accordance with this Section. If contamination is documented to exist, the Health and Safety Plan shall include exposure risk.
- B. The Contractor shall provide the initial 40 HOUR initial training and annual eight (8) hour training and medical monitoring for all Contractor employees scheduled to work in or with regulated material as specified in OSHA 29 CFR 1910.

1.06 MATERIALS MANAGEMENT PLAN

- A. If contaminated soil and/or groundwater will be handled during construction, the Contractor shall prepare a Materials Management Plan (MMP), to be approved by the Construction Manager's Licensed Site Remediation Professional (LSRP), which shall include the following information:
  - 1. Stockpiling/Staging Requirements and Procedures for clean fill and for excavated wastes.
    - a. Prepare stockpile location in accordance with the approved soil erosion and sediment control plans.
  - 2. Spill Protection Requirements
  - 3. Waste Characterization
    - a. Regulated material consists of material of whatever nature encountered that is classified as regulated or hazardous in the NJDEP Solid Waste Regulations, N.J.A.C 7:26-1 et seq. or N.J.A.C 7:26-8.
    - b. Submit the results of material sampling and analysis, waste facility applications and acceptance documentation, and fee payment requirements to the Construction Manager at least 15 days before planned removal of regulated material.
  - 4. Off-Site Disposal and Transportation
    - a. Disposal procedure and location the disposal facility.

5. Waste Disposal Documentation

- a. Comply with the requirements specified in Section 014300.
- b. Submit to the Construction Manager a bill of lading for each truckload of regulated material removed from the Project Limits. Ensure that the bill of lading and waste manifest include the following information:
  - i. Transport subcontractor name, address, permit number, and telephone number.
  - ii. Type and quantity of material removed.
  - iii. Weight of vehicle with weigh slip.
  - iv. Recycling or disposal facility name, address, permit number, and telephone number.
  - v. Date removed from the Project Limits.
  - vi. Signature of transport vehicle operator.
- c. The Construction Manager will sign the bills of lading for the DEP as the generator of the Project Limits. Submit one (1) copy of the bill of lading to the Construction Manager by the end of each working day that the transport vehicle leaves the site. For hazardous regulated material, the manifest will verify the type and quantity of hazardous regulated material being transported off-site.
- d. The Uniform Hazardous Waste Manifests are required by the Federal Resource Conservation and Recovery Act (RCRA) (40 CFR Subpart B Parts 262.20 to 262.23) and N.J.A.C 7:26G for all off-site shipments of hazardous regulated materials.
  - i. The DEP is the generator of the waste. The DEP will obtain an EPA Identification Number (EPA ID#) and supply this information to the Construction Manager for inclusion on the Uniform Hazardous Waste Manifest. The Construction Manager will provide the Contractor with an EPA ID# if the Project contains hazardous regulated material.
  - ii. Complete the manifest form in accordance with all applicable regulations and mail to the Bureau of Environmental Program Resources at 951 Parkway Avenue, PO Box 600, Trenton, NJ 08625-0600 to ensure that the “final disposition” (TSD to Generator) copy of the manifest is mailed back to the office responsible for the record keeping requirements.

- iii. The Construction Manager will keep a copy of the original manifest for the Contract files. The Bureau of Environmental Program Resources will distribute the original manifests in accordance with the regulations and also for retention of the manifests per regulatory requirements.
    - iv. The Contractor is responsible for all manifest discrepancies. Immediately report discrepancies to the Construction Manager and resolve to the satisfaction of the Construction Manager. The Construction Manager will forward a copy of manifest discrepancy letters to the Bureau of Environmental Program Resources.
  - e. Once the material leaves the project limits, the Contractor is responsible for ensuring that the handling procedures, placement methods, and disposal location are according to applicable Federal, State, and local laws, rules, and requirements, including permits that may be issued for the project. If the disposal of contaminated material results in a violation notice from any governmental authority, immediately correct the violation. Indemnify and defend the DEP for any violation incurred, penalty assessed, or any claims, suits, losses, demands or damages of whatever kind or nature arising out of, or claimed to arise out of, the improper disposal of excess materials. If the Contractor does not correct the violation to the satisfaction of the governmental authority that issued the violation notice, the Contractor is responsible for assessed penalties including costs incurred by the DEP to remedy the violations.
- 6. Backfilling and Capping
  - 7. Decontamination Procedure
  - 8. Contaminated Groundwater Management Procedures
  - 9. Emergency Response Procedures
- B. A description of the MMP components is provided in the following paragraphs. The MMP shall be submitted as a draft for review by the Construction Manager and the Construction Manager's LSRP. The MMP will incorporate all comments and then be finalized for approval.
  - C. Excavated materials from the Project will generally be reused where generated, or characterized and disposed at a licensed disposal/ recycling facility.
  - D. Excavated contaminated soil can be reused on site as backfill material within the linear construction corridor, preferably in the same parcel from which it was excavated, except when it contains free and/ or residual product. Excavated soils will be inspected by the Construction Manager for visual evidence of free and/ or residual product for

instances where soil will be reused as backfill material on site. Soil containing free and/or residual product must be disposed at an off-site licensed disposal/recycling facility.

1. Contaminated Soil Management Procedures.
2. Contaminated Groundwater Management Procedures.
3. Procedures for Handling Free Product, if encountered.
4. Spill Protection and Prevention Procedures.
5. Excavated materials from the Project will be characterized and reused on site as backfill material within the same linear construction corridor or disposed at a licensed disposal/recycling facility.
6. Stockpiling/Staging Requirements and Procedures
  - a. If the contaminated soil is to be stockpiled, the Contractor shall coordinate with the Construction Manager to determine the best option for the temporary stockpiling/staging of materials. The Contractor shall obtain approval from the Construction Manager prior to moving contaminated soil within the site (away from the immediate work location) for disposal/storage.
  - b. Stockpiled materials shall be protected in accordance with any permit issued for this project, including approved soil erosion and sediment control plans.
    - i. Place regulated materials in stockpile location. Do not place regulated materials in the same stockpile with any other materials.
    - ii. Stockpiles cannot exceed the dimensions given in the soil erosion and sediment control permit plans.
    - iii. If the materials are left in place more than 30 days, the surface of the stockpile shall be seeded and stabilized.
    - iv. Remove and dispose of all materials that are classified as regulated or hazardous after the Construction Manager approves the submittals.
  - c. All proposed stockpile locations (temporary or longer-term) for contaminated material shall be identified on a site plan and presented to the Construction Manager for approval two (2) weeks in advance of stockpiling activities. In the event that materials requiring off-site transportation are generated that have not been fully characterized for waste disposal, the Contractor shall coordinate with the Construction Manager to determine the best options for the temporary storage of this material. Once a designated

staging area is determined, these soils shall be stockpiled in accordance with the following minimum handling criteria:

- i. Excavation, material handling and stockpiling shall be performed in a manner that minimizes the mixing of materials containing different levels and types of contamination in accordance with N.J.A.C. 7:26E-5.2(b).
  - ii. No re-handling of soils in designated, temporary stockpile storage areas shall be carried out without the approval and presence of the Construction Manager. No material shall be removed without suitable segregation, stockpiling, sampling, testing and characterization and completion of a bill of lading and/or hazardous or non-hazardous waste manifest.
  - iii. The transfer of all materials from excavation(s) to the designated staging area shall be conducted in such a manner as to not allow the spread of contaminated materials. Transfer of contaminated soils shall be performed in accordance with all applicable waste transportation and management requirements. At a minimum, all soils transported by truck shall be covered to minimize fugitive dust.
  - iv. Access shall be restricted to authorized personnel only.
7. Stockpiled contaminated materials shall be placed on an impervious surface lined with polyethylene sheeting (with a minimum thickness of 20 mils) within the designated temporary stockpile storage areas. Excavated material shall be stockpiled. The stockpile will be securely covered with polyethylene sheeting at the end of each work day and maintained throughout the stockpile period to prevent wind dispersion and contact with precipitation. If dust suppression becomes necessary during the soil stockpiling, at the discretion of the Construction Manager, exposed soils shall be wetted.
  8. If any petroleum contaminated soil exhibiting evidence or likelihood of free-product, is encountered, the soil shall be removed from the excavation to the extent practical and necessary to complete the proposed Work. The petroleum free-product contaminated soil shall be stockpiled separate from other soil.
  9. All material entering or leaving the staging area shall be under the direct supervision of the Contractor. Stockpiles shall be inspected by the Contractor at a minimum of once each week and after every storm event. Inspection results will be recorded in a Daily Log to be maintained at the site and available for inspection by the Construction Manager or designee. A copy of the inspection log will be provided to the Construction Manager with other weekly submittals.

10. Stockpile areas will be graded to shed water such that storm water runoff is diverted from stockpiled materials and hay bale berms/silt fencing will be placed around the perimeter of the area. Straw bales will be used as needed near catch basins, surface waters and other discharge points. Stockpile slopes will be no steeper than 1 horizontal to 1 vertical (1 to 1).
11. Soil and groundwater movement on site will be recorded on a Daily Soil Tracking Log to record all incoming and outgoing material for the duration of disposal activities. The log will include up-to-date records that identify the origin of each waste stream in the staging area; indicate the date the materials were received; list the specific storage location; indicate the date the materials were transported from the storage area to the final destination; and the location of the final destination.

#### 1.07 WASTE CHARACTERIZATION

##### A. Waste Characterization

1. For off-site disposal purposes, the Contractor is responsible for collecting representative samples of the contaminated soil and submitting the samples to a New Jersey State certified laboratory for analysis. The Contractor will sample and analyze material in strict accordance with the most recent versions of the NJDEP Field Sampling Procedures Manual. The disposal facility will dictate the waste characterization analytical parameters and sampling frequency.
2. The Contractor shall determine the process for waste characterization. If the Contractor decides to sample soil in areas designated for removal prior to excavation, the Contractor shall provide a sampling and analysis plan for in-situ waste characterization that meets the licensed disposal/recycling facility requirements. If the Contractor decides to stockpile the soil prior to disposal, the Contractor shall provide a sampling and analysis plan for stockpiled soil waste characterization that meets the licensed disposal/recycling facility requirements. The selection between in-situ and stockpile waste characterization may be dictated by the ability to stockpile the soil within the Project area pending disposal.
3. The results of the waste characterization analysis will determine whether the contaminated soil is hazardous or non-hazardous (i.e., ID-27) waste.

##### B. Off-Site Disposal and Transportation

1. Prior to disposal activities, the Contractor will ensure that all operations associated with disposal/recycling of materials are in compliance with applicable Federal and New Jersey Department of Transportation regulations, as well as all applicable local requirements. The Contractor shall hold an A-901 license for the collection or disposal of solid or hazardous waste and a Certificate of Public

Convenience and Necessity (CPCN) for solid waste, pursuant to NJSA 13:1E-126 et. seq. and NJSA 48:13A-1 et. seq. Transporters of solid or hazardous waste shall also have an A-901 license and CPCN. The Construction Manager's LSRP will review the Contractor's proposed methods and facilities.

2. The Contractor will specify the proposed transportation/storage/disposal (TSD) facility. A commitment letter will be obtained from the TSD facility indicating the capacity to accept the type and volume of waste material and stating that it will be open for business during the Contract duration to accept the volume of waste materials. The Contractor will ensure that the hauler of record and TSD facility possess the proper licenses, credentials and experience to transport and dispose of the subject material.
3. The Contractor will provide the Construction Manager with a list of permitted alternative TSD facilities to be utilized in the event the approved facility ceases to accept waste materials generated under this contract. The DEP will not bear any additional costs if the alternative TSD facility is used for waste disposal.
4. The Contractor will maintain a Daily Soil Tracking Log that will record the source location, type, quantity, and characteristics of all excavated, stockpiled, and transported regulated material.
5. The Contractor shall comply with all applicable regulations, including, but not limited to:
  - a. Vehicle placard requirements.
  - b. Container requirements.
  - c. Manifest requirements.
  - d. Responsibilities and requirements for collectors and haulers of hazardous and non-hazardous solid waste.
  - e. Posted weight limitations on roads and bridges.
  - f. Other local restrictions on storage and transportation of waste/debris.
6. Any material deemed hazardous shall be removed from the site within 90 days as per NJDEP regulations (NJAC 7:26). No hazardous material shall be reused.
7. Excess contaminated non-hazardous soil must be disposed off-site within 180 days of excavation as per NJDEP regulations (NJAC 7:26). The licensed hauler shall transport the contaminated soil directly to the selected disposal facility. A non-hazardous bill-of-lading (BOL) will be used to document the transportation and final disposition of contaminated soil during construction. The DEP will be



identified as the generator associated with the BOL and the DEP or designee will sign each BOL. The soil designated for off-site disposal will be trucked off-site to the selected licensed TSD facility.

8. Containers of waste will be immediately sealed as each container is filled. The Contractor shall continuously maintain custody of all non-hazardous and hazardous material generated at the Work site including security, short term storage, transportation, and disposition until custody is transferred to the off-site TSD facility. All vehicles used to transport material to off-site facilities shall be covered to prevent loss soil during transport.
9. Should the disposal facility reject material transported from the site, and said material is returned to the Project site, the material shall be separately stockpiled in an area that does not “cross contaminate” other materials, compromise construction activities, or violate existing permits and approvals. The Contractor, in consultation with the DEP, shall assess said stockpiled material for disposal options.
10. Potentially contaminated soil designated for additional testing will be stockpiled in accordance with the Materials Management Plan. The types and frequencies of tests to be conducted will be based on knowledge of the material, previous pre-characterization and waste characterization data, conditions encountered during excavation, and the permit requirements of the receiving recycling or disposal facility.
11. The licensed hauler shall transport the contaminated material to the disposal/recycling facility with no unauthorized stops in between, except as required by regulatory authority. The hauler shall use appropriate vehicles and operating practices to prevent spillage or leakage from occurring during transport. Remove excess soil adhering to the wheels or under carriage of the vehicles before leaving the Project Limits. If soil or water escapes to the public roads, immediately clean the road to restore it to the original condition and immediately notify the Construction Manager. Do not transport contaminated material over public roads if they contain free liquid or are sufficiently wet to be potentially flowable during transport.

C. Waste Disposal Documentation

1. The Contractor will maintain copies of all documentation and submit copies of each of the following to the Construction Manager:
  - a. Waste characterization sampling logs, sample location maps, and laboratory analysis reports;

- b. Documentation of the disposal facility's regulatory permit to accept waste and specific disposal analytical/procedural requirements criteria for accepting waste;
    - c. Documentation of the disposal facility's acceptance of the regulated material prior to transporting any material off site;
    - d. Transportation manifests/bills of lading; and,
    - e. Waste disposal recycling documentation (e.g., weight tickets) in hard copy and electronic (spreadsheet) formats from the receiving facility.
  2. Copies of each manifest/bill of lading shall be submitted to the Construction Manager within seven (7) business days following transportation from the site, and within five (5) business days after delivery to the disposal facility. All manifests/bills of lading must be fully executed by the disposal facility for this task to be considered complete.
  3. Immediately submit written notification to the Construction Manager if problems arise, regarding the facility chosen to accept the contaminated material for off-site management, that would require the return of waste, or if the chosen facility has violated any environmental regulation that may result in regulatory enforcement action. Propose an alternate disposal facility, and obtain the Construction Manager's written approval of off-site management at such facility.
- D. Backfilling and Capping
  1. Imported backfill material must comply with the NJDEP's April 2015 *Fill Material Guidance for SRP Sites*. The Contractor shall submit the clean fill source and supporting documentation to the Construction Manager prior to the start of construction to demonstrate it meets certified clean fill requirements. All fill materials brought on-site shall comply with current NJDEP Soil Remediation Standards for Residential properties. Alternative fill will not be considered.
  2. Place clean fill materials in stockpile location. Do not place clean fill in the same stockpile with any other materials.
  3. Stockpiles cannot exceed the dimensions given in the soil erosion and sediment control permit plans.
  4. Fill materials
    - a. Suitable Material: Material from on-site excavation that meets all of the specified requirements for its intended use, but is excess of the amount of material required for the intended use. Wet subgrade material which meets other requirements for suitable material is suitable.

- b. Unsuitable Material: Material that fails to meet requirements for suitable materials; or contains any of the following:
  - i. Organic clay, organic silt, or peat; as defined in ASTM D2487.
  - ii. Vegetation, wood, roots, leaves, and organic, degradable material.
  - iii. Stones or rock fragments over 6 inches in any dimension.
  - iv. Porous biodegradable matter, excavated pavement, construction debris, rubbish, or refuse.
  - v. Ice, snow, frost, or frozen soil particles.

E. Decontamination Procedures

- 1. The Contractor will designate an area for implementing decontamination procedures (e.g., steam cleaning, manual scrubbing, etc.) for all equipment contacting contaminated material and vehicles leaving the site in accordance with Section 025100. The Contractor will remove soil from the truck tires as needed to ensure that contamination is not tracked off site. In addition, all roads in the construction area will be swept to keep the roadway free of dirt and debris. Recovered wastes resulting from decontamination shall be properly characterized, transported and disposed off-site in accordance with applicable Federal, State, and local requirements.

F. Contaminated Groundwater Management Procedures

- 1. Groundwater dewatering during construction will be necessary. Groundwater throughout the project is known to be or assumed to be contaminated. Thus, the contaminated dewatering fluids shall be removed from the excavation and disposed properly.
- 2. The Contractor shall select the groundwater disposal method based on anticipated dewatering rates, treatment options, proximity of storm sewers and surface water bodies, the permeability of the subsurface materials, and groundwater quality as determined by an engineer engaged by the Contractor. The Pollution Prevention Control (PPC) Plan shall document the method for handling, treatment, and disposal of contaminated groundwater.
- 3. The potential options for managing the generated groundwater are:
  - a. Discharge to surface water;
  - b. Discharge to groundwater;

- c. Discharge to a sanitary sewer; and
  - d. Transportation to a permitted treatment facility.
4. Discharge to surface water will require a New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Surface Water (DSW) Permit issued by the NJDEP Division of Water Quality. The NJDEP provides a General Groundwater Remediation Cleanup (BGR) permit for non-petroleum contamination, which authorizes discharges of treated groundwater to surface waters.
  5. NJPDES Discharge to Ground Water (DGW) Permits can also be issued by the NJDEP Site Remediation Program.
  6. Discharge to a sanitary sewer will require a permit from the receiving utility. The Contractor may be required to obtain a Treatment Works Approval (TWA) prior to discharge to public utility as well depending on groundwater characteristics. Groundwater should be considered contaminated until confirmed via sampling.
  7. If the dewatering effluent requires treatment prior to discharge to surface water or discharge to groundwater, it is likely that a Treatment Works Approval will be required from the NJDEP Division of Water Quality prior to application for the discharge permit.
  8. The Contractor shall apply for and obtain a Construction Dewatering General Permit (B7) from the NJDEP Division of Water Quality for the authorization of a short-term groundwater discharge for lowering the groundwater table during construction related dewatering of uncontaminated groundwater. Discharges associated with industrial processes, site remediation activities, and sanitary sewerage systems are not covered under the General Permit B7.
  9. The Contractor shall also apply for and obtain a Dewatering Permit-by-Rule or Water Allocation Permit from the NJDEP's Division of Water Supply and Geoscience, as needed, when the pumping or lowering of any groundwater at an average rate of 100,000 gallons per day, over a 30-day period.
  10. Permitting information can be found on the following NJDEP permitting webpages:
    - a. NJDEP BGR DSW Permitting: [http://www.nj.gov/dep/dwq/gp\\_bgr.htm](http://www.nj.gov/dep/dwq/gp_bgr.htm)
    - b. NJDEP DGW Permitting: [http://www.nj.gov/dep/dwq/dgw\\_home.htm](http://www.nj.gov/dep/dwq/dgw_home.htm)
    - c. NJDEP Treatment Works Approval: <http://www.nj.gov/dep/dwq/twa.htm>

- d. NJDEP Dewatering Permitting:  
[http://www.nj.gov/dep/watersupply/a\\_wtable.html](http://www.nj.gov/dep/watersupply/a_wtable.html)
  - e. NJDEP Air Permitting: <https://www.nj.gov/dep/aqm/rules27.html>
- 11. At all times, the Contractor shall maintain and operate proper and adequate dewatering in order to keep the construction site dry and in such condition that construction of structures and placement and compaction of fill and backfill may proceed unhindered by saturation of the area. The Contractor shall provide and maintain pumps, well points, sumps, suction and discharge lines, or other dewatering system components necessary to convey all water away from excavations. The Contractor shall prevent surface water from flooding or spilling into excavations.
  - 12. The Contractor shall obtain any local and State permits required for construction dewatering as discussed above. Cost of permits shall be paid by the Contractor. The Contractor shall adhere to all terms of the environmental permits.
  - 13. All discharges from dewatering activities to surface waters, groundwater, or storm sewers shall be free of sediments. The Contractor shall collect effluent samples from the treatment system at the frequency required by the permit and analyze the samples for the parameters specified in the permit. The Contractor shall provide the sample results to the Construction Manager to document that the discharge meets the permit limits.

PART 2 - PRODUCTS  
Not Used

PART 3 – EXECUTION  
Not Used

END OF SECTION 021600

## SECTION 025100 - DECONTAMINATION

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

- A. This Section covers the decontamination of personnel and equipment as they move from the Exclusion or Work Zones to Support Zones and off-site. Decontamination is required throughout Work activities.

#### 1.02 RELATED SECTIONS

- A. General Conditions Article 4.7 – Shop Drawings and Other Submissions.
- B. Section 014150 - Health and Safety Requirements

#### 1.03 LAWS AND REGULATIONS

- A. All work under this Contract shall be accomplished in accordance with regulations of local, county, State, and Federal agencies and utility authority standards as they apply.

#### 1.04 SAFETY

- A. Methods of operation utilized in Work related to these specifications shall be such as to provide maximum protection against injury or death to workmen or the public. Requirements of the United States and New Jersey Occupational Safety and Health Acts as to safety regulations and procedures shall be adhered to for all Work covered under these Specifications.

#### 1.05 SUBMITTALS

- A. Submit the following items in accordance with General Conditions Article 4.7
- B. Prior to mobilization, Contractor shall submit personnel decontamination procedures as part of the Contractor's Health and Safety Plan (HASP) specified in Section 014150. Contractor shall provide the following information:
  - 1. Number and location of decontamination and wheel wash stations.
  - 2. Decontamination methods and equipment that shall be used in accordance with applicable New Jersey Department of Environmental Protection (NJDEP) requirements.
  - 3. Procedures to prevent cross-contamination of clean areas during remedial activities.

4. Methods and procedures to minimize worker contact with contaminants during removal of personal protective equipment (PPE).
5. Procedures for inspection and decontamination of vehicles leaving the site.
6. Procedures for disposal of personal PPE.
7. Procedures for the collection of all decontamination water and residuals.
8. Procedures for minimizing generation of waste water.

#### 1.06 DECONTAMINATION FACILITIES

- A. Contractor shall construct and maintain decontamination facilities for equipment and trucks as described in the Contract Documents.
- B. Contractor shall construct and maintain decontamination facilities for personnel.
- C. Construction of new decontamination facilities is not required if existing decontamination facilities from previous phases of Work are available and optimally located.

### PART 2 – PRODUCTS

#### 2.01 DECONTAMINATION EQUIPMENT

- A. Contractor shall provide all equipment necessary to complete decontamination activities such as, but not limited to:
  1. Power washer (heated if needed), shower, brushes, and receptacle for PPE, etc.

### PART 3 – EXECUTION

#### 3.01 VEHICLE/EQUIPMENT DECONTAMINATION

- A. Work zones shall be established as specified in the Contractor's HASP and Technical Execution Plan.
- B. Contractor shall inspect and decontaminate all vehicles and equipment that have entered the Exclusion Zone. All decontamination shall take place in Decontamination Zones.
- C. Decontamination of vehicles and equipment shall include removal of soil and residues from the chassis (which includes undercarriage, suspension, wheel wells, tires, and

wheels) and other parts of the vehicle known to have been contaminated or visually appearing to be contaminated.

- D. Contractor shall take care while decontaminating vehicles to avoid contaminating personnel, other parts of the vehicle or equipment, or the surroundings. Personnel involved in vehicle and equipment decontamination shall be dressed in the appropriate level of PPE as determined by the HASP. All personnel shall follow applicable safety procedures described in Section 014150.
- E. Contractor shall decontaminate haul trucks after loading and before the haul trucks exit exclusion zones if inspection indicates the presence of contaminants. Contractor shall ensure that haul trucks exit through the Decontamination Zone and receive proper decontamination and inspection.

### 3.02 PERSONNEL DECONTAMINATION

- A. Contractor shall ensure that personnel who have entered the Exclusion Zone perform decontamination as required in the HASP as specified in Section 014150 prior to exiting the Decontamination Zone.

### 3.03 DECONTAMINATION METHODS

- A. Physical decontamination techniques used during truck and equipment decontamination include, but are not limited to brushing and spraying with a heated water pressure washer until all visible contamination and debris is removed.
- B. Brushing shall consist of removal of loose materials with the use of a broom and/or brushes.
- C. A heated pressure washer shall be used to provide application of water of sufficient temperature, pressure, residence time, and agitation to remove soil and contaminated residuals from surfaces.
- D. Surfactants and detergents must be approved by the Construction Manager prior to use in decontamination operations. Materials which may be detrimental to water treatment, handling, or disposal shall not be allowed.
- E. All equipment decontamination procedures shall be performed in a decontamination facility or area.
- F. Overspray barriers shall be provided, if necessary or as directed by the Construction Manager on each side of the decontamination area to prevent contamination of adjacent areas.



- G. Contractor shall manage decontamination residuals, including water, soil, residues, used PPE, and other materials removed during decontamination as specified in Paragraph 3.04 Management of Decontamination Residuals.

#### 3.04 MANAGEMENT OF DECONTAMINATION RESIDUALS

- A. Decontamination liquids shall be collected by Contractor during personnel decontamination, truck and equipment decontamination.
- B. Decontamination liquids shall be disposed offsite at Construction Manager-approved disposal facility.
- C. Contractor shall dewater and collect decontamination solids. Dewatered decontamination solids shall be allowed to air dry in a stockpile pad for off-site disposal at a NJDEP-approved disposal facility acceptable to the Construction Manager and the Construction Manager's Licensed Site Remediation Professional (LSRP). The Contractor will be responsible for loading this material into trucks.
- D. Contractor shall manage contaminated PPE when working in impacted areas as Impacted Material to be sent to a NJDEP-approved disposal facility acceptable to the Construction Manager and the Construction Manager's LSRP.
- E. When the decontamination pad is no longer required, the Contractor shall remove the contents, including but not limited to gravel, sumps, and liner, and dispose of the material at a NJDEP-approved off-site facility approved by the Construction Manager and the Construction Manager's LSRP.

END OF SECTION 025100



## State of New Jersey

DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O Box 034  
TRENTON NJ 08625-0034

PHILIP D. MURPHY  
*Governor*

SHEILA Y. OLIVER  
*Lt. Governor*

ELIZABETH MAHER MUOIO  
*State Treasurer*

CHRISTOPHER CHIANESE  
*Director*

October 21, 2020

SUBJECT: **Bulletin "D" Dated October 21, 2020**

PROJECT #: **P1155-01**

DESCRIPTION: Re-Build by Design  
Sewer System Modification  
Hoboken, Hudson County, NJ

To Whom It May Concern:

WE ARE FORWARDING A COPY OF THE ABOVE REFERENCED BULLETIN. PLEASE  
ACKNOWLEDGE RECEIPT BY RETURNING THIS FORM TO:

Division of Property Management and Construction  
**Attention:** S. Taylor  
Contracts & Procurement  
PO Box 034  
Trenton NJ 08625-0034  
**Fax #: 609-777-1970**

Sincerely,

A handwritten signature in black ink, appearing to read "S. Taylor", written over a light gray rectangular background.

Shawn Taylor  
Property Management Services Specialist  
Contracts and Procurement

\_\_\_\_\_  
Date Received

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

Project # P1155-01  
Bulletin D

STATE OF NEW JERSEY DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION  
PO BOX 034, TRENTON, NJ 08625-0034

PROJECT#: P1155-01

A/E: AECOM

DATE: October 21, 2020

#### BULLETIN D

Bidder must acknowledge receipt of this Bulletin on bid form in the space provided therefor.

This Bulletin is issued for the purpose of amending certain requirements of the original Contract Documents, as noted hereinafter, and is hereby made part of and incorporated in full force as part of the Contract Documents. Unless specifically noted or specified hereinafter, all work shall comply with the applicable provisions of the Contract Documents.

- **The bid due date of October 29, 2020 at 2:00 PM has been postponed. Answers to Contractor questions, any clarifications to the bid documents, supplemental documentation to the bid documents and pre-bid meeting minutes will be distributed as a part of Bulletin E to be issued on or around November 5, 2020. The revised bid due date is forecasted to be on or around November 19, 2020.**

END OF BULLETIN D



## State of New Jersey

DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O Box 034  
TRENTON NJ 08625-0034

PHILIP D. MURPHY  
*Governor*

SHEILA Y. OLIVER  
*Lt. Governor*

ELIZABETH MAHER MUOIO  
*State Treasurer*

CHRISTOPHER CHIANESE  
*Director*

September 24, 2020

SUBJECT: **Bulletin "C" Dated September 24, 2020**

PROJECT #: **P1155-01**

DESCRIPTION: Re-Build by Design  
Sewer System Modification  
Hoboken, Hudson County, NJ

To Whom It May Concern:

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Shawn Taylor  
Property Management Services Specialist  
Contracts and Procurement

\_\_\_\_\_  
Date Received

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION  
PO BOX 034, TRENTON, NJ 08625-0034

PROJECT #: P1155-01

REBUILD BY DESIGN HUDSON RIVER PROJECT  
COASTAL DEFENSE  
SEWER SYSTEM MODIFICATION  
Hoboken, Jersey City, Weehawken

HUDSON COUNTY, N.J.

A/E: AECOM

DATE: September 24, 2020

#### BULLETIN "C"

Bidder must acknowledge receipt of this Bulletin on bid form in the space provided therefore. This Bulletin is issued for the purpose of amending certain requirements of the original Contract Documents, as noted hereinafter, and is hereby made part of and incorporated in full force as part of the Contract Documents. Unless specifically noted or specified hereinafter, all work shall comply with the applicable provisions of the Contract Documents.

#### **CONTRACTOR QUESTIONS**

**1. Any and all Contractor Questions shall be submitted via email:**

- a. E-mail to Bill Byster at [William.Byster@treas.nj.gov](mailto:William.Byster@treas.nj.gov)
- b. **No later than: 10/08/2020 by 12 Noon**
- c. All questions/Requests for Information (RFI's) in WORD format, not PDF.
- d. No verbal questions or phone calls to DPMC, client or engineer.
- e. Responses will be made to all via a subsequent Bulletin.
- f. Questions will only be accepted from Prime Contractors.

END OF BULLETIN "C"



## State of New Jersey

DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O Box 034  
TRENTON NJ 08625-0034

PHILIP D. MURPHY  
*Governor*

SHEILA Y. OLIVER  
*Lt. Governor*

ELIZABETH MAHER MUOIO  
*State Treasurer*

CHRISTOPHER CHIANESE  
*Director*

September 9, 2020

SUBJECT: **Bulletin "B" Dated September 9, 2020**

PROJECT #: **P1155-01**

DESCRIPTION: Re-Build by Design  
Sewer System Modification  
Hoboken, Hudson County, NJ

To Whom It May Concern:

WE ARE FORWARDING A COPY OF THE ABOVE REFERENCED BULLETIN. PLEASE  
ACKNOWLEDGE RECEIPT BY RETURNING THIS FORM TO:

Division of Property Management and Construction  
**Attention:** S. Taylor  
Contracts & Procurement  
PO Box 034  
Trenton NJ 08625-0034  
**Fax #: 609-777-1970**

Sincerely,

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Shawn Taylor  
Property Management Services Specialist  
Contracts and Procurement

\_\_\_\_\_  
Date Received

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION  
PO BOX 034, TRENTON, NJ 08625-0034

PROJECT #: P1155-01

REBUILD BY DESIGN HUDSON RIVER PROJECT  
COASTAL DEFENSE  
SEWER SYSTEM MODIFICATION  
Hoboken, Jersey City, Weehawken

HUDSON COUNTY, N.J.

A/E: AECOM

DATE: September 9, 2020

#### BULLETIN "B"

Bidder must acknowledge receipt of this Bulletin on bid form in the space provided therefore. This Bulletin is issued for the purpose of amending certain requirements of the original Contract Documents, as noted hereinafter, and is hereby made part of and incorporated in full force as part of the Contract Documents. Unless specifically noted or specified hereinafter, all work shall comply with the applicable provisions of the Contract Documents.

#### **A) ADDITIONAL HUD CDBG-DR FORMS REQUIRED FOR INVOICING**

Attached forms must be executed and submitted with each contractor invoice for payment.

#### **Attachments:**

- a. "Contractor Information Form"
- b. "SECTION 3 BUSINESS CONTACT LOG"
- c. "SECTION 3 COMMUNITY OUTREACH CONTACT LOG"
- d. "CERTIFICATION FOR BUSINESS CONCERNS SEEKING SECTION 3"
- e. "SECTION 3 RESIDENT CERTIFICATION FORM"
- f. "SECTION 3 COMPLIANCE CHECKLIST"

END OF BULLETIN "B"

## Contractor Information Form

### Background Information

1. Company Name	
2. Contact Name	
3. Contact Number	

4. Date Submitted	
5. Reporting Period	

6. Are you a Section 3 Business?	
----------------------------------	--

### Part I: Listing of Projects Contractor is Working On

A	B	C
Project Name	Contract Value	HUD-60002 Type of Work

### Part II: Employee Information

A	B	C
Number of New Hires	Number of New Hires that are Section 3	Number of Section 3 Employees and Trainees



**Part III: Subcontractors**

(leave blank if no subcontractors have been hired)

A	B	C	D
Subcontractor Name	Is the subcontractor working on construction or non-construction work?	Is the subcontractor a Section 3 Business?	Contract Value

**Part IV: Summary of Outreach Efforts**

Indicate the efforts made to direct the employment and other economic opportunities generated by HUD financial assistance for housing and community development programs, to the greatest extent feasible low- and very-low income persons, particularly those who are recipients of government assistance for housing. Check all that apply.

- ☐ Attempted to recruit low-income residents through: local advertising media, signs prominently displayed at the project site, contracts with the community organizations and public or private agencies operating within the metropolitan area (or Nonmetropolitan County) in which the Section 3 covered program or project is located or similar methods.
- ☐ Participated in HUD program or other program which promotes the training or employment of Section 3 residents.
- ☐ Participated in HUD program or other program which promotes the award of contracts to business concerns which meet the definition of Section 3 business concerns.
- ☐ Coordinated with Youthbuild Program administered in the metropolitan area in which the Section 3 covered project is located.
- ☐ Other; describe below

## SECTION 3 BUSINESS CONTACT LOG

Project Name: \_\_\_\_\_

Project Number: \_\_\_\_\_

Company Name: \_\_\_\_\_

This form must be maintained during the entire period of the solicitation phase and entire period of construction to record contact with businesses. Record all efforts used to meet Section 3 obligations and affix documents that support such efforts (e.g. proof of mailing, fax transmittal, e-mails, etc.).

Attach additional pages if necessary.

Date / Time	Company	Method of Contact	Contact Person	Other Efforts	Results of Communication

## SECTION 3 COMMUNITY OUTREACH CONTACT LOG

Project Name: \_\_\_\_\_

Project Number: \_\_\_\_\_

Company Name: \_\_\_\_\_

This form must be maintained during the entire period of the solicitation phase and entire period of construction to record community outreach efforts. Record all efforts used to meet Section 3 obligations and affix documents that support such efforts (e.g. proof of mailing, fax transmittal, e-mails, etc.).

Attach additional pages if necessary.

Date / Time	Company	Method of Contact	Contact Person	Other Efforts	Results of Communication

**CERTIFICATION FOR BUSINESS CONCERNS SEEKING SECTION 3  
PREFERENCE IN CONTRACTING AND DEMONSTRATION OF CAPABILITY**

Name of Business \_\_\_\_\_

Address of Business \_\_\_\_\_

Type of Business: ☐ Corporation    ☐ Partnership    ☐ Sole Proprietorship    ☐ Joint Venture

Attached is the following documentation as evidence of status:

**For Business claiming status as a Section 3 resident-owned enterprise:**

- ☐ Copy of resident lease                      ☐ Copy of receipt of public assistance
- ☐ Copy of evidence of participation in a public assistance program
- ☐ Other evidence

**For business entity as applicable:**

- ☐ Copy of Articles of Incorporation
- ☐ Certificate of Good Standing
- ☐ Assumed Business Name Certificate
- ☐ Partnership Agreement
- ☐ List of owners/stockholders and % ownership of each
- ☐ Corporation Annual Report
- ☐ Latest Board minutes appointing officers
- ☐ Organization chart with names and titles and brief function statement
- ☐ Additional documentation

**For business claiming Section 3 status by subcontracting 25 percent of the dollar awarded to qualified Section 3 business:**

- ☐ List of subcontracted Section 3 business(es) and subcontract amount, including signed contracts if a relationship has already been established or a letter of intent to hire the Section 3 business(es) mentioned.

**SECTION 3 BUSINESS CONCERN CERTIFICATION PAGE 2**

**For business claiming Section 3 status, claiming at least 30 percent of their workforce are currently Section 3 residents or were Section 3 eligible residents within 3 years of date of first employment with the business:**

- ☐ List of all current full-time employees
- ☐ List of employees claiming Section 3 status
- ☐ PHA/IHA Residential lease less than 3 years from date of first employment
- ☐ Other evidence of Section 3 status less than 3 years from date of first employment

**Evidence of ability to perform successfully under the terms and conditions of the proposed contract:**

- ☐ Current financial statement
- ☐ Statement of ability to comply with public policy
- ☐ List of owned equipment
- ☐ List of all contracts for the past two years

\_\_\_\_\_  
(Authorizing Name and Signature)

(Corporate Seal)

Attested by: \_\_\_\_\_

## SECTION 3 RESIDENT CERTIFICATION FORM

### *Eligibility for Preference*

A Section 3 resident seeking the preference in training and employment provided by this part shall certify, or submit evidence to the recipient contractor or subcontractor, if requested, that the person is a Section 3 resident, as defined in 24 CFR Part 135.5. (An example of evidence of eligibility for the preference is evidence of receipt of public assistance, or evidence of participation in a public assistance program. Additional documentation supporting eligibility will be submitted upon request. )

### *Certification for Resident Seeking Section 3 Preference in Training and Employment*

I, \_\_\_\_\_, am a legal resident of the \_\_\_\_\_

\_\_\_\_\_ and meet HUD's income eligibility guidelines for a low- or very low-income person.

I am currently employed by: \_\_\_\_\_

My date of first employment with this company was: (month/year) \_\_\_\_\_

My permanent address is: \_\_\_\_\_

\_\_\_\_\_

I have attached the following documentation as evidence of my status:

☐ Copy of lease

☐ Copy of receipt of public assistance

☐ Copy of Evidence of participation

☐ Other evidence

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Printed name)

## SECTION 3 RESIDENT CERTIFICATION PAGE 2

### *SECTION 3 INCOME LIMITS*

All residents of public housing developments of the

\_\_\_\_\_ Housing Authority qualify as Section 3 residents.

Additionally, individuals residing in the \_\_\_\_\_ (City/County) of \_\_\_\_\_ who meet the income limits set forth below can also qualify for Section 3 status.

A picture identification card and proof of current residency is required.

#### **Eligibility Guideline**

<b>Number in Household</b>	<b>Very Low Income</b>	<b>Low Income</b>
1 Individual		
2 Individuals		
3 Individuals		
4 Individuals		
5 Individuals		
6 Individuals		
7 Individuals		
8 Individuals		

The HUD income limits can be found at <http://www.huduser.org/portal/datasets/il.html>

## SECTION 3 COMPLIANCE CHECKLIST

SAMPLE / FOR CONTRACTOR'S USE

For recommended use by Contractors and Sub-contractors.

<b>Creation of Action Plan</b>	<b>Yes / No</b>	<b>Date Complete</b>
1. Contractor has designated a Section 3 compliance officer/contact for the project		
2. Contractor attended the project's pre-bid meeting		
3. Contractor attended the project's pre-construction meeting		
4. The Contractor's Section 3 Plan was approved by the State.		
5. Sub-contractors with contracts in excess of \$100,000 have each submitted a complete Section 3 Action Plan		

<b>Soliciting Bids / Contracting</b>	<b>Yes / No</b>	<b>Date Complete</b>
1. A list of certified Section 3 business concerns from the metropolitan Housing Authority has been obtained		
2. Solicited bids from the list of Section 3 businesses for each service that requires sub-contracts (ensure adequate time for the business to respond and/or submit a proposal or bid)		
3. Provided plans and specifications or information regarding the location of plans and specifications to Section 3 business concerns		
4. Efforts to sub-contract Section 3 business concerns have been recorded.		
5. Efforts and their results have been included with the project's bid packet		

<b>Compliance</b>	<b>Yes / No</b>	<b>Date Complete</b>
1. Quarterly Section 3 compliance reports have been submitted to the State		
2. Section 3 businesses utilized for the project were identified		
3. All contractors and new hires utilized for the project were identified		
4. The existing core workforce list or a certified payroll has been submitted to the State's Section 3 Coordinator		

<b>Impediments, Concerns, Enforcement</b>	<b>Yes / No</b>	<b>Date Complete</b>
1. Efforts taken and the impediments encountered in trying to satisfy Section 3 requirements have been documented		



STATE OF NEW JERSEY  
DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION  
PO BOX 034, TRENTON, NJ 08625-0034

PROJECT #: P1155-01

REBUILD BY DESIGN HUDSON RIVER PROJECT  
COASTAL DEFENSE  
SEWER SYSTEM MODIFICATION  
Hoboken, Jersey City, Weehawken

HUDSON COUNTY, N.J.

A/E: AECOM

DATE: August 21, 2020

BULLETIN "A"

Bidder must acknowledge receipt of this Bulletin on bid form in the space provided therefore. This Bulletin is issued for the purpose of amending certain requirements of the original Contract Documents, as noted hereinafter, and is hereby made part of and incorporated in full force as part of the Contract Documents. Unless specifically noted or specified hereinafter, all work shall comply with the applicable provisions of the Contract Documents.

A) DIANE B. ALLEN EQUAL PAY ACT

Pursuant to N.J.S.A. 34:11-56.14(b), any employer, regardless of the location of the employer, who enters into a contract with a public body to perform any public work for the public body shall provide to the Commissioner of the New Jersey Department of Labor and Workforce Development, through certified payroll records required pursuant to P.L.1963, c.150 (C.34:11-56.25 et seq.), information regarding the gender, race, job title, occupational category, and rate of total compensation of every employee of the employer employed in the State in connection with the contract. The employer shall provide the commissioner, throughout the duration of the contract or contracts, with an update to the information whenever payroll records are required to be submitted pursuant to P.L.1963, c.150 (C.34:11-56.25 et seq.).

Information regarding the Diane B. Allen Equal Pay Act and its requirements may be obtained from the New Jersey Department of Labor and Workforce Development (LWD) web site at: <https://nj.gov/labor/equalpay/equalpay.html>

LWD forms may be obtained from the online web site at: [https://nj.gov/labor/forms\\_pdfs/equalpayact/MW-562withoutfein.pdf](https://nj.gov/labor/forms_pdfs/equalpayact/MW-562withoutfein.pdf)

**B) REVISIONS TO PROJECT REQUIREMENTS**

- a. All businesses engaged in construction projects in the State must adopt policies that include, at minimum, the requirements set forth in Executive Order 142 (2020) which supersedes the policies and procedures included in Executive Order 122 (2020). Please see the attached DPMC Notice dated June 1, 2020 to All Contractors and Project Personnel on DPMC Construction Projects.

**C) Calendar Days for Contractor Completion is **480 Days****

**D) Make the following changes to specification:**

- a. SECTION 012901 - MEASUREMENT AND PAYMENT; Para. , 3.01 SCHEDULE OF BID PRICES, NN. Item 40: Utility Relocations, If and Where Directed, 3. Payment - An allowance for this item with an established amount of \$475,000.00 is included in the bid items.

**DELETE** – 3. “An allowance for this item with an established amount of \$475,000.00 is included in the bid items.”

**ADD** – 3. “An allowance for this item with an established amount of \$425,000.00 is included in the bid items.”

- b. SECTION 031000 - CONCRETE FORMWORK; Para. , 2.05 FORM TIES, D. Elastic Vinyl Plug, 2. a. Dayton Superior, Miamisburg, OH; A58 Sure Plug.

**ADD** – b. “or Approved Equal”

- c. SECTION 321300 - RIGID PAVING; Para. , 3.11 PAINTING AND STRIPING.

**DELETE** – A. “Refer to Section 321700 for additional requirements.”

**ADD** – A. “Refer to Section 340113 for additional requirements.”

**E) CONTRACTOR INFORMATION:**

- a. Contractors are advised that due to recently approved Legislation (P.L. 2019, Chapter 406), any firm seeking to be awarded a contract must register with the Federal System for Award Management (SAM) prior to contract award. In order to comply with this requirement, firms must register in SAM at <http://www.sam.gov>. It is recommended that Contractors register with the SAM as soon as possible to avoid delays in the award of a contract.

**Attachments:**

- a. Attachment “A” Statement of Assurances
- b. Attachment “B” Additional Information for HUD Statement of Assurances for Contractor – MUST BE COMPLETED AND RECEIVED PRIOR TO CONTRACT AWARD
- c. Attachment “C” Section 3 Utilization Plan Template - MUST BE COMPLETED AND RECEIVED PRIOR TO CONTRACT AWARD
- d. DPMC Notice dated June 1, 2020 to All Contractors and Project Personnel on DPMC Construction Projects.
- e. RBD\_HR\_Programmatic\_Agreement\_September 2017\_executed
- f. RBDH SSM Contract P1155-01 Hoboken Soil Disposal and Backfill Waiver 2020-08-11.pdf.

END OF BULLETIN “A”

## **ATTACHMENT “A”**

### **STATEMENT OF ASSURANCES FOR CONTRACTOR/CONSULTANT**

#### **ADDITIONAL FEDERALLY FUNDED AGREEMENT PROVISIONS APPLICABLE TO COMMUNITY DEVELOPMENT BLOCK GRANT- DISASTER RECOVERY FUNDED PROJECTS**

The purpose of this Statement of Assurances is to list requirements applicable to programs funded in whole or in part by Community Development Block Grant-Disaster Recovery (“CDBG-DR”) funds received from the U.S. Department of Housing and Urban Development (“HUD”). Not all of the requirements listed herein shall apply to all activities or work under the Contract.

As used herein, “**Contractor**” and “**Consultant**” refer to any contractors or consultants awarded a Contract to provide goods or perform services in connection with the Project and paid with CDBG-DR funds.

Contractor/Consultant agrees to comply with all *applicable* federal CDBG-DR laws, guidelines and standards in a manner satisfactory to the State and HUD, including all administration and compliance requirements set forth by this Statement of Assurances. To the extent that Contractor/Consultant utilizes any subconsultants/subcontractors, Contractor/Consultant shall require and ensure that each subconsultant/subcontractor comply with all *applicable* federal CDBG-DR laws, guidelines and standards; any subcontracts entered into by Consultant shall set forth these requirements. Contractor/Consultant also agrees to comply with all *applicable* cross-cutting statutes and regulations, subject to waivers cited in the Federal Register, Docket No. FR-5696-N-01 (March 5, 2013) (Allocations, Common Application, Waivers, and Alternative Requirements for Grantees Receiving CDBG - DR funds in Response to Superstorm Sandy), as supplemented by additional applicable Notices published by HUD in the Federal Register.

Contractor/Consultant agrees to comply with the requirements of Title 24 of the CFR, Part 570 (HUD regulations concerning Community Development Block Grants).

The failure to list herein a legal requirement applicable to services performed by Contractor/Consultant does not relieve the Contractor/Consultant from complying with that requirement.

#### **A. GENERAL PROVISIONS**

1. Under provisions of the Hatch Act that limit the political activity of employees and HUD regulations governing political activity (24 CFR 570.207), CDBG funds shall not be used to finance the use of facilities or equipment for political purposes or to engage in other partisan political activities, such as candidate forums, voter transportation, or voter registration. However, a facility originally assisted with CDBG funds may be used on an incidental basis to hold political meetings, candidate forums, or voter registration campaigns, provided that all parties and organizations have access to the facility on an equal basis, and are assessed equal rent or use charges, if any.
2. No federally appointed funds shall be used for lobbying purposes regardless of level of government, in accordance with 2 CFR 200.450.
3. HUD rules prohibit the use of CDBG funds for inherently religious activities, as set forth in 24 CFR 570.200(j), except for circumstances specified in the Department of Housing and Urban

Development Allocations, Common Application, Waivers, and Alternative Requirements for Grantees Receiving CDBG Disaster Recovery Funds in Response, 78 FR 14329 (March 5, 2013).

4. HUD rules impose drug-free workplace requirements in Subpart B of 2 CFR part 2429, which adopts the government-wide implementation (2 CFR Part 182) of sections 5152-5158 of the Drug-Free Workplace Act of 1988.
  5. Citizens will be provided with an appropriate address, phone number, and times during which they may submit complaints regarding activities carried out utilizing these CDBG-DR funds. The State will provide a written response to every citizen complaint within fifteen (15) working days of the complaint.
- B. **PERSONALLY IDENTIFIABLE INFORMATION:** To the extent the Contractor/Consultant receives personally identifiable information, it will comply with the Privacy Act of 1974 and HUD rules and regulations related to the protection of personally identifiable information. The term “personally identifiable information” refers to information which can be used to distinguish or trace an individual’s identity, such as their name, social security number, biometric records, etc., either alone or when combined with other personal or identifying information which is linked or linkable to a specific individual, such as date and place of birth, mother’s maiden name, etc. See 2 CFR 200.79 & OMB M-07-16. Contractor/Consultant shall require all persons that have access to personally identifiable information (including subcontractors/subconsultants and their employees) to sign a Non-Disclosure Agreement.

C. **FINANCIAL MANAGEMENT AND PROCUREMENT**

1. *To the extent applicable*, Contractor/Consultant shall adhere to the principles and standards governing federal grant distribution as set forth in the OMB Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards (2 CFR Part 200).
2. Contractor/Consultant shall comply with all *applicable* laws pertaining to financial management, including 2 CFR Part 180 and 2 CFR Part 2424, which prohibit the making of any award or permitting any award (sub grant or contract) at any tier to any party that is debarred or suspended or is otherwise excluded from or ineligible for participation in federal assistance programs. To the extent that it uses subcontractors or subconsultants, Contractor must verify that none of them are on the List of Parties Excluded from Federal Procurement or Non-procurement Programs promulgated in accordance with Executive Orders 12549 and 12689, “Debarment and Suspension,” as set forth at 2 CFR Part 2424. No Contractors or Subcontractors that are on the List may receive any CDBG funds.
3. Conflict of interest rules, as set forth in 24 CFR 570.489, 24 CFR 570.611, and 2 CFR 200.112, apply. Contractor/Consultant shall disclose in writing any potential conflict of interest to DPMC and DEP.
4. *To the extent applicable*, Contractor/Consultant shall comply with 24 CFR Part 570 regarding the management and disposition of cash, real and personal property acquired with CDBG-DR funds.
5. *To the extent applicable*, Contractor/Consultant shall comply with 24 CFR 570.489(j) regarding change of use of real property. These standards apply to real property within its control (including activities undertaken by subcontractors/subconsultants). These standards apply from the date CDBG-DR funds are first spent until five years after the close-out of the Program.

#### **D. RECORDS AND RECORDS RETENTION**

1. In accordance with 2 CFR 200.333, 24 CFR 570.502 and 570.506, Contractor/Consultant shall retain financial records, supporting documents, statistical records, and all other records pertinent to this Agreement. The retention period shall be the longer of three (3) years after the expiration or termination of this Agreement, or three years after the submission of the annual performance and evaluation report in which the project is reported on for the final time, except that records for activities subject to the reversion of assets provisions at § 570.503(b)(7) or change of use provisions at § 570.505 must be maintained for as long as those provisions continue to apply to the activity. Notwithstanding the above, if any litigation, claim, or audit pertaining to the Agreement is started before the expiration of the applicable retention period, records must be retained until completion of the action and resolution of all issues which arise from it, or until the end of the required retention period, whichever is later.
2. Contractor/Consultant shall provide the State and HUD, including their representatives or agents, access to and the right to examine all records, books, papers, or documents related to the Contract and the use of CDBG funds.

#### **E. FEDERAL LABOR STANDARDS:** *To the extent applicable, Contractor/Consultant shall comply with Federal Labor Standards, including:*

1. Section 110 of the Housing and Community Development Act of 1974, 42 U.S.C. §5310, 24 CFR §570.603 and HUD Handbook 1344.1 Federal Labor Standards Requirements in Housing and Urban Development Programs, as revised, which require that all laborers and mechanics (as defined at 29 CFR §5.2) employed by Contractor/Consultant (including its subcontractors/subconsultants) in connection with construction contracts over \$2,000, are paid wages at rates not less than those prevailing on similar construction in the locality as per the Davis-Bacon Act (40 U.S.C. §3141 *et seq.*), as amended; except that these requirements do not apply to the rehabilitation of residential property if such property contains less than 8 units;
2. The Contract Work Hours and Safety Standards Act (40 U.S.C. 3701 *et seq.*), requiring that mechanics and laborers (including watchmen and guards) employed on federally assisted contracts of \$100,000 or greater be paid wages of not less than one and one-half times their basic wage rates for all hours worked in excess of forty hours in a work-week, and projects must comply with safety standards;
3. The Federal Fair Labor Standards Act (29 U.S.C. 201 *et seq.*), requiring that covered nonexempt employees be paid at least the minimum prescribed wage, and also that they be paid one and one-half times their basic wage rate for all hours worked in excess of the prescribed work-week;
4. The Copeland “Anti-Kickback” Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR part 3), which apply to contracts and subcontracts for construction, prosecution, completion, or repair of public buildings, public works or buildings, or works financed in whole or in part by Federal loans or grants, and requires payment of wages once a week and allows only permissible payroll deductions;
5. Department of Labor regulations in parallel with HUD requirements above:
  - a. 29 CFR part 1: Procedures for Predetermination of Wage Rates

- b. 29 CFR part 5: Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (Also, Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)
  - c. 29 CFR part 6: Rules of Practice for Administrative Proceedings Enforcing Labor Standards In Federal and Federally Assisted Construction Contracts and Federal Service Contracts
  - d. 29 CFR part 7: Practice Before the Administrative Review Board With Regard to Federal and Federally Assisted Construction Contracts.
6. All applicable Federal Labor Standards provisions set forth in form HUD-4010. Consultant/Contractor will ensure that form HUD-4010 is included in all bid packages and subcontracts entered into with contractors, consultants, or other third parties to supply goods or perform services in connection with the Contract activities and paid with CDBG-DR funds.

#### **F. SECTION 3 REQUIREMENTS**

1. *To the extent applicable, Contractor/Consultant shall comply with Section 3 of the Housing and Urban Development Act of 1968, as amended ("Section 3"). Section 3 is intended to encourage recipients of HUD funding to direct new employment, training, and contracting opportunities to the greatest extent feasible to low- and very low-income persons, and to businesses that employ these persons, within their community. Section 3 applies to grantees and subrecipients that receive assistance exceeding \$200,000 in certain types of HUD funding, including CDBG funding, and to contractors and subcontractors that enter into contracts in excess of \$100,000 funded by certain types of HUD funding, including CDBG funds, for any activity that involves housing construction, rehabilitation, and demolition, or other public construction. A guide to Section 3 applicability and compliance requirements is located at HUD's website, [http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/fair\\_housing\\_equal\\_opp/section3/section3](http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/section3/section3), under Frequently Asked Questions (FAQs).*
2. **Pursuant to 24 CFR 135.38, the following language shall be included in all contracts and subcontracts:**
  - a. *The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.*
  - b. *The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.*
  - c. *The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and*

- training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.*
- d. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.*
  - e. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.*
  - f. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.*
  - g. With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).*

#### **G. FAIR HOUSING AND NON-DISCRIMINATION**

1. *To the extent applicable, Contractor/Consultant shall comply with the following fair housing and non-discrimination laws. Any act of unlawful discrimination committed by Contractor/Consultant or failure to comply with applicable laws shall be grounds for termination of the Contract.*
  - a. Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. §200d et seq., and the regulations issued pursuant thereto (24 CFR Part 1), which provide that no person in the United States shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which it receives federal financial assistance and shall immediately take any measures necessary to effectuate this assurance. If any real property or structure thereon is provided or improved with the aid of federal financial assistance extended to it this assurance shall obligate it, or in the case of any transfer of such property, and transferee, for the period during which the property or structure is used for another purpose involving the provision of similar services or benefits.*
  - b. Fair Housing Act (Title VIII of the Civil Rights Act of 1968, as amended, 42 U.S.C. 3601–3619), which requires administering all programs and activities relating to housing and community development in a manner to affirmatively further fair housing. Title VIII further prohibits discrimination against any person in the sale or rental of housing, or the provision of brokerage services, including in any way making unavailable or denying a dwelling to any person, because of race, color, religion, sex, national origin, handicap or familial status.*



- c. Title II of the Civil Rights Act of 1968 (25 U.S.C. 1301-1303), which prohibits discrimination because of race, color, religion, or natural origin in certain places of public accommodation.
- d. Architectural Barriers Act (ABA) of 1968, 42 U.S.C. 4151 *et seq.* The ABA requires access to buildings designed, built, altered, or leased by or on behalf of the federal government or with loans or grants, in whole or in part, from the federal government. As used in the ABA, the term “building” does not include privately owned residential structures not leased by the government for subsidized housing programs.
- e. Title IX of the Education Amendments Act of 1972, 20 U.S.C. 1681 *et seq.*, which prohibits discrimination on the basis of sex in any federally funded education program or activity.
- f. Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. §794, which provides that no otherwise qualified individual shall solely by reason of his or her handicap be excluded from participation, denied program benefits, or subjected to discrimination under any program or activity receiving federal funding assistance.
- g. Section 508 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. §794d, which requires Federal agencies to make their electronic and information technology (EIT) accessible to people with disabilities, and applies to all federal agencies when they develop, procure, maintain or use electronic and information technology.
- h. Section 109 of Title I of the Housing and Community Development Act of 1974, and the regulations issued pursuant thereto (24 CFR 570.602), which provides that no person in the United States shall, on the grounds of race, color, national origin, or sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under, any program or activity funded in whole or in part with funds provided under that Part. Section 109 further prohibits discrimination to an otherwise qualified individual with a handicap, as provided under Section 504 of the Rehabilitation Act of 1973, as amended, and prohibits discrimination based on age as provided under the Age Discrimination Act of 1975. The policies and procedures necessary to ensure enforcement of section 109 are codified in 24 CFR 6.
- i. Section 104(b)(2) of the Housing and Community Development Act of 1974, 42 U.S.C. 5304(b), which requires communities receiving community development block grants to certify that the grantee is in compliance with various specified requirements.
- j. Age Discrimination Act of 1975, 42 U.S.C. 6101 *et seq.*, which prohibits discrimination on the basis of age in programs and activities receiving federal financial assistance.
- k. Title II of the Americans with Disabilities Act of 1990, 42 U.S.C. 12131 *et seq.*, as amended by the ADA Amendments Act of 2008, which prohibits discrimination against people with disabilities by public entities, which includes any state or local government and any of its departments, agencies or other instrumentalities.
- l. Housing for Older Persons Act of 1995 (“HOPA”) (42 U.S.C. 3607), which governs housing developments that qualify as housing for persons age 55 or older.
- m. Accessibility requirements contained in Title III of the Americans with Disabilities Act of 1990 (42 U.S.C. 12181 *et seq.*).
- n. Executive Order 11063: Equal Opportunity in Housing, November 20, 1962, as amended by Executive Order 12259, and the regulations issued pursuant thereto, which pertain to equal opportunity in housing and non-discrimination in the sale or rental of housing built with federal assistance.
- o. Executive Order 11246 (Johnson), September 24, 1965, as amended by Executive Order 11375 (Johnson), October 13, 1967, as amended by Executive Order 13672 (Obama), July 21, 2014, which prohibit discrimination in employment on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin. Further, contractors and subcontractors on federal and federally assisted construction contracts shall take affirmative action to ensure that equal opportunity is provided in all aspects of their employment,

- including, but not limited to: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training and apprenticeship.
- p. Executive Order 12086: Consolidation of contract compliance functions for equal employment opportunity, October 5, 1978.
  - q. Executive Order 12892: Leadership and Coordination of Fair Housing in Federal Programs: Affirmatively Furthering Fair Housing, January 17, 1994.
  - r. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994.
  - s. Executive Order 13166: Improving Access to Services for Persons with Limited English Proficiency (LEP), August 11, 2000, and Federal Register Notice FR-4878-N-02 (available online at <http://www.gpo.gov/fdsys/pkg/FR-2007-01-22/pdf/07-217.pdf>), which require recipients of federal financial assistance to ensure meaningful access to programs and activities by LEP persons. (The State's Language Access Plan (LAP) is available online at [http://www.renewjerseystronger.org/wp-content/uploads/2014/08/NJ-DCA-LAP\\_Version-1.0\\_2015.01.14-for-RenewJerseyStronger.pdf](http://www.renewjerseystronger.org/wp-content/uploads/2014/08/NJ-DCA-LAP_Version-1.0_2015.01.14-for-RenewJerseyStronger.pdf)).
  - t. Executive Order 13217: Community-Based Alternatives for Individuals with Disabilities, June 19, 2001.
  - u. Executive Order 13330: Human Service Transportation Coordination, February 24, 2004.
  - v. Implementing regulations for the above:
    - i. 24 CFR part 1: Nondiscrimination in Federally Assisted Programs of HUD.
    - ii. 24 CFR part 3: Nondiscrimination on the Basis of Sex in Education Programs or Activities receiving Federal Financial Assistance.
    - iii. 24 CFR 5.105: Other Federal Requirements.
    - iv. 24 CFR part 6: Nondiscrimination in Programs, Activities Receiving Assistance under Title I of the Housing and Development Act of 1974.
    - v. 24 CFR part 8: Nondiscrimination Based on Handicap in Federally Assisted Programs and Activities of the Department of Housing and Urban Development.
    - vi. 24 CFR 50.4(l) and 58.5 (j): Environmental Justice.
    - vii. 24 CFR 91.225(a)(1): Affirmatively Furthering Fair Housing.
    - viii. 24 CFR 91.325(a)(1): Affirmatively Furthering Fair Housing.
    - ix. 24 CFR 91.325(b)(5): Compliance with Anti-discrimination laws.
    - x. 24 CFR 91.520: Performance Reports.
    - xi. 24 CFR part 100 – part 125: Fair Housing.
    - xii. 24 CFR part 107: Non-discrimination and Equal Opportunity in Housing under Executive Order 11063 (State Community Development Block Grant Grantees).
    - xiii. 24 CFR part 121: Collection of Data.
    - xiv. 24 CFR part 135: Economic Opportunities for Low- and Very Low-Income Persons.
    - xv. 24 CFR part 146: Non-discrimination on the Basis of Age in HUD Programs or Activities Receiving Federal Financial Assistance.
    - xvi. 24 CFR 570.206(c): Fair Housing Activities.
    - xvii. 24 CFR 570.487(b): Affirmatively Furthering Fair Housing.
    - xviii. 24 CFR 570.487(e): Architectural Barriers Act and Americans with Disabilities Act (State Community Development Block Grant Grantees).
    - xix. 24 CFR 570.490(a)-(b): Recordkeeping requirements.
    - xx. 24 CFR 570.491: Performance Reviews and Audits.
    - xxi. 24 CFR 570.495(b): HCDA Section 109 nondiscrimination.
    - xxii. 24 CFR 570.506(g): Fair Housing and equal opportunity records.
    - xxiii. 24 CFR 570.601: Affirmatively Further Fair Housing.
    - xxiv. 24 CFR 570.608 and Part 35: Lead-Based Paint.
    - xxv. 24 CFR 570.614: Architectural Barriers Act and Americans with Disabilities Act.

- xxvi. 24 CFR 570.904: Equal Opportunity and Fair Housing Review  
xxvii. 24 CFR 570.912: Nondiscrimination compliance

## **H. CONTRACTING WITH SMALL AND MINORITY-OWNED AND VETERAN-OWNED FIRMS, WOMEN'S BUSINESS ENTERPRISES AND LABOR AREA SURPLUS FIRMS**

1. Contractor/Consultant shall take all necessary affirmative steps to ensure contracting opportunities are provided to small and minority-owned and veteran-owned businesses, women's business enterprises, and labor area surplus firms. As used in this contract, the terms "minority-owned business," "veteran-owned business," and "women's business enterprises" means a business that is at least fifty-one percent (51%) owned and controlled by minority group members, veterans or women. For purposes of this definition, "minority group members" are African-Americans, Spanish-speaking, Spanish surnamed or Spanish-heritage Americans, Asian-Americans, and Native Americans. Contractor may rely on written representations by businesses regarding their status as minority, women and veteran businesses in lieu of an independent investigation.
2. Affirmative steps shall include:
  - a. Placing qualified small and minority-, veteran- and women-owned businesses on solicitation lists;
  - b. Ensuring that small and minority-, veteran- and women-owned businesses are solicited whenever they are potential sources, for goods and/or services required in furtherance of the Contract;
  - c. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority-, veteran- and women-owned businesses;
  - d. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority-, veteran- and women-owned businesses; and
  - e. Using the service and assistance, as appropriate, of organizations such as the Small Business Administration, and the Minority Business Development Agency of the U.S. Department of Commerce; and
  - f. Requiring the subcontractor, if subcontracts are to be let, to take the affirmative steps listed in subparagraphs (a) through (e) of this section.

## **I. ENVIRONMENTAL REGULATORY COMPLIANCE**

*To the extent applicable*, Contractor/Consultant must comply with HUD regulations found at 24 CFR Parts 50 and 58, implementing the National Environmental Policy Act ("NEPA"), 42 U.S.C. §4321 *et seq.*, and other Federal environmental requirements, including but not limited to:

1. Floodplain management and wetland protection:
  - a. Executive Order 11990, Protection of Wetlands (May 24, 1977) (42 FR 26961), 3 CFR, 1977 Comp., p. 121, as interpreted by HUD regulations at 24 CFR 55, particularly sections 2 and 5 of the order;
  - b. Executive Order 11988, Floodplain Management, May 24, 1977 (42 FR 26951), 3 CFR, 1977 Comp., p. 117, as interpreted in HUD regulations at 24 CFR part 55, particularly section 2(a) of the order;
2. The Coastal Zone Management Act of 1972 (16 U.S.C. § 1451 *et seq.*), as amended, particularly sections 307(c) and (d) (16 U.S.C. §§1456(c) and(d));

3. In relation to water quality:
  - a. Executive Order 12088, as amended by Executive Order 12580, relating to the prevention, control and abatement of water pollution;
  - b. The Safe Drinking Water Act of 1974 (42 U.S.C. §§ 201, 300(f) et seq. and U.S.C. §349), as amended, particularly Section 1424(e) (42 U.S.C. §§ 300h-303(e)), which is intended to protect underground sources of water. No commitment for federal financial assistance can be entered into for any project which the U.S. Environmental Protection Agency (“EPA”) determines may contaminate an aquifer which is the sole or principal drinking water source for an area (40 CFR 149); and
  - c. The Federal Water Pollution Control Act of 1972, as amended, including the Clean Water Act of 1977, Public Law 92-212 (33 U.S.C. §1251, et seq.) which provides for the restoration and maintenance of the chemical, physical and biological integrity of the nation’s water.
4. Endangered Species Act of 1973 (16 U.S.C. §1531 et seq.), as amended, particularly section 7 (16 U.S.C. §1536);
5. The Fish and Wildlife Coordination Act of 1958, as amended;
6. Wild and Scenic Rivers Act of 1968 (16 U.S.C. § 1271 et seq.), particularly sections 7(b) and (c) (16 U.S.C. §1278(b) and (c));
7. Executive Order 11738 (Nixon), Sept. 10, 1973, providing for administration of the Clean Air Act and the Federal Water Pollution Control Act With Respect to Federal Contracts, Grants, or Loans, and EPA regulations (40 CFR 15);
8. The Clean Air Act of 1970 (42 U.S.C. § 7401 et seq.) as amended, particularly sections 176(c) and (d) (42 U.S.C. § 7506(c) and (d)), and 40 CFR 6, 51, 93, which prohibits engaging in, supporting in any way, providing financial assistance for, licensing or permitting, or approving any activity which does not conform to State or Federal implementation plans for national primary and secondary ambient air quality standards.
9. The Farmland Protection Policy Act of 1981, 7 U.S.C.A. §4201 et seq., particularly sections 1540(b) and 1541 (7 U.S.C. §4201(b) and §4202), and Farmland Protection Policy, 7 CFR 658, which require recipients of federal assistance to minimize the extent to which their projects contribute to the unnecessary and irreversible commitment of farmland to nonagricultural uses;
10. Noise abatement and control requirements at 24 CFR 51B;
11. Explosive and flammable operations requirements at 24 CFR 51C;
12. Requirements at 24 CFR 58.5(i) relating to toxic chemicals and radioactive materials;
13. Environmental Justice, Executive Order 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994 (59 FR 7629), 3 CFR, 1994 Comp. p. 859.

## **J. EQUAL EMPLOYMENT OPPORTUNITY**

1. All federally assisted construction contracts must include the equal opportunity clause provided under 41 CFR §60-1.4(b). Federally assisted construction contracts include any agreement or

modification thereof between any applicant and a person for construction work which is paid for in whole or in part with funds obtained from the federal government. Construction work is defined as “the construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.” 41 CFR §60-1.3.

**2. Pursuant to 41 CFR §60-1.4(b), the following language shall be included in all federally assisted construction contracts and subcontracts:**

*During the performance of this contract, the contractor agrees as follows:*

*(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action 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 setting forth the provisions of this nondiscrimination clause.*

*(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.*

*(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.*

*(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representatives of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.*

*(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.*

*(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or*

*pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.*

*(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.*

*(8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.*

## ATTACHMENT “B”

### ATTACHMENT TO STATEMENT OF ASSURANCES, SECTION 3 REQUIREMENTS AND CERTIFICATIONS

To the extent that Contractor utilizes any subcontractors, Contractor shall require and ensure that each subcontractor comply with all *applicable* federal CDBG-DR laws, guidelines and standards as well as codes, regulations and workers’ safety rules that are administered by federal agencies (EPA, OSHA, and DOT), state agencies (state OSHA and DEP), and any other local regulations and standards (i.e. building codes) that may apply.

#### A. SECTION 3 REQUIREMENTS

##### 1. Definitions:

Low-Income: Low-income is used in the Section 3 regulation to include both low- and very low-income individuals. Low-income is defined as 80% or below the median income of that area. Very low-income is defined as 50% or below the median income of that area. Local income levels can be obtained online at: <http://www.huduser.org/DATASETS/il.html>.

New Hire: Full-time employee for a new permanent, temporary, or seasonal position that is created during the expenditure of Section 3 covered financial assistance.

Section 3: Section 3 is a provision of the Housing and Urban Development Act of 1968, which recognizes that HUD funds are typically one of the largest sources of federal funding expended in communities through the form of grants, loans, entitlement allocations and other forms of financial assistance. Section 3 is intended to ensure that when employment or contracting opportunities are generated because a covered project or activity necessitates the employment of additional persons or the awarding of contracts for work, preference must be given to low- and very low-income persons or business concerns residing in the community where the project is located. Section 3 is both race and gender neutral. The preferences provided under this regulation are based on income level and location.

Section 3 Business Concern: Businesses that can provide evidence that they meet one of the following: 1) Business is owned by a Section 3 resident; or 2) 51 percent or more owned by Section 3 residents; or 3) at least 30 percent of its full time employees include persons that are currently Section 3 residents, or within three years of the date of first employment with the business concern were Section 3 residents; or 4) provides evidence, as required, of a commitment to subcontract in excess of 25 percent of the dollar award of all subcontracts to be awarded to businesses that meet the qualifications above.

Section 3 Resident: A “Section 3 resident” is: 1) a public housing resident; or 2) a low- or very low-income person residing in the metropolitan area or Non-metropolitan County in which the Section 3 covered assistance is expended.

##### 2. NJ DCA Sandy Recovery Division (SRD)

- a. The successful bidder shall provide a Section 3 Utilization Plan (see attached Section 3 Plan Template) prior to contract award. The Section 3 Plan must include specific information regarding the following:
  - i. Identification of the Project Area;
  - ii. Identification of past experience with Section 3 and whether goals have been met;
  - iii. Specific information about the contractor's current workforce (payroll reports, etc.);
  - iv. Specific plans for hiring Section 3 eligible residents;
  - v. Specific plan for engaging Section 3 designated businesses and, if applicable, each HUD Section 3 certified business that will participate in the contract;
  - vi. A description of work each named Section 3 Business will perform with the dollar amount of participation;
  - vii. A signed Statement of Section 3 Utilization Commitment regarding Section 3 requirements;
  - viii. A firm commitment to include the HUD Section 3 Clause in all sub-contracts; and
  - ix. A firm commitment to conduct aggressive outreach and notification to potential Section 3 residents and businesses of hiring opportunities using site signage, flyers, etc.
- b. Contractor shall perform outreach with outside organizations to identify workforce development opportunities and to facilitate the hiring of Section 3 Residents and Section 3 Businesses. See sample forms provided.
  - i. Targeted Outreach Organizations include Public Housing Authorities in impacted areas, New Jersey One Stop Career Centers, Urban League, NAACP, Hispanic Chamber of Commerce, Small Business Administration (SBA) Development Centers.
  - ii. To find Section 3 residents, New Jersey has NJ One Stop Career Centers throughout the state, which are available to assist in posting available jobs and finding qualified individuals. Their job posting website is: <http://jobs4jersey.com>. These centers have the ability to post job openings to their website and send out e-mails to qualified individuals.
  - iii. To find Section 3 businesses, HUD has a Section 3 Business Registry. Qualified Section 3 businesses can be found at <https://portalapps.hud.gov/Sec3BusReg/BRegistry/BRegistryHome>. Section 3 eligible business concerns have the ability to "self-certify" on the HUD Registry. In addition, Section 3 eligible business concerns can register with



their local housing authority as a Section 3 business and obtain certification. Note that at any time NJ DCA-SRD can request proof and documentation of eligibility from the Section 3 business concern.

- c. Contractor and all sub-contractors must submit documentation demonstrating their efforts to reach the Section 3 contracting, hiring, and training goals using appropriate forms that identify their efforts. See sample forms provided.
- d. Contractor and all sub-contractors must submit with each invoice the Contractor Information Form and Section 3 Resident Certification Form, identifying new employees.
- e. Contractor and all sub-contractors must submit with each invoice the Contractor Information Form and Section 3 Business Concern Certification Form, identifying subcontractors.
- f. NJ DCA-SRD has designated a Section 3 Coordinator to ensure businesses are in compliance with HUD and NJ DCA-SRD's Section 3 guidelines. The Section 3 Coordinator will be responsible for overseeing the implementation of all Section 3 Utilization Plans approved by Subrecipients and that such plans are an official part of the contract. The Section 3 coordinator is available to answer questions from the Subrecipients.

**CONTRACTORS CERTIFICATION OF ELIGIBILITY**

To be submitted prior to award of contract

The bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the contractor's firm, nor any of the contractor's subcontractors, is ineligible to:

- (1) Be awarded contracts by any agency of the United States Government of HUD; or,
- (2) Participate in HUD programs pursuant to 24 CFR part 24.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address

By:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Date

**CERTIFICATION OF BIDDER REGARDING SECTION 3**

To be submitted prior to award of contract

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Project Number

The undersigned hereby certifies that:

1. Section 3 provisions are included in the Contract.
2. A written Section 3 plan in compliance with the Section 3 Plan Format and Utilization Plan Template (Attachments B and C hereto) will be prepared and submitted prior to the award of the contract (if bid equals or exceeds \$100,000).

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

### **SUCCESSFUL BIDDER SECTION 3 PLAN FORMAT**

To be submitted prior to award of contract

If award is received, \_\_\_\_\_ (name of Bidder) agrees to implement the following specific affirmative action steps directed at increasing the utilization of lower income residents and businesses within the City of Pleasantville.

1. To ascertain from the locality's CDBG program official the exact boundaries of the Section 3 covered project area, and where advantageous, seek the assistance of local officials in preparing and implementing the affirmative action plan.
2. To attempt to recruit from within the municipalities the necessary number of lower income residents through local advertising media, signs placed at the proposed site for the project, and community organizations, and public or private institutions operating within or serving the project area, such as Service Employment and Redevelopment (SER), Opportunities Industrialization Center (OIC), Urban League, Concentrated Employment Program, Hometown Plan, or the U.S. Employment Service.
3. To maintain a list of all lower income area residents who have applied either on their own or on referral from any source, and to employ such persons, if otherwise eligible and if a vacancy exists.
4. To insert the Section 3 Contract Provisions clause in all subcontracts over \$100,000, to obtain all forms from said subcontractors, and to obtain all required documentation. (Loans, grants, contracts, and subsidies for less than \$100,000 will be exempt.)
5. To contact unions, subcontractors, and trade associations to secure their cooperation for this program.
6. To ensure that all appropriate project area business concerns are notified of pending sub contractual opportunities.
7. To maintain records, including copies of correspondence, memoranda, etc., which document that all of the above affirmative action steps have been taken.
8. To appoint or recruit an executive official of the company or agency as Equal Opportunity Officer to coordinate the implementation of this Section 3 plan.
9. To list information related to proposed subcontracts to be awarded to Section 3 businesses.
10. To list all projected workforce needs for all phases of this project by occupation, trade, skill level, and number of positions.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Date

**CERTIFICATION OF PROPOSED SUBCONTRACTOR REGARDING SECTION 3**

To be submitted prior to award of contract

\_\_\_\_\_  
Name of Subcontractor

\_\_\_\_\_  
Project Name and Number

The undersigned hereby certifies that:

1. Section 3 provisions are included in the Contract.
2. A written Section 3 plan in compliance with the Section 3 Plan Format and Utilization Plan Template (Attachments B and C hereto) will be prepared and submitted prior to the award of the contract (if the subcontract equals or exceeds \$100,000).

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## ATTACHMENT “C”

# Section 3 Utilization Plan Template

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## **SECTION 3 PLAN**

This document serves as the Section 3 Plan for \_\_\_\_\_ (insert Project Name) in compliance with the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended.

The purpose of Section 3 of the Housing and Urban Development Act of 1968, as amended (12 U.S.C. 1701u) (Section 3), is to ensure that training, employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State and Local laws and regulations, be directed to the greatest extent possible to low- and very low-income persons, particularly those who are recipients of government assistance for housing, and to business concerns, which provide economic opportunities to low- and very low-income persons.

## **NUMERICAL GOALS FOR TRAINING AND EMPLOYMENT OPPORTUNITIES**

\_\_\_\_\_ (insert Bidder's name) will, to the greatest extent feasible, when awarding contracts or providing training and/or employment opportunities for activities or projects subject to the requirements of Section 3, strive to comply with the goals established in this section.

The numerical goals established in this section represent minimum numerical targets.

Training and employment opportunities will be made available to Section 3 residents as follows:

- (i) 30 percent of the aggregate number of new hires/training opportunities resulting from funds awarded.

## **PREFERENCE FOR SECTION 3 RESIDENTS IN TRAINING AND EMPLOYMENT OPPORTUNITIES**

In providing training and employment opportunities, generated from the expenditure of Section 3 activities to Section 3 residents, the following order of preference will be followed:

***Highest Priority:*** Low- and very-low income residents certified as Section 3 eligible residing in the services area or municipality where the project is located.

***Second Priority:*** Section 3 residents of the County in which the project is taking place.

***Third Priority:*** Participants of public and social service programs.

***Third Priority:*** Other Public Housing residents.

***Fourth Priority:*** Participants in Youth build programs.

***Fifth Priority:*** Other Section 3 residents, including residents of the Metropolitan area or non-Metropolitan county.

**LIST OF STRATEGIES TO BE ADOPTED FOR COMPLIANCE WITH THE STATED EMPLOYMENT, TRAINING AND CONTRACTING GOALS**

In compliance with the Section 3 Plan requirements, the Bidder must submit specific information about their current workforce (payroll reports, etc.) as of the date the Section 3 Plan is submitted for approval along with anticipated new hires. A list of employees can be submitted on the Existing Worker Utilization Report Form or an official company form that includes the same information requested on the Existing Worker Utilization Report Form.

The Bidder must also develop a list of strategies to be adopted for compliance with the stated employment, training and contracting goals.

Contracts in excess of \$100,000 must include the Section 3 Clause.



## PLAN FOR SECTION 3 TRAINING AND EMPLOYMENT

Name of Bidder: \_\_\_\_\_

Project Name: \_\_\_\_\_

Job Category	Total Estimated Positions Needed for Project	Number of Positions Occupied by Permanent Employees	Number of Positions to be filled with Section 3 Residents

## EXISTING WORKER UTILIZATION REPORT FORM

**Name of Bidder:** \_\_\_\_\_

**Project Name:** \_\_\_\_\_

[illegible]

### **NUMERICAL GOALS FOR CONTRACTING ACTIVITIES:**

These goals apply to contract awards in excess of \$100,000 in connection with a Section 3 eligible project, and it applies to contractors, subcontractors, developers, and/or sub-recipients.

\_\_\_\_\_ (insert Bidder's name) commits to award to Section 3 business concerns:

1. At least 10 percent of the total dollar amount of all Section 3 covered construction contracts.
2. At least 3 percent of the total dollar amount of all other Section 3 covered contracts.

### **PREFERENCE FOR SECTION 3 BUSINESS CONCERNS**

The following order of preference will be followed when providing contracting opportunities to Section 3 businesses:

***Highest Priority:*** Section 3 business concerns that provide economic opportunities for Section 3 residents in the service area or municipality in which the Section 3 covered project is located.

***Second Priority:*** Participants of public and social service programs.

***Third Priority:*** Other Section 3 residents.

**PLAN FOR SECTION 3 SUB-CONTRACTING**

**Name of Bidder:** \_\_\_\_\_

**Project Name:** \_\_\_\_\_

Total Contract Bid Value (\$)	Number of Sub-Contracts	Total Subcontracts Dollar Value (\$)	Total Section 3 Subcontracts Dollar Value (\$)	Section 3	
				Percent Proposed	Percent Required
					10

### STATEMENT OF SECTION 3 UTILIZATION COMMITMENT

In compliance with the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, I the undersigned certify that I am fully empowered to enter into this Statement of Section 3 Utilization Commitment on behalf of this company I am certifying that the information contained within this Section 3 Utilization Plan is accurate and correct and that I understand that the NJ DPMC may impose penalties and sanctions for the submission of any false and inaccurate statements within this document.

---

Bidder Authorized Representative

---

Signature of Authorized Representative

---

Title

---

Bidder Section 3 Coordinator  
*(Leave blank if the same as authorized representative)*

---

E-mail Address

---

Phone

---

Bidder Name

---

Bidder Complete Address

## SECTION 3 CLAUSE

All contracts subject to the Section 3 requirements will include the following clause:

- A. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.
- C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.
- D. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.
- E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.
- F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.
- G. With respect to work performed in connection with Section 3 covered Indian housing assistance, Section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of Section 3 and Section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with Section 7(b).



## State of New Jersey

PHILIP D. MURPHY  
*Governor*

DEPARTMENT OF TREASURY  
DIVISION OF PROPERTY MANAGEMENT & CONSTRUCTION  
P O BOX 034  
TRENTON NJ 08625-0034

ELIZABETH MAHER MUOIO  
*State Treasurer*

SHEILA Y. OLIVER  
*Lt. Governor*

CHRISTOPHER CHIANESE  
*Director*

June 1, 2020

### **To All Contractors and Project Personnel on DPMC Construction Projects:**

All businesses engaged in construction projects in the State, whether or not the projects were designated as essential under Executive Order No. 122 (2020), must adopt policies that include, at minimum, the following requirements **as per Executive Order No 142 (2020) which supersedes the policies and procedures included in EO 122:**

#### **These policies and procedures are as follows:**

- a. Prohibit non-essential visitors from entering the worksite;
- b. Engage in appropriate social distancing measures when picking up or delivering equipment or materials;
- c. Limit worksite meetings, inductions, and workgroups to groups of fewer than 10 individuals;
- d. Require individuals to maintain six feet or more distance between them wherever possible;
- e. Stagger work start and stop times where practicable to limit the number of individuals entering and leaving the worksite concurrently;
- f. Identify congested and "high-risk areas," including but not limited to lunchrooms, breakrooms, portable rest rooms, and elevators, and limit the number of individuals at those sites concurrently where practicable;
- g. Stagger lunch breaks and work times where practicable to enable operations to safely continue while utilizing the least number of individuals possible at the site;
- h. Require workers and visitors to wear cloth face coverings, in accordance with CDC recommendations, while on the premises, except where doing so would inhibit the individual's health or the individual is under two years of age, and require workers to wear gloves while on the premises. Businesses must provide, at their expense, such face coverings and gloves for their employees. If a visitor refuses to wear a cloth face covering for non-medical reasons and if such covering cannot be provided to the individual by the business at the point of entry, then the business must decline entry to the individual. Nothing in the stated policy should prevent workers or visitors from wearing a surgical-grade mask or other more protective face covering if the individual is already in possession of such equipment, or if the businesses is otherwise required to provide such worker with more protective equipment due to the nature of the work

involved. Where an individual declines to wear a face covering on the premises due to a medical condition that inhibits such usage, neither the business nor its staff shall require the individual to produce medical documentation verifying the stated condition;

- i. Require infection control practices, such as regular hand washing, coughing and sneezing etiquette, and proper tissue usage and disposal;
- j. Limit sharing of tools, equipment, and machinery;
- k. Where running water is not available, provide portable washing stations with soap and/or alcohol-based hand sanitizers that have greater than 60% ethanol or 70% isopropanol;
- l. Require frequent sanitization of high-touch areas like restrooms, breakrooms, equipment, and machinery;
- m. When the worksite is an occupied residence, require workers to sanitize work areas and keep a distance of at least six feet from the occupants; and
- n. Place conspicuous signage at entrances and throughout the worksite detailing the above mandates.

**Additionally, Contractors and Project Personnel on DPMC construction projects must continue to:**

- a. Immediately separate and send home workers who appear to have symptoms consistent with COVID-19 illness upon arrival at work or who become sick during the day;
- b. Promptly notify workers of any known exposure to COVID-19 at the worksite, consistent with the confidentiality requirements of the Americans with Disabilities Act and any other applicable laws;
- c. Clean and disinfect the worksite in accordance with CDC guidelines when a worker at the site has been diagnosed with COVID-19 illness; and
- d. Continue to follow guidelines and directives issued by the New Jersey Department of Health, the CDC and the Occupational Health and Safety Administration, as applicable, for maintaining a clean, safe and healthy work environment.

**Consequently, the protections and policies outlined in Executive Order 142 and 122 for essential construction projects take effect immediately for all DPMC projects.**

These protections and policies shall remain in effect until revoked or modified by the Governor, who shall consult with the Commissioner of DOH as appropriate; or as amended or clarified by the State Director of Emergency Management.

Respectfully,



Richard Flodmand  
Deputy Director, Contract Administration  
Division of Property Management  
and Construction



**PROGRAMMATIC AGREEMENT**  
**Among**  
**The New Jersey Department of Community Affairs (NJDCA)**  
**The Advisory Council on Historic Preservation (ACHP)**  
**and**  
**The New Jersey Historic Preservation Office (NJHPO)**  
**Regarding**  
**The Rebuild by Design-Hudson River (RBD-HR) Project in**  
**Hudson County, New Jersey**

**WHEREAS**, United States Department of Housing and Urban Development (HUD) launched the Rebuild by Design (RBD) competition in 2013, inviting interdisciplinary design teams to craft pioneering resiliency solutions to address needs for flood risk reduction within the Hurricane Sandy-affected region; and

**WHEREAS**, from the RBD competition, HUD selected and awarded the State of New Jersey \$230 million of Community Development Block Grant – Disaster Recovery (CDBG-DR) funds for the implementation of the first phase of the Rebuild by Design-Hudson River (RBD-HR) Project that would provide resiliency and flood protection to the City of Hoboken, and portions of the cities of Weehawken and Jersey City, in association with future coastal storms and severe weather events; and

**WHEREAS**, the New Jersey Hurricane Sandy Programmatic Agreement (Agreement) was executed on April 30, 2013 and the Amendment to the Agreement (Amended Agreement) was executed on May 1, 2015. In addition to Disaster Declaration, the Amended Agreement covers FEMA Hurricane Sandy (DR-4086-NJ) non- disaster grant program reviews; and

**WHEREAS**, given the scope and scale of the Rebuild by Design-Hudson River (RBD-HR) Project, it was determined that the existing Amended Agreement does not adequately address potential effects to historic properties associated with the Project. Therefore, following Stipulation II.C.7.c of the Amended Agreement, this Programmatic Agreement (PA) has been developed in accordance with 36 CFR § 800.14(b) to identify programmatic conditions or treatments to govern the resolution of potential or anticipated adverse effects from certain complex project situations for the RBD-HR Project (Undertaking); and

**WHEREAS**, RBD-HR consists of a comprehensive urban water strategy for the Hoboken, Jersey City and Weehawken area and includes hard infrastructure and soft landscape for coastal defense (Resist), policy recommendations, guidelines and urban infrastructure to slow storm water runoff (Delay), green and grey infrastructure improvements to allow for greater storage of excess rainwater (Store), and water pumps and alternative routes to support drainage (Discharge); and

**WHEREAS**, the \$230 million grant was for the implementation of the first phase of the RBD-HR Project which includes the environmental impact analysis of the overall comprehensive master plan for the entire project (the Resist and Delay, Store, Discharge (DSD) components) and funding for the construction of the Resist components. The DSD elements would be implemented separately by the City of Hoboken or other partners as funding becomes available; and

**WHEREAS**, the New Jersey Department of Community Affairs (NJDCA) has assumed the role of Responsible Entity on behalf of the U.S. Department of Housing and Urban Development (HUD) and is responsible for environmental review, decision-making and action that would apply to HUD pursuant to 24 CFR § 58, and NJDCA has assumed the role to administer the Sandy Community Development Block Grant-Disaster Recovery (CDBG-DR) funds pursuant to the Disaster Relief Appropriations Act of 2013 (Public Law 113-2, January 29, 2013); and

**WHEREAS**, the New Jersey Department of Environmental Protection (NJDEP) is assisting NJDCA with compliance under the National Environmental Policy Act (NEPA, codified as 42 USC 4321 et seq.), and is coordinating NJDCA's compliance with Section 106 of the National Historic Preservation Act (54 USC § 306108 and herein "Section 106"); and

**WHEREAS**, NJDEP has been designated to assist NJDCA in execution of this Programmatic Agreement and therefore has been designated an Invited Signatory, and

**WHEREAS**, the NJDEP Rebuild By Design team, referred to herein as NJDEP, will be overseeing the compliance under Section 106 and the design and construction for the Project, and

**WHEREAS**, the New Jersey Historic Preservation Office (NJHPO) is the regulatory agency overseeing compliance with Section 106; and

**WHEREAS**, NJDCA has authorized NJDEP to initiate consultation under Section 106, and,

**WHEREAS**, pursuant to Section 106 regulations, NJDEP, in consultation with NJHPO, identified Archaeological and Historic Architectural Areas of Potential Effects (APE) for RBD-HR (Exhibit A), and determined that the APEs will be the areas where potential effects on Historic Properties caused by RBD-HR may occur; and

**WHEREAS**, the Draft Environmental Impact Statement (DEIS) was published on February 24, 2017 for public comment. The DEIS provides the environmental impact analysis of three Build Alternatives as well as a No Action Alternative for the Resist alignment. The DSD components are the same for each Build alternative and are also included in the overall impact analysis; and

**WHEREAS**, the DEIS includes a detailed project description at the project-level and describes environmental impacts, including indirect and cumulative environmental impacts. A range of reasonable alternatives (Build Alternatives 1, 2 and 3) was evaluated in the DEIS. Alternative 3 was selected as the Preferred Alternative in consideration of environmental, technical and other factors; and

**WHEREAS**, the Preferred Alternative (i.e., Alternative 3) consists of a Resist alignment that includes termination points located upland and includes the use of an alleyway between Garden Street and Washington Street in the City of Hoboken. The southern portion of the Resist alignment extends along and within the north side of the Hoboken Terminal rail yard before extending westward along the rail embankment; and

**WHEREAS**, NJDEP has demonstrated coordinated compliance with Section 106 and NEPA, pursuant to 36 CFR § 800.8, through the preparation of a Cultural Resources Technical Environmental Study submitted to NJHPO in September 2016 and developed cultural resource specific recommendations for inclusion within the Project's Final Environmental Impact Statement (FEIS) for RBD-HR so that Section 106 recommendations were considered during the analysis of alternatives as part of the NEPA EIS process as well as consultation with NJHPO for participation in the Section 106 process; and

**WHEREAS**, through the process conducted in preparing the FEIS, NJDEP has determined that RBD-HR may have an effect on historic properties under Section 106. Historic properties may include any prehistoric or historic district, site, building, structure, or any object listed in or eligible for listing in the National Register of Historic Places (NRHP), herein Historic Properties or Historic Properties Criteria; and

**WHEREAS**, as documented in the FEIS, NJDEP, in consultation with NJHPO pursuant to 36 CFR Part 800, identified 27 Historic Properties (Standing Structures) (see Exhibits B & C) to date in the RBD-HR APE, which are listed in or eligible for listing in the National Register of Historic Places; and

**WHEREAS**, as documented in the FEIS and in consultation with NJHPO, NJDEP identified areas with the potential to contain Archaeological Resources in the RBD-HR Archaeological APE, and identified

archaeologically sensitive areas in which construction might occur. These properties are described in Chapter 4 of the FEIS (see Exhibits D and E); and

**WHEREAS**, the proposed design of DSD will be confined entirely below ground and will therefore have no visual effect to above ground historic properties; and

**WHEREAS**, in accordance with 36 CFR § 800.6(a)(1), the NJDEP has invited the ACHP to participate in the Section 106 process to develop the RBD-HR PA; and on February 8, 2017 the ACHP accepted; and

**WHEREAS**, the NJDEP has invited the Cities of Hoboken, Weehawken and Jersey City to participate in the Section 106 process for RBD-HR, in which the City of Hoboken accepted; the City of Hoboken will serve as an Invited Signatory(following 36 CFR 800.6(c)(3)) to this PA; and

**WHEREAS**, NJDEP conducted a reasonable and good faith effort to invite the appropriate Native American tribes and groups (the “Tribes”) to participate in the Section 106 process on August 19, 2016 by way of identifying the Tribes and delivering letters of invitation to such Tribes that could attach religious or cultural significance to sites within the RBD-HR APE, and upon which RBD-HR could have an effect; and extended letters of invitation to the Tribes to participate in the development of the RBD-HR PA on January 5, 2017 (see Exhibit F); and

**WHEREAS**, the Delaware Nation does not wish to participate as a consulting party; and

**WHEREAS**, the Shawnee Tribe indicated on February 7, 2016 that they wish to participate in the development of the Project’s PA, and the NJDCA has invited the Shawnee Tribe to comment on the RBD-HR PA and the Shawnee Tribe will participate as an Invited Signatory (following 36 CFR 800.6(c)(2)) to this PA; and

**WHEREAS**, the Stockbridge-Munsee Mohican Tribe indicated on July 19, 2017 that they do not wish to participate as a consulting party to the PA but will review, as applicable, archaeological reports related to the implementation of this Project; and

**WHEREAS**, the City of Hoboken may construct DSD elements of this Project; and

**WHEREAS**, NJDCA, ACHP, NJHPO, the Shawnee Tribe, the City of Hoboken and the NJDEP are hereinafter defined as the PA Signatories; and

**WHEREAS**, the Federal Transit Administration (FTA) has been invited to participate in the development of this PA and on February 1, 2017 declined to participate in the RBD-HR PA; and

**WHEREAS**, this PA was developed with appropriate public participation during the NEPA public comment period pursuant to Subpart A of Section 106 Regulations, and copy of this PA was included in and distributed with the FEIS, published June 16, 2017. The public shall be duly notified as to the execution and effective dates of this PA through the issuance of the FEIS Record of Decision for RBD-HR; and

**WHEREAS**, it is possible that as the Project evolves or as a result of the addition of new Project elements beyond the boundaries of the current APEs, NJDEP, in consultation with NJHPO, may identify additional, previously unidentified Historic Properties or archaeologically sensitive areas, which may be affected by the Project; and

**NOW, THEREFORE**, NJDCA, ACHP, and NJHPO as signatories, the Shawnee Tribe, the City of Hoboken and the NJDEP as invited signatories, agree the RBD-HR PA shall be implemented in accordance with the following stipulations to ensure that potential effects on Historic Properties are taken into account.

## STIPULATIONS

**NJDCA, in coordination with NJDEP, will ensure that the following measures are carried out:**

### **I. IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES**

- A. NJDEP will complete the identification of historic properties (36 CFR 800.4) and assessment of adverse effects (36 CFR 800.5), during the design stage of the Undertaking. Avoidance of adverse effects to identified historic properties is the preferred approach and will incorporate all practicable measures to avoid, minimize or mitigate adverse effects. If avoidance is not possible and an adverse effect will result, then NJDEP will resolve those adverse effects as set forth under 36 CFR 800.6., NJDEP will designate a Cultural Resource Monitor (CRM) with specific responsibilities to coordinate the requirements of this project-specific agreement as the liaison for NJDEP amongst the PA Signatories.
- B. The CRM will be a qualified professional who meets the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61). NJDEP shall ensure that consultants retained for services pursuant to the PA meet these standards.
  - 1. A "qualified professional" is a person who meets the relevant standards outlined in the Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines [As Amended and Annotated] ([http://www.nps.gov/history/local-law/arch\\_stnds\\_9.htm](http://www.nps.gov/history/local-law/arch_stnds_9.htm)).
    - a. Archaeology, 36 CFR 61.8, Appendix A(b)
    - b. Architectural history, 36 CFR 61.8, Appendix A(c)
  - 2. Any changes in the consultants will be reported to the NJHPO before the hiring process is completed.
- C. Oversight for implementation of this PA will be provided by NJDEP, to whom the CRM reports. The following will be the responsibility of the CRM:
  - 1. The CRM will act as the liaison and work cooperatively with NJDEP and its contractors throughout the design and construction phases of the Undertaking.
  - 2. The CRM will assist the design contractor regarding the design as it relates to those historic properties identified in Exhibits B, C, D and E. In addition, the availability of new data and access to previously inaccessible areas may result in information associated with undetermined historic properties. If known or undetermined historic properties may be affected, NJDEP will follow the steps outlined in Stipulation IV.A.
  - 3. The CRM will review design plans and specifications in addition to NJHPO when design reaches 30, 65 and 95% outlined in Stipulation I.F.
  - 4. The construction contractor will hold as-needed construction field review meetings with the CRM to review ongoing construction. If construction activities deviate from final design plans or if effects to historic properties are observed, the CRM will notify NJDEP of the situation and provide a report via electronic mail describing the location of the affected historic property and how construction has affected the historic property. NJDEP will notify the other PA Signatories immediately of the deviation or observed effect and consult with NJHPO.
  - 5. The CRM will participate in the resolution of any objections or disputes received during the review of identification and evaluation documents, plans, and implementation of other stipulations in the executed PA.
- D. Archaeological Resources Identification

1. Where possible, NJDEP shall avoid affecting areas of archaeological potential listed in Exhibits D & E.
2. NJDEP will initiate and complete archaeological field analysis and data recovery (depending on site access and testing feasibility) by conducting a Phase 1B and Phase II Archaeological Survey prior to RBD-HR construction activities.
3. All phases of the archaeological survey and reporting shall be in keeping with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*.
4. Survey efforts shall follow *Requirements for Phase I Archaeological Survey* (N.J.A.C. 7:4-8.4).
5. Reports of archaeological survey results shall conform to the *Requirements for Archaeological Survey Reports – Standards for Report Sufficiency* (N.J.A.C. 7:4-8.5).
6. Evaluations to determine the National Register eligibility of historic properties must be in keeping with the National Park Service's 1999 National Register Bulletin, *How to Apply the National Register Criteria for Evaluation*, as well as the 2000 National Register Bulletin, *Guidelines for Evaluating and Registering Archeological Properties*.
7. In advance of construction, a Soil Boring Program shall be established in consultation with the PA Signatories for areas identified as archaeologically sensitive coincident with proposed construction in the Project's archaeological APE (Exhibit E).
  - a. The results of the soil boring program may be used to further refine the areas of archaeological potential.
8. Following consultation amongst the PA Signatories and receipt of comments for sites where archaeological potential has been confirmed to exist by the Soil Boring Program, NJDEP shall develop a Field Testing Plan (Phase IB Archaeological Testing).
  - a. The CRM will develop the Field Testing Plan outlining the proposed archaeological field testing methodology to complete any required subsurface survey to identify the presence or absence of archaeological sites within the identified areas of archaeological potential (Exhibits D & E).
  - b. The field testing plan will also include steps (Phase II Site Evaluation) to evaluate the NRHP eligibility of an archaeological site identified during Phase IB field testing.
  - c. The Field Testing Plan shall be submitted to PA Signatories for a review and comment period of 15 business days.
  - d. Upon receipt of comments on the Field Testing Plan, the CRM on behalf of NJDEP will implement the approved Field Testing Plan. For all field tested sites, NJDEP shall provide a summary report to the other PA Signatories to reach one of the following conclusions:
    - i) No archaeological sites were identified by the Field Testing Plan.
    - ii) The archaeological site does not meet NRHP-eligibility Criteria; in which case no further action is required.
    - iii) The site does meet the NRHP-eligibility Criteria, in which case the application of the criteria of adverse effects will follow in accordance with Stipulation II.A.
  - e. The CRM will provide a summary report of the Field Testing Plan's activities and results following Stipulation I.D.4.
  - f. The report will be submitted to the PA Signatories for a review and comment period of 15 business days.

9. Additional Areas outside the Archaeological APE

- a. Prior to construction, the CRM will have reviewed the design plans at 30, 65 and 95% completeness to determine if there are areas outside the archaeological APE that require assessment for archaeological potential
- b. If areas outside the assessed APE are determined to possess archaeological potential, then NJDEP will conduct subsurface investigations following Stipulation I.D.8 to make NRHP-eligibility determinations and assess effects for those project locations not currently identified in Exhibit E.

E. Historic Buildings and Districts

1. As presently conceived (i.e., on the effective date of this Agreement), the Project does not have the potential to directly impact the Erie-Lackawanna Terminal, Stevens Historic District, Holbrook Manufacturing Company, North (Hudson) River Tunnels, Pennsylvania Railroad New York to Philadelphia Historic District.
2. The Project will cause direct effects associated with proposed design to the Hoboken Historic District; the Old Main Delaware, Lackawanna and Western Railroad (DLWRR) Historic District; and, Grove Street Bridge.
3. The Project may cause indirect effects associated with vibration and construction noise or visual effects from the construction of the Resist barrier to the 501 Adams Street (Public School No. 3); Church of the Holy Innocents; Church of Our Lady of Grace; Engine Company #2 Firehouse; Engine Company No. 3, Truck No. 2 Firehouse; Ferguson Brothers Manufacturing Company; Hoboken Historic District; Hoboken Land and Improvement Company Building; Hoboken-North Hudson YMCA; Keuffel and Esser Manufacturing Complex; Machine Shop (Bethlehem Steel Corp. Shipyard); Old Main Delaware, Lackawanna and Western Railroad Historic District; Public School No. 7; Hudson and Manhattan Railroad Transit System (PATH); Grove Street Bridge; R. Neumann & Co. Complex; 509 Madison Street; Factory Terminal Loft Buildings (Standard Brands & Lipton Tea Plant); Hoboken High School; John Schmalz's Sons Model Bakery; and, R.B. Davis Company Manufacturing Complex.
4. The DSD components will not result in visual effects to historic buildings or districts. The implementation of the Historic Resource Construction Protection Plan (HRCPP) as described in Stipulation III.B.2.b will meet the conditional no adverse effect determination for vibratory impacts from DSD.
5. Additional Historic Building and District Identification
  - a. Future refinements to the project design may result in the need for evaluation of NRHP eligibility for previously undetermined historic properties (which may include, but are not limited to, those properties listed in Exhibit B). NJDEP, will consult with the other PA Signatories and evaluate the historic properties to determine if they meet NRHP criteria; NJHPO will review the eligibility determination recommendations. In the event of the identification of historic properties during construction of the Project, NJDEP will follow the steps outlined in Stipulation IV.
  - b. PA Signatories will have 15 business days for review and comment on the eligibility determination.
  - c. If the NJDEP and the NJHPO do not agree on whether the criteria are met, the eligibility of the property will be resolved in accordance with Stipulation VIII.B.8.
  - d. Any such property will be treated as eligible while it is under review by NJDEP and the

NJHPO, and potential effects to the property will be evaluated following 36 CFR 800.5

- F. Design Specifications will be submitted by the NJDEP to the NJHPO for review and comment. The NJHPO will be afforded a 15 business day review period for all design submittals following Stipulation VI.A.
  - 1. Design reaches 30 percent, the CRM will review all available plans and specifications and determine if the design might affect historic properties listed in Exhibits B, C, D and E.
  - 2. Design reaches 65 percent, the CRM will review all available plans and specifications and determine if the design might affect historic properties listed in Exhibits B, C, D and E.
  - 3. Design reaches 95 percent, the CRM will review all available plans and specifications and determine if the design might affect historic properties listed in Exhibits B, C, D and E.
- G. All design enhancements and/or aesthetic treatments that may affect historic properties will be subject to review and comment by the NJHPO.
- H. The availability of new data and access to previously inaccessible areas may result in information associated with undetermined historic properties. If historic properties with undetermined eligibility may be affected, NJDEP will follow the steps outlined in Stipulation I.E.4 while post-review discoveries will be treated following Stipulation IV.
- I. NJDEP will ensure that contractors involved with the implementation of all phases of the undertaking are aware of and comply with the requirements of the RBD-HR PA. NJDEP will provide the construction contractor with training on the identification of historic properties specific to the RBD-HR PA.

## **II. ASSESSMENT OF ADVERSE EFFECTS**

- A. Archaeological Resources
  - 1. For archaeological sites identified by Stipulation I.D.8 and determined to meet NRHP eligibility criteria, the CRM will apply the criteria of adverse effects (36 CFR 800.5.a.1) to the identified archaeological site. The results of the application of the criteria of adverse effects will be summarized for review by the NJHPO.
  - 2. NJDEP will ensure that avoidance of adverse effects to any previously identified historic properties is the preferred alternative and will utilize all practicable measures to avoid, minimize or mitigate adverse effects.
  - 3. If avoidance of identified archaeological resources is not possible and an adverse effect will result, the NJDEP will follow Stipulation III.A.
  - 4. The CRM, on behalf of NJDEP, will inform the NJHPO of the assessment of adverse effect specific to the identified archaeological site. NJHPO will be afforded a 15 business day review of the findings to offer comments.
  - 5. If the Undertaking will have an adverse effect on the NRHP eligible archaeological site, the NJDEP, on behalf of NJDCA, and in consultation with the other PA Signatories, shall develop appropriate treatment plans for historic properties adversely affected by the Undertaking. Unless the PA Signatories object within 15 business days of receipt of any plan, NJDCA shall ensure that treatment plans are implemented by NJDEP or its representative(s). NJDEP, on behalf of NJDCA, shall revise Plans to address comment and recommendations provided by the signatories. If the NJDEP and the PA Signatories do not agree on the proposed treatment plans, the dispute will be resolved in accordance with Stipulation VIII.B.8.
- B. Above Ground Historic Buildings or Districts

1. Following the review of design specifications in Stipulation I.F, historic properties identified in Exhibit B & C or by Stipulation I.E.4 and determined to meet NRHP eligibility criteria will be evaluated for project adverse effects by applying the criteria of adverse effects (36 CFR 800.5.a.1) to the identified historic property. The results of the assessment of adverse effect specific to the above ground historic building or district will be summarized for review by the NJHPO.
2. NJDEP will ensure that avoidance of adverse effects to any previously identified historic properties is the preferred alternative and will utilize all practicable measures to avoid, minimize or mitigate adverse effects.
3. If avoidance of identified historic properties is not possible and an adverse effect will result, the NJDEP will follow Stipulation III.B.
4. The CRM on behalf of NJDEP will inform the NJHPO of the assessment of adverse effect for the identified above ground historic building or district. NJHPO will be afforded a 15 day review of the findings to offer comments.
5. In the event it is determined that the Undertaking will have an adverse effect on the historic property, the NJDEP, on behalf of NJDCA and in consultation with the other PA Signatories, shall develop appropriate treatment plans for historic properties adversely affected by the Undertaking. Unless the PA Signatories object within 15 business days of receipt of any plan, NJDCA shall ensure that treatment plans are implemented by NJDEP or its representative(s). NJDEP, on behalf of NJDCA, shall revise Plans to address comment and recommendations provided by the signatories. If the NJDEP and the PA Signatories do not agree on the proposed treatment plans, the dispute will be resolved in accordance with Stipulation VIII.B.8.

### **III. RESOLUTION OF ADVERSE EFFECT**

#### **A. Archaeological Resources**

1. Following the assessment of adverse effect, if redesign of the Undertaking cannot avoid the NRHP eligible archaeological resource, NJDEP will develop an Archaeological Resource Management Plan (ARMP) in consultation with the PA Signatories.
2. The CRM, on behalf of NJDEP, will develop the ARMP specific to the identified NRHP-eligible archaeological resource.
3. The ARMP will include a section evaluating design modifications for minimizing effects to historic properties.
4. If the NRHP-eligible site cannot be avoided by redesign of project elements, then mitigation of adverse effects to NRHP-eligible archaeological sites is required. Mitigation may include a program of archaeological data recovery developed in consultation with the PA Signatories
5. Data recovery plans detail the systematic recovery, analysis, reporting, and curation of archaeological data from the archaeological resource to be impacted.
6. The data recovery plan shall be developed and implemented as consistent with the requirements of the NJHPO, the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 Fed. Reg. (190) (1983)), and the ACHP's *Treatment of Archaeological Properties: A Handbook* (1980).
7. The NJDEP will provide the ARMP for review and consultation with the other PA Signatories, who will have 15 business days for review and comment.
8. If, after consultation, NJDEP and the NJHPO cannot agree on appropriate terms for the mitigation plan, NJDEP will refer the matter to the ACHP pursuant to Stipulation VIII.B.



9. NJDEP shall implement the ARMP upon receipt of NJHPO comments or upon completion of dispute resolution as outlined in Stipulation VIII.B.
10. The CRM will provide a summary report of the ARMP activities and results in accordance with Stipulation I.D.4.
11. The ARMP report will be submitted to the PA Signatories for a review and comment period of 15 business days.

B. Historic Properties

1. NJDEP may propose in writing, resolution of adverse effect through the application of Treatment Measures outlined in Appendix C of the Amended Agreement. Such treatment measures are also described here in Exhibit G.
2. Minimization of adverse effects to historic properties may be achieved by the following:
  - a. Design Specifications: The NJDEP will develop design specifications to ensure that any permanent Project elements that may affect the visual context or historic setting of a Historic Property in the Project's historic architectural APE are compatible with the historic and architectural qualities of that property. Specifically, the Resist structure has the potential to introduce visual elements, which would adversely affect the context and/or setting of Historic Properties listed in Exhibit B.
    - i) The design specifications will be in keeping with the intent of *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR Part 68).
  - b. Historic Resource Construction Protection Plan (HRCPP): The CRM on behalf of NJDEP, will develop a HRCPP specific to each Built Historic Properties listed in Exhibit B, as well as any unidentified Built Historic Properties located within 90 feet of construction, in consultation with the PA Signatories.
    - i) The HRCPP, specific to each Historic Property, will be submitted to the NJHPO for a review and comment period of 15 business days.
    - ii) NJDEP will include this PA, as well as relevant HRCPPs within specific contract packages to inform contractors of their responsibilities relative to historic properties.
    - iii) Given that DSD construction activities will have no visual effect to historic resources, establishment and implementation of the HRCPP will mitigate potential adverse effects to historic properties resulting from vibration associated with Project construction activities.

#### IV. POST-REVIEW DISCOVERIES

- A. If previously unidentified historic properties are discovered or unanticipated effects on historic properties are found during the implementation of the undertaking, NJDEP shall cease all work in the vicinity of the discovered historic property or effect and take all reasonable measures to avoid or minimize harm to the property until it can be evaluated pursuant to Stipulations I and II of this Programmatic Agreement.
- B. NJDEP shall notify the PA Signatories of the discovery at the earliest possible time and consult to develop actions to take into account the effects of the Undertaking. NJDEP shall notify the PA Signatories of any time constraints, and all parties will mutually agree upon timeframes for this consultation.
- C. NJDEP shall provide the PA Signatories with written notification describing NJDEP's assessment of National Register eligibility of the property and proposed actions to resolve the adverse effects.

- D. The PA Signatories shall respond to NJDEP's written notification within the mutually agreed upon timeframe.
- E. NJDEP shall take into account their recommendations regarding National Register eligibility and proposed actions, and then carry out appropriate actions.
- F. The agency official shall provide the PA Signatories a report of the actions when they are completed.

## **V. UNANTICIPATED DISCOVERIES OF HUMAN REMAINS**

- A. If human remains are identified during construction, then construction will cease in an area sufficient to ensure there will be no inadvertent impacts, and the CRM will notify the NJDEP of the discovery of human remains.
- B. NJDEP will notify the local law enforcement office and coroner/medical examiner if human remains are discovered, in accordance with applicable New Jersey State statute(s).
- C. NJDEP will take all reasonable measures to avoid or minimize harm to the human remains until NJDEP has consulted with the other PA Signatories. Upon notification by the CRM of a discovery, NJDEP will immediately notify the other PA Signatories of the discovery, and develop a Field Testing Plan following Stipulation I.D.8 to identify the discovery, take into account the effects of the Undertaking, resolve adverse effects if necessary, and ensure compliance with applicable Federal and State statutes.
- D. In cases where discovered human remains are determined to be American Indian, NJDEP shall consult with the Shawnee Tribe representatives and NJHPO. In addition, NJDEP shall follow the guidelines outlined in the ACHP's Policy Statement Regarding the Treatment of Burial Sites, Human Remains, and Funerary Objects (2007).
- E. NJDEP will coordinate with the other PA Signatories regarding any needed modification to the project's Final Design necessary to implement recommendations of the consultation and facilitate proceeding with the Undertaking.
- F. If the NJDEP identifies unforeseen effects to the identified human remains during construction of the Project, then NJDEP, in consultation with the PA Signatories, shall evaluate unforeseen effects to the historic property according to 36 CFR Section 800.5.
- G. If, after consideration and consultation regarding alternatives and minimization measures, the PA Signatories agree that the human remains will be adversely affected, then NJDEP will follow the steps outlined above in Stipulation III to develop a suitable treatment plan.
- H. If, after consultation, NJDEP and the NJHPO cannot agree on appropriate terms for the mitigation plan, NJDEP will refer the matter to the ACHP pursuant to Stipulation VIII.B. If the NJDEP and the NJHPO disagree regarding the effects to the property, the NJDEP will request the ACHP's opinion. The ACHP will advise the NJDEP of its opinion regarding the effects to human remains. NJDEP will take into account the ACHP's opinion before making a final determination. If an adverse effect is found by NJDEP, the CRM will include the identification of the human remains in the archaeological resource treatment plan.

## **VI. COORDINATION OF REVIEWS**

- A. The PA Signatories will have a review period of 15 business days to comment on all documents, plans and specifications provided by the NJDEP under the terms of this PA. Alteration of the review time frame will require agreement among the PA Signatories. If multiple historic properties are involved, the review time may be extended, as appropriate and based on unanimous agreement among the signatories.

- B. The ACHP will be afforded a 15 business day review period upon receipt of documents, plans and specifications. If the ACHP does not provide a response within 15 business days, NJDEP will proceed with the proposed action submitted for ACHP review.
- C. The CRM will provide any comments and recommendations directly to the NJDEP. If the PA Signatories fail to provide comments within the designated review period, the NJDEP may assume that the PA Signatories concur with the proposed action submitted for PA Signatory review.

## **VII. REPORTING**

- A. Annual Reports. In order to monitor completion of the stipulations contained in this PA, NJDEP, on behalf of NJDCA, will prepare and submit an annual report each year for distribution to the PA Signatories summarizing the actions taken to fulfill the stipulations of this PA. The PA Signatories may agree to change the frequency of the reports.
- B. Reporting Meetings. NJDEP will coordinate PA Signatory meetings to discuss activities carried out pursuant to this PA as needed.
- C. Schedule. The timeframe for the annual reports will commence from the execution date of this PA.

## **VIII. IMPLEMENTATION OF THE AGREEMENT**

- A. Amendments
  - 1. Any Signatory or Invited Signatory may propose in writing to the other Signatories or Invited Signatories that the PA be amended, whereupon the PA Signatories will consult in order to consider such amendment. The amendment will be effective on the date a copy signed by the PA Signatories, who have signed this PA prior to the proposed amendment, is filed with the ACHP.
  - 2. If no resolution is reached, then NJDEP will forward all relevant documentation to the ACHP including NJDEP's recommendations for resolution. Within 15 business days, the ACHP will:
    - a. Concur in NJDEP's proposed resolution, or
    - b. Provide NJDEP with recommendations, which NJDEP will take into account in reaching a final decision.
  - 3. An amendment to this Agreement will be effective only when it has been signed by the PA Signatories.
- B. Dispute Resolution
  - 1. Should any of the PA Signatories object in writing within 15 business days to the terms of this Agreement, NJDEP will consult with the objecting party for not more than 15 business days to resolve the objection.
  - 2. If the objection is resolved within 15 business days, NJDEP shall proceed in accordance with the resolution.
  - 3. If NJDEP determines within 15 business days that the objection cannot be resolved, NJDEP will forward to ACHP all documentation relevant to the objection, including NJDEP's proposed resolution. Within 15 business days of receipt, ACHP will:
    - a. Concur in NJDEP's proposed resolution; or
    - b. Provide NJDEP with recommendations, which NJDEP will take into account in reaching a final decision regarding the objection; or
    - c. Notify NJDEP that the objection will be referred for comment in accordance with 36 CFR § 800.7(a)(4), and proceed to do so. NJDEP will take the resulting comment into account.

4. NJDEP will take into account any ACHP recommendations or comments, and any comments from the other PA Signatories, in reaching a final decision regarding the objection in accordance with 36 CFR § 800.7(c)(4). The PA Signatories will continue to implement all other terms of this Agreement that are not subject to objection.
5. Should ACHP not respond within 15 business days, NJDEP may assume ACHP has no comment and proceed with its proposed resolution to the objection.
6. NJDEP will provide the other PA Signatories with its final written decision regarding any objection brought forth pursuant to this Stipulation.
7. NJDEP may authorize any disputed action to proceed, after making its final decision.
8. Any dispute regarding National Register eligibility that is not resolved pursuant to this Stipulation will be resolved by NJDEP following these steps:
  - a. Continue consultation with the objecting party until the objection is resolved;
  - b. Treat the property as eligible for the National Register, or
  - c. Obtain a determination of eligibility from the Keeper of the National Register in accordance with 36 CFR§ 63.2(d)-(e) and 36 CFR§ 800.4(c)(2). The Keeper's determination of eligibility is binding.

#### C. Public Objections

1. At any time while this Agreement is in effect, should a member of the public object in writing to implementation of its terms, NJDEP will notify the other PA Signatories in writing and take the objection into consideration. NJDEP will consult with the objecting party and, if that party so requests, the other PA Signatories, for not more than 15 business days.
2. NJDEP will take into consideration all comments from public parties. Within 15 business days after closure of this consultation period, NJDEP will provide the other parties with its final decision in writing.

#### D. Severability and Termination

1. In the event a PA Signatory determines that the terms of this Agreement will not or cannot be carried out, that party shall immediately consult with the other PA Signatories and make a good faith effort to develop an amendment per Stipulation VIII.A. If within 15 business days an amendment cannot be reached (or such longer period as is agreed to by the PA Signatories who sign this PA), any Signatory or Invited Signatory who signed this PA may terminate the PA upon written notification to the other PA Signatories.
2. In the event this PA is terminated, and to the extent feasible prior to continuing to implement the undertaking, NJDEP must either:
  - a. execute a new agreement pursuant to 36 CFR §800.14(b)(3)
  - b. revert to and proceed at the appropriate point of the phased process for identification and evaluation directly under 36 CFR §§800.4, 800.5, and 800.6, or
  - c. if identification and evaluation are complete, request, take into account, and respond to the comments of the ACHP under 36 CFR §800.7.
3. This Agreement may be terminated by the implementation of a subsequent Agreement that explicitly terminates or supersedes this Agreement, or by NJDEP's implementation of Alternate Procedures, pursuant to 36 CFR § 800.14(a).

## **IX. EMERGENCY SITUATIONS**

- A. Should an emergency situation occur which represents an imminent threat to public health, a natural disaster, or safety, or creates a hazardous condition, NJDEP shall immediately notify the other PA Signatories of the condition which has initiated the situation and the measures taken to respond to the emergency or hazardous condition. Should the NJHPO or the ACHP desire to provide technical assistance to the NJDEP, they shall submit comments within 7 calendar days from notification, if the nature of the emergency or hazardous condition allows for such coordination.

## **X. DURATION**

- A. Unless otherwise extended and agreed upon by the PA Signatories, the RBD-HR PA will remain in effect until September 30, 2022, consistent with the Disaster Relief Act of 2013 and 31 U.S.C. § 1552(a). If needed, the PA Signatories may choose to terminate this Agreement per Stipulation VIII.D.

APPROVAL AND SIGNATURE PAGE FOR PROGRAMMATIC AGREEMENT

Among

The New Jersey Department of Community Affairs (NJDCa)  
The Advisory Council on Historic Preservation (ACHP)

and

The New Jersey Historic Preservation Office (NJHPO)

Regarding

The Rebuild by Design-Hudson River (RBD-HR) Project in  
Hudson County, New Jersey

Execution and Implementation of this Programmatic Agreement Evidences that NJDCa has  
Satisfied its Section 106 Responsibilities for Individual Undertakings of RBD-HR.

THE NEW JERSEY DEPARTMENT OF COMMUNITY AFFAIRS

By: \_\_\_\_\_



Date \_\_\_\_\_

8/11/17

Name Charles A. Richman

Title Commissioner, Department of Community Affairs, NJDCa, Sandy Recovery Division

APPROVAL AND SIGNATURE PAGE FOR PROGRAMMATIC AGREEMENT

Among

The New Jersey Department of Community Affairs (NJDCa)  
The Advisory Council on Historic Preservation (ACHP)

and


The New Jersey Historic Preservation Office (NJHPO)

Regarding

The Rebuild by Design-Hudson River (RBD-HR) Project in  
Hudson County, New Jersey

Execution and Implementation of this Programmatic Agreement Evidences that ACHP has  
Satisfied its Section 106 Responsibilities for Individual Undertakings of RBD-HR.

THE ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: 

Date 9/7/17

Name John Fowler

Title Executive Director

**APPROVAL AND SIGNATURE PAGE FOR PROGRAMMATIC AGREEMENT**

**Among**

**The New Jersey Department of Community Affairs (NJDCA)  
The Advisory Council on Historic Preservation (ACHP)**

**and**

**The New Jersey Historic Preservation Office (NJHPO)**

**Regarding**

**The Rebuild by Design-Hudson River (RBD-HR) Project in  
Hudson County, New Jersey**

**Execution and Implementation of this Programmatic Agreement Evidences that NJHPO has  
Satisfied its Section 106 Responsibilities for Individual Undertakings of RBD-HR.**

**THE NEW JERSEY HISTORIC PRESERVATION OFFICE**

By: Katherine J. Marcopul

Date 8/21/2017

Name Katherine Marcopul

Title Administrator and Deputy State Historic Preservation Officer



INVITED SIGNATORY PAGE FOR PROGRAMMATIC AGREEMENT

Among

The New Jersey Department of Community Affairs (NJDCOA)  
The Advisory Council on Historic Preservation (ACHP)

and


The New Jersey Historic Preservation Office (NJHPO)

Regarding

The Rebuild by Design-Hudson River (RBD-HR) Project in  
Hudson County, New Jersey

Invited Signatory

THE SHAWNEE TRIBE

By: 

Name Ron Sparkman

Title Chief

Date 8/29/17

INVITED SIGNATORY PAGE FOR PROGRAMMATIC AGREEMENT

Among

The New Jersey Department of Community Affairs (NJDCa)  
The Advisory Council on Historic Preservation (ACHP)

and

The New Jersey Historic Preservation Office (NJHPO)

Regarding

The Rebuild by Design-Hudson River (RBD-HR) Project in  
Hudson County, New Jersey

Invited Signatory

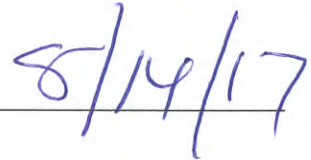
THE CITY OF HOBOKEN

By:  \_\_\_\_\_

Name Dawn Zimmer

Title Mayor, City of Hoboken

Date



INVITED SIGNATORY PAGE FOR PROGRAMMATIC AGREEMENT

Among

The New Jersey Department of Community Affairs (NJDCA)  
The Advisory Council on Historic Preservation (ACHP)

and

The New Jersey Historic Preservation Office (NJHPO)

Regarding

The Rebuild by Design-Hudson River (RBD-HR) Project in  
Hudson County, New Jersey

Invited Signatory

THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Rebuild by Design

By: \_\_\_\_\_



Date \_\_\_\_\_

8/7/17

Name David Rosenblatt



Title Assistant Commission, Department of Environmental Protection

**List of Exhibits**

- A RBD-HR APEs**
- B LOCATION OF KNOWN HISTORIC RESOURCES WITHIN THE RBD-HR APE**
- C KNOWN HISTORIC RESOURCES WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS**
- D LOCATION OF ARCHAEOLOGICALLY SENSITIVE AREAS WITHIN THE RBD-HR APE**
- E LISTING OF ARCHAEOLOGICALLY SENSITIVE AREAS WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS**
- F TRIBAL CONSULTATIONS**
- G POTENTIAL TREATMENT MEASURES FOR THE RESOLUTION OF ADVERSE EFFECT**

**EXHIBIT A**  
**RBD-HR APEs**

TECHNICAL DRAWINGS FOR THIS PROJECT ARE NOT REPRINTED HERE  
DUE TO SIZE

**EXHIBIT B**  
**LOCATION OF KNOWN HISTORIC RESOURCES WITHIN**  
**THE RBD-HR APE**

## **EXHIBIT C**

### **KNOWN HISTORIC RESOURCES WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS**



**EXHIBIT C**  
**KNOWN HISTORIC RESOURCES WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS**

Map ID No.	RESOURCE	DETERMINATION	ADDRESS	MUNICIPALITY	POTENTIAL PROJECT EFFECTS	PROPOSED MITIGATION
1.	501 Adams Street (Public School No. 3)	SHPO Opinion 8/20/1999	501 Adams Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
2.	Church of the Holy Innocents	SR 2/4/1977 NR 5/24/1977	6th Street, Willow Avenue, and Clinton Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
3.	Church of Our Lady of Grace	COE 12/15/1994 SR4/10/1996 NR 5/31/1996	4th Street, Clinton Street, 5th Street, and Willow Avenue	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
4.	Engine Company #2 Firehouse (Thematic Nomination of Hoboken Firehouses)	SR 2/9/1984 NR 3/30/1984	1313 Washington Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of resist structure (Conditional no adverse effect)	Develop and implement CRMPP
5.	Engine Company #3, Truck #2 Firehouse (thematic Nomination of Hoboken Firehouses)	SR 2/9/1984 NR 3/30/1984	501 Observer Highway	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure in the vicinity of the Train Sheds and yard (Conditional no adverse effect)	Develop and implement CRMPP
6.	Erie-Lackawanna Terminal	SR 6/16/1973; 12/7/2004 NR 7/24/1973; 2/17/2005	Hudson Plaza	Hoboken City	No effect	
7.	Ferguson Brothers Manufacturing Company	SHPO Opinion 10/16/1998	730-732 Monroe Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP

# EXHIBIT C

## KNOWN HISTORIC RESOURCES WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS

Map ID No.	RESOURCE	DETERMINATION	ADDRESS	MUNICIPALITY	POTENTIAL PROJECT EFFECTS	PROPOSED MITIGATION
8.	Hoboken Historic District	SHPO Opinion 3/5/1982; 5/12/1983; Boundary increase 12/12/2016	Observer Highway, Henderson/Marin Boulevard, Hudson River, 14 <sup>th</sup> , Clinton, 8 <sup>th</sup> , Monroe, 1 <sup>st</sup> , and Bloomfield Streets	Hoboken City	Adverse Effect: Option 1 and 2: Resist Structure has the potential to change the character of the properties' use and/or physical features within the properties' setting; Option 1 and 2: Potential effects from vibration-related impacts associated with installation of resist structure to historic district. (Conditional no adverse effect) Potential effects from vibration-related impacts associated with installation of DSD tank structures in vicinity of contributing resources (Conditional no adverse effect)	Develop and implement CRMPP
9.	Hoboken Land and Improvement Company Building	SR 3/29/1979 NR 7/3/1979	1 Newark Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of high level storm sewer system (Conditional no adverse effect)	Develop and implement CRMPP
10.	Hoboken-North Hudson YMCA	SHPO Opinion 4/20/2007	1301 Washington Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of resist structure (Conditional no adverse effect) Potential effects from vibration-related impacts associated with installation of high level storm sewer system (Conditional no adverse effect)	Develop and implement CRMPP
11.	Keuffel and Esser Manufacturing Complex	SR 7/31/1985 NR 9/12/1985	3rd, Adam, and Grand Streets	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
12.	Machine Shop (Bethlehem Steel Corp. Shipyard)	SHPO Opinion 5/2/1997	1201-1321 Hudson Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of high level storm sewer system (Conditional no adverse effect)	Develop and implement CRMPP
13.	Old Main Delaware, Lackawanna and Western Railroad Historic District	SHPO Opinion 9/24/1996	Morris & Essex Railroad Right-of-Way to Delaware River	Hoboken City and Jersey City	Adverse effect: Options 1 & 2 of the Project will require installation of bridge abutments and/or wing walls in the vicinity of the Henderson Street and the Grove Street bridges these installations will impact the fill adjacent to resources contributing to the district resulting in a direct effect.	Develop and implement CRMPP

# EXHIBIT C

## KNOWN HISTORIC RESOURCES WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS

Map ID No.	RESOURCE	DETERMINATION	ADDRESS	MUNICIPALITY	POTENTIAL PROJECT EFFECTS	PROPOSED MITIGATION
14.	Public School Number 7	SHPO Opinion 9/24/1996	80 Park Avenue	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
15.	Stevens Historic District	SHPO Opinion 2/28/1991	Castle Point	Hoboken City	No Effect	
16.	Hudson and Manhattan Railroad Transit System (PATH) Hoboken and Jersey City	SHPO Opinion 3/4/2002	Connects Exchange Place and Hoboken to New York City	Hoboken City and Jersey City	Potential effects from vibration-related impacts associated with installation of resist structure in the vicinity of the PATH tunnel (Conditional no adverse effect)	Develop and implement CRMPP
17.	Grove Street Bridge (NJ Transit Morristown Line milepost .66)	SHPO Opinion 1/20/1999	NJ Transit Morristown Line, M.P. 0.66 over Grove Street	Jersey City	Adverse effect: Option 1 of the Project will require installation of bridge abutments and/or wing walls which will impact the fill adjacent to the resource resulting in a direct effect.	Develop and implement CRMPP
18.	Holbrook Manufacturing Company	SHPO Opinion 2/28/1991	315 Coles Street	Jersey City	No effect	
19.	North (Hudson) River Tunnels	SHPO Opinion 11/12/1998	Amtrak Northeast Corridor under Hudson River	Weehawken Township	No effect	
20.	Pennsylvania Railroad New York to Philadelphia Historic District	SHPO Opinion 10/2/2002	Amtrak Northeast Corridor Line	Weehawken Township	No effect	
21.	R. Neumann & Co. Complex	SHPO Opinion 12/9/2016	300 Observer Highway	Hoboken City	Option 2: Potential effects from vibration-related impacts associated with installation of resist structure (Conditional no adverse effect) Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
22.	509 Madison Street	SHPO Opinion 12/12/2016	509 Madison Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP

# EXHIBIT C

## KNOWN HISTORIC RESOURCES WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS

Map ID No.	RESOURCE	DETERMINATION	ADDRESS	MUNICIPALITY	POTENTIAL PROJECT EFFECTS	PROPOSED MITIGATION
23.	Factory Terminal Loft Buildings (Standard Brands & Lipton Tea Plant) (Terminal Distribution Warehouses of Hudson County, New Jersey, 1870-1945 MPS)	SHPO Opinion 12/12/2016	Hudson at 15th Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of high level storm sewer system (Conditional no adverse effect)	Develop and implement CRMPP
24.	Hoboken High School	SHPO Opinion 12/12/2016	800 Clinton Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
25.	Christopher Columbus Gardens	SHPO Opinion 12/12/2016	460 8 <sup>th</sup> Street 455 9 <sup>th</sup> Street	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
26.	John Schmalz's Sons Model Bakery	SHPO Opinion 12/12/2016	351 8 <sup>th</sup> Street between Clinton and Grand Sts.	Hoboken City	Potential effects from vibration-related impacts associated with installation of DSD tank structure (Conditional no adverse effect)	Develop and implement CRMPP
27.	R.B. Davis Company Manufacturing Complex	SHPO Opinion†	38-56 Jackson Street	Hoboken City	Potential temporary effects from vibration associated with installation of DSD tank structure and installation of sewers associated with Block 10	Develop and implement CRMPP

**EXHIBIT D**  
**LOCATION OF ARCHAEOLOGICALLY SENSITIVE AREAS WITHIN**  
**THE RBD-HR APE**

## **EXHIBIT E**

### **LISTING OF ARCHAEOLOGICALLY SENSITIVE AREAS WITHIN THE RBD-HR APE AND POTENTIAL PROJECT EFFECTS**

# EXHIBIT E - AREAS OF ARCHAEOLOGICAL SENSITIVITY

MAP ID.	SEGMENT/ LOCATION	ARCHAEOLOGICAL SENSITIVITY	DEPTH OF POTENTIAL RESOURCE/ SENSITIVITY (fbs <sup>1</sup> )	EXTENT OF PROPOSED DISTURBANCE (fbs/acres)	NATURE OF DISTURBANCE / ARCHAEOLOGICAL RECOMMENDATION
A-1	Resist Structure: Southwestern	<ol style="list-style-type: none"> <li>1. Mid to late 19<sup>th</sup> to early 20<sup>th</sup> Century DLWRR Railroad and Industrial Deposits</li> <li>2. Early 20<sup>th</sup> Century Freight House and structure associated with Standard Oil Company</li> </ol>	0-14 fbs	~25fbs/1.153	Installation of sheet piles. 1 & 2: Phased program of archaeological investigation following PA Stipulations I-III.
A-2	Resist Structure: Southern	<ol style="list-style-type: none"> <li>1. Prehistoric deposits (15-35 fbs)</li> <li>2. Option 1: mid to late 19<sup>th</sup> to early 20<sup>th</sup> Century DLWRR &amp; Erie-Lackawanna Terminal Deposits; Deposits associated with Long Slip Canal and railroad-related landfill (0-14 fbs)</li> <li>3. Western portion of Option 2—late 19<sup>th</sup> century brick sewer deposits (3-5 fbs)</li> <li>4. Portions of Options 1 &amp; 2 sensitive for deposits associated with National Register eligible PATH Tunnel (&gt;60 fbs)</li> </ol>	<ol style="list-style-type: none"> <li>1. 15-35 fbs</li> <li>2. 0-14fbs</li> <li>3. 3-5fbs</li> <li>4. &gt;60fbs</li> </ol>	20-60fbs (deeper around PATH tunnel)  Option 1: 1.875 Option 2: 1.991	Installation of sheet piles. 1-4: Phased program of archaeological investigation following PA Stipulations I-III.
A-3	Resist Structure: Northern	<ol style="list-style-type: none"> <li>1. Early 19<sup>th</sup> century seawall</li> <li>2. Mid to late 19<sup>th</sup> century structures</li> <li>3. Late 19<sup>th</sup> to early 20<sup>th</sup> century waterfront development and industrial development</li> <li>4. Late 19<sup>th</sup> to early 20<sup>th</sup> century sewer line around 14<sup>th</sup> Street</li> <li>5. Weehawken Cove sensitive for prehistoric deposits</li> <li>6. Weehawken Cove potential for 17<sup>th</sup> to early 20<sup>th</sup> century shipwrecks</li> </ol>	<ol style="list-style-type: none"> <li>1. 15-17fbs</li> <li>2. 15-17fbs</li> <li>3. &gt;10fbs</li> <li>4. 5-8.5fbs</li> <li>5. &gt;9fbs</li> <li>6. &gt;15fbs</li> </ol>	~25fbs/1.667	Installation of sheet piles. 1-6: Phased program of archaeological investigation following PA Stipulations I-III.
A-4	Resist Structure: Weehawken	<ol style="list-style-type: none"> <li>1. Majority of segment sensitive for prehistoric remains</li> <li>2. Mid-19<sup>th</sup> to early 20<sup>th</sup> century waterfront development associated with Erie Freight Terminal</li> <li>3. Portion of segment sensitive for potential mid to late 19<sup>th</sup> century historic structures associated with Hoboken Land &amp; Improvement Company</li> <li>4. Possible 19<sup>th</sup> Street outlet sewer</li> </ol>	<ol style="list-style-type: none"> <li>1. &gt;12fbs</li> <li>2. &gt;2fbs</li> <li>3. &gt;2fbs</li> <li>4. 4-8fbs</li> </ol>	~25fbs/0.94	Installation of sheet piles. 1-4: Phased program of archaeological investigation following PA Stipulations I-III.

<sup>1</sup> fbs = feet below surface

### EXHIBIT E - AREAS OF ARCHAEOLOGICAL SENSITIVITY

MAP ID.	SEGMENT/ LOCATION	ARCHAEOLOGICAL SENSITIVITY	DEPTH OF POTENTIAL RESOURCE/ SENSITIVITY (fbs <sup>1</sup> )	EXTENT OF PROPOSED DISTURBANCE (fbs/acres)	NATURE OF DISTURBANCE / ARCHAEOLOGICAL RECOMMENDATION
A-5a-b	HLSS--South	<ol style="list-style-type: none"> <li>1. Mid to late 19<sup>th</sup> century slip/basin along River Street between 1<sup>st</sup> and 3<sup>rd</sup> Streets (A5-b)</li> <li>2. possible late 19<sup>th</sup> to early 20<sup>th</sup> century brick sewer along Newark Street in vicinity of 3<sup>rd</sup> Street and River Street (A-5a)</li> </ol>	<ol style="list-style-type: none"> <li>1. 8-18fbs</li> <li>2. ~5fbs</li> </ol>	<12fbs/0.961	Installation of sewer pipe, sewer-related infrastructure, and associated sheeting. 1 & 2: Phased program of archaeological investigation following PA Stipulations I-III.
A-6a-b	HLSS--North	<ol style="list-style-type: none"> <li>1. Early to mid-20<sup>th</sup> century waterfront development and industrial development, including Vanderbilt &amp; Schill Lumber Yard and the Jagels &amp; Bellis Coal Company, along northern portion of Washington and Bloomfield streets, north of 14<sup>th</sup> Street, and the 14<sup>th</sup> Street DLWRR Ferry House and pier (A-6a)</li> <li>2. Late 19<sup>th</sup> to early 20<sup>th</sup> century sewer line around 14<sup>th</sup> Street (A-6b)</li> </ol>	<ol style="list-style-type: none"> <li>1. &lt;10fbs</li> <li>2. 5-8.5fbs</li> </ol>	<12fbs/1.56	Installation of sewer pipe, sewer-related infrastructure, and associated sheeting. 1 & 2: Phased program of archaeological investigation following PA Stipulations I-III.
A-7a-b	Sheeting	<ol style="list-style-type: none"> <li>1. Prehistoric deposits within portions of the eastern sheeting (A-7a)</li> <li>2. Western sheeting: early to mid-20<sup>th</sup> century structures associated with meat packing industry, early 20<sup>th</sup> century Grain and Straw building, early to mid-20<sup>th</sup> century ice platform and ice house, railroad-related landfill (A-7b)</li> <li>3. Eastern sheeting: early to late 20<sup>th</sup> century DLWRR signal tower</li> </ol>	<ol style="list-style-type: none"> <li>1. 15-35fbs</li> <li>2. 0-15fbs</li> <li>3. 0-15fbs</li> </ol>	>20fbs/0.101	Installation of sheeting. 1-3: Phased program of archaeological investigation following PA Stipulations I-III.
A-8	DSD T7-OBS	Mid to Late 19 <sup>th</sup> Century Brick Sewer Line within Observer Highway	3-7.5fbs	7.17fbs/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-9	DSD T5-OBS	Mid to Late 19 <sup>th</sup> Century Brick Sewer Line within Observer Highway	2.5-8fbs	8.17fbs/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-10	DSD T3-OBS	Mid to Late 19 <sup>th</sup> Century Brick Sewer Line within Observer Highway	3.5-9fbs	7.17fbs/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.



### EXHIBIT E - AREAS OF ARCHAEOLOGICAL SENSITIVITY

MAP ID.	SEGMENT/ LOCATION	ARCHAEOLOGICAL SENSITIVITY	DEPTH OF POTENTIAL RESOURCE/ SENSITIVITY (fbs <sup>1</sup> )	EXTENT OF PROPOSED DISTURBANCE (fbs/acres)	NATURE OF DISTURBANCE / ARCHAEOLOGICAL RECOMMENDATION
A-11	DSD TD4-OBS	Mid to Late 19 <sup>th</sup> Century Brick Sewer Line within Observer Highway	7-12fbs	9.67fbs/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-12	DSD TD8-GAR	Mid to late 19 <sup>th</sup> Century Circular Brick Sewer Line within Observer Highway	4-7fbs	7.67 Feet/0.001	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-13	DSD T1-NEW	Mid-late 19 <sup>th</sup> Century Wood Sewer Line within Newark Avenue and Egg-Shaped Brick Sewer within Willow Avenue	2.5-8.5fbs	8.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-14	DSD T3-3ST	Mid to late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Wooden Sewer Line within 3 <sup>rd</sup> Street	5.5-11fbs	9.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-15	DSD T9-ADM	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Adams Street	3.7-5fbs	9.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-16	DSD T5-JAC	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Jackson Street	8-17fbs	10.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-17	DSD T4-4ST	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Madison Street	3.5-9fbs	11.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-18	DSD T3-4ST	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Adams Street	3-7fbs	7.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.

### EXHIBIT E - AREAS OF ARCHAEOLOGICAL SENSITIVITY

MAP ID.	SEGMENT/ LOCATION	ARCHAEOLOGICAL SENSITIVITY	DEPTH OF POTENTIAL RESOURCE/ SENSITIVITY (fbs <sup>1</sup> )	EXTENT OF PROPOSED DISTURBANCE (fbs/acres)	NATURE OF DISTURBANCE / ARCHAEOLOGICAL RECOMMENDATION
A-19	DSD TD14-CLA	Mid to late 19 <sup>th</sup> Century Wood Sewer Line within Clinton Street	5-8.5fbs	7.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-20	DSD TD1-WIL	Mid to late 19 <sup>th</sup> Century Brick Sewer Line within Willow Avenue	2.5-8.5fbs	7.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-21	DSD TD6-WIL	Mid to late 19 <sup>th</sup> Century Brick Sewer Line within Willow Avenue	2.5-8.5fbs	7.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-22	DSD T1-GAR	Mid to late 19 <sup>th</sup> Century Brick Sewer Line within Garden Street	5-9.5fbs	9.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-23	DSD T2-BLM	Mid to late 19 <sup>th</sup> Century Brick Sewer Line within Bloomfield Street	4-6fbs	9.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-24	DSD T16-MAD	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Madison Street	3.5-9fbs	8.67 Feet/0.001	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-25	DSD T15-MAD	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Sewer Line within Madison Street	3.5-9fbs	9.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-26	DSD T8-ADM	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Sewer Line within Adams Street	3-7fbs	7.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.

# EXHIBIT E - AREAS OF ARCHAEOLOGICAL SENSITIVITY

MAP ID.	SEGMENT/ LOCATION	ARCHAEOLOGICAL SENSITIVITY	DEPTH OF POTENTIAL RESOURCE/ SENSITIVITY (fbs <sup>1</sup> )	EXTENT OF PROPOSED DISTURBANCE (fbs/acres)	NATURE OF DISTURBANCE / ARCHAEOLOGICAL RECOMMENDATION
A-27	DSD T6-GND	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century wooden sewer line within Grand Street	3-7.5fbs	7.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-28	DSD TD23-CLA	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Clinton Street	5-8.5fbs	7.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-29	DSD T7-MON	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Monroe Street	5-11fbs	9.67 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-30	DSD T5-GND	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Grand Street	3.3-6.5fbs	9.17 Feet/0.002	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-31	DSD T6-ADM	Early 20 <sup>th</sup> Century Brick Sewer Line within Adams Street	2.5-6fbs	6.67 Feet/0.001	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-32	DSD TD31-CLA	Late 19 <sup>th</sup> to early 20 <sup>th</sup> Century Brick Sewer Line within Clinton Street	4-8fbs	8.17 Feet/0.001	Excavation and installation of tank for stormwater management. Phased program of archaeological investigation following PA Stipulations I-III.
A-33	Block 10	Mid-19 <sup>th</sup> Century Paterson Plank Road	>4fbs	4 Feet/0.29	Installation of underground stormwater detention system and associated piping. Phased program of archaeological investigation following PA Stipulations I-III.

# EXHIBIT E - AREAS OF ARCHAEOLOGICAL SENSITIVITY

MAP ID.	SEGMENT/ LOCATION	ARCHAEOLOGICAL SENSITIVITY	DEPTH OF POTENTIAL RESOURCE/ SENSITIVITY (fbs <sup>1</sup> )	EXTENT OF PROPOSED DISTURBANCE (fbs/acres)	NATURE OF DISTURBANCE / ARCHAEOLOGICAL RECOMMENDATION
A-34	DSD BASF Site (Pipe)	Early to Mid-20 <sup>th</sup> Century Dry Docks Development along Weehawken Cove	<15fbs	6 Feet/0.30	Installation of piping associated with underground stormwater detention system and its outfall. Phased program of archaeological investigation following PA Stipulations I-III.

**EXHIBIT F**  
**TRIBAL CONSULTATIONS**

## **EXHIBIT F**

### **TRIBAL CONSULTATION**

As part of the RBD-HR Project, NJDEP has initiated contact with federally and state-recognized Native American tribes and groups, including as part of the consulting parties and interested parties outreach and coordination. The following tribes and groups have been part of the consultation process for this Project.

#### **I.       FEDERALLY RECOGNIZED NATIVE AMERICAN TRIBES CONTACTED FOR RBD-HR**

- Absentee-Shawnee Tribe of Oklahoma
- Delaware Nation of Oklahoma
- Delaware Tribe of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Shawnee Tribe of Oklahoma
- Stockbridge-Munsee Community of Mohican Indians of Wisconsin



## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

101 SOUTH BROAD STREET

PO Box 823

TRENTON, NJ 08625-0823

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

August 19, 2016

Absentee Shawnee Tribe of Oklahoma  
Governor Edwina Butler-Wolfe  
2025 South Gordon Cooper Drive  
Shawnee, Oklahoma 74801

### **Rebuild by Design Hudson River Invitation to Consult as a Consulting Party under Section 106 of the National Historic Preservation Act**

Dear Governor Butler-Wolfe,

In an effort to address flood and resiliency vulnerabilities exposed as a result of Superstorm Sandy in 2012, the United States Department of Housing and Urban Development (HUD) launched the Rebuild by Design (RBD) competition inviting communities and designers to craft resiliency and flood damage reduction solutions. The State of New Jersey was subsequently awarded \$230 million to pursue the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project) which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City.

Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCOA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association. NJDCOA, HUD's Responsible Entity, is initiating consultation under Section 106 of the National Historic Preservation Act with the Shawnee Tribe of Oklahoma for the proposed undertaking in accordance with 36 CFR Part 800 and the *Programmatic Agreement among the Federal Emergency Management Agency, the New Jersey State Historic Preservation Officer, the New Jersey State Office of Emergency Management, the Advisory Council on Historic Preservation, the Absentee Shawnee Tribe of Indians of Oklahoma, the Delaware Nation, the Delaware Tribe of Indians, the Shawnee Tribe of Oklahoma, and the Stockbridge Munsee Band of Mohicans as a result of Hurricane Sandy* (the PA).

The NJDCOA has designated NJDEP as the lead agency for this project who are assisting with the environmental review. NJDEP will prepare the Environmental Impact Statement (EIS) in accordance with HUD's procedures for NEPA found at 24 CFR Part 58, et al.





NJDEP has initiated the Section 106 process with the New Jersey Historic Preservation Office (NJHPO) and established the project's Areas of Potential Effects (APEs) for both archaeological and historic architectural resources. On June 2, 2016, the NJHPO accepted the project initiation documentation as well as the list of consulting and interested parties.

We respectfully request your participation as a consulted party regarding the Proposed Project and seek your input on any cultural resources that you may be aware of or have concerns about for which you have jurisdiction and that fall within the project boundaries. To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days. If you have comments on the APE or any initial concerns with impacts of the project on religious or cultural properties, please note them in your response. An NJDCA-authorized representative may be following up with Joseph Blanchard, your THPO, in approximately 10 days to make sure you received this letter and to discuss whether you plan to consult further on this project.

See [http://www.comcon.org/sites/default/files/historic\\_preservation/](http://www.comcon.org/sites/default/files/historic_preservation/) for more information on the Section 106 review process. HUD's process for tribal consultation under Section 106 is described in a Notice available at <https://www.onecpd.info/resource/2448/notice-cpd-12-006-tribal-consultation-under-24-cfr-part-58/>.

If you have any questions, comments, or concerns about the Proposed Project as it relates to cultural resources, please contact Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,



Charles A. Richman  
Commissioner

Enclosures: Project Location  
Alternative maps

cc: Joseph Blanchard, THPO  
Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

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CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

August 19, 2016

Delaware Nation, Oklahoma  
Kerry Holton, President  
P.O. Box 825  
Anadarko, Oklahoma 73005

### **Rebuild by Design Hudson River**

### **Invitation to Consult as a Consulting Party under Section 106 of the National Historic Preservation Act**

Dear President Holton,

In an effort to address flood and resiliency vulnerabilities exposed as a result of Superstorm Sandy in 2012, the United States Department of Housing and Urban Development (HUD) launched the Rebuild by Design (RBD) competition inviting communities and designers to craft resiliency and flood damage reduction solutions. The State of New Jersey was subsequently awarded \$230 million to pursue the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project) which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City.

Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association. NJDCA, HUD's Responsible Entity, is initiating consultation under Section 106 of the National Historic Preservation Act with the Shawnee Tribe of Oklahoma for the proposed undertaking in accordance with 36 CFR Part 800 and the *Programmatic Agreement among the Federal Emergency Management Agency, the New Jersey State Historic Preservation Officer, the New Jersey State Office of Emergency Management, the Advisory Council on Historic Preservation, the Absentee Shawnee Tribe of Indians of Oklahoma, the Delaware Nation, the Delaware Tribe of Indians, the Shawnee Tribe of Oklahoma, and the Stockbridge Munsee Band of Mohicans as a result of Hurricane Sandy* (the PA).

The NJDCA has designated NJDEP as the lead agency for this project who are assisting with the environmental review. NJDEP will prepare the Environmental Impact Statement (EIS) in accordance with HUD's procedures for NEPA found at 24 CFR Part 58, et al.





NJDEP has initiated the Section 106 process with the New Jersey Historic Preservation Office (NJHPO) and established the project's Areas of Potential Effects (APEs) for both archaeological and historic architectural resources. On June 2, 2016, the NJHPO accepted the project initiation documentation as well as the list of consulting and interested parties.

We respectfully request your participation as a consulted party regarding the Proposed Project and seek your input on any cultural resources that you may be aware of or have concerns about for which you have jurisdiction and that fall within the project boundaries. To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days. If you have comments on the APE or any initial concerns with impacts of the project on religious or cultural properties, please note them in your response. An NJDCA-authorized representative may follow up with Jason Ross in approximately 10 days to make sure you received this letter and to discuss whether you plan to consult further on this project.

See [http://www.comcon.org/sites/default/files/historic\\_preservation/](http://www.comcon.org/sites/default/files/historic_preservation/) for more information on the Section 106 review process. HUD's process for tribal consultation under Section 106 is described in a Notice available at <https://www.onecpd.info/resource/2448/notice-cpd-12-006-tribal-consultation-under-24-cfr-part-58/>.

If you have any questions, comments, or concerns about the Proposed Project as it relates to cultural resources, please contact Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,



Charles A. Richman  
Commissioner

Enclosures: Project Location  
Alternative maps

cc:	Jason	Ross,	Delaware	Nation
	Kate Marcopul, SHPO			
	Nicholas Smith-Herman, NJDCA			
	Kim McEvoy, NJDEP			
	Frank Schwarz, NJDEP			
	Dennis Reinknecht, NJDEP			
	Clay Sherman, NJDEP			





**State of New Jersey**  
DEPARTMENT OF COMMUNITY AFFAIRS

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

SANDY RECOVERY DIVISION  
101 SOUTH BROAD STREET  
PO Box 823  
TRENTON, NJ 08625-0823

CHARLES A. RICHMAN  
*Commissioner*

August 19, 2016

Delaware Tribe of Indians  
Chief Chester Brooks  
Delaware Tribal Headquarters  
5100 Tuxedo Boulevard  
Bartlesville, Oklahoma 74006

**Rebuild by Design Hudson River  
Invitation to Consult as a Consulting Party under Section 106 of the  
National Historic Preservation Act**

Dear Chief Brooks,

In an effort to address flood and resiliency vulnerabilities exposed as a result of Superstorm Sandy in 2012, the United States Department of Housing and Urban Development (HUD) launched the Rebuild by Design (RBD) competition inviting communities and designers to craft resiliency and flood damage reduction solutions. The State of New Jersey was subsequently awarded \$230 million to pursue the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project) which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City.

Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association. NJDCA, HUD's Responsible Entity, is initiating consultation under Section 106 of the National Historic Preservation Act with the Shawnee Tribe of Oklahoma for the proposed undertaking in accordance with 36 CFR Part 800 and the *Programmatic Agreement among the Federal Emergency Management Agency, the New Jersey State Historic Preservation Officer, the New Jersey State Office of Emergency Management, the Advisory Council on Historic Preservation, the Absentee Shawnee Tribe of Indians of Oklahoma, the Delaware Nation, the Delaware Tribe of Indians, the Shawnee Tribe of Oklahoma, and the Stockbridge Munsee Band of Mohicans as a result of Hurricane Sandy* (the PA).

The NJDCA has designated NJDEP as the lead agency for this project who are assisting with the environmental review. NJDEP will prepare the Environmental Impact Statement (EIS) in accordance with HUD's procedures for NEPA found at 24 CFR Part 58, et al.





NJDEP has initiated the Section 106 process with the New Jersey Historic Preservation Office (NJHPO) and established the project's Areas of Potential Effects (APEs) for both archaeological and historic architectural resources. On June 2, 2016, the NJHPO accepted the project initiation documentation as well as the list of consulting and interested parties.


We respectfully request your participation as a consulted party regarding the Proposed Project and seek your input on any cultural resources that you may be aware of or have concerns about for which you have jurisdiction and that fall within the project boundaries. To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days. If you have comments on the APE or any initial concerns with impacts of the project on religious or cultural properties, please note them in your response. An NJDCA-authorized representative may be following up with Dr. Brice Obermeyer in approximately 10 days to make sure you received this letter and to discuss whether you plan to consult further on this project.

See [http://www.comcon.org/sites/default/files/historic\\_preservation/](http://www.comcon.org/sites/default/files/historic_preservation/) for more information on the Section 106 review process. HUD's process for tribal consultation under Section 106 is described in a Notice available at <https://www.onecpd.info/resource/2448/notice-cpd-12-006-tribal-consultation-under-24-cfr-part-58/>.

If you have any questions, comments, or concerns about the Proposed Project as it relates to cultural resources, please contact Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,



Charles A. Richman  
Commissioner

Enclosures: Project Location  
Alternative maps

cc: Brice Obermeyer, THPO  
Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

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SANDY RECOVERY DIVISION

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PO Box 823

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CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

August 19, 2016

Eastern Shawnee Tribe of Oklahoma  
Glenna Wallace, Chief  
P.O. Box 350  
Seneca, Missouri 64865

### **Rebuild by Design Hudson River**

### **Invitation to Consult as a Consulting Party under Section 106 of the National Historic Preservation Act**

Dear Chief Wallace,

In an effort to address flood and resiliency vulnerabilities exposed as a result of Superstorm Sandy in 2012, the United States Department of Housing and Urban Development (HUD) launched the Rebuild by Design (RBD) competition inviting communities and designers to craft resiliency and flood damage reduction solutions. The State of New Jersey was subsequently awarded \$230 million to pursue the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project) which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City.

Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association. NJDCA, HUD's Responsible Entity, is initiating consultation under Section 106 of the National Historic Preservation Act with the Shawnee Tribe of Oklahoma for the proposed undertaking in accordance with 36 CFR Part 800 and the *Programmatic Agreement among the Federal Emergency Management Agency, the New Jersey State Historic Preservation Officer, the New Jersey State Office of Emergency Management, the Advisory Council on Historic Preservation, the Absentee Shawnee Tribe of Indians of Oklahoma, the Delaware Nation, the Delaware Tribe of Indians, the Shawnee Tribe of Oklahoma, and the Stockbridge Munsee Band of Mohicans as a result of Hurricane Sandy* (the PA).

The NJDCA has designated NJDEP as the lead agency for this project who are assisting with the environmental review. NJDEP will prepare the Environmental Impact Statement (EIS) in accordance with HUD's procedures for NEPA found at 24 CFR Part 58, et al.





NJDEP has initiated the Section 106 process with the New Jersey Historic Preservation Office (NJHPO) and established the project's Areas of Potential Effects (APEs) for both archaeological and historic architectural resources. On June 2, 2016, the NJHPO accepted the project initiation documentation as well as the list of consulting and interested parties.

We respectfully request your participation as a consulted party regarding the Proposed Project and seek your input on any cultural resources that you may be aware of or have concerns about for which you have jurisdiction and that fall within the project boundaries. To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days. If you have comments on the APE or any initial concerns with impacts of the project on religious or cultural properties, please note them in your response. An NJDCA-authorized representative may follow up in approximately 10 days with Robin Dushane, your THPO, to make sure you received this letter and to discuss whether you plan to consult further on this project.

See [http://www.comcon.org/sites/default/files/historic\\_preservation/](http://www.comcon.org/sites/default/files/historic_preservation/) for more information on the Section 106 review process. HUD's process for tribal consultation under Section 106 is described in a Notice available at <https://www.onecpd.info/resource/2448/notice-cpd-12-006-tribal-consultation-under-24-cfr-part-58/>.

If you have any questions, comments, or concerns about the Proposed Project as it relates to cultural resources, please contact Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,



Charles A. Richman  
Commissioner

Enclosures: Project Location  
Alternative maps

cc: Robin Dushane, THPO  
Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

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CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

August 19, 2016

Shawnee Tribe  
Ron Sparkman, Chief  
29 South Highway 69A  
Miami, OK 73005

### **Rebuild by Design Hudson River Invitation to Consult as a Consulting Party under Section 106 of the National Historic Preservation Act**

Dear Chief Sparkman,

In an effort to address flood and resiliency vulnerabilities exposed as a result of Superstorm Sandy in 2012, the United States Department of Housing and Urban Development (HUD) launched the Rebuild by Design (RBD) competition inviting communities and designers to craft resiliency and flood damage reduction solutions. The State of New Jersey was subsequently awarded \$230 million to pursue the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project) which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City.

Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association. NJDCA, HUD's Responsible Entity, is initiating consultation under Section 106 of the National Historic Preservation Act with the Shawnee Tribe of Oklahoma for the proposed undertaking in accordance with 36 CFR Part 800 and the *Programmatic Agreement among the Federal Emergency Management Agency, the New Jersey State Historic Preservation Officer, the New Jersey State Office of Emergency Management, the Advisory Council on Historic Preservation, the Absentee Shawnee Tribe of Indians of Oklahoma, the Delaware Nation, the Delaware Tribe of Indians, the Shawnee Tribe of Oklahoma, and the Stockbridge Munsee Band of Mohicans as a result of Hurricane Sandy* (the PA).

The NJDCA has designated NJDEP as the lead agency for this project who are assisting with the environmental review. NJDEP will prepare the Environmental Impact Statement (EIS) in accordance with HUD's procedures for NEPA found at 24 CFR Part 58, et al.





NJDEP has initiated the Section 106 process with the New Jersey Historic Preservation Office (NJHPO) and established the project's Areas of Potential Effects (APEs) for both archaeological and historic architectural resources. On June 2, 2016, the NJHPO accepted the project initiation documentation as well as the list of consulting and interested parties.

We respectfully request your participation as a consulted party regarding the Proposed Project and seek your input on any cultural resources that you may be aware of or have concerns about for which you have jurisdiction and that fall within the project boundaries. To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days. If you have comments on the APE or any initial concerns with impacts of the project on religious or cultural properties, please note them in your response. An NJDCA-authorized representative may follow up with Jim Jumper, your THPO, in approximately 10 days to make sure you received this letter and to discuss whether you plan to consult further on this project.

See [http://www.comcon.org/sites/default/files/historic\\_preservation/](http://www.comcon.org/sites/default/files/historic_preservation/) for more information on the Section 106 review process. HUD's process for tribal consultation under Section 106 is described in a Notice available at <https://www.onecpd.info/resource/2448/notice-cpd-12-006-tribal-consultation-under-24-cfr-part-58/>.

If you have any questions, comments, or concerns about the Proposed Project as it relates to cultural resources, please contact Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,



Charles A. Richman  
Commissioner

Enclosures: Project Location  
Alternative maps

cc: Kim  
Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP

Jumper,

THPO





## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

101 SOUTH BROAD STREET

PO Box 823

TRENTON, NJ 08625-0823

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

August 19, 2016

Stockbridge-Munsee Community  
Band of the Mohicans  
Wally Miller, Chairman  
N8476 Moh He Con Nuck Road  
Bowler, Wisconsin 54417

### **Rebuild by Design Hudson River Invitation to Consult as a Consulting Party under Section 106 of the National Historic Preservation Act**

Dear Chairman Miller,

In an effort to address flood and resiliency vulnerabilities exposed as a result of Superstorm Sandy in 2012, the United States Department of Housing and Urban Development (HUD) launched the Rebuild by Design (RBD) competition inviting communities and designers to craft resiliency and flood damage reduction solutions. The State of New Jersey was subsequently awarded \$230 million to pursue the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project) which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City.

Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association. NJDCA, HUD's Responsible Entity, is initiating consultation under Section 106 of the National Historic Preservation Act with the Shawnee Tribe of Oklahoma for the proposed undertaking in accordance with 36 CFR Part 800 and the *Programmatic Agreement among the Federal Emergency Management Agency, the New Jersey State Historic Preservation Officer, the New Jersey State Office of Emergency Management, the Advisory Council on Historic Preservation, the Absentee Shawnee Tribe of Indians of Oklahoma, the Delaware Nation, the Delaware Tribe of Indians, the Shawnee Tribe of Oklahoma, and the Stockbridge Munsee Band of Mohicans as a result of Hurricane Sandy* (the PA).

The NJDCA has designated NJDEP as the lead agency for this project who are assisting with the environmental review. NJDEP will prepare the Environmental Impact Statement (EIS) in accordance with HUD's procedures for NEPA found at 24 CFR Part 58, et al.





NJDEP has initiated the Section 106 process with the New Jersey Historic Preservation Office (NJHPO) and established the project's Areas of Potential Effects (APEs) for both archaeological and historic architectural resources. On June 2, 2016, the NJHPO accepted the project initiation documentation as well as the list of consulting and interested parties.

We respectfully request your participation as a consulted party regarding the Proposed Project and seek your input on any cultural resources that you may be aware of or have concerns about for which you have jurisdiction and that fall within the project boundaries. To meet project timeframes, if you would like to be a consulting party on this project, please let us know of your interest within 30 days. If you have comments on the APE or any initial concerns with impacts of the project on religious or cultural properties, please note them in your response. An NJDCA-authorized representative may follow up with Bonney Hartley, your THPO, in approximately 10 days to make sure you received this letter and to discuss whether you plan to consult further on this project.

See [http://www.comcon.org/sites/default/files/historic\\_preservation/](http://www.comcon.org/sites/default/files/historic_preservation/) for more information on the Section 106 review process. HUD's process for tribal consultation under Section 106 is described in a Notice available at <https://www.onecpd.info/resource/2448/notice-cpd-12-006-tribal-consultation-under-24-cfr-part-58/>.

If you have any questions, comments, or concerns about the Proposed Project as it relates to cultural resources, please contact Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,



Charles A. Richman  
Commissioner

Enclosures: Project Location  
Alternative maps

cc: Bonney Hartley, THPO  
Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

101 SOUTH BROAD STREET

PO Box 823

TRENTON, NJ 08625-0823

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

January 5, 2017

Eastern Shawnee Tribe of Oklahoma  
Glenna Wallace, Chief  
P.O. Box 350  
Seneca, Missouri 64865

**Rebuild by Design Hudson River Project: Resist, Delay, Store, Discharge  
Invitation to Participate in the Preparation of the Project's Programmatic  
Agreement, Section 106 of the National Historic Preservation Act**

Dear Chief Wallace,

The State of New Jersey has received Community Development Block Grant – Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD) for the above-noted project. Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association.

The NJDCA, acting as the HUD Responsible Entity, has invited the Advisory Council on Historic Preservation (ACHP) to participate in the preparation of a Programmatic Agreement to address likely adverse effects to historic properties as a result of the implementation of the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project), which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City. In accordance with 36CFR800.14(2)(i) of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), we invite the Eastern Shawnee Tribe of Oklahoma to participate in the development of the project's Programmatic Agreement to address the project's adverse effects to historic properties. For a project description and project map please go to <http://www.nj.gov/dep/floodresilience/rbd-hudsonriver.htm>. Included with this request is a copy of the notification sent to ACHP for your review.



Please provide your response within 15 days to this invitation to Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'CARICHMAN', written over a circular stamp.

Charles A. Richman  
Commissioner

Enclosures: ACHP Letter

cc: Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

101 SOUTH BROAD STREET

PO BOX 823

TRENTON, NJ 08625-0823

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

January 5, 2017

Delaware Tribe of Indians  
Chief Chester Brooks  
Delaware Tribal Headquarters  
5100 Tuxedo Boulevard  
Bartlesville, Oklahoma 74006

**Rebuild by Design Hudson River Project: Resist, Delay, Store, Discharge  
Invitation to Participate in the Preparation of the Project's Programmatic  
Agreement, Section 106 of the National Historic Preservation Act**

Dear Chief Brooks,

The State of New Jersey has received Community Development Block Grant – Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD) for the above-noted project. Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association.

The NJDCA, as the HUD Responsible Entity, has invited the Advisory Council on Historic Preservation (ACHP) to participate in the preparation of a Programmatic Agreement to address likely adverse effects to historic properties as a result of the implementation of the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project), which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City. In accordance with 36CFR800.14(2)(i) of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), we invite the Delaware Tribe of Indians to participate in the development of the project's Programmatic Agreement to address the project's adverse effects to historic properties. For a project description and project map please go to <http://www.nj.gov/dep/floodresilience/rbd-hudsonriver.htm>. Included with this request is a copy of the notification sent to ACHP for your review.



Please provide your response within 15 days to this invitation to Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'CAR', with a long horizontal line extending to the right.

Charles A. Richman  
Commissioner

Enclosures: ACHP Letter

cc: Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

101 SOUTH BROAD STREET

PO BOX 823

TRENTON, NJ 08625-0823

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

January 5, 2017

Delaware Nation, Oklahoma  
Kerry Holton, President  
P.O. Box 825  
Anadarko, Oklahoma 73005

**Rebuild by Design Hudson River Project: Resist, Delay, Store, Discharge  
Invitation to Participate in the Preparation of the Project's Programmatic  
Agreement, Section 106 of the National Historic Preservation Act**

Dear President Holton,

The State of New Jersey has received Community Development Block Grant – Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD) for the above-noted project. Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association.

The NJDCA, as the HUD Responsible Entity, has invited the Advisory Council on Historic Preservation (ACHP) to participate in the preparation of a Programmatic Agreement to address likely adverse effects to historic properties as a result of the implementation of the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project), which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City. In accordance with 36CFR800.14(2)(i) of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), we invite the Delaware Nation, Oklahoma to participate in the development of the project's Programmatic Agreement to address the project's adverse effects to historic properties. For a project description and project map please go to <http://www.nj.gov/dep/floodresilience/rbd-hudsonriver.htm>. Included with this request is a copy of the notification sent to ACHP for your review.



Please provide your response within 15 days to this invitation to Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'CAR', with a long horizontal line extending to the right.

Charles A. Richman  
Commissioner

Enclosures: ACHP Letter

cc: Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

101 SOUTH BROAD STREET

PO Box 823

TRENTON, NJ 08625-0823

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

January 5, 2017

Absentee Shawnee Tribe of Oklahoma  
Governor Edwina Butler-Wolfe  
2025 South Gordon Cooper Drive  
Shawnee, Oklahoma 74801

**Rebuild by Design Hudson River Project: Resist, Delay, Store, Discharge  
Invitation to Participate in the Preparation of the Project's Programmatic  
Agreement, Section 106 of the National Historic Preservation Act**

Dear Governor Butler-Wolfe,

The State of New Jersey has received Community Development Block Grant – Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD) for the above-noted project. Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association.

The NJDCA, as the HUD Responsible Entity, has invited the Advisory Council on Historic Preservation (ACHP) to participate in the preparation of a Programmatic Agreement to address likely adverse effects to historic properties as a result of the implementation of the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project), which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City. In accordance with 36CFR800.14(2)(i) of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), we invite the Absentee Shawnee Tribe of Oklahoma to participate in the development of the project's Programmatic Agreement to address the project's adverse effects to historic properties. For a project description and project map please go to <http://www.nj.gov/dep/floodresilience/rbd-hudsonriver.htm>. Included with this request is a copy of the notification sent to ACHP for your review.

Please provide your response within 15 days to this invitation to Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'CAR', with a long horizontal flourish extending to the right.

Charles A. Richman  
Commissioner

Enclosures: ACHP Letter

cc: Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP





## State of New Jersey

DEPARTMENT OF COMMUNITY AFFAIRS

SANDY RECOVERY DIVISION

101 SOUTH BROAD STREET

PO Box 823

TRENTON, NJ 08625-0823

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

CHARLES A. RICHMAN  
*Commissioner*

January 5, 2017

Shawnee Tribe  
Ron Sparkman, Chief  
29 South Highway 69A  
Miami, Oklahoma 74355

**Rebuild by Design Hudson River Project: Resist, Delay, Store, Discharge  
Invitation to Participate in the Preparation of the Project's Programmatic  
Agreement, Section 106 of the National Historic Preservation Act**

Dear Chief Sparkman,

The State of New Jersey has received Community Development Block Grant – Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD) for the above-noted project. Under HUD regulation 24 CFR 58.4, the New Jersey Department of Community Affairs (NJDCA) has assumed HUD's environmental review responsibilities for the project, including tribal consultation related to historic properties. Historic properties include archaeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association.

The NJDCA, as the HUD Responsible Entity, has invited the Advisory Council on Historic Preservation (ACHP) to participate in the preparation of a Programmatic Agreement to address likely adverse effects to historic properties as a result of the implementation of the "Hudson River Project: Resist, Delay, Store, Discharge" (the Project), which seeks to reduce flooding and enhance resiliency in the municipality of Hoboken, and parts of Weehawken and Jersey City. In accordance with 36CFR800.14(2)(i) of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), we invite the Shawnee Tribe to participate in the development of the project's Programmatic Agreement to address the project's adverse effects to historic properties. For a project description and project map please go to <http://www.nj.gov/dep/floodresilience/rbd-hudsonriver.htm>. Included with this request is a copy of the notification sent to ACHP for your review.



Please provide your response within 15 days to this invitation to Clay Sherman, Project Manager, Office of Flood Hazard Risk Reduction Measures at the address above or at [clay.sherman@dep.nj.gov](mailto:clay.sherman@dep.nj.gov).

Thank you for your consideration and cooperation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'CARICHMAN', with a long horizontal flourish extending to the right.

Charles A. Richman  
Commissioner

Enclosures: ACHP Letter

cc: Kate Marcopul, SHPO  
Nicholas Smith-Herman, NJDCA  
Kim McEvoy, NJDEP  
Frank Schwarz, NJDEP  
Dennis Reinknecht, NJDEP  
Clay Sherman, NJDEP



## *The Delaware Nation*

### **NAGPRA/106 Department**

31064 State Highway 281  
Anadarko, OK 73005  
Phone (405)247-2448 Fax (405) 247-8905

NAGPRA	ext. 1182
Museum/106	ext. 1181
Library	ext. 1196
Director	ext. 1180

26 January 2017

To Whom It May Concern:

The Delaware Nation Cultural Preservation Department received correspondence regarding the following referenced project(s).

**Hudson River Project: Resist, Delay, Store, Discharge. Invitation for Participation in  
The project's Programmatic Agreement.**

Our office is committed to protecting tribal heritage, culture and religion with particular concern for archaeological sites potentially containing burials and associated funerary objects.

The Lenape people occupied the area indicated in your letter during, or prior to, European contact until their eventual removal to our present locations. According to our files, the location of the proposed project does not endanger cultural or religious sites of interest to the Delaware Nation. Therefore on behalf of the Delaware Nation, and having read the provided planning information, I would request that the standard element of most PA documents of keeping in mind that during construction should an archaeological site or artifacts inadvertently be uncovered, all construction and ground disturbing activities should immediately be halted until the appropriate state agencies, as well as this office, are notified (within 24 hours), and a proper archaeological assessment can be made. With consideration to the existing development, the potential for a site discovery is likely very low, although one never knows what may be discovered with the movement of earth.

Please note the Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Band of Mohican Indians are the only Federally Recognized Delaware/Lenape entities in the United States and consultation must be made only with designated staff of these three tribes. We appreciate your cooperation in contacting the Delaware Nation Cultural Preservation Office to conduct proper Section 106 consultation. Should you have any questions, feel free to contact our offices at 405/247-8903 or by email: [nalligood@delawarenation.com](mailto:nalligood@delawarenation.com), or [jross@delawarenation.com](mailto:jross@delawarenation.com).

**Nekole Alligood**  
NAGPRA/106 Director  
The Delaware Nation  
31064 State Highway 281  
Anadarko, OK 73005



## Davis, Zachary

---

**From:** Sherman, Clay <Clay.Sherman@dep.nj.gov>  
**Sent:** Tuesday, February 07, 2017 11:36 AM  
**To:** Smith-Herman, Nicholas  
**Cc:** McEvoy, Kim; Schwarz, Frank; Reinknecht, Dennis; Davis, Zachary; Smith, Lawrence; Doss, Gary  
**Subject:** FW: Rebuild by Design Hudson River Project

**This message originated from outside your organization**

---

Nicholas,

We have another interested party for the Programmatic Agreement. I also forwarded the invite for the RBDH Programmatic Agreement meeting on Tuesday the 14<sup>th</sup> to the interested party.

Clay Sherman, Project Manager  
Hudson River Rebuild By Design  
[www.rbd-hudsonriver.nj.gov](http://www.rbd-hudsonriver.nj.gov)

Engineering and Construction  
Bureau of Flood Resilience  
501 East State Street-1st Floor  
Mail Code 501-01A  
P.O. Box 420  
Trenton, NJ 08625-0420

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---

**From:** Tonya Tipton [mailto:[tonya@shawnee-tribe.com](mailto:tonya@shawnee-tribe.com)]  
**Sent:** Tuesday, February 07, 2017 11:05 AM  
**To:** Sherman, Clay  
**Cc:** [ben.barnes@gmail.com](mailto:ben.barnes@gmail.com)  
**Subject:** Rebuild by Design Hudson River Project

The Shawnee Tribe is interested in establishing a Programmatic Agreement.

Please contact Second Chief Ben Barnes at [ben.barnes@gmail.com](mailto:ben.barnes@gmail.com)

Thank you,

Tonya Tipton

## Davis, Zachary

---

**From:** McEvoy, Kim <Kim.McEvoy@dep.nj.gov>  
**Sent:** Wednesday, July 19, 2017 2:03 PM  
**To:** Bonney Hartley  
**Cc:** Davis, Zachary; Smith, Lawrence; Doss, Gary  
**Subject:** RE: Request for Consulting Party Review - Hudson River Rebuild By Design (RBD) Programmatic Agreement - Stockbridge-Munsee Mohican Tribe

This message originated from outside your organization

---

Bonney,  
Thank you for the prompt response. We will add you as a consulting party for the archeological compliance.

Sincerely,  
Kim McEvoy  
RBD Environmental Team Leader  
NJDEP Bureau of Flood Resilience  
609-789-2526 (cell)  
609-292-0307 (direct)

---

**From:** Bonney Hartley [mailto:Bonney.Hartley@mohican-nsn.gov]  
**Sent:** Wednesday, July 19, 2017 12:14 PM  
**To:** McEvoy, Kim <Kim.McEvoy@dep.nj.gov>  
**Subject:** RE: Request for Consulting Party Review - Hudson River Rebuild By Design (RBD) Programmatic Agreement - Stockbridge-Munsee Mohican Tribe

Dear Kim,  
Stockbridge-Munsee Community will opt to not participate as a signatory to the PA, but will review any subsequent archeological reports under Section 106 as applicable for this undertaking.  
Thank you,  
Bonney

*Bonney Hartley*  
Tribal Historic Preservation Officer  
Stockbridge-Munsee Mohican Tribal Historic Preservation  
Extension office  
65 1st Street  
Troy, NY 12180  
(518) 244-3164  
[Bonney.Hartley@mohican-nsn.gov](mailto:Bonney.Hartley@mohican-nsn.gov)  
[www.mohican-nsn.gov](http://www.mohican-nsn.gov)

---

**From:** McEvoy, Kim [<mailto:Kim.McEvoy@dep.nj.gov>]

**Sent:** Friday, July 14, 2017 3:05 PM

**To:** Bonney Hartley <[Bonney.Hartley@mohican-nsn.gov](mailto:Bonney.Hartley@mohican-nsn.gov)>; Shannon Holsey <[Shannon.Holsey@mohican-nsn.gov](mailto:Shannon.Holsey@mohican-nsn.gov)>

**Cc:** 'Smith, Lawrence' <[lsmith@Dewberry.com](mailto:lsmith@Dewberry.com)>; 'Doss, Gary' <[gdoss@Dewberry.com](mailto:gdoss@Dewberry.com)>; Davis, Zachary ([zdavis@Dewberry.com](mailto:zdavis@Dewberry.com)) <[zdavis@Dewberry.com](mailto:zdavis@Dewberry.com)>; Reinknecht, Dennis <[Dennis.Reinknecht@dep.nj.gov](mailto:Dennis.Reinknecht@dep.nj.gov)>; Schwarz, Frank <[Frank.Schwarz@dep.nj.gov](mailto:Frank.Schwarz@dep.nj.gov)>; Taylor, Alexis <[Alexis.Taylor@dep.nj.gov](mailto:Alexis.Taylor@dep.nj.gov)>; DEP rbdh-archive <[rbdh-archive@dep.nj.gov](mailto:rbdh-archive@dep.nj.gov)>; Snyder, Kerri <[ksnyder@louisberger.com](mailto:ksnyder@louisberger.com)>; Corliss, Christopher <[ccorliss@louisberger.com](mailto:ccorliss@louisberger.com)>; 'jloichinger@achp.gov' <[jloichinger@achp.gov](mailto:jloichinger@achp.gov)>; Marcopul, Kate <[Kate.Marcopul@dep.nj.gov](mailto:Kate.Marcopul@dep.nj.gov)>; Smith-Herman, Nicholas <[Nicholas.Smith-Herman@dca.nj.gov](mailto:Nicholas.Smith-Herman@dca.nj.gov)>

**Subject:** RE: Request for Consulting Party Review - Hudson River Rebuild By Design (RBD) Programmatic Agreement - Stockbridge-Munsee Mohican Tribe

Good Afternoon

The NJDEP, on behalf of NJDCA, is submitting the attached RBD Hudson River Resist, Delay, Store, Discharge Project (Project) Programmatic Agreement for a Final 15-day review. The Project is being federally funded by HUD CDBG-DR and requires compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended [36 CFR 800.4(a) (1) and 36 CFR 800.4(b) (1)], along with guidelines outlined in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716).

The State Historic Preservation Office has identified that the Project should develop a project specific Programmatic Agreement, pursuant to 36 CFR 800.14 Federal Agency Program Alternatives, to complete the Section 106 process. NJDEP, on behalf of NJDCA, has provided the PA to all Signatories and Invited Signatories for 2 rounds of comments and our agency has addressed all comments. Your agency has been identified as a consulting party for the Project; therefore, the PA is being sent to your agency for a final 15-day review period, which will initiate on Monday, July 17<sup>th</sup> and end on Monday July 31<sup>st</sup>.

If you can provide comments earlier than the 15-day review period we would appreciate it. Documents included are as follows:

1. RBD Hudson River Programmatic Agreement – PDF with Exhibits
2. RBD Hudson River Programmatic Agreement – WORD no Exhibits

After this review period ends, NJDEP, on behalf of NJDCA, will finalize the PA and NJDCA will request that all Signatories execute the PA by signing.

Thank you very much,  
Kim

Sincerely,  
Kimberly McEvoy  
RBD Environmental Team Leader  
Bureau of Flood Resilience  
609-789-2526 (cell)  
609-292-0307 (direct)



**EXHIBIT G**

**POTENTIAL TREATMENT MEASURES FOR THE  
RESOLUTION OF ADVERSE EFFECT**

## Exhibit G – Potential Treatment Measures for the Resolution of Adverse Effect

### I. Recordation Package

- A. Digital Photography Package: Prior to project implementation, NJDEP shall oversee the successful delivery of a Digital Photography Package prepared by the CRM. The Digital Photography Package will meet the standards cited in the National Park Service's National Register of Historic Places Photographic Policy March 2010 or subsequent revisions (<https://www.nps.gov/nr/PUBLICATIONS/bulletins/photopolicy/index.htm>).
1. The Digital Photography Package shall include a comprehensive collection of photographs of both interior and exterior views showing representative spaces and details of significant architectural features and typical building materials. Exterior photographs shall include full oblique and contextual images of each elevation. Exterior views shall be keyed to a site plan while interior views shall be keyed to a floor plan of the building/structure. The photographs shall be indexed according to the date photographed, site number, site name, site address, direction, frame number, subject matter and photographer's name recorded on the reverse side in pencil.
  2. The Digital Photography Package shall include printed color copies of the digital photographs (on appropriate paper, per NPS Photographic Policy), a CD/DVD of the digital photographs, a completed state architectural inventory form, and a written site history of the historic property.
  3. The NJDEP shall submit the Digital Photography Package to PA Signatories for review and approval. Once reviewed by the PA Signatories and approved by the NJHPO, the NJDEP shall submit full copies of the approved Digital Photography Package to the NJHPO, the City of Hoboken and the New Jersey State Archives for permanent retention.
- B. 35 mm Black and White Film Photography Package: Prior to project implementation, the designated responsible party shall oversee the successful delivery of a 35 mm Black and White Film Photography Package prepared by the CRM.
1. The 35 mm Black and White Film Photography Package shall include a comprehensive collection of photographs of both interior and exterior views showing representative spaces and details of significant architectural features and typical building materials. Exterior photographs shall include full oblique and contextual images of each elevation. Exterior views shall be keyed to a site plan while interior views shall be keyed to a floor plan of the building/structure. The photographs shall be indexed according to the date photographed, site number, site name, site address, direction, frame number, subject matter and photographer's name recorded on the reverse side in pencil.
  2. The 35 mm Black and White Film Photography Package shall include one (1) full set of 35mm film black and white photographs printed on acid free paper, the corresponding 35mm film negatives in acid free sleeves, a completed state architectural inventory form, and a written site history of the historic property.
  3. The NJDEP shall submit the 35 mm Black and White Film Photography Package to PA Signatories for review and approval by the NJHPO. Once approved by the NJHPO, the NJDEP shall submit full copies of the approved 35 mm Black and White Film Photography Package to the NJHPO, the City of Hoboken and the New Jersey State Archives for permanent retention.
- C. Large Format Film Photography Package: Prior to project implementation, the NJDEP shall oversee the successful delivery of a Large Format Film Photography Package prepared by the CRM.
1. The Large Format Film Photography Package shall include a comprehensive collection of photographs of both interior and exterior views showing representative spaces and details of significant architectural features and typical building materials. Exterior photographs shall include full oblique and contextual images of each elevation. Exterior views shall be keyed to a site plan while interior views shall be keyed to a floor plan of the building/structure. The photographs shall be indexed according to the date photographed, site number, site name, site address, direction, frame number, subject matter and photographer's name recorded on the reverse side in pencil.
  2. The Large Format Film Photography Package shall include one (1) full set of 4 x 5 or 5 x 7-inch photographs printed on acid free paper, the corresponding 4 x 5 or 5 x 7-inch negatives in acid free sleeves, a completed state architectural inventory form, and a written site history of the historic property.

## **Exhibit G – Potential Treatment Measures for the Resolution of Adverse Effect**

3. The designated responsible party shall submit the Large Format Film Photography Package to the PA Signatories for review and approval by the NJHPO. Once approved by the NJHPO, the NJDEP shall submit full copies of the approved Large Format Film Photography Package to the NJHPO, the City of Hoboken and the New Jersey State Archives for permanent retention

### **II. Design Review by PA Signatories**

- A. The CRM, NJDEP and the PA Signatories shall work in concert to develop a historically compatible design for the Resist barrier. As specified in Stipulation II.A, plans and specifications will, to the greatest extent feasible, preserve the basic character of the identified historic properties. Primary emphasis shall be given to the major street elevations that are visible. In the event that significant contributing features (e.g. trim, windows, doors, porches) are adversely affected by the Project, repairs will be made with either in-kind materials or materials that come as close as possible to the original materials in basic appearance. Aesthetic camouflaging treatments such as use of veneers, paints, texture compounds and other surface treatments and/or use of sympathetic infill panels and landscaping features will be employed to the greatest extent feasible. Final construction drawings used in the bidding process will be submitted to the PA Signatories for review and comment.

### **III. Tribal Treatment Plan**

- A. The CRM and NJDEP shall work with the Shawnee Tribe to develop a plan for the protection and treatment of, including but not limited to, Native American remains, funerary objects, cultural and religious landscapes, ceremonial items, traditional gathering areas and cultural items, for known sites and in the event that any are discovered in conjunction with the Undertaking, including archaeological studies, excavation, geotechnical investigations, grading, and all ground-disturbing activity. The plan will also formalize procedures for Tribal monitoring during archaeological studies, grading, and ground disturbing activities for the Undertaking. No photography of Native American human remains or funerary objects other than those used for identification purposes as required by local, state, and federal laws will be allowed.

### **IV. Public Interpretation**

- A. The CRM, NJDEP and the PA Signatories will work together to design an educational interpretive plan. The plan may include signs, displays, educational pamphlets, websites, workshops and other similar mechanisms to educate the public on historic properties within the local community, state, or region. Once an interpretive plan has been agreed to by the PA Signatories, the NJDEP will continue to consult throughout implementation of the plan until all agreed upon actions have been completed by the NJDEP.

### **V. Historical Context Statements and Narratives**

- A. Prior to project implementation, the PA Signatories will collaboratively determine the topic and framework of a historic context statement or narrative the designated responsible party shall be responsible for completing. The statement or narrative may focus on an individual property, a historic district, a set of related properties, or relevant themes as identified in the statewide preservation plan. Once the topic of the historic context statement or narrative has been agreed to, the project may move to the construction phase and the NJDEP shall continue to coordinate with the PA Signatories as the CRM drafts the historic context statement and narrative. The PA Signatories shall have final approval over the end product.

### **VI. Oral History Documentation**

- A. Prior to project implementation, NJDEP will work with the PA Signatories to identify oral history documentation needs and agree upon a topic and list of interview candidates. Once the parameters of the oral history project have been agreed upon, the project may move to the construction phase and the NJDEP shall continue to coordinate with the PA Signatories through the data collection, drafting of the document, and delivery of a final product by the CRM. The PA Signatories shall have final approval over the end product.

### **VII. Historic Property Inventory**

- A. Prior to project implementation, NJDEP will work with the PA Signatories to establish the appropriate level of effort to accomplish a historic property inventory or synthesis of archeological data. Efforts may be directed toward the resurvey of previously designated historic properties and/or districts which have

## **Exhibit G – Potential Treatment Measures for the Resolution of Adverse Effect**

undergone change or lack sufficient documentation, or the survey of new historic properties and/or districts that lack formal designation. Once the boundaries of the survey area have been agreed upon, the project may move to the construction phase and the NJDEP shall continue to coordinate with the PA Signatories through the data collection process. The NJDEP will use NJHPO standards for the survey of historic properties and NJHPO forms as appropriate. The CRM will prepare a draft inventory report, according to NJHPO templates and guidelines, and work with the PA Signatories until a final property inventory is approved.

### **VIII. National Register and National Historic Landmark Nominations**

- A. Prior to project implementation, NJDEP will work with the PA Signatories to identify the individual properties that would benefit from a completed National Register or National Historic Landmark nomination form. Once the PA Signatories have agreed to a property, the project may move to the construction phase and the NJDEP shall continue to coordinate with the PA Signatories as the CRM drafts the nomination form. The PA Signatories will provide adequate guidance to the NJDEP during the preparation of the nomination form. The NJHPO shall formally submit the final nomination to the Keeper for inclusion in the National Register. .

### **IX. Geo-References of Historic Maps and Aerial Photographs**

- A. Prior to project implementation, NJDEP will work with the PA Signatories to identify the historic maps and/or aerial photographs for scanning and geo- referencing. Once a list of maps and/or aerial photographs have been agreed upon, the project may move to the construction phase and the NJDEP shall continue to coordinate with the PA Signatories through the scanning and geo-referencing process and shall submit drafts of paper maps and electronic files to them for review. The PA Signatories shall have final approval on the quality of the documentation provided by the designated responsible party. The final deliverable shall include a paper copy of each scanned image, a georeferenced copy of each scanned image, and the metadata relating to both the original creation of the paper maps and the digitization process.



RAVINDER S. BHALLA  
MAYOR

# OFFICE OF THE BUSINESS ADMINISTRATOR

DEPARTMENT OF ADMINISTRATION

CITY HALL

94 WASHINGTON STREET  
HOBOKEN, NEW JERSEY 07030  
(201) 420-2000 EXT. 1100

CALEB STRATTON, AICP, PP, CFM  
ASSISTANT BUSINESS ADMINISTRATOR

JASON R. FREEMAN,  
DIRECTOR OF OPERATIONS

*Electronic Copy via email*

Clay Sherman  
Project Manager  
Hudson River Rebuild By Design  
Bureau of Climate Resilience Design & Engineering  
Climate & Flood Resilience Program  
New Jersey Department of Environmental Protection (NJDEP)  
401 E State Street  
Trenton, NJ 08608

August 11, 2020

Re: Soil Disposal and Backfill for the Hudson River Rebuild by Design Sub-Surface Utility Exploration (SUE), Storm Sewer Modification (SSM) and Coastal Storm Surge Risk Reduction measures (RESIST)

Mr. Sherman,

I have reviewed your request from the NJDEP that recommends using excavated materials as backfill when the excavated material meets certain standards. This has the potential to substantially reduce costs associated with disposing all excavated material off-site. NJDEP regulations allow excavated material to be used as backfill if it meets certain guidelines. Additionally, according to Chapter §168-64 of the Hoboken Municipal Code, the Department of Transportation and Parking may approve the use of excavated material as backfill in road openings.

Therefore, and in consultation with the Director of Transportation, and the Division of Engineering, I am approving the use of excavated material as backfill during the construction activities being performed by the NJDEP and its subcontractors associated with Sub-surface Utility Exploration (SUE), Storm Sewer Modification project (SSM) and Coastal Storm Risk Reduction measures (RESIST) with the following conditions:

1. Excavated material shall not be stockpiled in the public right of way;
2. Excavated material shall be structurally suitable for use as a roadway base;
3. Excavated material shall be visually inspected by the project's inspection staff and/or LSRP before being used as backfill;
4. Staff shall reuse gravels and sands that appear to makeup cohesive, structurally sound soils;
5. Staff shall reuse materials that offer stable pavement and subgrade and ease of compaction; and
6. Staff shall reuse concrete in the subgrade having dimensions no larger than 6" on any side;
7. Staff shall reject materials that appear to have no moisture and order such materials to be exported off-site;
8. Staff shall reject materials that appear to have excess moisture or high plasticity and order such materials to be exported off-site;
9. Staff shall reject fat clays and organic materials and order these materials to be exported off-site;

A Fair and Welcoming Community

10. Staff shall only reuse suitable materials as backfill in the same area as it was excavated;
11. Staff shall visually inspect excavated material for free product and if free product is identified the projects LSRP shall be contacted for further inspections;
12. If any material impacted by free product is encountered it shall not be used on site.

Any excavation in the municipal right of way requires issuance of a road opening permit which can be obtained from the Division of Engineering. Failure to comply with the conditions stated above may result in the modification or termination of this waiver.

Sincerely,

*Caleb D. Stratton*

Caleb D. Stratton

Chief Resilience Officer and Assistant Business Administrator

CC: Ryan Sharp, Director of Transportation and Parking  
Jen Gonzalez, Director of Environmental Services  
Jason Freeman, Director of Operations  
Kim Craft, Municipal Engineer  
Sgt. William Montanez, Office of Emergency Management  
Lt. John Petrosino, Hoboken Police Department

## INSTRUCTIONS TO BIDDERS

### IB 1 Bid Proposals

**IB 1.1** Sealed proposals for the work described herein must be received and time-stamped in the Plan Room, Division of Property Management and Construction (DPMC), 9th Floor, 33 West State Street, P O Box 034, Trenton, NJ 08625-0034. The closing date and time for bids will be stated in the Advertisement for Bid. Bidders are cautioned that reliance on the US Postal Service or other mail delivery or courier service for timely delivery of proposals is at the bidders' risk. Failure by a bidder to have a sealed proposal reach DPMC by the prescribed time will result in rejection of the unopened submission.

**IB 1.2** Bids may be accepted on the following branches of work, as applicable:

- a. Lump Sum All Trades
- b. General Construction
- c. Structural Steel
- d. Plumbing
- e. Heating, Ventilating and Air Conditioning
- f. Electrical
- g. Special Categories as may be required

**IB 1.3** Contractors classified by DPMC may obtain contract documents at the DPMC address above, or upon written request, subject to payment of applicable fees. Each bidder is herewith put on notice that its general classification by DPMC is not the sole basis for qualification for the award of work. The Director reserves the right to deny award to any bidder that is not clearly responsible, based upon experience, past performance, financial capability or other material factors, to perform the work required herein.

**IB 1.4** The schedule of non-refundable bid fees below is based upon individual trade construction cost estimates. Upon request and at no cost the DPMC will furnish a set of the contract documents for review in the offices of the division at the address noted in paragraph IB1.1 above.

#### DPMC BID DOCUMENTS FEE SCHEDULE (PER PACKAGE):

<u>TRADE ESTIMATE</u>	<u>DOCUMENT FEE</u>	<u>MAILING FEE</u>
\$100,000 or less	No charge	\$25.00
Greater than \$100,000	\$ 65.00	\$25.00

**IB 1.5** Bid proposals based upon the plans, specifications, general, special and supplementary conditions and bulletins shall be deemed as having been made by the bidder with full knowledge of the conditions therein. Bidders are required to visit the site prior to submitting proposals for the work herein described, and to have thoroughly examined the conditions under which the contract is to be executed, including those reasonably observable conditions of the premises which would hinder, delay, or otherwise affect the performance of the contractor required under the terms of the contract. The State will not allow claims for additional costs as a result of the contractor's failure to become aware of the reasonably observable conditions affecting its required performance. The bidder is required to make appropriate allowances in the preparation of the bid for the accommodation of such conditions.

Bidders must warrant in the bid documents that the bidder is familiar with conditions existing at the site at the time the bid is submitted.

**IB 1.6** Bid proposals shall be submitted on the standard form provided by DPMC, enclosed in a sealed envelope issued by DPMC. The name and address of the bidder must be indicated on the envelope, as well as indication of the DPMC project number, project location and other appropriate identification.

**IB 1.7** All amounts in the bid documents, Lump Sum, Unit Prices and Allowances, shall be stated in numerical figures and written out only. If there is discrepancy between the numerical figures and written amount, the written amount will be used to calculate the total bid cost.

**IB 1.8** The bidder must include in the bid envelope: (1) the proposal signed by the bidder, (2) the executed affidavit of non-collusion, (3) the executed Source Disclosure Certification Form as further described in section IB1.11, (4) the executed Disclosure of Investment Activities in Iran Form and (5) bid security as further described in Section IB6.

**IB 1.9** Proposals shall remain open for acceptance and may not be withdrawn for a period of 60 calendar days after the bid opening date.

**IB 1.10** Proposals not submitted and filed in accordance with instructions contained herein and in the Advertisement for Bids may be rejected as non-responsive.

**IB 1.11 Procurement Reform**

- a. **RESTRICTIONS ON POLITICAL CONTRIBUTIONS** – In accordance with N.J.S.A. 19:44A-20.13, *et seq.*, bidders submitting a bid on or after October 15, 2004, shall be required to submit a Certification and Disclosure Form and Ownership Disclosure Form for all Business Entities. These forms must be submitted by the bidder and approved prior to contract award.

N.J.S.A. 19:44A-20.13, *et seq.* prohibits State departments, agencies and authorities from entering into a contract that exceeds \$17,500 with an individual or entity that has made a contribution to that political party committee. N.J.S.A. 19:44A-20.13, *et seq.* further requires the disclosure of all contribution to any political organization organized under section 527 of the Internal Revenue Code that also meets the definition of “continuing political committee” within the meaning of N.J.S.A. 19:44A-3(n) and N.J.A.C. 19:25-1.7. The successful bidder shall also be required to adhere to all continuing obligations contained in N.J.S.A. 19:44A-20.13, *et seq.* regarding contributions and disclosures as required in N.J.S.A. 19:44A-20.13, *et seq.*

- b. **Source Disclosure Certification** - Pursuant to N.J.S.A. 52:34-13.2, *et seq.*, all bidders submitting a proposal shall be required to complete a Source Disclosure Certification that all services will be performed in the United States. The bidder shall disclose the location by country where services under the contract will be performed and any subcontracted services will be performed. The Source Disclosure Certification will be attached to the bid proposal.
- c. **MacBride Principles** - Pursuant to N.J.S.A. 52:34-12.2, a bidder must complete a certification on the DPMC form provided prior to contract award to attest, under penalty of perjury, that neither the person or entity, nor any of its parents,



subsidiaries, or affiliates pursuant to N.J.S.A. 52:34-12.2, that the bidder has no ongoing business activities in Northern Ireland and does not maintain a physical presence therein through the operation of offices, plants, factories, or similar facilities, either directly or indirectly, through intermediaries, subsidiaries or affiliated companies over which it maintains effective control; or will take lawful steps in good faith to conduct any business operations it has in Northern Ireland in accordance with the MacBride principles of nondiscrimination in employment as set forth in N.J.S.A. 52:18A-89.8 and in conformance with the United Kingdom's Fair Employment (Northern Ireland) Act of 1989, and permit independent monitoring of their compliance with those principles. If a contractor who would otherwise be awarded a contract or agreement does not complete the certification, then the Director may determine, in accordance with applicable law and rules, it is in the best interest of the State to award the contract or agreement to the next responsible bidder who has completed the certification. If the Director finds the contractor to be in violation of the principles which are the subject of this law, s/he shall take such action as may be appropriate and provided for by law, rule or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the contractor in default and seeking debarment or suspension of the contractor.

- d. Investment Activities in Iran - Pursuant to N.J.S.A. 52, 32-55, *et seq.*, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete a certification with their bid on the DPMC form provided to attest, under penalty of perjury, that neither the person or entity, nor any of its parents, subsidiaries, or affiliates, is identified on the Department of Treasury's Chapter 25 list as a person or entity engaging in investment activities in Iran. The Chapter 25 list is found on the Division of Purchase and Property's website at [www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf](http://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf). Bidders must review this list prior to completing the certification. Failure to complete the certification may render a bidder's proposal non-responsive. If the Director finds a person or entity to be in violation of law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.

## **IB 2 Bid Modification**

**IB 2.1** A bidder may modify its bid proposal by electronic mail or letter at any time prior to the scheduled closing time for receipt of bids, provided such communication is received by the DPMC prior to such closing time. A mailed confirmation of any modification signed by the bidder must have been mailed and time-stamped by the US Postal Service prior to the specified closing time. Such confirmation, whether transmitted electronically or by mail, shall be accompanied by a newly executed affidavit of non-collusion.

**IB 2.2** Communications shall not reveal the basic bid price but shall only provide the amount to be added, subtracted or modified so that the final prices or terms will not be revealed until the sealed proposal is opened. If written confirmation of the telegraphic modification is not received within two working days after the scheduled closing time, no consideration will be given to the telegraphic modification.

**IB 2.3** Bids may be withdrawn upon receipt of a bidder's written request prior to the time fixed for the bid opening. A bidder's right to withdraw a bid is lost after a bid has been opened. If an error has been made in the bid amount, request for relief from the bid may be made in writing to the Director. The written request shall be signed by an authorized corporate officer. A determination of whether the bidder will be released shall be at the sole discretion of the Director, who shall issue a finding within five working days of receipt of all pertinent information relating to such request for relief.

### **IB 3 Consideration of Bids**

#### **IB 3.1 Award of Contracts or Rejection of Bids:**

- a. Contracts will be awarded to the lowest responsible bidder. The awards will be made, or the bids rejected, within 60 calendar days from the date of the opening of bids. At the discretion of the Director, a bid extension may be requested from the bidders if circumstances warrant an extension.
- b. The Director reserves the right to award the contract on the basis of the single bid for the entire work, or on the basis of a separate bid and alternate, or any combination of separate bids and alternates, which the Director deems best serves the interest of the State.
- c. The Director reserves the right to waive any bid requirements when such waiver is in the best interests of the State, and where such waiver is permitted by law. Such waiver shall be at the sole discretion of the Director.
- d. The Director reserves the right to reject any and all bids when such rejection is in the best interests of the State. The Director also may reject the bid of any bidder which, in the Director's judgment, is not responsible or capable of performing the contract obligations based on financial capability, past performance, or experience. A bidder whose bid is so rejected may request a hearing before the Director by filing a written notice.

**IB 3.2** The bidder to be awarded the contract shall execute and deliver the requisite contract documents, including payment and performance bonds, within the time specified. Upon the bidder's failure or refusal to comply in the manner and within the time specified, the Director may either award the contract to the next low responsible bidder or re-advertise for new proposals. In either case, the Director may hold the defaulting bidder and its surety liable for the difference between the applicable sums quoted by the defaulting bidder and the sum which the State may be obligated to pay to the contractor which is contracted to perform and complete the work of the defaulting bidder.

## **IB 4 Awards**

**IB 4.1** In executing a contract, the successful bidder agrees to perform the required work in a good and workmanlike manner to the reasonable satisfaction of the Director, and to complete all work within the number of calendar days specified in its contract.

**IB 4.2** Successful bidders will be notified of the time and place for the signing of contracts. Key requirements in the contract, including, but not limited to, the number of days of performance of the contract, manner and schedule of payments, and other administrative details will be reviewed at the award meeting. The time and place of the first job meeting will be announced at the award meeting.

**IB 4.3** The State reserves the right to award the contract upon the basis of a single bid for the entire work, or on the basis of separate bids for each prime trade when the total of the separate bids is less than the single bid. Alternates will be accepted or rejected in numerical sequence as cited in the bid documents and shall not be selected at random except as provided herein. Add alternates and deduct alternates will be specified separately. The State may choose from the add and deduct alternates without priority between the two groups so long as selection within each group is in numerical sequence from the first to the last. This limitation shall not apply, however, to any alternates concerning proprietary items. The Director, with the approval of the Using Agency, may accept alternates out of sequence, provided the Director states the reasons for so doing, in writing, within five working days following the opening of bids.

**IB 4.4** Should submission of unit prices be required for specified items of work in bid proposals, they will be considered in the evaluation of bids as set forth in the bid proposal form.

**IB 4.5** The successful bidder and all of its subcontractors are required to comply with the requirements of N.J.S.A. 10:5-31 et seq., regarding Equal Employment Opportunity in Public Works Contracts.

## **IB 5 Qualification of Bidders**

**IB 5.1** If the successful bidder is a corporation not organized under the laws of the State of New Jersey or is not authorized to do business in this State (foreign corporation), the award of the contract shall be conditioned upon the prompt filing by the said corporation of a certificate to do business in this State and complying with the laws of this State in that regard. This filing must be made with the Division of Revenue. No award of contract will be made until the Division of Revenue confirms this authorization.

**IB 5.2** The State requires that each contractor, except in the case of a single contractor, shall perform a minimum of 35 percent of the contract work by the contractor's own forces. However, the Director has the sole discretion to reduce this percentage depending upon the nature and circumstances in any particular case, if the Director determines that to do so would be in the best interests of the State, and provided that the bidder submits a written request with the original bid proposal.

**IB 5.3** The State reserves the right to reject a bidder at any time prior to the signing of a contract if information or data is obtained which, in the opinion of the Director, adversely affects the responsibility and/or the capability of the bidder to undertake and to complete the work, regardless of the bidder's previous qualification or classification. The State may

conduct any investigation as it deems necessary to determine the bidder's responsibility and capacity, and the bidder shall furnish all information and data for this purpose as requested by the State.

**IB 5.4** Each bidder must be classified by DPMC in accordance with the provisions of the classification statute, NJSA 52:35-1, *et seq.*, In the case of a single bid for all of the work, the bidder shall include in the bid the names of its principal subcontractors (in categories as listed in IB1.2 above), which must also be classified in accordance with the said statute.

**IB 5.5** At the time of the bid due date, the bidder and the subcontractors must be registered in accordance with “The Public Works Contractor Registration Act”, N.J.S.A. 34:11-56.48, *et seq.* All questions regarding registration shall be addressed to:

Contractor Registration Unit  
New Jersey Department of Labor  
& Workforce Development  
Division of Wage & Hour Compliance  
P O Box 389  
Trenton NJ 08625-0389  
Telephone: 609-292-9464  
FAX: 609-633-8591

**IB 5.6** In accordance with N.J.S.A. 52:32-44, *et seq.* Public Law 2001, Chapter 134, all contractors and subcontractors providing goods/services to State agencies and authorities are required to provide the contracting agency or authority with proof of registration with the Department of Treasury, Division of Revenue. The basic registration process involves the filing of Form NJ-Reg., which can be filed online at [www.state.nj.us/njbgs/services.html](http://www.state.nj.us/njbgs/services.html) or by calling (609) 292-7077 or (609) 292-1730.

## **IB 6 Deposit and Bid Bond**

**IB 6.1** The Proposal, when submitted, shall be accompanied by a Bid Bond satisfactory to the Director, for the sum of not less than fifty percent (50%) of the Total Bid including alternates, if applicable.

**IB 6.2** The Bid Bond shall be properly filled out, signed, and witnessed.

**IB 6.3** The Bid Bond shall be accompanied by a copy of the power of attorney executed by the Surety Company or companies. The power of attorney shall set forth the authority of the attorney-in-fact who has signed the bond on behalf of the surety company to bind the company and shall further certify that such power is in full force and effect as of the date of the bond.

**IB 6.4** If the bidder whose proposal is accepted is unable to provide the performance and payment bonds or fails to execute a contract, then such bidder and the bid bond surety, where applicable, shall be obligated to pay to the State the difference between the amount of the bid and the amount which the State contracts to pay another party to perform the work. The bidder and the surety shall pay, upon demand, the entire amount of the State's difference in cost. Should there be a deficiency in excess of the bid deposit, the bidder shall make immediate payment to the State for any such deficiency. Nothing contained herein shall be construed as a waiver of any other legal remedies that the State may have against the contractor.

**IB 6.5** Attorneys-in-fact who sign bid bonds or contract bonds must file a certified power-of-attorney with the State indicating the effective date of that power.

## **IB 7 Performance and Payment Bond**

**IB 7.1** The successful bidder shall furnish within ten (10) calendar days after notice of award both a performance bond in statutory form in an amount equal to one hundred percent (100%) of the total contract price as security for the faithful performance of this contract and a payment bond in statutory form in amount equal to one hundred percent (100%) of the contract price as security for the payment of all persons and firms performing labor and furnishing materials in connection with this contract. The performance bond and the payment bond may be combined or in separate instruments in accordance with law. If combined, they must be for 200% of the award amount. No contract shall be executed unless and until each bond is submitted to and approved by the State. The surety must be presently authorized to do business in the State of New Jersey. In addition to the other coverage provided, the Bond shall cover all Contract guarantees and any other guarantees/warranties issued by the Contractor.

**IB 7.2** The cost of all performance and payment bonds shall be paid for by the successful bidder.

**IB 7.3** If at any time the State, for justifiable cause, is dissatisfied with any surety which has issued or proposes to issue a performance or payment bond, the contractor shall, within ten calendar days after notice from the State to do so, substitute an acceptance bond (or bonds). The substituted bond(s) shall be in such form and sum and executed by such other surety or sureties as may be satisfactory to the State. The premiums on such bond(s) shall be paid by the contractor. No contract shall be executed and/or no payment made under a contract until the new surety or sureties shall have furnished such an acceptable bond to the State.

**IB 7.4** Bonds must be legally effective as of the date the contract is signed. Each must indicate the contractor's name exactly as it appears on the contract. Current attorney-in-fact instruments and financial statement of the surety must be included with the bonds. Bonds must be executed by an authorized officer of the surety. Bonds furnished under this section shall conform in all respects to the requirement and language of NJSA 2A:44-143 to 147.

## **IB 8 Bulletins and Interpretations**

**IB 8.1** No interpretation of the meaning of the plans, specifications or other pre-bid documents will be provided to any bidder unless such interpretation is made in writing to all prospective bidders prior to the opening of bids. Any such interpretations must be identified in bid proposals submitted. Any interpretations which are not entered in accordance with this provision shall be unauthorized and not binding upon the State.

**IB 8.2** Every request for an interpretation relating to clarification or correction of the plans, specifications, or other bid documents must be made in writing, addressed to the architect/engineer and the DPMC Director, and must be received at least five (5) working days prior to the date fixed for the opening of the bids. Any and all interpretations, clarifications or corrections and any supplemental instructions must be issued by the Director in the form of written bulletins and mailed by certified mail, return receipt requested, or by electronic notice to all prospective bidders not later than three (3) working days prior to the date of the opening of bids. All bulletins issued shall become part of the contract documents and shall be acknowledged in all bid proposals. Failure of a bidder to acknowledge receipt of all such

bulletins and interpretations by the time of bid opening shall result in its proposal being considered non-responsive, at the option of the Director.

**IB 8.3** Each bidder shall be responsible for thoroughly reviewing the contract documents prior to the submission of bids. Bidders are advised that no claim for expenses incurred or damages sustained as a result of any error, discrepancy, omission, or conflict in the contract documents shall be recognized by the State unless, and only to the extent that, a written request for interpretation, clarification or correction has been submitted in compliance with Section IB8.2 and provided the matter has not been addressed by the State through the issuance of a bulletin interpreting, clarifying or correcting such error, discrepancy, omission or conflict.

## **IB 9 Assignments**

**IB 9.1** The contractor shall not assign all or any part of this contract without written consent of the State. Money due (or to become due) the contractor hereunder shall not be assigned for any purposes whatsoever.

## **IB 10 Federal Excise Taxes and State Sales Tax**

**IB 10.1** In general, bidders, in preparing bids, must take into consideration applicable Federal and State tax laws.

**IB 10.2** Materials, supplies or services for exclusive use in erecting structures or buildings or otherwise improving, altering or repairing all State-owned property are exempt from the State sales tax. The successful bidder must submit Division of Taxation form ST13, Exempt Use Certificate, to the seller of all materials, supplies or services that will be incorporated into the Work.

**IB 10.3** Bidders must determine the current status and applicability of any tax laws, and the contractor may make no claim based upon any error or misunderstanding as to the applicability of any tax laws.

**IB 10.4** Purchases or rentals of equipment are not exempt from any tax under the State Sales Tax Act.

## **IB 11 Restrictive Specifications**

**IB 11.1** Should any bidder determine before the bid due date that any portion of the specifications or drawings specify a particular product which can be provided by only one supplier or manufacturer, with the result that competitive prices are not available, the bidder shall immediately notify the Director in writing of such fact.

**IB 11.2** If such notice is not given in a timely manner, it shall be assumed that the bidder has included the estimate of such sole source in the bid. However, if the Director is notified in a timely manner of the sole source of supply or manufacture, the Director may order the product re-bid or take other lawful action. Such action shall be at the Director's sole discretion.



## **IB 12 Offer of Gratuities**

**IB 12.1** Bidders are advised that the laws of New Jersey (NJSA 52:34-19) make it a misdemeanor to offer, pay or give any fee, commission, compensation, gift or gratuity to any person employed by the State. Also, Executive Order #189 (1988) requires that all requests for proposals and contracts issued by the State specify prohibitions on vendor (contractor) activities, the violation of which shall render the vendor liable to ineligibility for State contracts, pursuant to the debarment procedures set forth in N.J.A.C. 17:19-4.1., *et seq.* These prohibited activities include the following:

- a. No vendor shall pay, offer to pay, or agree to pay, either directly or indirectly, any fee, commission, compensation, gift, gratuity, or other thing of value of any kind to any State officer or employee or special State officer or employee, as defined by NJSA 52:34D-13b. and e., in the Department of Treasury or any other agency with which such vendor transacts or offers or proposes to transact business, or to any member of the immediate family, as defined by NJSA 52:13D-13i., of any such officer or employee, or any partnership, firm, or corporation with which they are employed or associated, or in which such officer or employee has an interest within the meaning of NJSA 52:13D-13g.
- b. The solicitation of any fee, commission, compensation, gift, gratuity or other thing of value by any State officer or employee or special State officer or employee from any State vendor shall be reported in writing forthwith by the vendor to the Attorney General and the State Ethics Commission.
- c. No vendor may, directly or indirectly, undertake any private business, commercial or entrepreneurial relationship with, whether or not pursuant to employment, contract or other agreement, express or implied, or sell any interest in such vendor to, any State officer or employee or special State officer or employee having any duties or responsibilities in connection with the purchase, acquisition or sale of any property or services by or to any State agency or any instrumentality thereof, or with any person, firm or entity with which he is employed or associated or in which he has an interest within the meaning of NJSA 52:13D-13g. Any relationships subject to this provision shall be reported in writing forthwith to the Executive Commission on Ethical Standards, which may grant a waiver of this restriction upon application of the State officer or employee or special State officer or employee upon a finding that the present or proposed relationship does not present the potential, actuality or appearance of a conflict of interest.
- d. No vendor shall influence, or attempt to influence or cause to be influenced, any State officer or employee or special State officer or employee in his official capacity in any manner which might tend to impair the objectivity or independence of judgment of said officer or employee.
- e. No vendor shall cause or influence, or attempt to cause or influence, any State officer or employee or special State officer or employee to use, or attempt to use, his official position to secure unwarranted privileges or advantages for the vendor or any other person.

- f. The provisions cited above in paragraphs IB12.1.a. through e. shall not be construed to prohibit a State officer or employee or special State officer or employee from receiving gifts from or contracting with vendors under the same terms and conditions as are offered or made available to members of the general public subject to any guidelines the State Ethics Commission may promulgate under paragraph IB12.1.c. above.

## **END OF INSTRUCTIONS TO BIDDERS**



## GENERAL CONDITIONS

### ARTICLE 1 - GENERAL PROVISIONS

#### 1.1 DEFINITIONS:

1.1.1 Architect/Engineer: The Architect/Engineer (“A/E”) is the consultant engaged by the DPMC to prepare the design and perform certain contract administration functions in accordance with the provisions of its contract with the DPMC.

1.1.2 Bulletin: A document, issued by DPMC prior to the opening of bids, which supplements, revises or modifies the bid document(s).

1.1.3 Change in the Work: A change in the Project and the Contract Documents, including, but not limited to, an increase or decrease in the Work, an acceleration or extension of time for the performance of the Work.

1.1.4 Change Order: A written order, directing or authorizing a Change in the Work executed by the DPMC and agreed to by the Contractor (except in the case of unilateral change orders executed by DPMC) that includes all adjustments to work, compensation and/or time warranted by the Change in the Work.

1.1.5 Code Official: the individual licensed by the NJ Department of Community Affairs authorized to enforce the NJ Uniform Construction Code (UCC) and approve or reject the Work for NJ UCC compliance.

1.1.6 Construction Management Firm (“CMF”): A person or firm that may be engaged by the DPMC to assist DEP and DPMC in the administration of its contracts.

1.1.7 Contract: The entire and integrated agreement between the Contractor and the DPMC encompassing all of the Contract Documents.

1.1.8 Contract Documents: The executed form of Contract, General Conditions, Supplementary Conditions, Supplementary Instructions, Bulletins, plans, specifications, instructions to bidders, addenda, responses to requests for information, Price Proposal, Change Orders, other amendments, including construction change directives, and all exhibits, appendices and documents attached to or referenced in any of the foregoing materials.

1.1.9 Contract Limit Lines: The lines shown on the Contract Drawings that define the boundaries of the Project, and beyond which no construction work or activities may be performed by the Contractor unless otherwise noted on the drawings or specifications.

1.1.10 Contractor: The business entity with whom the DPMC enters a contract for the performance of the construction of a construction Project by the terms set forth in the Contract Documents.

1.1.11 Contract Price: The sum stated in the Contract, as it may be adjusted in accordance with the Contract Documents, that represents the total amount payable by the State to the Contractor for performance of the Work.

1.1.12 Day: A calendar day, unless otherwise designated.

1.1.12A DEP: The New Jersey Department of Environmental Protection.

1, 1.1.12B: DEP Project Director: The DEP representative designated to assist and direct the CMF with regard to the Contract and the Project Work, or such other person(s) as the DEP Project Director may authorize to act in his or her behalf.

1.1.13 Director: The DPMC person authorized by statute to administer the design, engineering and construction of all State buildings.

1.1.14 Division of Property Management and Construction (DPMC): The State of New Jersey's contracting agency for the design and construction of State facilities.

1.1.15 Final Acceptance and Completion: The date following receipt, review and acceptance by DEP, the CMF and DPMC of all administrative and close-out documents. Following acceptance, the DPMC will issue a Certificate of Final Acceptance and Completion for the Project.

1.1.16 Generally Accepted Accounting Principles: The common set of accounting principles, standards and procedures that companies use to compile their financial statements. Accounting records must identify all labor and material costs and expenses, whether they are direct or indirect. The identity must include at least the Project number for direct expenses and/or account number for indirect expenses.

1.1.17 NJUCC or Code: The New Jersey Uniform Construction Code which governs the permit and approval process for construction projects.

1.1.18 Notice: A written directive or communication given by the State to the Contractor to act or perform work or carry out some other contractual obligation, or a written communication to be served by the Contractor upon the State. A notice served on the Contractor will be deemed to have been duly served if delivered to an individual or member of the firm or entity or to an officer of the corporation for whom it was intended. This includes regular mail, e-mail, delivery by courier, or registered or certified mail, or facsimile to the Contractor's business address cited in the Contract documents. A notice from the Contractor to the State shall be deemed to have been duly served only if delivered to the Director or the Director's duly authorized representative.

1.1.19 Notice to Proceed: The written communication issued by the DPMC to the Contractor directing the Contractor to begin the Work. The contract calendar day duration period will commence on the effective date noted.

1.1.20 Project: The term for the entire public works engagement. It includes the design, construction work and all administrative aspects required to fully complete the engagement.

1.1.21 Punch List: The list of incomplete or defective Work, compiled by the CMF and the A/E, in consultation with DEP and/or its authorized representative, which remains to be completed after achievement of Substantial Completion.

1.1.22 Schedule: The time tracking mechanism that establishes the Project's allotted time requirements for completion as more specifically described in Article 6 of these General Conditions. When the construction activity items of the schedule have a monetary value associated with them, the schedule is referred to as a "costed" or "cost-loaded" schedule.

1.1.23 Site: The geographical location of the facility or property at which the Work under the Contract is to be performed.

1.1.24 State: The State of New Jersey, acting through DPMC or DEP.

1.1.25 Subcontractor: The business entity that enters into an agreement with the Contractor for the performance of work or materials under this Contract. Also refers to any agreement between a Subcontractor and any of lower tier Subcontractors. Such an agreement creates no relationship, legal or otherwise, between the DPMC and the Subcontractor(s) and/or lower tier Subcontractor(s).

1.1.26 Substantial Completion: The date when all essential requirements of the Contract Documents have been satisfied so that the purpose of the Contract Documents is accomplished, as determined by the DPMC including training of staff by the Contractor on all equipment, and resulting in the issuance of a temporary Certificate of Occupancy, a permanent Certificate of Occupancy or a permanent Certificate of Acceptance and when the Work and the facility can be safely occupied and used in accordance with its intended purpose. DPMC or DEP may condition issuance of a Certificate of Substantial Completion upon satisfactory receipt of critical documents.

1.1.27 Unit Schedule Breakdown: A detailed list of the Work activities required for Project construction, other elements associated with fulfilling the requirements of the Contract (bonds, insurance, etc.), major items of material, labor or equipment, and the prices associated with each of them.

1.2.28 Using Agency: The State department or agency for whom the construction project is being completed.

1.1.29 Work: All construction, supervision, labor, material and equipment necessary to complete the obligations under the Contract including Operation and Maintenance Manuals, Punch List completion, and As-Built Documents.

## 1.2 CONTRACT DOCUMENTS TO BE PROVIDED BY DPMC

Upon Contract award, the DPMC will furnish to the Contractor, free of charge, three copies of the drawings and specifications, and any additional instructions by means of supplemental contract documents as otherwise necessary for the proper execution of the Work, unless otherwise provided in the Contract Documents. Upon request, additional copies of the contract documents will be furnished at the Contractor's expense.

## 1.3 INTENT OF THE CONTRACT

1.3.1 The drawings, specifications and all of the Contract Documents are intended to require the Contractor to provide for everything necessary to accomplish the proper and complete finishing of all work. For the Project, the Contractor shall perform all of the obligations and work identified in the Contract Documents, regardless of the manner in

which it is divided among the trades or the order in which it appears in the Contract Documents. All work and materials included in the specifications and not shown on the drawings, or shown on the drawings and not in the specifications shall be performed and/or furnished by the Contractor. The Contractor shall include any incidental materials and/or Work not indicated in the drawings and/or the specifications which are nevertheless necessary for the development of the Project and are reasonably inferable from the contract documents and industry practice. The Contractor shall perform all such work and furnish all such materials as if particularly delineated or described in the contract documents as part of the bid proposal.

1.3.2 The Contractor acknowledges that in preparing its bid, the Contractor had the obligation to raise any reasonably observable errors, omissions, ambiguities or discrepancies and request an interpretation of the alleged errors, omissions, ambiguities or discrepancies. If the Contractor failed to do so, it will have waived all rights to a Change Order or claim and the Contractor will be responsible to complete the Work as required, consistent with the intent of the Contract Documents as interpreted by the DPMC and DEP, without additional compensation.

1.3.3 No interpretation of the meaning of the plans, specifications or other Contract Documents provided prior to bid submission shall be binding upon the State for any purpose unless issued in a Bulletin.

1.3.4 The Contractor shall abide by and comply with the intent and meaning of the Contract Documents taken as a whole, and shall not take advantage of any error or omission, should any exist. Should the Contractor become aware of the existence of any error, omission or discrepancy, the Contractor shall immediately notify the DEP, the CMF and the A/E of any such errors, omissions, ambiguities or discrepancies and seek correction or interpretation thereof prior to commencement of the Work at issue. The A/E will issue a written interpretation. The Contractor shall do no work outside of the Contract Documents, unless written authorization to proceed from the State is received by the Contractor.

1.3.5 Each and every provision required by law to be inserted in the Contract Documents is deemed to have been inserted therein. If any such provision has been omitted or has not been correctly inserted, then upon application of either party, the Contract may be modified to provide for such insertion or correction.

1.3.6 The order of precedence pertaining to interpretation of Contract Documents is as follows:

- a. Executed Contract
- b. Bulletins and Instructions
- c. Supplemental General Conditions
- d. Specifications and General Conditions
- e. Drawings, in the following order of precedence:
  - (1) Notes on drawings
  - (2) Large scale details
  - (3) Figured dimensions
  - (4) Scaled dimensions

1.3.7 Where there may be a conflict in the Contract Documents not resolvable by application of the provisions of this Article, then the more expensive labor, materials, or equipment shall be assumed to be required and shall be provided by the Contractor.

1.3.8 On all work, it shall be the responsibility of the Contractor, by personal inspection of the existing building, facility, plant, utility systems, roadways, or New Jersey Transit property and infrastructure, to ascertain the accuracy of any information given. This shall be the case, whether or not such information is indicated on the drawings, included in the specifications, or shown in any other documentation that is available. The Contractor shall have an affirmative duty to make reasonable inquiry for all available information. The Contractor shall include the costs of all material and labor required to complete the Work based on inspection and reasonably observable conditions.

## 1.4 WORKDAYS

Regular working hours will be defined in the Contract Documents. Changes thereto may be granted with written approval of the DEP Project Director. Any work required to be performed after regular working hours or on Saturdays, Sundays, or legal holidays as specially set forth in the Contract documents, as may be reasonably required and consistent with contractual obligations, shall be performed at the amount set forth in the Contractor's bid without additional expense to the State. The Contractor shall obtain written approval of the DEP Project Director for performance of work after regular working hours or on non-regular workdays at least forty-eight (48) hours prior to the commencement of overtime, unless such overtime work is caused by an emergency. If the Contractor seeks such approval for the overtime work, same shall be performed at no additional cost to the State except in the event of an emergency, at which time, the State, in its sole discretion, shall determine if the submitted overtime is compensable.

## 1.5 ASSIGNMENTS

The Contractor shall not assign all or any part of this Contract without the written consent of the Director. Money due (or to become due) the Contractor hereunder shall not be assigned for any purpose whatsoever without the written consent of the Director.

## 1.6 STATE SALES TAX

1.6.1 Materials, supplies or services for exclusive use in the construction of structures or buildings or otherwise improving, altering or repairing all State-owned property are exempt from the State sales tax.

1.6.2 Purchases or rentals of equipment are not exempt from any tax under the State Sales Tax Act.

## 1.7 EASEMENTS

A portion of the Work is to be constructed within easements obtained by the State for private property owners or other State Agencies. The Contractor is to contain his work and operations within the permanent or temporary easements obtained by the State. Easement maps are included in the Contract Documents. Any damage to property or structures outside the easements caused by the Contractor, its employees, Subcontractors, and Vendors or agents, shall be repaired and restored to original condition by the Contractor at no cost to the State.

## **ARTICLE 2 - STATE/DPMC/DEP**

### **2.1 DPMC'S REPRESENTATION**

The DPMC will be represented on the Project by the DEP Project Director and other representative(s) as may be designated by the DEP Project Director. Such designated representative(s) have only those duties that are required of the State under this Contract.

### **2.2 RIGHT TO PERFORM WORK**

The DPMC or DEP may, and reserves the right to, enter upon the premises at any and all times during the progress of the Work, or cause others to do so, for the purpose of performing any work or installing any apparatus or carrying on any work of any kind not included in the Contract Documents, or for any other reasonable purpose.

The DPMC or DEP shall have the right to defer the beginning of Work or to suspend the whole or any part of the Work whenever, in the sole discretion of the DPMC or DEP, it may be necessary or expedient for the State to do so.

### **2.3 MEANS AND METHODS**

The State will not be responsible for, nor have control or charge of construction means, methods, techniques, sequences of procedures, or safety precautions and programs in connection with the Work. The State will not be responsible for, nor have control or charge of, the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other person performing any of the Work.

## **ARTICLE 3 ARCHITECT/ENGINEER**

### **3.1 DUTIES AND RESPONSIBILITIES**

3.1.1 The Architect/Engineer (“A/E”) is the consultant engaged by the DPMC to prepare the design and perform certain contract administration functions in accordance with the provisions of its contract with the DPMC.

### **3.2 PROGRESS MEETINGS**

The A/E/ will attend and will assist the CMF in issuing record minutes of bi- weekly job progress meetings.

### **3.3 SITE OBSERVATIONS**

3.3.1 The A/E will assist the CMF in monitoring the execution and progress of the Work when necessary. The A/E shall at all times be provided reasonable and safe access to the Work. The Contractor shall provide facilities for such access so as to enable the A/E to perform its functions.

3.3.2 The A/E will not be responsible for, nor have control or charge of construction means, methods, techniques, sequences of procedures, or safety precautions and programs in connection with the Work. The A/E will not be responsible for, nor have control or charge of, the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other person performing any of the Work.

### **3.4 SHOP DRAWINGS AND SUBMITTALS**

As more specifically described in Article 4, the A/E will review, approve or take other appropriate action relating to Contractor’s submittals, including shop drawings, product data and samples, and as – built drawings, to assure conformance with the requirements of the Contract. Such actions shall be taken with reasonable promptness. Approval of a specific item shall not indicate approval of an assembly of which the item is a component.

### **3.5 PAYMENT APPROVALS**

3.5.1 The A/E will assist the DPMC, the DEP and the CMF with the review of all invoices submitted by the Contractor.

3.5.2 The A/E will assist the DPMC, the DEP and the CMF in reviewing and recommending approval of Contractor closeout documentation in conjunction with the final application for payment.

## **ARTICLE 3A CONSTRUCTION MANAGEMENT FIRM**

### **3A.1 DUTIES AND RESPONSIBILITIES**

3A.1.1 The CMF is the consultant engaged by the DPMC to perform certain contract administration functions and to assist DEP and DPMC in management of the Project and direction of the work of the Contractor, in accordance with the provisions of its contract with the DPMC. In performance of its duties on the Project, the CMF shall be considered an independent contractor and not an agent of DEP or DPMC, and shall not have the authority to issue binding directives to the Contractor on DEP's or DPMC's behalf.

### **3A.2 PROGRESS MEETINGS**

The CMF will schedule, attend and chair and will issue record minutes of bi-weekly job progress meetings.

### **3A.3 SITE RESPONSIBILITIES**

3A.3.1 The CMF will assist DEP and DPMC in managing the execution and progress of the Work. The CMF shall at all times be provided reasonable and safe access to the Work. The Contractor shall provide facilities for such access so as to enable the CMF to perform its functions.

3A.3.2 The CMF will not be responsible for, nor have control or charge of construction means, methods, techniques, sequences of procedures, or safety precautions and programs in connection with the Work. The CMF will not be responsible for, nor have control or charge of, the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other person performing any of the Work.

### **3A.4 SHOP DRAWINGS AND SUBMITTALS**

The CMF will assist the A/E and DEP in the review of Contractor's submittals, including shop drawings, product data and samples, and will monitor the Contractor's updating of as – built drawings as the Work progresses.

### **3A.5 PAYMENT APPROVALS**

3A.5.1 The CMF, together with the DPMC and the DEP will review all invoices submitted by the Contractor.

3.5.2 The CMF, in consultation with the DPMC, the DEP and the A/E, will review and recommend approval of Contractor closeout documentation in conjunction with the final application for payment.



## **ARTICLE 4 - THE CONTRACTOR**

### **4.1 REVIEW OF THE CONTRACT DOCUMENTS AND FIELD CONDITIONS**

4.1.1 The Contractor shall thoroughly examine and be familiar with all of the Contract Documents and the Site. The Contractor shall investigate and accurately determine the nature and location of the Work, the current site conditions including access to the Work, labor and material conditions, and all matters which may affect the Work or its performance.

4.1.2 The Contractor shall be deemed to have verified all reasonably observable conditions outside the Contract limit lines to determine whether any conflict exists with the Work that the Contractor is required to perform under the Contract. This includes but is not limited to a check on elevations, utility connections and other site data. If a condition changed from the time of the bid to the time of the issuance of the Notice to Proceed, the Contractor shall notify the DEP, CMF and A/E immediately. The Contractor shall immediately report any conflicts prior to the bid proposal due date or waive any claim for additional compensation arising from such conflict.

4.1.3 During the progress of the Work, the Contractor shall immediately report in writing any alleged error, inconsistency, ambiguity or omission in the Contract Documents to DEP, the CMF and A/E. The Contractor shall not continue with any work that is affected by such alleged error, inconsistency, ambiguity or omission until the DEP has had the opportunity to respond. Any error, inconsistency, ambiguity or omission shall be addressed pursuant to appropriate procedures set forth in these General Conditions.

4.1.4 Following notification of an alleged error, inconsistency, ambiguity or omission, the DEP may issue supplemental instructions for the proper execution of the Work. The Contractor shall do no work without proper supplemental instructions. In giving such supplemental instructions, the DEP shall have the right to direct the Contractor to make minor changes in the Work without payment of additional monies. This provision is not intended to infringe upon or limit the DEP's and DPMC's authority to otherwise direct changes in the Work, described elsewhere in these general conditions.

4.1.5 Where certain work is shown in complete detail, but not repeated in similar detail in other areas of the drawings, or if there is an indication of continuation with the remainder being shown only in outlines, the Work shown in detail shall be understood to be required in other like portions of the Project.

4.1.6 Unless otherwise directed in writing by the DEP or the DPMC, the Contractor shall perform no portion of the Work without appropriate approvals as may be applicable and required by the Contract Documents.

4.1.7 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, equipment, materials, tools, construction equipment and machinery, water, heat, utilities, transportation and other facilities and services necessary for the proper execution, protection, and completion of the Work.

## 4.2 INSURANCE

The Contractor shall secure and maintain in force, for the term of the Contract, insurance coverage provided in Section 13.4. The Contractor shall provide the State of New Jersey with current certificates of insurance for all coverage and renewals thereof which must contain a provision that the insurance provided in the certificate shall not be canceled for any reason except after thirty (30) calendar day's written notice to the State of New Jersey. If cancellation occurs, the Contractor shall immediately procure new coverage, not allowing any lapse of coverage to occur.

## 4.3 PERMITS, LAWS, AND REGULATIONS

4.3.1 .1 The DEP will obtain and pay for environmental permits required by the NJDEP or Army Corps of Engineers.

4.3.2 .2 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work, and which are legally required at the time of receipt of bids.

4.3.3 .3 The Work performed pursuant to this Contract is exempt from local ordinances, codes and regulations as related to the building and the Site on which it is located, except in certain limited circumstances, where construction could adversely affect adjacent property, public sidewalks and/or streets. In those instances, the Contractor shall coordinate its activities with municipal and/or highway authorities having appropriate jurisdiction.

4.3.4 Immediately upon receipt of the contract award documents from the DPMC, the Contractor shall notify all utility companies involved regarding utility services required for completion of the Work. Such notification shall be in addition to any notification requirements imposed by law, including, without limitation, the Underground Facility Protection Act, N.J.S.A. 48:2-73, et seq.

4.3.5 The Contractor shall perform all soil conservation measures in accordance with County Soil Conservation District requirements.

4.3.6 The Contractor shall dispose of all water collected during dewater operations in accordance with NJDEP regulations and the North Hudson Sewerage Authority (NHSA) requirements. If the Contractor chooses to dispose of the groundwater into the NHSA collection system, the Contractor shall be responsible for all fees and costs required by the NHSA.

4.3.7 Consistent with section 4.4 of these General Conditions, the Contractor shall be responsible for its own actions and protect, defend and indemnify the State from all fines, penalties or loss incurred for, or by reason of, the violation of any municipal ordinance or regulation or law of the State while the said work is in progress.

4.3.8 The Contractor shall comply with the Federal Occupational Safety and Health Act of 1970 and all of the rules and regulations promulgated there under.

4.3.9 If the Contractor causes a substantial violation of a State, local or federal statute or regulation on the Project, DPMC may declare the Contractor to be in default, and/or terminate the Contract.

4.3.10 Prior to the start of any crane equipment operations, the Contractor shall make all necessary applications and obtain all required permits from the Federal Aviation Administration (F.A.A.). When the F.A.A. has jurisdiction, the sequence of operations, timing and methods of conducting the Work shall be approved by the F.A.A.

4.3.11 The Contractor shall establish an approved Silica Health and Safety Program when tasks generating crystalline silica dust are being performed. This program shall include engineering, work practice, and respiratory protection controls to reduce worker exposure to airborne respirable crystalline dust to levels that are as low as reasonably achievable. When tasks are performed that generate airborne crystalline dust, the Contractor will minimize worker exposure to dust by one, or a combination of the following methods: 1) dust suppression with water, 2) local exhaust ventilation to a high-efficiency dust collector, and/or 3) appropriate respiratory protection devices. The Contractor shall provide a trained, competent person, as defined by OSHA 29 CFR 1926, on site at all times to implement the Silica Health and Safety Program when tasks generating crystalline silica dust are being performed.

#### 4.4 RESPONSIBILITY FOR THE WORK

4.4.1 The Contractor shall be responsible to the State and to any separate Contractors and/or consultants including, without limitation, the CMF, the A/E, for the acts, errors and omissions of its employees, Subcontractors and their agents and employees that injure, damage or delay such other Contractors and/or consultants in the performance of their work.

4.4.2 The Contractor shall be responsible for all damage or destruction caused directly or indirectly by its operations to all parts of the Work, both temporary and permanent, and to all adjoining property at no cost to the State.

4.4.3 The Contractor shall, at its own expense, protect all finished work and keep the same protected until the Project (or identifiable portions thereof, that are declared as substantially complete and being used) is completed and accepted.

4.4.4 The Contractor shall be responsible for safety and for any damage or injury which may result from the Contractor's failure or improper construction, maintenance or operation.

4.4.5 In order to protect the lives and health of its employees, the Contractor shall comply with all applicable statutes and regulations and pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain accurate records of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work arising out of and in the course of employment on work under the Contract. If a conflict should exist with the requirements of the Federal Occupational Safety and Health Act of 1970, then the most stringent statute or pertinent provision shall apply.

## 4.5 INDEMNIFICATION

4.5.1 The Contractor shall assume all risk of and responsibility for, and agrees to protect, defend and indemnify the State of New Jersey, its agents, and its employees, from and against, any and all claims, demands, suits, actions, recoveries, judgment and costs of expenses in connection therewith on account of the loss of life, property, injury or damage to the person, body or property of any person or persons whatsoever, resulting from the Contractor's performance on the Project or through the use of any improper or defective machinery, implements or appliances, or through any act or omission on the part of the Contractor or its agents, employees or servants, which shall arise from or result directly or indirectly from the Work and/or materials supplied under this Contract. This indemnification obligation is not limited by, but is in addition to, the insurance obligations contained in this Contract.

4.5.2 In any and all claims against the State or any of its agents or employees, any employees of the Contractor or Subcontractor or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under this section shall not be limited in any way as to the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under worker's compensation acts, disability benefit acts, or other employee benefit acts.

## 4.6 SUPERVISION

4.6.1 The Contractor shall attentively supervise and direct the Work. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

4.6.2 The Contractor shall employ a full-time competent superintendent and necessary foremen and assistants, who shall be in attendance on the Project Site during the progress of the Work. The superintendent shall represent the Contractor, and all communications given to the superintendent shall be binding upon the Contractor. The State reserves the right to require a change in superintendent if the superintendent's performance, as judged by the DEP or the DPMC, is deemed to be inadequate.

4.6.3 The Contractor shall ensure that its Subcontractors shall likewise have competent superintendents in charge of their respective portions of the Work at all times. Upon application in writing, and if deemed appropriate and expressly approved by the DEP, the requirement for a full-time superintendent may be waived. If such a waiver is permitted, the Subcontractor shall employ a full-time competent foreman who shall be in attendance on the site during the progress of work and shall represent the subcontractor, and all communications given to the foreman shall be binding upon the Subcontractor. The Subcontractor shall not employ persons unfit or unskilled in the assigned area of work. If it becomes apparent that a Subcontractor does not have its portion of the Work under control of a competent foreman, the Contractor shall have the obligation to take appropriate steps to immediately provide proper supervision.

4.6.4 The Contractor shall employ qualified competent craftsmen in their respective lines of work. The State may require evidence that all employees have received sufficient training to execute the Work.

4.6.5 If, due to a trade agreement or project labor agreement, standby personnel are required to supervise equipment installation or for any other purpose during the normal working hours of other trades, the Contractor normally required to provide the standby services shall be deemed to have evaluated and included the costs thereof in its bid price and shall provide said services without additional charge.

4.6.6 .6 The Contractor shall at all times enforce strict discipline and good order among its employees and shall not employ any unfit person or anyone not skilled in the task assigned.

## 4.7 SHOP DRAWINGS AND OTHER SUBMITTALS

4.7.1 The Contractor shall, within two weeks of the Notice to Proceed, submit to the CMF for approval by the A/E, shop drawings and sample submission schedule for approval, which shall be used as a basis for complying with the overall progress schedule. The Contractor shall obtain, from its Subcontractor(s), all submittals including shop drawings, details, and schedules. The Contractor shall review the submittals for completeness and conformity with the Contract Documents, and shall stamp the submittals "approved." The Contractor shall promptly submit to the Construction Manager two copies of each submittal in reproducible form for its review. The shop drawing and sample submission schedule shall be developed so as not to cause any delay in the Contractor's own work or that of any other contractor. The DPMC Project number and the drawing and specification references shall be written or typed on all submissions. Failure to comply with these instructions will be sufficient reason to return the drawing to the Contractor without approval and any resulting delay in the Project shall be the sole responsibility of the Contractor.

4.7.2. The A/E will review shop drawings and other submittals with reasonable promptness. The Contractor shall promptly make any corrections, if required by the A/E, and resubmit a reproducible copy to the Construction Manager for approval by the A/E. Within five (5) working days of final approval, the Contractor shall send the A/E a minimum of seven (7) prints of the finally approved shop drawings as well as seven (7) copies of all catalog cuts, as well as electronic files of all finally approved shop drawings and catalog cuts. The Construction Manager will dictate the appropriate file type for any electronic files submitted by the Contractor.

4.7.3 The Contractor shall prepare original shop drawings, and not simply copy the Contract Drawings for submission as shop drawings. All shop drawing sizes shall be in multiples of 9" x 12" (e.g., 18" x 24", 24" x 27", 24" x 36", etc.) as approved by the A/E.

4.7.4 Any deviations or changes from the requirements of the Contract Documents, must be approved by the A/E. A Contractor seeking approval for any deviations or changes must: a) make a written request for the proposed change; b) provide to the A/E a detailed narrative description of the proposed change; c) highlight on the applicable drawing the proposed change; and d) furnish a detailed description of all potential impacts on the schedule and project budget.

#### 4.7.5 Substitutions

4.7.5.1 Where any particular brand or manufactured article is specified, it shall be regarded as a standard. Similar products of other manufacturers, capable of equal performance and quality, may be accepted if approved by the A/E and CMF and accepted by the DEP Project Director in writing.

4.7.5.2 In the event that a Contractor proposes a substitution to the specified equipment or materials, it shall be the Contractor's responsibility to submit proof of equality and to provide and pay for any tests which may be required by the DEP in order to evaluate the proposal. If there is a substantial cost savings between the substitution and the specified equipment or material, the difference will be returned to the State in the form of a credit Change Order.

4.7.5.3 The application for the approval of a substitution must be submitted on the State form within 10 days of Notice to Proceed. Further, the submission shall include the following requirements:

- a. A Full and complete identification information;
- b. The identification of the paragraph and section of the specifications for which the substitution is proposed. The attachment of data indicating in detail whether and how the equipment or material differs, if at all, from the article specified;
- d. A detailed explanation of any effect the proposed substitution will have on the scope of the Work and a certification that the Contractor agrees to be responsible for any and all resulting added costs to its Work and to any additional costs incurred by the A/E in time, labor and/or redesign of the Contract Documents;
- e. The submission of documents that demonstrate proof of equality, along with an agreement to have such tests performed at the Contractor's own expense as may be required for approval by the DPMC and/or the A/E. The Contractor shall be responsible for the cost of reviews by the A/E of subsequent submissions of additional information.

4.7.5.4 No Contractor shall base a bid on a substitution that may have been approved on previous Projects. Bids shall be based solely on plans and specifications of this Project.

4.7.5.5 The Contractor shall not proceed with the purchase or installation of a substitution without the written approval of the CMF and the DEP Project Director. Any such installation may result in the assessment of costs for its removal at the Contractor's expense, and/or other damages and/or termination of the Contract for default.

#### 4.8 AS-BUILT DRAWINGS

4.8.1 The Contractor shall maintain on the Project Site at all times one set of drawings to be marked "AS-BUILT". The DEP and CMF shall have the right to rely on the accuracy of the "as-built" drawings provided by the Contractor. During the course of the Project, the Contractor shall mark these drawings with colored pencils to reflect any changes, pile locations and depths, foundation depths, as well as the dimensions

and locations of all utilities encountered. These marked-up drawings shall remain current and shall be made available to DEP or the CMF at all times during the progress of the Work.

4.8.2 In instances where shop drawings and/or erection drawings, of a scale larger than the Contract Drawings, are prepared by the Contractor, such drawings may be acceptable "as-built" drawings provided they are updated. A master sheet of the same dimensions as the Contract Drawings shall be prepared by the Contractor that shall indicate, sheet by sheet, a cross-reference to all shop drawings pertaining to that drawing.

4.8.3 The Contractor shall submit the "as-built" documents to the CMF for approval by the A/E with a certification as to the accuracy of the information thereon at the time of Contract completion and before final payment will be made to the Contractor. After review and acceptance by the A/E, the Contractor will furnish two sets of all shop drawings from Article 4.7.2 used for "as-built" documentation.

4.8.4 All "as-built" drawings as submitted by the Contractor shall be dated and labeled "AS- BUILT" above the title block. This information shall be checked, edited and certified by the Architect/Engineer, who will then transpose such information from the Contractor's "as-built" drawings to the original drawings. Where shop drawings have been used by the Contractor for "as-built" documentation, the master sheet providing cross reference information, as described in section 4.8.2, shall be included in the set of "as-built" drawings furnished to DEP.

#### 4.9 EXCAVATIONS, CUTTING AND PATCHING

4.9.1 Soil borings, test pits or other subsurface information may be secured by an independent contractor retained by the State prior to design and construction of the Project and, if obtained, may be included in the Contract Documents for the Contractor's use. The Contractor assumes full responsibility for interpretation of said information.

4.9.2 The Contractor shall be responsible for furnishing and setting of sleeves, built-in items, anchors, inserts, and other necessary materials for its work and for all cutting, fitting, closing in, patching, finishing, or adjusting of its work in new and/or existing construction, as required for the completed installation.

#### 4.10 TESTING

4.10.1 Contractor shall notify the DEP Project Director in writing of all work required to be inspected or tested. The notice shall be provided no later than five working days prior to the scheduled inspection or test. The Contractor shall bear all costs of such inspections or tests, except for Code inspections as stated in section 4.3 of this document.

4.10.2 When mechanical, electrical or other equipment is installed, it shall be the responsibility of the installing Contractor to maintain, warrant and operate it for such period of time as required by the Contract Documents or as necessary for the proper inspection and testing of the equipment and for adequately instructing the State's operating personnel. All costs associated with the maintenance, warranty, operations, inspection and testing of equipment, as well as instructing State personnel, shall be borne by the Contractor installing the equipment. All tests shall be conducted in the presence of, and upon timely notice to, the DEP, A/E and CMF prior to acceptance of the equipment.

4.10.3 DEP Project Director shall have the authority to direct in writing that special or

additional inspections or tests be performed. The Contractor shall comply and give notice as detailed above.

4.10.4 In the event such special or additional inspections or testing reveal a failure of the Work to comply with the terms and conditions of the Contract, the Contractor shall bear all costs thereof, including all costs incurred by the State made necessary by such failures.

4.10.5 Contractor shall utilize inspection or testing from those firms/entities pre-qualified by DPMC. Failure to use a firm/entity pre-qualified by DPMC shall be grounds for rejection of the inspection or test as non-conforming.

4.10.6 All submittals of inspections, test reports or requests for approval shall be accompanied by a certification signed by the Contractor, attesting to: the Contractor's knowledge of the submittal; acceptance of its findings; acknowledgment that material testing meets the required standards; and a certification of the report's representation of the facts. Failure to provide the written certification shall be grounds for rejection of the submittal.

4.10.7 Contractor shall ensure that a copy of the inspection report is transmitted directly to the CMF and the DEP. The Contractor shall ensure that it includes in all of its subcontracts and purchase orders for inspection and testing, the requirement for the inspection or testing firm/entity to submit a copy of the report directly to the DEP Project Director. The Contractor shall ensure that all such reports are submitted within fourteen (14) calendar days of the test or inspection.

4.10.8 In addition to tests performed by the Contractor, the State reserves the right to engage an independent testing agency or firm to perform testing inspections. The Contractor shall provide full access, provide samples, and cooperate fully with this testing agency.

4.10.9 Testing requirements for real property installed equipment (RPIE) to be furnished by the Contractor, when such testing is required by Code, Contract, or the manufacturer, shall be performed by a testing laboratory pre-qualified by DPMC, or in the absence of such, by the manufacturer or its authorized representative. The Contractor shall provide five working days' notice to the DEP Project Director, to allow sufficient opportunity to witness the test.

4.10.10 The DEP Project Director may order that any part of the Work be re-examined by the DEP, and if so ordered, the Contractor shall open or uncover such work for re-inspection by the DEP Project Director. If such work is found to be in accordance with the Contract, the DEP shall pay the cost of re-inspection; however, if such work is not found to be in accordance with the Contract, the Contractor shall be responsible for the cost of re-inspection and replacement of any defective or non-conforming work.

#### 4.11 EQUIPMENT AND MATERIALS

4.11.1 Contractor warrants that all materials and equipment furnished under the Contract will be new, unless otherwise specified, and that all work will be of good quality, free from faults, defects, and installed in conformance with the Contract Documents. All work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective and rejected by the DEP Project Director or the A/E. If required by the A/E or the DEP Project Director, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty



shall be in addition to but not in lieu of any other warranty or guarantee provided for in the Contract.

4.11.2 Contractor shall submit to the CMF for approval by the Architect/Engineer an original and six copies of the request for approval of materials on the form provided by DEP for approval. Each item of material listed shall be marked "As Specified", "Substitution" or "Unspecified" as appropriate.

4.11.3 Contractor shall furnish and deliver the necessary equipment and materials in ample quantities and as frequently as required to avoid delay in the progress of the Work and shall store them so as not to cause interference with the orderly progress of the Project.

4.11.4 Contractor shall furnish and pay for all necessary transportation, storage, scaffolding, centering, forms, water, labor, tools, light and power and mechanical appliances and all other means, materials and supplies for properly executing the Work under this Contract, unless expressly specified otherwise in the Contract Documents. The Contractor shall have its representatives at the Site to accept delivered materials. State agencies employees and/or representatives will not accept materials, nor will State agency employees and/or representatives be responsible for damage, theft, or disappearance of the Contractor's materials, equipment, tools, or other property.

4.11.5 Only domestic materials shall be acquired or used for this work unless the Director, or other public officer charged with the duty by law, shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, or domestic materials of the class or kind to be used are not mined, produced or manufactured, as the case may be, in the United States in commercial quantities and of a satisfactory quality.

4.11.6 No materials, equipment, or supplies for the Work shall be purchased by the Contractor subject to any lien or encumbrance or other agreement by which an interest is retained by the seller. This clause shall be a condition included in all agreements between the Contractor and its Subcontractors. The Contractor warrants, by signing its invoice, that it has good and sufficient title to all such material, equipment and supplies used by it in the Work, free from all liens, claims or encumbrances.

## 4.12 TEMPORARY FACILITIES

4.12.1 The Contractor shall be responsible for providing for its own storage areas, employee vehicular parking and staging areas, excavation borrow/spoils designated areas, commercial canteen areas, and all other areas necessary for use by the Contractor. The Contractor shall locate these areas to be reviewed and coordinated with the DEP and CMF. These areas must comply with all Municipal regulations and ordinances.

4.12.2 Field Offices - The Contractor shall provide and maintain during the contract duration an on-site suitable weather-tight insulated field office conveniently located, and shall maintain therein a complete set of Contract Documents including plans, specifications, CPM network diagrams, Change Orders, logs and other details and Project correspondence. The Contractor shall maintain the field office until final acceptance or until the DEP Project Director approves its removal. The Contractor shall be responsible to obtain and pay for all permits required for the Contractor's field offices.

4.12.3 Telephones - The Contractor shall provide its own telephones. The State will be responsible only for the cost of calls made by State employees, if there is a documented cost for same.

4.12.4 age - The Contractor will provide and maintain, for its own use suitable and safe temporary storage, tool shops, and employees' sheds for proper protection, storage work and shelter. The Contractor shall maintain these structures properly and remove the structures at the completion of work. The Contractor shall be responsible to maintain these facilities and the areas around the facilities in a clear and clean manner. The Contractor shall be responsible for correcting defects and damage caused by such use. .

### 4.12.5 Facilities

- a. The Contractor shall provide and pay for suitable temporary toilets at an approved location on the Site and prior to the start of any field work. The toilet facilities shall comply with federal, State and local laws and regulations. The Contractor will be responsible for maintenance, removal and relocation as described hereinafter.
- b. The Contractor shall provide a temporary toilet and/or indoor toilet connected to water and sewer to accommodate the meeting room and the Architect/Engineer's office, as well as the CMF's office and the DEP office.
- c. Toilets shall be serviced by a qualified and experienced firm authorized to maintain services.
- g. Each portable toilet facility shall be maintained in a neat and clean condition and serviced at least twice a week, including the removal of waste matter, sterilizing, recharging tank, refilling tissue holders, and thoroughly cleaning and scrubbing entire interior. When temporary toilets are connected to water and sewer lines, precautions shall be taken to prevent freezing. The Contractor shall remove the temporary toilet units from the Site at the completion of the Work, or when so directed by the DEP Project Director or the CMF.

### 4.12.6 Access, Roads and Walks

- a. The Contractor shall be responsible for providing and maintaining

unobstructed access to all office trailers and temporary storage areas provided for the Work. The Contractor shall provide and maintain all reasonably required safety devices. The Contractor shall not store or leave during non-work hours, any materials or equipment within municipal rights-of-way without the permission of the DEP or CMF. The Contractor shall provide any necessary additional materials, grading and compaction, and shall remove snow, ice and debris as necessary to provide and maintain access roadway and pedestrian ways in serviceable and safe condition.

b. The Contractor shall be responsible for providing and maintaining unobstructed traffic lanes, temporary pedestrian walkways, drives and parking areas within or proximate to the Site free and clear of debris, gravel, mud, snow, ice or any other Work zone materials, by ensuring that all reasonably necessary measures are taken to prevent such materials from being deposited on such surfaces. This includes as may be appropriate, the cleaning of vehicle wheels and/or other necessary maintenance, prior to exit from the Construction Work zones. Should such surface require cleaning, the Contractor shall clean these surfaces without additional cost to the State. The Contractor will be held accountable for any citations, fines or penalties imposed on the State for failing to comply with local rules and regulations related to Work zone and off-Work zone maintenance.

c. The Contractor shall not commence final construction of permanent roadways, driveways, parking areas or walks without the written approval of the DEP Project Director. The Contractor shall provide additional materials and labor for maintaining and reworking the sub-grade prior to completion of the Work, to ensure improvements conform fully to the specifications.

d. The Contractor shall obtain written permission from the State for the use of any existing driveways or parking areas not specifically designated for such use in the Contract Documents. If permission is granted, the Contractor shall maintain such driveways and areas in good condition during the construction period, and at the completion of the Project, shall leave them in the same or better condition as at the start of the Work. Conditions before use shall be carefully photographed and documented by the Contractor.

#### 4.12.7 Light and Power

a. The Contractor shall extend sufficient electrical service to the temporary construction offices and all other structures to receive electrical service at locations approved by the DEP Project Director. Temporary electrical service shall be independent of the existing permanent service. Initial temporary service shall be three phase or single phase as indicated in the Contract Documents. The Contractor is responsible to investigate and verify the appropriateness and availability of electrical service with the local utility company prior to the bid date. The Contractor's bid shall be deemed to include all costs associated with providing this power. Temporary light and power installations, wiring, and miscellaneous electrical hardware must meet the electrical Code and will be inspected by NJUCC officials. The Contractor shall provide the necessary distributing facilities and a meter, and shall pay the cost of running temporary services from the nearest utility company power pole. All costs shall be included in the Contractor's bid.

b. In the event that a water well is the source of water supply for the Project,

the extension of electrical service shall include the necessary wiring of sufficient capacity to the location of the well for the operation of the well pump. Where service of a type other than herein mentioned is required, the Contractor requiring it shall install and pay all costs of such special service. The size and incoming service and main distribution switch and panel shall be sized as any service by NEC requirements.

c. The Contractor shall pay for the cost of all electric energy used on distribution lines installed.

d. The Contractor shall provide and pay for all maintenance, servicing, operation and supervision of the service and distribution facilities.

e. If the Contractor fails to carry out its responsibility in the supplying uninterrupted light and power as set forth herein, the Contractor shall be held responsible for such failure, and the DEP Project Director shall have the right to take such action as is deemed proper for the protection and conduct of the Work. Any costs associated with DEP Project Director obtaining or supplying light and power shall be deducted from any payment due to the Contractor.

f. The Contractor shall comply with the requirements of the Federal Occupational Safety and Health Act of 1970 with regard to temporary light and power.

#### 4.12.8 Temporary Enclosures and Heat

Whenever necessary, and in order to maintain proper temperatures for execution or protection of the Work, the Contractor shall furnish and maintain temporary enclosures. Heat for the protection of the work is to be provided by the Contractor.

#### 4.12.9 Temporary Water

a. The Contractor shall provide, protect and maintain an adequate valved water supply. The Contractor is responsible for all permits and fees required by the municipality and service provider to connect to the water supply. If the source of water supply is a well, provisions covering the supply water will include the installation of necessary power-driven pumping facilities. The well shall be protected against contamination. The water supply shall be tested periodically by the Contractor, and if necessary, shall be chlorinated and filtered. All costs of providing water will be paid for by the Contractor.

b. The Contractor is responsible to protect all temporary and permanent water lines from damage or freezing. Should water connections be made to an existing line, the Contractor shall provide a positive shut-off valve at its own cost and expense.

#### 4.12.10 Standby Personnel

If, pursuant to trade agreement to which the Contractor is a party, the Contractor is obligated to employ standby personnel then the Contractor shall determine and include all such costs thereof in its bid proposal. The Contractor shall not, at any time, make a claim to the State for costs relating to standby maintenance or standby supervision for electric motor-driven or other equipment.

#### 4.12.11 Dust Control

The Contractor shall provide dust control at the Site and all areas affected by the Work, including roads used to haul Work materials. Contractor shall provide a minimum of weekly sweeping and water washdown, more frequently if directed by the CMF, in order to minimize airborne dust.

### 4.13 STORAGE AND SITE MAINTENANCE

4.13.1 Contractor shall confine its apparatus, the storage of its equipment, tools and materials, and its operations and workers to areas permitted by law, ordinances, permits, and Contract as set forth in the Contract Documents, the rules and regulations of the State, or as ordered by the DPMC. The Contractor shall not unreasonably encumber the Site or the premises with materials, tools and equipment. The Contractor shall not store nor leave during non-work hours, any materials or equipment within municipal rights-of-way without the permission of the DEP or CMF.

4.13.2 Contractor shall, at all times during the progress of the Work keep the premises and the Site free from the accumulation of all refuse, rubbish, scrap materials and debris caused by its operations and/or the actions of its employees, Subcontractors and/or workers, to ensure that, at all times, the premises and Site shall present a neat, orderly and workmanlike appearance. This is to be accomplished as frequently as is necessary by the removal of such refuse, rubbish, scrap materials and debris from the Site. Loading, cartage, hauling and dumping of same will be at the Contractor's expense.

4.13.3 At the completion of the Work, the Contractor shall remove all of its tools, construction equipment, machinery, temporary staging, false work, mock-ups, form work, shoring, bracing, protective enclosures, scaffolding, stairs, chutes, ramps, runways, hoisting equipment, elevators, derricks, cranes, and any other materials and equipment brought onto the Site.

4.13.4 Should the Contractor not promptly and properly discharge its obligation relating to Site maintenance and/or final clean up, the State shall have the right to employ others and to charge the resulting cost to the Contractor after first having given the Contractor a three-working day written notice of such intent.

4.13.5 Contractor's responsibilities for final clean up shall include:

- a. Removal of all debris and rubbish resulting from or relating to the Contractor's work.
- b. Restoration of all landscaping, roadways and walkways to preexisting condition. Damage to trees and plantings shall be repaired in the next planting season, and such shall be guaranteed for one year from the date of repair and/or replanting.

4.13.6 All construction equipment, materials and/or supplies of any kind, character or description, regardless of value, which remain on the Site for more than 30 (thirty) calendar days from the date of the Certificate of Final Acceptance, shall become the property of the State. Such construction equipment, materials and/or supplies will be disposed of in any manner the State shall deem reasonable and proper. The cost of this disposal shall be deducted from any sums due the Contractor. If the payments then or thereafter due the Contractor are not sufficient

to cover such amount, the Contractor shall pay the difference to the State.

#### 4.14 PROTECTION/SAFETY

4.14.1 Safety Precautions and Programs – The Contractor shall be responsible for initiating, maintaining and supervising all required safety precautions and programs in connection with the Work. The Contractor shall designate a responsible member of its organization at the Site whose duty shall be the prevention of accidents. This person shall be competent to review, implement and coordinate the safety programs being performed as required by Occupational Safety and Health Administration (OSHA) or any other agency having authority over safety on a State Construction Site.

##### 4.14.2 Protection of Persons

a. The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

- (1) Every employee on the Site and all other persons who may be affected thereby;
- (2) All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the Site, under the care, custody or control of the Contractor, or any of its Subcontractor(s) or lower tier sub-Subcontractor(s); and
- (3) Other property at the Site or adjacent thereto (whether owned by the State or not), including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

b. The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

c. The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including but not limited to rails, night-lights, aircraft warning lights, the posting of danger signs and other warnings against hazards, promulgating safety regulations, notifying owners and users of adjacent utilities and other means of protection against accidental injury or damage to persons and property.

d. The Contractor shall not load or permit any part of the Work to be loaded so as to endanger the safety of the project, its employees, or any other person on the project Site.

e. The Contractor shall promptly remedy all damage or loss to any property caused in whole or in part by the Contractor, any of its Subcontractors, lower tier Subcontractors, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible. These obligations are in addition to those stated elsewhere herein.

##### 4.14.3 Protection of Property

The Contractor shall have full responsibility to install, protect, and maintain all materials and supplies in proper condition whether in storage or off the site and to immediately repair

and/or replace any such damage until Final Acceptance. The Contractor shall maintain an inventory of all materials and supplies for the Work at the Site that are delivered to the site, or delivered to approved off-site storage facilities. The State shall not be liable for any damage, theft or negligent injury to the Contractor's property.

#### 4.14.4 Hazardous Materials

- a. When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.
- b. The Contractor shall maintain all records, reports and files of the general storage and handling of hazardous materials as required by any and all federal, State and/or local regulatory agencies.

#### 4.14.5 Emergencies

In any emergency affecting the safety of persons or property, the Contractor shall act with diligence to prevent threatening injury, damage or loss. In such case, the Contractor shall immediately, but in no case, not more than 24-hours following the emergency, notify the DEP and the CMF of the action taken.

### 4.15 UNCOVERING AND CORRECTION OF WORK

#### 4.15.1 Uncovering of Work

- a. The Contractor is obligated to provide reasonable notice to the DEP Project Director, the CMF and/or the A/E of all work scheduled to be covered, to permit the DEP Project Director, the CMF the opportunity to inspect the Work prior to actual covering. If any portion of the Work is covered prior to inspection by the DEP Project Director, the CMF, it shall be uncovered for observation. Uncovering and replacement of the covering shall be at the Contractor's expense.
- b. The DEP Project Director and/or the CMF may request any work be uncovered by the Contractor for inspection. If such work is found to be in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be reimbursed to the Contractor. If such work is found not to be in accordance with the Contract Documents, the Contractor shall pay all associated costs.

#### 4.15.2 Correction of Work

- a. The Contractor shall promptly correct all work rejected by the DEP Project Director, the CMF or the A/E as defective or failing to conform to the Contract Documents, whether observed before or after final acceptance and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected work, including the costs of all consultant services including but not limited to the CMF's and the A/E's additional services.
- b. The Contractor shall remove from the Site, at its own expense, all portions of the Work which are defective or non-conforming and which have not been corrected, unless removal is waived by the DEP Project Director.
- c. If the Contractor fails to correct defective or non-conforming work in a reasonable time fixed by written notice from DEP Project Director, then the DEP

Project Director may make arrangements for such correction by others and charge the cost of so doing to the Contractor.

d. If the Contractor does not proceed with the removal and correction of such defective or non-conforming work within a reasonable time, fixed by written notice from the DEP Project Director, any materials or equipment shall become the property of the State and the State may remove and dispose the non-conforming work in any manner to best meet the interest of the State. If such material is sold and the proceeds of the sale do not cover all costs which the Contractor should have borne and any additional cost incurred by the State in the uncovering, removal, disposal and correction of non-conforming work, the difference shall be charged to the Contractor and an appropriate credit Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the State. The Contractor shall be responsible for the cost of making good all work destroyed or damaged by such correction or removal.

e. Notwithstanding other obligations within the Contract Documents, nothing contained herein shall be construed to establish a time or date limitation upon which the State must discover non-conforming work.

#### 4.15.3 Acceptance of Non-Conforming Work

The DEP Project Director and DPMC, with the assistance of the A/E and CMF may determine that the best interests of the State will be served by accepting defective or non-conforming work instead of requiring its removal and correction. In such instance, the DPMC may, by any means available, exact an appropriate reduction in the Contract sum. Such adjustment shall be effected regardless of final payment having previously been made, and the Contractor and/or its surety shall be responsible for promptly remitting any funds due the State as a result thereof.

### 4.16 LAYOUT AND DIMENSIONAL CONTROL

4.16.1 Contractor shall be responsible for locating and laying out the Work, including all structures, piping and all of its parts on the site, in strict accordance with the Contract Documents, and shall accurately establish and maintain dimensional control. The Contractor shall employ and pay for the services of a competent and licensed New Jersey engineer or land surveyor who shall be pre-qualified by DPMC to perform all layout work.

4.16.2 Contractor's engineer/surveyor, in the course of layout work either on the Site or along any structure, shall establish all points, lines, elevations, grades and bench marks for proper control and execution of the Work. The Contractor's engineer/surveyor shall establish multiple permanent benchmarks needed to control the Work as set forth in the Contract Documents to which all three coordinates of dimensional control shall be referenced. The Contractor's engineer/surveyor shall verify all survey data furnished in the Contract Documents including but not limited to topographical and utility location points, lines, elevations, grades and benchmarks, and buildings. Should any discrepancies be found between information given on the Contract Documents and the actual site or field conditions, the Contractor shall notify DEP, the A/E and the CMF in writing of such discrepancy, and shall not proceed with any work affected until receipt of written instructions from the DEP or CMF.



#### 4.17 PROJECT SIGN

The Contractor shall erect and maintain two signs at the Site, as set forth in the Contract Documents and located as directed by the CMF. Painting shall be done by a professional sign painter, with two coats of exterior paint, colors, letter face and layout as shown. No other sign will be permitted at the Site. Upon completion of the Project, and when directed by the CMF or the DEP Project Director, the Contractor shall remove the sign.

#### 4.18 SECURITY

The Contractor shall be responsible for the protection of the Work from all damage including defacement of all structures, until final acceptance of the Work by the State. The Contractor is responsible for the security of all temporary structures used for the Project, including structures used by the DEP, CMF and A/E.

#### 4.19 FIELD OFFICE

4.19.1 Contractor shall provide on-site, suitable, separate, weather-tight, insulated (floor, walls, ceilings) field office facilities for the use of DEP personnel and separate field offices for the CMF and A/E, as more fully described in the Contract Documents. At a minimum, the Contractor is to supply these field offices with toilet facilities, heating and air conditioning, tables and chairs, and phone and data communication lines. At a time determined by the DEP Project Director or the CMF, the Contractor shall remove field facilities and shall relocate the contents and operations of the field office to the interior of the Project building until completion of the Project.

4.19.2 The Contractor shall be responsible for the maintenance of all temporary field offices including the cost of heating, air conditioning, electric service and janitorial service.

#### 4.20 PHOTOGRAPHS

4.20.1 The Contractor shall submit monthly progress photographs in duplicate to the CMF, giving six (6) views of the Work with each application for payment until the Project is completed.

4.20.2 The photographs shall be 8" by 10" shall bear the date and time of the exposure, the DPMC Project number and title, the names of the Contractor and the name of the A/E. All photographs shall also be submitted in digital format.

## **ARTICLE 5 - SUBCONTRACTORS**

### **5.1 SUBCONTRACTORS AND MATERIAL SUPPLIER APPROVALS**

- 5.1.1 Upon their execution, but not less than fourteen (14) calendar days prior to Subcontractor mobilization on the site, and/or Subcontractor billing, the Contractor shall forward to the CMF on the form provided by the DPMC the names of all its Subcontractors and suppliers, of such others as the DPMC may direct, proposed to perform the principal parts of the Work. The Contractor shall forward the appropriate DPMC form to the CMF for approval. Department of Labor and Workforce Development Public Works Contractor Registration and New Jersey Business Registration Certificate are required for all Subcontractors.
- 5.1.2 If the DPMC or DEP has objection to any proposed or approved Subcontractor and/or material supplier, the Contractor shall substitute another Subcontractor and/or material supplier acceptable to DPMC and DEP. Under no circumstances shall the State be obligated for additional cost due to such substitution.
- 5.1.3 After the acceptance of bids, the Contractor shall make no substitution of any Subcontractor person or firm previously selected and approved, without prior written approval from the CMF, DEP and DPMC. A Contractor seeking to substitute a Subcontractor person or firm shall provide written request for substitution no less than fourteen (14) calendar days prior to the execution of Work by the Subcontractor or material supplier.
- 5.1.4 Approval of a Subcontractor or material supplier by the DPMC, DEP and CMF shall not relieve the Contractor of the responsibility of complying with all provisions of the Contract Documents. The approval of a Subcontractor or material supplier does not imply approval of any construction, material, equipment or supplies.

### **5.2 CONTRACTOR-SUBCONTRACTOR RELATIONSHIP**

- 5.2.1 The Contractor acknowledges its full responsibility to the State for the acts and omissions of its Subcontractors and lower tier subcontractors, and of persons and firms either directly or indirectly employed by them, equally to the extent that the Contractor is responsible for the acts and omissions of persons and firms directly or indirectly employed by it. The Contractor acknowledges that it remains fully responsible for the proper performance of its Contract regardless of whether work is performed by the Contractor's own forces or by Subcontractors engaged by the Contractor.
- 5.2.2 Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor and the State. Further, no Subcontractor or material supplier shall be deemed an intended third party beneficiary under this Contract.
- 5.2.3 The Contractor and all Subcontractors agree that, in the employment of both skilled and unskilled labor, preference shall be given to residents of the State of New Jersey, if such labor force is available.

5.2.4 The Contractor shall require, in its agreements with Subcontractors and as a condition of agreement, that each Subcontractor require in its agreement(s) with lower tier Subcontractors and Suppliers, that the Subcontractor understands that there is no contractual obligation of any kind between the State and Subcontractor and the Subcontractor's sole recourse lies with the Contractor and/or the surety, and not with the State, that each Subcontractor and lower tier Subcontractor, bound by the terms of the Contract Documents for this Contract, and assume toward the Contractor all the obligations and responsibilities which the Contractor assumes, pursuant to the Contract Documents.

## **ARTICLE 6 - CONSTRUCTION PROGRESS SCHEDULE**

### **6.1 GENERAL**

The State may contract for the services of a Critical Path Method (CPM) scheduling consultant for Project planning, scheduling and cost control. If such has been arranged, then section 6.2 shall apply to the Contract between the State and the Contractor. In the absence of a statement in the bid documents that a CPM consultant has been retained by the State, then section 6.3 shall apply.

### **6.2 CONSTRUCTION PROGRESS SCHEDULING PROVIDED BY THE CONTRACTOR**

6.2.1 The Project shall be completed within the specified number of calendar days from the effective date of the Notice to Proceed.

6.2.2 The Contractor shall be responsible for preparing and furnishing to the DEP Project Director through the CMF before the first Contract requisition date, but in no event later than 30 (thirty) days after the effective date of the Notice to Proceed, a coordinated combined progress schedule that incorporates the progress schedules of the Contractors and all Subcontractors engaged on the Project. The schedule shall be in the form of a network diagram or other recognized graphic critical path progress schedule format that indicates, among other things, predecessor and successor activities, and major and intermediate milestones, in sufficient detail to satisfy the DEP and the CMF. (See also section 6.3.4 below.) The Contractor shall use scheduling software Primavera P6 or equal with the approval of the CMF. The Contractor's initial invoice will not be processed by the DPMC until and unless such a single coordinated progress schedule has been submitted to and approved by the DPMC. Thereafter, the Contractor shall submit an updated coordinated progress schedule on a monthly basis. Receipt and approval of the updates will be a mandatory condition to payment.

6.2.3 Once each month, or more often if required by the CMF, the Contractor shall meet with the CMF and the DEP representative to gather the information necessary for the Contractor's preparation of the revised/updated computer generated scheduling reports.

6.2.4 The progress schedule, based upon the logic and time estimates based on a seven (7) day calendar, shall indicate in suitable detail for display, all significant features of the Work of the Contractor and each Subcontractor, including but not limited to, the placing of orders, manufacturing durations, anticipated delivery dates for critical and long-lead items, submissions and approvals of shop drawings, construction activities, all work activities to be performed by the Contractor and its Subcontractors, the beginning and time duration thereof, and the dates of all milestones, substantial and final completion of the various elements of the Work, including punch list and close-out. The Contractor shall consider availability of work zone areas in the planning and scheduling of work as noted in the Contract Documents. Reports shall be in booklets, indexed and separated as categorized below. Each activity listed on the Schedule shall include, as a minimum, the following:

- a. The activity description;
- b. The Work or trade(s);

- c. The duration in calendar days;
- d. The Early Start date;
- e. The Late Start date;
- f. The Early Finish date;
- g. The Late Finish date;
- h. The Total Float

6.2.5 The Contractor agrees that no time extension will be granted for time lost due to normal seasonal weather conditions. In order to qualify for consideration for a time extension due to adverse weather conditions, it must be shown by clear and convincing evidence that the weather conditions during a given quarterly period (summer, fall, winter, spring) were more severe than the previous five-year (5) average for the Project geographical area, and that these weather conditions critically impacted the final Project completion date by delaying the performance of work. If abnormal weather losses can be shown to have impacted the Project completion date, a non-compensable time extension will be considered for that portion of the proven weather-related delays, which exceeded normal weather losses that should have been anticipated for the quarterly period in question.

6.2.6 Immediately upon approval by DEP and the CMF, the Contractor shall prepare and distribute four copies of the progress schedule to the DEP plus two copies to the CMF and the A/E. Each monthly updated coordinated schedule shall be signed and dated by the Contractor.

6.2.7 The Contractor shall furnish sufficient labor and construction plant and equipment to ensure the execution of the Work in accordance with the approved progress schedule. If any updated completion time or date for any activity does not conform to the durations or milestones shown in the approved progress schedule, the sequence of activities and/or the time for performance of activities shall be updated on the progress schedule to be approved by the DEP and the CMF and cured by the Contractor by any means, including performing concurrent operations, additional manpower, additional shifts, and overtime. No additional charges to the State will be allowed the Contractor for overtime, additional manpower, equipment, additional shifts, etc. (except as may be provided elsewhere in the Contract), if such expediting procedures or measures are necessary to meet the Contract completion date.

6.2.8 The progress schedule shall show:

- a. Recommended changes in activity sequencing;
- b. Changes in activity duration for activities not started or partially completed, where agreed upon;
- c. The effect on the network of the modifications (activity duration, Predecessors and Successors);
- d. Changes for the purposes of regaining lost time or improving progress, and;
- e. Changes to milestones, due dates, and the overall Contract completion date, which have been agreed upon by the DPMC's project manager since the last revision of the progress schedule.

6.2.9 The progress schedule shall accurately reflect the manner in which the Contractor intends

to proceed with the Project and shall immediately incorporate and reflect the impact of all delays and change orders. All changes made to the schedule shall be subject to approval by the DEP and the CMF.

6.2.10 The DEP will not authorize or approve any claims for additional payment or extension of time for completion of the Work, or any other concession because of any alleged misinterpretation or misunderstanding on the Contractor's part of the Project schedule, the Contractor's failure to attend the pre-bid conference, because of any failure on the Contractor's part to become fully acquainted with all conditions relating to the Project schedule and the manner in which it will be used on the Project, or because of any other failure by the Contractor to properly participate in the development of a progress schedule or to perform the Contract in accordance with the progress schedule.

## **ARTICLE 7 - TIME OF COMPLETION**

### **7.1 CONTRACT DURATION/NOTICE TO PROCEED**

7.1.1 Contract duration shall commence on the effective date set forth on the written Notice to Proceed. The Notice to Proceed will be issued by the DPMC after the DPMC's receipt and acceptance of properly executed Contract Documents, including performance and payment bonds, proof of insurance and permit technical information submitted by the Contractor and/or Subcontractors. The Contractor shall not be entitled to delay, disruption, acceleration or any other claims arising from a deferred issuance of the Notice to Proceed.

7.1.2 The Contractor shall perform no work at the Contract Site prior to the issuance of the Notice to Proceed.

### **7.2 SUBSTANTIAL COMPLETION**

7.2.1 At the request of the Contractor, the CMF, the A/E and the DEP may make a joint inspection of the Work for the purpose of determining if the Work is substantially complete in accordance with the definition provided in Article 1. If the CMF finds that the Work is substantially complete, then the DPMC will issue a written Notice of Substantial Completion for Beneficial Use. Such Notice shall in no way relieve the Contractor of any contractual obligation(s) or relieve the Contractor from responsibility to promptly complete all remaining Contract Work including, but not limited to, punch list items.

7.2.2 The standard guarantee period for equipment, workmanship and materials shall commence on the date DPMC issues the Notification of Substantial Completion for Beneficial Use, or from the time of completion and acceptance of equipment, work or materials in question, whichever is later.

7.2.3 In the event that the Project is completed in phases or stages, and/or in the event that the DEP takes possession of any part of the Work pursuant to Section 7.4 of these General Conditions, no part of the Project shall be deemed substantially complete for purposes of the New Jersey Statute of Repose, N.J.S.A. 2A:14-1.1, prior to the issuance of a formal Notice of Substantial Completion for Beneficial Use for the all of the Work.

### **7.3 FINAL COMPLETION**

7.3.1 Final completion of the Contract shall occur when:

- a. The DEP, the CMF and the A/E have determined that the punch list has been completed;
- b. The Contractor has complied with the Contract Document's closeout requirements;
- c. The Contractor has submitted all Contract deliverables as required by the Contract Documents including but not limited to the following: "as-built" documents, operating and maintenance manuals, attic stock, parts lists, repair source lists, training and certificates; and

- d. The Contractor has submitted all warranties, guarantees and/or maintenance bonds required under the Contract.

## 7.4 PARTIAL OCCUPANCY FOR USE

7.4.1 Use and possession prior to completion: The DEP shall have the right to take possession or use of any completed or partially completed part of the Project. Said possession or use shall not be deemed acceptance of the Work performed on the Project.

7.4.2 Prior to such possession or use, the DEP shall furnish the Contractor with an itemized list of Work remaining to be performed or corrected on such portions of the Project that are to be possessed or used by the State. Failure by the DEP Project Director to list any item of work shall not be deemed an acceptance of any Work under the Contract.

7.4.3 The Contractor shall not be entitled to recovery of money damages for any delays, disruptions or inefficiencies caused by such partial occupancy.

## 7.5 DELAY, DISRUPTION AND INTERFERENCE

- 7.5.1 Delay - Time Extension. If the Contractor's work is delayed, disrupted or interfered with by act, neglect or default of any party, including the State, the CMF, the A/E, or by strikes, lockouts, fire, unusual delay by common carriers, natural disasters, or by any cause for which the Contractor is not responsible; then for all such delays and suspensions, the Contractor shall be allowed one (1) 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 above, the same to be determined by the DPMC. No such extension shall be granted for any delay unless, within ten (10) calendar days after the beginning of such delay, a written request for additional time shall be filed with the DEP and approved by the DPMC.

### 7.5.2 Contractor's Damages for Delay, Disruption or Interference

The Contractor shall not be entitled to recovery of money damages from the State caused by delay, disruption or interference with the Contractor's Work except as expressly provided under section 7.5.2 of these General Conditions. The Contractor expressly agrees that the Contractor's remedy for delay, disruption or interference shall be limited to an extension of time only and that there shall be no recovery of money damages by the Contractor for any delay, disruption or interference with the Contractor's work attributable to any cause whatsoever (other than the State's negligence, bad faith, active interference or other tortious conduct). The Contractor expressly agrees that it shall not be entitled to recover damages due to delay, disruption or interference caused by any of the following:

- a. Delayed execution of the contract or any of the causes referenced in paragraph 7.5.2;
- b. Any act or omission by any party other than the State, including, but not limited to, the CMF, the A/E, any other Contractor or Subcontractor, any CPM or other consultant retained by the State, any construction manager retained by the State, any agency or instrumentality of



the federal government or of any local governmental entity or any utility (e.g., gas, electric, telephone, cable);

- c. Any act or omission of any agency or instrumentality of the State, other than the DPMC or DEP, including, without limitation, the Department of Community Affairs;
- d. Weather;
- e. Subsurface conditions of any type including, without limitation rock and underground utilities, whether or not such conditions were reasonably ascertainable to the Contractor at the time of bidding;
- f. Use of all or any portion the Project premises prior to completion of the Work to the extent that such use is permitted under the terms of the Contract;
- g. Delay in obtaining any permit or approval;
- h. Delay caused by the issuance of any court order, injunction or restraining order;
- i. Any delay which does not entitle the Contractor to an extension of the Contract Completion Time under Section 6.2.8 of these General Conditions; or
- j. Delay attributable to any other cause, other than a cause for which the State is legally restricted from enforcing a contractual “no damage for delay” clause under N.J.S.A. 2A:58B-3 or any other provision of law restricting or barring the enforcement of such clauses.

In interpreting this provision, the negligence or other wrongful conduct of others, including, without limitation, the Architect/Engineer, the CMF, any construction management firm and any other firm or person retained by the State shall not be imputed to the State. Further, to the extent that the Contractor is entitled to recover monetary damages for delay under this Contract, such recovery shall be limited to actual direct costs incurred on account of the delay, and shall not include profit or other markup on such costs, home office overhead calculated under the Eichleay formula or any other kind of consequential or indirect cost or damage, including but not limited to any alleged cost or damage under the total cost method, the modified total cost method, or productivity factors (costs for inefficiency based on industry productivity factors such as those provided by the Mechanical Contractors Association of America (MCAA) Factors Affecting Labor Productivity).

7.5.3 In the event of the failure of the Contractor to complete its work within the time stated in its Contract, the Contractor shall be liable to the State in the sum as set forth as liquidated damages in the Contract, for each and every calendar day that the Contractor fails to attain contract completion of the work. This sum shall be treated as liquidated damages to compensate for the loss to the State of the use of premises in a completed state of construction, alteration or repair, and for added administrative and inspection costs to the State on account of the delay; provided, however, that the said liquidated damages shall be in addition to other compensatory or consequential losses or damages that the State may incur by reason of such delay, such as, but not limited to, added costs of the Project and

the cost of furnishing temporary services, if any. Any such sums for which the Contractor is liable may be deducted by the State from any moneys due or to become due to the Contractor.

7.5.4 It is hereby understood and mutually agreed by and between the Contractor and the State that the start date in the Notice to Proceed, the dates of all required intermediate milestones, and the times for substantial and final completion, as specified in the Contract Documents, are essential conditions of this Contract.

7.5.5 The Contractor agrees that said work shall be executed diligently, at such rate of progress as will ensure full completion of the Work within the time specified. It is expressly understood and agreed, by and between the Contractor and the State, that the time for the completion of the Work herein is a reasonable time, taking into consideration the average climactic range and usual industry conditions prevailing in this locality. 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 State, then the Contractor does hereby agree, as a part of the consideration for the awarding of its Contract, to pay the State the amount specified in section 7.5.3 above, as liquidated damages for loss of use of the Project as hereinafter set forth, for each and every calendar day that the Contractor may have exceeded the stipulated date in the Contract for substantially completing the Work.

7.5.6 It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications 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 similarly be of the essence.

## **ARTICLE 8 - CLOSE-OUT**

### **8.1 CLOSE-OUT PROCEDURES/FINAL PAYMENT**

As part of the final completion procedures described in Article 7 and the requirements for payment as described in Article 9, the Contractor must complete all of the Close-out procedures as follows:

- a. Submit the “as-built” record documents as described in Article 4;
- b. Submit all operating and maintenance manuals, parts lists, repair source parts, and certificates as defined in 8.2 below;
- c. Provide the necessary training for operating systems and equipment as defined in 8.3 below; and
- d. Submit all guarantees as defined in 8.4 below.

### **8.2 OPERATIONS, EQUIPMENT AND MAINTENANCE MANUALS**

8.2.1 The Contractor shall provide six (6) copies of all operating, equipment and maintenance manuals, and applicable warranties, as identified and described in the Contract Documents. The operating, equipment and maintenance manuals and warranties, including contact personnel, addresses and telephone numbers, must include a complete description of all systems and equipment and the method of operating and maintaining the equipment. These manuals must be submitted to the CMF for approval by the A/E for review and approval at the earliest date possible following substantial completion, but in all cases prior to final acceptance. Included within the manuals shall be a list of names, addresses and telephone numbers of all the Subcontractors involved in the installations and of firms capable of performing services for each mechanical item.

8.2.2 As a pre-condition to the Final acceptance of a facility for beneficial use, the Contractor shall provide a "throw-away" copy of operations and maintenance manuals to allow DEP staff to operate the equipment prior to receiving the hard bound copies required by this Contract.

### **8.3 TRAINING**

The Contractor shall provide formal instruction for DEP-designated personnel, addressing the operation and maintenance of the facilities and all installed equipment for each operating system or major item of equipment or as otherwise specified. The operations and maintenance manuals shall be used as training materials. Unless otherwise accepted by the DEP Project Director, training course format shall be split equally between classroom instruction and field exercise. All classroom instruction may be videotaped by the DPMC. Classroom instruction may be supported by professionally made videotapes. If used, a copy of each professional video that was utilized shall be provided to the DEP at no cost for future training and reference.

## 8.4 GUARANTEE

8.4.1 The issuance of a final certificate for payment and/or partial or complete occupancy of the premises shall not be deemed an acceptance of Work not completed in accordance with the Contract Documents. The issuance of a final certificate for payment and/or partial or complete occupancy of the premises shall not relieve the Contractor or its surety of liability with respect to any express or implied warranties or responsibility for faulty materials or workmanship.

8.4.2 The Contractor shall guarantee and warrant, in writing, the Work performed and all materials furnished under this Contract against defects in materials and/or workmanship. The Contractor shall be responsible for the value or repair of any damage to other Work or to the building premises resulting from the performance of the Contract.

8.4.3 The Contractor is responsible for the above-stated obligations for a period of one (1) year from the date established in 7.2.2 above. All guarantees, including bonds and registrations, required by the Contract Documents shall be in writing and delivered to the CMF with submission of the invoice for final payment.

8.4.4 Contractor shall, at its own expense and without cost to the State, promptly after receipt of written notice thereof, make good any defects in materials or workmanship which may develop during stipulated guarantee periods, as well as any damage to other Work caused by such defects or by repairs. Any other defects in materials or workmanship not discovered during the guarantee period shall be repaired and/or replaced at the Contractor's expense, and such shall be completed within a reasonable time after written notice is given to the Contractor.

8.4.5 It is expressly acknowledged and agreed that the express and implied warranties and guarantees to which the State is entitled as well as all warranty and guarantee bonds issued by any surety, shall be in addition to and not in lieu of the State's right to seek recourse against the Contractor and the Contractor's surety for defective work.

## ARTICLE 9 - PAYMENTS

### 9.1 INVOICES

9.1.1 Requests for payment under the Contract for materials delivered or services rendered require the proper completion and submittal of specific forms including, but not limited to, the following:

- a. DPMC Form 11/AR50-1 - DPMC Invoice;
- b. DPMC Form 11-2 - Monthly Estimate for Payment to Contractor;
- c. DPMC Form 11-2a - Certification of Prime Contractor;
- d. DPMC Form 11-2b – Certification of Subcontractor;
- e. Copies of Subcontractor(s) invoices;
- d. DPMC Form 11-3 - Prime Contractors Summary of Stored Materials;
- e. DPMC Form 11-3A - Agreement and Bill of Sale Certification for Stored Materials;
- f. Consent of Surety forms;
- g. Certified Payroll Records;
- h. Updated project schedule
- i. Any other information or documentation required by other provisions of the Contract documents.

9.1.3 The Contractor shall submit the completed request for payment on a monthly basis for all properly completed billable work to the CMF and at the address identified at the pre-construction conference.

9.1.4 One (1) original and one (1) copy of the request for payment packets shall be prepared and submitted unless otherwise specified.

9.1.2 No request for payment shall be deemed to be formally submitted and received for payment until all dollar amounts and completion percentages for each line item in the invoice has been determined and agreed upon by the State and the Contractor.

9.1.5 For the purpose of the State's Prompt Payment Act (N.J.S.A. 2A:30A-1 et seq.):

- a. A proper invoice shall be deemed to have been received by the State when it is received by the person or entity designated by the State to review and sign the invoice on the State's behalf at the address designated in the pre-construction conference for receipt of invoices. Receipt of an invoice by such person or entity shall commence the running of the 20-day period for formal approval and certification as provided under N.J.S.A. 2A:30A-2(a);
- b. The "billing date", as the term is used in N.J.S.A. 2A:30A-2, shall be the earlier of the date upon which an invoice for payment is approved for payment or twenty (20) days after the invoice is received, unless within such 20-day period the invoice is found to be incomplete or otherwise unacceptable and returned to the contractor, with a written explanation of deficiencies;

c. In the event that an invoice is found to be deficient and returned to the contractor, the “billing date” shall be calculated from the date that a corrected invoice is received.

d. Payment shall be considered to have been made on the date on which a check for such payment is dated;

e. Payment terms (e.g., “net 20”) offered by the contractor shall not govern the State’s obligation to make payment;

f. The following periods of time will not be included in the calculation of the due date of any contractor invoice:

(1) Any time elapsed between receipt of an improper invoice and its return to the contractor, not to exceed twenty (20) calendar days; or

(2) Any time elapsed between the State’s return of an improper invoice to the contractor and the State’s receipt of a corrected invoice.

9.1.6 The provisions of this Article 9 shall not govern the State’s payment obligations nor shall they supersede or modify any other contractual provision allowing the withholding of monies from the contractor to the extent that the contractor has not performed in accordance with the provisions of the contract. Nor shall this Article 9 govern the State’s payment obligations nor supersede or modify any other contractual provision governing Contractor claims for additional compensation beyond the base contract price and approved change orders.

## 9.2 INTEREST

9.2.1 Interest shall be payable on amounts due the contractor if not paid within thirty (30) calendar days after the billing date specified in the above subparagraph 9.1.5(b), as provided under the State’s Prompt Payment of Contractors and Subcontractors Act (N.J.S.A. 2A:30A-1, et seq.). Interest on amounts due shall be payable to the contractor for the period beginning on the day after the required payment date and ending on the date on which the check for payment is drawn.

9.2.2 Interest may be paid by separate payment to the Contractor, but shall be paid within thirty (30) calendar days of payment of the principal amount of the approved invoice.

9.2.3 Nothing in this Article 9 shall be construed as entitling the Contractor to payment of interest on any sum withheld by the State for any reason permitted under the Contract or applicable law, or on any claim for additional compensation, over and above sums due under the base Contract or approved change orders.

## 9.3 SCHEDULE OF VALUES AND FINAL PAYMENT

9.3.1 .1 Unless otherwise directed, the Contractor shall furnish a schedule of amounts for Contract payments (Unit Schedule Breakdown,) of the total Contract price, showing the amount included therein for each principal category of the Work and for each Contractor and Subcontractor, in such detail as requested, to provide a basis for determining progress

payments. The schedule, as approved, shall be used only as a basis for the Contractor's estimates for progress payments, and approval by the CMF does not constitute acceptance of the allocability and allowability of costs to a specific element of Work. The Contractor is cautioned that no payment requests shall be approved until the Unit Schedule Breakdown has been approved in writing by the CMF.

9.3.2 The State will make progress payments monthly as the Work proceeds based upon the Unit Schedule Breakdown.

9.3.3 All material and Work paid pursuant to progress payments shall thereupon become the sole property of the State. This provision shall not be construed as relieving the Contractor from the sole responsibility for the protection of all material and Work upon which payments have been made for the restoration of any damaged work, or as waiving the right of the State to require the fulfillment of all of the terms and conditions of the Contract.

9.3.4 Following completion and acceptance of all work, the amount due the Contractor under this Contract shall be paid only upon satisfactory completion, by the Contractor, of all Contract close-out requirements, completion of a State audit on all Contract values and payments, and after the Contractor has furnished the State with a release of claims against the State, arising by virtue of this Contract, other than claims in stated amounts as may be specifically excepted by the Contractor from the release.

9.3.5 If for any reason the Contractor refuses final payment, the Project may be closed out by the State by the processing of a Final Contract Acceptance certification. The lack of such certification shall not toll the limitations period applicable to Contractor claims against the State.

9.3.6 In addition to other warranties required by provisions of the Contract and specifications, the Contractor warrants that title to all Work, materials and equipment covered by an application for payment will pass to the State free and clear of all liens, claims, security interests or encumbrances, either upon incorporation into the construction or upon receipt of payment to the Contractor, whichever occurs first. This provision shall not be construed as relieving the Contractor from sole responsibility for the care and protection of materials and work upon which payments have been made, or for the restoration of any damaged work, or as a waiver by the State of its rights to require fulfillment of all terms of the Contract.

9.3.7 By recommending approval of any invoice, neither the A/E nor the CMF shall be deemed to represent that it has made exhaustive or continuous on-Site inspections to check the quality or quantity of the Work, or that it has reviewed the construction means, methods, techniques, sequences or procedures, or that it has made any examination to ascertain how and for what purpose the Contractor has used the moneys previously paid. The payment of an invoice does not constitute an acceptance of the Work. The State reserves the right to further inspect the Work and to withhold retainage and any additional funds required to pay for any corrective action for non-conforming work.

9.3.8 If any corporation licensed to do business in New Jersey shall be or become delinquent in the payment of taxes, assessments or fees due the State, unless under an active appeal process or any final judgment in the State's favor against the Contractor, the State may, in accordance with N.J.S.A. 54:49-19 or other applicable law withhold moneys due the said corporation for the purpose of assuring the payment to the State of such taxes, assessments, fees or judgment.

## 9.4 CERTIFICATION OF PAYMENTS TO SUBCONTRACTOR

Pursuant to N.J.S.A. 52:32-40, 41 and N.J.S.A. 2A:44-148; the Contractor shall submit a Certification of Prime Contractors form and a Certification of Subcontractor form for each Subcontractor identified in the Unit Schedule Breakdown, as part of the submission for each invoiced progress payment.

## 9.5 STORED MATERIALS

9.5.1 Unless specifically allowed in the Contract Documents, all materials and equipment must be delivered and installed or stored on the Site prior to payment for such material or equipment.

9.5.2 .2 The DEP may at its discretion allow payment for equipment stored off Site provided that the following has occurred:

- a. The DEP Project Director has approved the Contractor's written request;
- b. The equipment has been properly stored in an approved location;
- c. The Contractor has established the State's title to the specific equipment;
- d. The Contractor has provided sufficient proof of insurance for the materials, equipment and the storage facility;
- e. The Contractor has submitted a release of liens on said stored equipment;
- f. The Contractor has submitted a statement agreeing to assume all costs for storage of material and equipment off Site, including, if required by the DPMC, the cost of storing such material and equipment in a bonded warehouse; and
- g. The Contractor furnishes the "Prime Contractor's Summary of Stored Materials" and "Agreement and Bill of Sale Certification for Stored Materials," forms respectively.

## 9.6 ALLOWANCES

9.6.1 The Contractor shall purchase the allowance items as directed by the DEP Project Director on the basis of the lowest acceptable quote from at least three competitive offers or as a negotiated cost subject to DEP and DPMC approval. If the actual cost of the allowance items is more or less than the stipulated allowance, the Contract price may be adjusted accordingly. The adjustment in Contract price shall be made on the basis of the actual purchase cost without additional charges for overhead, profit, bond



premium or any other incidental expenses. The cost of installation of the "allowed materials," unless otherwise specified, is to be included as the responsibility of the Contractor in whose Contract the allowance is included, and the Contractor installing such allowance items shall not be entitled to additional payment for such installation.

9.6.2 Unless otherwise provided in the Contract Documents:

- a. These allowances shall cover the Contractor's true costs, including credit for any trade discount, of the materials and equipment required by the allowance, delivered at the Site, including all applicable taxes;
- b. The Contractor's costs for unloading and handling, labor, installation costs, overhead, profit and other expenses reasonably required in connection with such allowance items shall be included in the Contract sum and not as part of the allowances.

## 9.7 RETAINAGE

9.7.1 In making progress payments for Contract work completed, the State will retain ten percent (10%) of the approved invoice amount until final acceptance and completion of all work covered by the Contract.

9.7.2 The Contractor may, after 50% (fifty percent) of the Contract work is in place, and if the Work is proceeding on schedule, apply for a reduction in the amount retained by the State for the duration of the Contract. Such application must be in writing and accompanied by documentation granting formal consent of surety to the reduction in retainage request. If the DPMC determines that the Contractor's performance has been satisfactory and that the reduction is warranted and appropriate, the State may, with the next progress payment, release any portion of the accumulated retainage in excess of five percent (5%) of the Work in place and retain an amount equal to five percent (5%) of the Work in place for the duration of the Contract. If progress of the Work is not maintained in accordance with the approved schedule, the DEP Project Director may elect to re-institute retainage of ten percent (10%) of the Work in place for the duration of the Contract.

9.7.3 Withholding Payment for Non-Delivery of Data:

- a. If technical data such as "as-built" drawings, reports, spare parts lists, repair parts lists, or instruction books (including additional and maintenance manuals), or any part thereof, are not delivered within the time specified by this Contract or are deficient upon delivery, the DEP Project Director has the discretion to withhold from each invoice a percentage (in addition to any other retainage required by the Contract) of the Contract price in accordance with the following table:

When total contract price is:    Percentage to be withheld is:

Less than \$250,000.	10%
\$250,000.01 through \$1,000,000	5.0%
Over \$1,000,000	2.0%

- b. The withholding of any sums pursuant to this article shall not be construed as, or constitute in any manner, a waiver by the State of the Contractor's obligation

to furnish the data required under this Contract. In the event the Contractor fails to furnish these items, the State shall have those rights and remedies provided by law and pursuant to this Contract, in addition to, and not in lieu of, the sums withheld in accordance with this article.

## 9.8 MISCELLANEOUS

9.8.1 Disputes regarding nonpayment of a Contractor's invoice under this Article 9 may be submitted to non-binding Alternative Dispute Resolution (ADR) upon mutual agreement of the State and the Contractor. In such event, the State and the Contractor shall share equally the fees and expenses of the selected mediator, arbitrator, umpire or other ADR neutral. Provided, however, that nothing herein shall be construed, in whole or in part, as a waiver, release or modification of the provisions of the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1, et seq., which governs claims against the State.

9.8.2 A Contractor not paid sums due under an approved invoice within thirty (30) days of the billing date may suspend performance without penalty for breach of contract, but only after providing the State with seven (7) days written notice of non-payment, and only in the event that the State fails to furnish the Contractor, within that seven-day period, a written statement of the amount withheld and the reasons for the withholding. Nothing herein shall be construed to excuse the Contractor's nonperformance, or to limit the State's rights and remedies relating to such non-performance, with regard to any monies withheld from the Contractor upon the proper notice provided under this Article 9, or with regard to any Contractor claim disputed by the DPMC.

## **ARTICLE 10 - CHANGES IN THE WORK**

### **10.1 CHANGES IN THE WORK**

10.1.1 The DPMC may at any time, issue a written Change Order which shall direct a Change in the Work within the general scope of the Contract, including, but not limited to, changes:

- a. In the plans and/or specifications;
- b. In the method or manner of performance of the Work;
- c. In the State-furnished facilities, equipment, materials, services, or site; or directing acceleration in the performance of the Work; and/or
- d. In the time for the completion of the Work.

10.1.1.1 The Contractor agrees that immediately upon discovering, uncovering or encountering any conditions it considers a changed condition, it will immediately notify the A/E, DEP and CMF prior to continuing work or covering up the changed condition to allow the A/E, DEP and CMF the opportunity to assess and verify the potential changed condition. Should the Contractor fail to immediately notify the A/E, DEP and CMF and continues work or covers the condition, that failure to notify may be grounds for rejection of any claim or request for Change Order.

### **10.1.2 Change Orders**

10.1.2.1 The Contractor agrees to prepare and submit, within ten (10) calendar days of encountering any conditions it considers a change, or upon receiving official notice of a proposed change or written direction to proceed with a change, a current DPMC form entitled "Contractor Change Order Request," to the DEP Project Director. The Contractor shall submit an original of the form. Failure to submit a timely form may be grounds for rejection of the request for Change Order, at the DEP Project Director's discretion.

10.1.2.2 All requests for Contract time extensions must be submitted in accordance with the requirements set forth in Articles 6 and 7, accompanied by copies of the current approved progress schedule and copies of a proposed progress schedule detailing the incorporation of the changed work and the effects of such incorporation on progress. Failure to provide all required information shall be grounds for rejection of the request.

10.1.2.3 The State will only consider a contract duration extension Change Order request arising from Changes in the Work, if that change is proven by the Contractor to have caused a delay in the completion of the Project. When the Contract duration is increased as a result of a change, the resulting change in Contract amount will include the costs of extended performance, computed in accordance with the terms of this Section, and no further consideration of such costs arising from the specific modification will be given.

10.1.2.4 Every Change Order request submitted by the Contractor shall furnish a price breakdown, which shall cover all work involved in the change whether such work was deleted, added or changed and shall be in sufficient detail to permit an analysis of all material, labor, equipment, subcontract, overhead costs and profit. Any amount proposed for subcontracts shall be supported by an equally detailed breakdown. In addition, if the request includes a time extension, a justification (see Article 6.2.8(a)) shall also be furnished. The request, together with the price breakdown and time extension justification, shall be furnished by the date specified by the DEP Project Director.

10.1.2.5 The following rates shall apply in computing overhead (indirect costs) and profit for Change Orders that do not exceed \$25,000. The percentages shall be applicable for deleted work as well as additional work. When a change consists of both added and deleted work, the applicable percentages shall be applied to the net cost or credit. In any event, the percentages shall not exceed the following:

- a. Overhead will be the sum of:
  - (1) fifteen percent (15%) of direct labor costs. NOTE: For the purpose of this article, the term "direct labor" shall include all foremen (identified by name and not included in the Project as the full-time superintendent or full time foreman as required elsewhere in the contract documents), equipment operators and skilled, semi-skilled and common laborers directly assigned to the specified operation. The term "direct labor costs" shall consist of the Contract or actual payroll rate of wage per hour and fringe benefits paid for each and every hour that such employees are actually engaged in the performance of the Work.
  - (2) fifteen percent (15%) of direct material costs. NOTE: For the purpose of this article, the term "direct material costs" shall consist of the actual costs of the materials including applicable tax and transportation charges.
- b. For rented equipment, an hourly rental rate will be used which will be determined based upon the monthly rental rates in the current edition of the Rental Rate Blue Book for Construction Equipment (Rental Book) and dividing it by 176. An allowance will be made for operating costs for each and every hour the equipment is actually operating in accordance with the rates listed in the Rental Book. The Contractor will be allowed only 65% (sixty-five percent) of the rental rate on Contractor-owned equipment.
- c. Bond premiums and payroll taxes, if applicable, will be allowed at actual cost. The Contractor shall submit from the surety to DEP Project Director a letter for the bond premiums.
- d. The Contractor's profit on Subcontractor's work will be six percent (6%) of the Subcontractor's costs. Subcontractor indirect costs will be computed in the same manner as for the Contractor. The Contractor agrees to incorporate this article in each of its subcontracts. NOTE: When more than one tier of Subcontractor exists, for the purpose of markups, they shall be treated as one Subcontractor.

- e. A profit of six percent (6%), where profit is allowable by the terms of the applicable Contract provision, shall be added to the Contractor's total cost. Indirect costs shall not be duplicated in direct costs.

10.1.2.6 For Change Orders in excess of \$25,000 the maximum allowable percentages of 15% overhead and 6% profit applies unless negotiated lower based upon the nature, extent and complexity of the Work involved.

10.1.2.7 The DEP Project Director, in order to avoid delays in the progress of work or when in the best interests of the State, has the discretion to direct the Contractor, in writing, to proceed with work claimed by the Contractor to be extra work , and/or to accelerate its work without a prior agreement on entitlement or costs. Such direction shall be in the form of a Letter of Direction. The Contractor may submit a claim for evaluation by the DEP Project Director, for costs or for time on account of such work and/or acceleration on the form entitled "Contractor Change Order Request," completed in sufficient detail and in accordance with this article within ten (10) calendar days after receipt of the Letter of Direction. Nothing in this article shall excuse the Contractor from proceeding with the Work identified in the Letter of Direction and all other Contract Work. Issuance of a Letter of Direction under this article shall not be intended nor construed as an admission or acknowledgment by the State that the Contractor is entitled to additional compensation and/or time on account of such Work and/or acceleration.

## 10.2 ACCELERATION

The DEP Project Director may order and direct the Contractor to accelerate its Work at any location(s) by increasing its forces, working overtime and/or working on Saturdays, Sundays, and holidays. If acceleration is required by the State, and not due to any delays on the part of the Contractor, the Contractor will be reimbursed for additional costs.

## **ARTICLE 11 - CLAIMS AND DISPUTES**

### **11.1 CONTRACTOR CLAIMS**

11.1.1 Any claims made by a Contractor against the State for damages, extra costs or any other claim made pursuant to the contract are governed by and subject to the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1 et seq., as well as all the provisions in this Contract.

11.1.2 Upon presentation by the Contractor of a request in writing, the DPMC and the DEP may review any decision or determination of the State, the CMF or the Architect/Engineer as to any claim, dispute or any other matter in question relating to the execution or progress of the Work or the interpretation of the Contract Documents. Consistent with the intent of this Contract, the DPMC may schedule a conference for the purpose of settling or resolving such claims, disputes or other matters. Where such a conference is conducted, the Contractor, the CMF and/or the Architect/Engineer shall be afforded the opportunity to be heard on the matter in question. Following review of the Contractor's request, the DPMC and the Contractor may settle or resolve the disputed matter, provided however that any such negotiations, conferences, settlement or resolution shall be subject to all requirements imposed by law, including where applicable, the New Jersey Contractual Liability Act (N.J.S.A. 59:13-1 et seq.). The DPMC's participation in any effort to negotiate, settle or resolve any such claim or dispute with the Contractor shall not operate to toll or extend the time limitations for notice or suit under the New Jersey Contractual Liability Act.

### **11.2 MUTUAL RIGHTS AND RESPONSIBILITIES OF ALL CONTRACTORS, THE CONSTRUCTION MANAGEMENT FIRM AND THE ARCHITECT/ENGINEER**

11.2.1 Any Contractor or the CMF or the A/E which by its own acts, errors or omissions, damages or unnecessarily delays the Work or otherwise causes damage to the State, any other Contractor or the CMF or A/E, shall be directly responsible to the aggrieved party or parties, for all costs and expenses incurred due to any such delays and/or damages whether by settlement, compromise or arbitration or judgment.

11.2.2 Any Contractor damaged by the actions of another Contractor or the CMF or A/E shall have a direct right to recovery against the party causing such damages, but shall not have a right to recover such damages against the State.

11.2.3 In addition, the party responsible for causing such damages agrees to defend, indemnify and save harmless the State from all such claims and damages. Nothing contained in this paragraph shall be construed to relieve the responsible party from any liability or damage sustained on account of such acts, errors or omissions.

11.2.4 The State shall not be held vicariously liable to any Contractor for any damages or extra costs caused by any acts or omissions by another party including but not limited to actions of the CMF or A/E as specified in the

above paragraph. The Contractor's exclusive remedy shall be against the party directly responsible for causing such damages or extra costs.

## **ARTICLE 12 - TERMINATION/SUSPENSION**

### **12.1 SUSPENSION OF THE WORK / STOP WORK**

12.1.1 If the Contractor fails to correct defective work or persistently fails to carry out the Work in accordance with the Contract Documents, or if the State determines that it is in the best interest of the Project to do so, the DEP Project Director, with the approval of the DPMC, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated and the DPMC provides written notice to the Contractor that the stopped Work may resume.

12.1.2 DPMC 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 DPMC, it may be necessary or expedient for the State to do so.

### **12.2 TERMINATION FOR CAUSE**

12.2.1 If the Contractor persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials so as to avoid or eliminate delays in the orderly progress of the Work in accordance with the approved schedule; or if the Contractor fails to make prompt payment to any Subcontractor or for materials or labor; or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction; or if the Contractor is guilty of a material breach of a provision of the Contract Documents or otherwise fails to carry out the Work in accordance with the Contract Documents, then the State may, without prejudice to any other right or remedy, and after giving the Contractor and its surety three (3) working days written Notice to forthwith address such breach and default with diligence and promptness, terminate the employment of the Contractor by the issuance of a written Notice to that effect to the Contractor and its surety, should the Contractor fail to comply with the demands of the original above mentioned Three Day Notice.

12.2.2 Upon such termination, the State may take possession of the Site and of all the materials, equipment, and tools on the Site and of any materials stored off Site paid for by the State, and may finish the Work by whatever method the State may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished.

12.2.3 In the event of termination for default, the surety shall either complete the principal's work or finance the completion of the Work. The surety shall not have the right to do nothing. In the event of the surety's breach of its obligations to the State, the surety shall be subject to all available damages under the law, including but not limited to debarment and the penalties imposed by New Jersey's Consumer Fraud Act.

12.2.4 Within seven (7) calendar days following receipt of Notice of Termination by the surety, the surety shall submit in writing its intention to satisfy its bond obligation to the



State as obligee, and to explain its plan to complete the Work, tender a completing Contractor or finance the completion of the Work.

12.2.5 If the surety elects to take over the Work and complete same or to tender a completing Contractor, it must furnish notice of its intent to do so in writing over the signature of an authorized representative and such notice shall be served upon the DPMC within seven (7) calendar days after service upon the surety of the Notice of Termination. This document shall identify the Contractor to perform this work.

12.2.6 If the surety elects to satisfy its bond obligation by financing the completion of the Work, in lieu of taking over same, the surety and State shall enter into an agreement, within thirty (30) days of the termination Notice, setting forth the details of the payments to be made by the surety. All current obligations for labor and materials incurred and outstanding by the defaulting Contractor on this Project shall be paid by the surety without delay, subject to allowance of reasonable time to verify such claims by the surety.

12.2.7 If the surety fails to satisfy its bond obligations within the time frames established above, the State may undertake the completion of the Project in any manner deemed appropriate. In that circumstance, the surety shall not be relieved of any of its payment and performance bond obligations.

12.2.8 If the unpaid balance of the Contract sum exceeds the cost of finishing the Work (including but not limited to liquidated damages for delays and all other remaining damages sustained by the State originating from such breach of Contract), such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and its surety shall be obligated to pay the difference to the State promptly upon receipt of billing from the State, and this obligation shall survive the termination of the Contract.

### 12.3 STATE'S RIGHT TO COMPLETE THE WORK

12.3.1 Alternatively, should the Contractor fail or refuse to correct its breach and default after receiving the required notice as provided under Section 12.2 hereof, the State, in lieu of terminating the Contractor's employment, may provide for the correction and completion of all remaining Work by other means, and deduct all costs associated with such correction and completion from any undisbursed balance of funds (including earned retainage) remaining under the Contract. Such deduction may be documented by issuance of one or more deductive change orders. The State's correction or completion of Work under this paragraph shall not operate to waive, release or diminish the liability of the Contractor and its surety to the State for any breach or default by the Contractor.

### 12.4 TERMINATION FOR CONVENIENCE

12.4.1 The State may, at any time, terminate the Contract in whole or in any part for the State's convenience and without cause when the State in its sole discretion views termination to be in the public interest.

12.4.2 Upon receipt of an order of Termination for Convenience, the Contractor shall not proceed with any item of work which is not specified in the Order of Termination. The Contractor shall complete all items of work specified in the termination order. Such work shall include punch list items and all work necessary to ensure the safety of the public, to properly secure existing work already constructed or partially constructed and to secure the

Project Site. This work so ordered shall be performed in accordance with the Contract Documents, and may include items of work not in the original Contract. The Work performed shall be considered substantially complete upon completion and acceptance of all items of work specified in the Order, except punch list items. After completion of the punch list items and all documents required by the Contract, the Contract shall terminate upon issuance of a Final Certificate and payment. The State reserves the right to declare in default a Contractor who fails to carry out the conditions set forth in an Order of Termination for Convenience.

12.4.3 When the State orders termination of the Contract for Convenience, all completed items of work as of that date will be paid for at the Contract prices.

12.4.3.1 Payment for partially completed work will be paid for at agreed prices.

12.4.3.2 Payment for new items, if any, will be made either at agreed prices or in accordance with Article 10.

12.4.3.3 Materials obtained by the Contractor for the Work but which have not been incorporated therein may, at the option of the State, be purchased from the Contractor at actual cost delivered to a prescribed location, or otherwise disposed of as mutually agreed.

12.4.4 Within sixty (60) days of the effective termination date, the Contractor shall submit claims for additional costs actually incurred, not covered above or elsewhere in the Contract. Such claims may include reasonable mobilization costs, overhead expenses attributable to the Work performed, Subcontractor costs not otherwise paid for, actual idle labor costs if Work is stopped in advance of the termination date. The State will not compensate the Contractor for costs prohibited under provisions of the Contract and/or anticipated profits on work not performed.

12.4.5 If the State terminates the Contractor for cause as provided under Article 12.2 of the General Conditions, and if a court of law subsequently determines such termination for cause to have been undertaken without lawful justification, then such termination shall be deemed a termination for convenience governed by this Article 12.4. In that event, recovery by the Contractor and/or the Contractor's surety shall be limited to those costs which are recoverable following a termination for convenience under this Article 12.4.

## ARTICLE 13 – OTHER REQUIREMENTS

### 13.1 PREVAILING WAGE

13.1.1 The Contractor shall comply with the New Jersey Prevailing Wage Act Laws of 1963, Chapter 150, (N.J.S.A. 34:11-56.25 et seq.) and all amendments thereto, and this act is hereby made a part of every Contract entered into on behalf of the State of New Jersey through the DPMC, except those Contracts which are not within the contemplation of the Act. Provisions of the Act include the following stipulations and requirements:

a. All workers employed in the performance of every Contract in which the Contract sum is in excess of \$2,000 and to which the DPMC is a party shall be paid not less than the prevailing wage rate as designated by the Commissioner, Division of Labor or his or her duly authorized representative.

(1) The Contractor performing public work for the DPMC and which is subject to the provisions of the Prevailing Wage Act, shall post the prevailing wage rates for each craft and classification involved as determined by the Commissioner, Division of Labor. This posting shall include the effective date of any changes thereof, and shall be displayed in prominent and easily accessible places at the Site of the Work or at such place or places as are used by the Contractor/Subcontractor to pay workers' wages.

(2) At the time of the bid due date, the Bidder and any Subcontractors identified by the Bidder must be registered in accordance with "The Public Works Contractor Registration Act" (N.J.S.A. 34:11-56.48 et seq.) All questions regarding registration shall be addressed to:

Contractor Registration Unit  
New Jersey Department of  
Labor and Workforce  
Development  
Division of Wage & Hour  
Compliance P O Box 389  
Trenton NJ 08625-  
0389  
[https://www.rohrerbus.com/new-jersey-bus-sales/FAX: 609-633-8591](https://www.rohrerbus.com/new-jersey-bus-sales/FAX:609-633-8591)

b. In the event it is found that any worker, employed by any Contractor covered by any Contract in excess of \$2,000 for any public work to which the DPMC is a party, has been paid a rate of wages less than the prevailing wage required by such Contract, DPMC may terminate the Contractor's right to proceed with the Work, or such part of the Work as to which there has been failure to pay required wages, and may otherwise execute the Work to completion.

- c. In the event that any Subcontractor retained by a Contractor on any Contract in excess of \$2,000 for any public work to which the DPMC is a party, has been paid a rate of wages less than the prevailing wage required by such Contract, DPMC may terminate the Contractor's right to proceed with the Work, or such part of the Work as to which there has been failure to pay required wages, and may otherwise execute the Work to completion or may require that the Contractor immediately substitute a new Subcontractor at the costs set forth in the Contract.
- d. Nothing contained in the Prevailing Wage Act shall prohibit the payment of more than the prevailing wage rate to any worker employed on a Project.
- e. The Contractor shall, as a condition of subcontract with any tier Subcontractor, require compliance with this section as a condition of Subcontract.
- f. The State may audit the Contractor's conformance with the Prevailing Wage Act. If the result of such audit determines that the Contractor has not complied with the Prevailing Wage Act then such Contractor shall be responsible for the cost of this audit.

## 13.2 PATENTS

13.2.1 The Contractor shall hold and save the State and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for or on account of any patented or non-patented design, devise, invention, process, article or appliance manufactured or used in the performance of the Contract, including its use by the State, unless otherwise specifically stipulated in the Contract Documents.

13.2.2 License and/or royalty fees for the use design, devise, invention, process, article or appliance which is authorized by the State must be reasonable, and paid to the holder of the patent or his or her authorized licensee directly by the State and not by or through the Contractor.

13.2.3 If the Contractor uses any design, devise, invention, process, article or appliance covered by letters, patent or copyright, it shall provide for such use by suitable agreement with the State of such patented or copyrighted design, device or material. It is mutually agreed and understood that, without exception, the Contract prices shall include all royalties or costs arising from the use of such design, devise, invention, process, article or appliance in any way involved in the Work.

13.2.4 The Contractor and/or its surety shall indemnify and save harmless the State from any and all claims for infringement by reason of the use of such patented or copyrighted devise, invention, process, article or appliance, or any trademark or copyright in connection with Work performed under this Contract, and shall defend and indemnify the State for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the execution of the Work or after the completion of the Work. This section shall survive the termination of the Contract.

## 13.3 RIGHT TO AUDIT

13.3.1 The State reserves the right to audit the records of the Contractor in connection with all matters related to its Contract. The Contractor agrees to maintain its records in accordance with "Generally Accepted Accounting Principles," for a period of not less than

five (5) years after receipt of final payment. All charges must be supported by appropriate documentation, including, but not limited to canceled checks. All records shall be made available to the New Jersey Office of the State Comptroller or other State audit agency upon request and at no cost to the State.

13.3.2 The Contractor shall maintain all documentation related to products, transactions or services under this contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller or other State audit agency upon request and at no cost to the State.

13.3.2 The Contractor shall develop, maintain and make available to the DPMC on request such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, Change Orders, all original estimates, takeoffs and other bidding documents, all Subcontractor and supplier Contracts and changes, all records showing all costs and liabilities incurred or to be incurred in connection with the Project (including all Subcontractor and supplier costs), all payment records and all records showing all costs incurred in labor and personnel of any kind, records and other data as the State may request concerning work performed or to be performed under this Contract.

13.3.3 The Contractor acknowledges and agrees that no claim for payment which is premised to any degree upon actual costs of the Contractor shall be recognized or payable by the State except and to the extent that such actual costs are substantiated by records required to be maintained under these provisions.

13.3.4 The Contractor acknowledges and agrees that its obligation to establish, maintain and make available records and the State's right to audit as delineated herein shall extend to actual costs incurred by Subcontractors in performing work required under the Contract Documents. The Contractor shall require in each subcontract that the Subcontractor establish, maintain and make available to the State all records as defined and delineated herein, relating to all work performed under the Subcontractor including work performed by a sub-Subcontractor.

## 13.4 INSURANCE

### 13.4.1 Insurance To Be Carried By The Contractor:

The Contractor shall obtain and maintain, at its expense and for the duration of the contract, minimum insurance coverage set forth below. By requiring such minimum insurance, the State of New Jersey shall not be deemed or construed to have assessed the risk that may be applicable to the Contractor under this contract. The Contractor shall assess its own risks and if it deems appropriate and/or prudent, maintain higher limits and/or broader coverage. The Contractor is not relieved of any liability or other obligations assumed or pursuant to the Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration or types.

#### a Commercial General Liability:

- (1) Commercial General Liability (CGL)-ISO occurrence form CG001 or a substitute form providing a minimum coverage of \$2,000,000 per occurrence for bodily injury liability and \$2,000,000 per occurrence for property damage liability and shall cover liability arising from:

- Premises/Operations

- Independent Contractors
  - Products/Completed Operations
  - Personal and Advertising Injury
  - Liability assumed under an insured contract (including defense cost assumed)
- (2) The State of New Jersey shall be included as an additional insured under the CGL using ISO additional insured endorsement CG 20 10 and CG 20 37 or a substitute providing equivalent coverage, which endorsement shall include coverage for the State of New Jersey arising out of the completed operations of the contractor, and which coverage shall be maintained in effect for the benefit of the State of New Jersey for a period of three (3) years following the completion of the work specified in section 7.3 of this contract. Additional Insured coverage as required in this subparagraph shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to the State of New Jersey.
- (3) The CGL general aggregate shall apply separately to this project using ISO CG 2503 form – designated construction projects(s) General Aggregate Limit.
- (4) There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from explosion, collapse or underground property damage.
- (5) If not included in the policy form the CGL policy must be endorsed with a separation of insureds (severability of interests) endorsement.
- (6) CGL policy must provide or be endorsed (ISO form CG 24 04) to provide for waiver of subrogation.
- b Business Automobile Liability:
- (1) Contractor and subcontractors shall maintain business auto liability insurance and such insurance shall cover liability arising out of any auto (including owned, hired and non-owned autos).
- (2) The limits of liability shall be not less than \$1,000,000 per occurrence for both bodily injury and property damage liability.
- (3) Business Automobile coverage shall be written on ISO form CA 00 01 or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in the 1990 and later additions of CA 00 01.
- (4) If required by law, the business auto policy shall be endorsed to provide pollution liability coverage equivalent to that provided under the ISO pollution liability broadened coverage for covered autos form CA 99 48 and the Motor Carrier Act endorsement (MCS 90) shall be attached.

- (5) Waiver of Subrogation -- Contractor waives all rights against the State of New Jersey for recovery of damages to the extent these damages are covered by the business auto liability insurance obtained by Contractor pursuant to Paragraph 2.0 of this Agreement.
- c Workers Compensation: Workers Compensation Insurance applicable to the laws of the State of New Jersey and other State or Federal jurisdiction is required to protect the employees of the Contractor or any Subcontractor who will be engaged in the performance of this Contract. This insurance shall include employers' liability protection with a limit of liability not less than \$500,000.
- d Umbrella Liability: Contractor must maintain an Umbrella Liability Policy excess of the Commercial General Liability, Automobile Liability and Employer Liability coverage.
  - (1) The coverages of the umbrella policy must be as broad as the primary policies covered by this policy and include a "drop-down" provision if the primary coverage becomes impaired or exhausted.

#### 13.4.2 Insurance To Be Carried By The State of New Jersey:

- a Builders Risk Insurance: Unless otherwise provided in this agreement the State of New Jersey shall provide and maintain, in a company or companies lawfully authorized to do business in the jurisdiction which this project is located, Builders Risk Insurance in the amount of the initial contract amount as well as subsequent modifications for the entire project at the site on a replacement cost basis.
  - (1) The Builders Risk coverage shall be on an "All Risk of direct physical loss or damage" or equivalent policy form and include theft, earthquake, flood, temporary structures, demolition and increased cost of construction, architects fees and expenses.

Also the insurance must include coverage for Equipment Breakdown Coverage (a.k.a. Boiler & Machinery) which shall cover insured Equipment during installation and testing. The Builders Risk insurance shall include the interest of the State of New Jersey, the general Contractor, subcontractors and sub-tier contractors in the project.
  - (2) The Builders Risk Policy shall cover all materials equipment and supplies, assemblies and furnishings intended for specific installation in the project while located at the site. The policy will cover portions of the work off site and portions of the work in transit subject to the policy sub-limits for these coverages.
  - (3) Waivers of Subrogation -- The State of New Jersey and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees and (2) the Architect/Engineer, Architect/Engineer's Consultants, and any of their subcontractors, Sub-subcontractors, agents and employees for damages caused by fire or other causes of loss to the extent covered by the

Builders Risk insurance or any other property insurance applicable to the work.

- (4) The Builders Risk policy will provide for a waiver of subrogation against all interested parties covered by the policy but only to the extent the loss is covered by the policy.
- (5) The above insurance shall apply only to the work described in this contract, and shall not apply to alterations, repairs, maintenance and installations of systems, equipment and other items of work which do not result in creating additional habitable space. This insurance shall not protect against damage or loss to any of the Contractor's or Subcontractor's tools, equipment, scaffolding, staging towers or forms and Contractor's materials stored on Site which are not part of the construction Project,. It is understood that the Contractor will, at its own expense, carry all insurance which may be required to provide the necessary protection against such loss or damage herein described which shall contain a waiver of any right of subrogation against the State of New Jersey.
- (6) Deductible Provisions -- The insurance protection described herein may contain a deductible clause. The State of New Jersey agrees to bear the cost of all deductibles of the Builders Risk Policy.
- (7) Loss Reporting and Loss Adjustment – The Contractor will receive a Loss Reporting Form whenever Builders' Risk Insurance is written. This form includes appropriate loss reporting instructions. In the event of loss, the Contractor shall immediately notify the State of New Jersey, DPMC, in writing, and take any other appropriate steps as may be required under the standard builders' risk insurance policy in effect. Upon the occurrence of any loss or damage prior to the acceptance of the building by the State, the Contractor shall, at the State's option, replace and repair the damaged work as originally provided in the drawings and specifications at no additional compensation to that provided in the original Contract.
- (8) Status Trustee for Loss Adjustment -- All losses will be adjusted with, and payable to, the State of New Jersey, as trustee for the insured as their interests may appear. The Contractor shall be named jointly with the State in all policies of insurance, all of which shall be open to inspection by the State.
- (9) This provision shall not relieve the Contractor from its obligation to complete, according to plans and specifications, the Project covered by the Contract, and the Contractor and its surety shall be obligated to full performance of the Contractor's undertaking.



## 13.5 ASSIGNMENT OF ANTITRUST CLAIMS

13.5.1 The Contractor recognizes that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the ultimate purchaser. Therefore, and as consideration for executing this Contract, the Contractor, acting herein by and through its duly authorized agent, hereby conveys, sells, assigns, and transfers to the State of New Jersey, for itself and on behalf of its political subdivisions, instrumentalities, and public agencies, all right, title and interest to all claims and causes of action it may now or hereafter acquire under the antitrust laws of the United States or the State of New Jersey, relating to the particular goods or services purchased or acquired by the State of New Jersey or any of its political subdivisions or public agencies pursuant to this Contract.

13.5.2 In connection with this assignment, the following are the express obligations of the Contractor:

- a. The Contractor will take no action which will in any way diminish the value of the rights conveyed or assigned hereunder.
- b. The Contractor will advise the Attorney General of New Jersey and DPMC:
  - (1) in advance of its intention to commence any action on its own behalf regarding any such claim or cause(s) of action; and/or
  - (2) immediately upon becoming aware of the fact that an action has been commenced on its behalf by some other person(s) of the tendency of such action.
- c. The Contractor will notify the defendants in any antitrust suit of the fact of the within assignment at the earliest practicable opportunity after the Contractor has initiated an action on its own behalf or becomes aware that such an action has been filed on its behalf by another person. A copy of such Notice will be sent to the Attorney General of New Jersey and the DPMC.

13.5.3 It is understood and agreed that in the event any payment under any such claim or cause of action is made to the Contractor, it shall promptly pay over to the State of New Jersey the allotted share thereof, if any, assigned to the State hereunder.

## **END, GENERAL CONDITIONS**

## SECTION 011414 – CONTROL OF WORK

### PART 1 - GENERAL

#### 1.01 HOURS OF CONSTRUCTION

- A. Normal daytime construction activity shall take place only between the hours of 8:00 a.m. to 6:00 p.m., excluding Saturdays, Sundays, and legal holidays. Night construction activity pending approval from the Municipality shall take place between the hours of 9:00 p.m. to 5:00 a.m., excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods will be permitted only with the written approval of the appropriate Municipalities (City of Jersey City, City of Hoboken, and Township of Weehawken) and County of Hudson.

#### 1.02 WORK ZONE LIMITS

- A. The Contractor shall not (except after written consent from the proper parties) enter or occupy with personnel, tools, materials or equipment any private property or public rights-of-ways outside the work zone limits as shown on the Contract Drawings. The Contractor shall coordinate with the Construction Manager to obtain written consent prior to entering or occupying land with the intent to stage and/or perform construction work outside of the work zone limits.

#### 1.03 UTILITY LOCATIONS

- A. Comply with all requirements of the One-Call Damage Prevention System. Contact New Jersey One Call at <https://www.nj1-call.org> or 1-800-272-1000 (or dial 811) no less than three (3) and no more than 10 days prior to the start of subsurface work. Verify with each utility owner if it requires that a representative be present during excavation, and, if required, coordinate with representative. Take all precautions required by the utility owner.
- B. Underground utilities are indicated on the Contract Drawings. These locations are approximate and neither the Construction Manager nor the DEP make any assurances that they are accurate or complete. The Contractor is to perform its own investigation of the utility locations and to take all necessary precautions to avoid damaging the utilities in the course of its Work.

#### 1.04 DIMENSION OF EXISTING STRUCTURES

- A. The Contractor shall verify the dimensions and locations of existing structures in the field before the fabrication of any material or equipment that is dependent on the correctness of such information.

#### 1.05 OPEN EXCAVATIONS

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, fencing, caution signs, lights, and other means to prevent accidents to persons and damage to property, and in accordance with applicable occupational health and safety regulations and local municipality requirements. The Contractor shall, at his own expense, provide suitable and safe crossings for accommodating travel by pedestrians and workmen. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits shown on the Contract Drawings. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Construction Manager may require special construction procedures at the sole cost and expense of the Contractor, such as limiting the length of the open trench, prohibiting storing excavated material in the street, and requiring that the trench not remain open overnight.
- B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles that could be dangerous to the public shall be well lighted at night.

#### 1.06 TEST PITS

- A. Test pits for the purpose of pre-characterization of soils properties and locating underground utilities or structures in advance of the construction shall be excavated and backfilled by the Contractor at the direction of the Construction Manager. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Construction Manager.
- B. Procedures for test pits (potholing) are found in Section 023219.

#### 1.07 INTERFERENCE WITH AND PROTECTION OF STREETS

- A. The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits from the proper parties. If any street, road, or private way shall be rendered unsafe by the Contractor's operations, they shall make such repairs or provide such temporary ways or guards as acceptable to the proper parties. "Operation and Maintenance of Roadways" are described in Section 340113.
- B. Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefor.
- C. The Contractor shall, at least two (2) weeks in advance, notify the Municipalities and/or County in writing, with a copy to the Construction Manager if the closure of a street or road is necessary. The Contractor shall cooperate with the Municipalities and/or County

in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

#### 1.08 SERVICES OF UNIFORMED SPECIAL OFFICERS

- A. Whenever work zones obstruct regular pedestrian or vehicular traffic, the Municipalities within the Project Area require uniformed special officers to direct traffic. The Contractor shall coordinate with the Municipalities, based on jurisdiction of the streets and rights-of-ways, as to the number of officers required at each work zone, which shall be at the sole discretion of the Municipalities. The Contractor will not be permitted to use his own flagmen or other workers in lieu of uniformed officers.
- B. NJT may also require additional NJT uniformed officers to direct NJT employee vehicles, emergency vehicles and/or buses around affected work zones. The Contractor shall coordinate with NJT as to the required number and location of NJT officers, which will be at the sole discretion of NJT.
- C. DEP shall reimburse the Contractor the cost of such uniformed special officers and NJT uniformed officers. Such cost shall consist of the actual wages paid to such officers. The Contractor will be responsible for coordinating with the Municipalities to set up payment terms and accounts as required. The Contractor will be required to submit sufficient backup to DEP, including invoices from the Municipalities, plus daily officer sign-in logs, including names, start and end times, and work zone locations of the officers working each day.
- D. The presence of uniformed special officers or NJT uniformed officers shall in no way relieve the Contractor of any responsibility or liability which is his under the terms of the Contract. An allowance of \$760,000.00 has been included in the Bid to pay for the uniformed officers. Contractor will not modify or change this number when submitting its Bid.

#### 1.09 CARE AND PROTECTION OF PROPERTY

- A. Contractor is referred to General Conditions Article 4.15.2.a(3) for additional requirements.
- B. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at their expense, to a condition similar or equal to that existing before the damage was done, or they shall make good the damage in other manner acceptable to the Construction Manager .

#### 1.10 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

- A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and communication conduits and cables, whether or not they are shown on the Contract Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by the Contractor at their sole cost and expense.
- B. The Contractor bears full responsibility for obtaining all locations of underground structures and utilities. Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor. As directed by the Construction Manager, locate utilities by potholing in accordance with Section 023219.
- C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the Work under the Contract and all costs in connection therewith shall be included in the Total Price Bid in the Bid Form.
- D. In addition to those utility relocations called out and shown on the Contract Drawings, if, in the opinion of the Construction Manager, permanent relocation of a utility is required, the Construction Manager may direct the Contractor, in writing, to perform the Work. Work so ordered will be paid at the Contract unit prices, if applicable, or as extra work under Article 11 of the General Conditions. The Contractor shall fully cooperate with the Municipality and utility owner, and shall have no claim for delay due to such relocation.
- E. Comply with all requirements of the One-Call Damage Prevention System. Contact New Jersey One Call at <https://www.nj1-call.org> or 1-800-272-1000 (or dial 811) no less than three (3) and no more than 10 days prior to the start of subsurface work. Verify with each utility owner if it requires that a representative be present during excavation, and, if required, coordinate with representative. Take all precautions required by the utility owner.
- F. The Contractor shall coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the DEP.

#### 1.11 INSPECTION OF WORK AWAY FROM THE SITE

- A. If Work to be done away from the construction site is to be inspected on behalf of the Owner during its fabrication, manufacture, testing, or before shipment, the Contractor shall give notice to the Construction Manager of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Such notice shall be in writing and delivered to the Construction Manager no less than 60 days so that the necessary arrangements for the inspection can be made.

#### 1.12 COOPERATION WITHIN THIS CONTRACT

- A. All firms or persons authorized to perform any work under this Contract shall cooperate with any and all other contractors involved with the Project and/or the Resist Structure Project, and shall assist in incorporating the work of other trades where necessary or required.
- B. Cutting and patching, drilling, and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or recommended by the Construction Manager.

#### 1.13 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

- A. During the course of the work, the Contractor shall keep the site of his operations in as clean and as neat a condition as is possible. They shall dispose of all residue resulting from the construction work and, at the conclusion of the Work, they shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.
- B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable Federal, State, and local laws, and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Contract Sections.
- C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and plains is strictly prohibited, even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by them will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill and restore the area impacted at their own expense.

#### PART 2 - PRODUCTS

(Not Used)

#### PART 3 - EXECUTION

(Not Used)

END OF SECTION 011414

## SECTION 011433 - WORK IN RIGHTS-OF-WAY

### PART 1 - GENERAL

#### 1.01 DEFINITIONS

- A. As used in this numbered Section, and this Section only, the terms used herein shall have the following meaning:
  - 1. The terms "Traffic Lane", "Lane", "Active Roadway", "Street" and "Roadway" shall mean, in addition to the normally traveled pavement areas, other areas including, but not limited to, ramp terminal gore areas, roadway shoulders, and all other areas that may foreseeably be occupied by moving vehicles.
  - 2. "Flashing Arrow Sign Unit" (FASU) shall mean an engine/generator-, solar- or battery-powered flashing light sign with lights displayed in the shape of an arrow.
  - 3. "Slow-Moving Vehicles" shall mean vehicles or equipment that travel at or under a speed corresponding to 15 mph less than the posted speed limit.
  - 4. "Work Area" shall mean the area immediately surrounding the Work in progress, typically, where workers are afoot, and/or the space within a Roadway where Work on the Roadway is being performed by the Contractor.
- B. General Requirements
  - 1. Conform to requirements of this numbered Section, the Contract Drawings, and the following:
    - a. Portions of the latest editions, including all amendments thereto, of the Federal Highway Administration (FHWA): "Manual on Uniform Traffic Control Devices" (MUTCD) Part VI as hereinafter specified and applicable portions of the companion "Traffic Control Devices Handbook" (TCDH); "Standard Highway Signs"; and "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects".
    - b. The latest edition of the American Association of State Highway and Transportation Officials (AASHTO): "Roadside Design Guide", Chapter 9: "Traffic Barriers, Traffic Control Devices, and Other Safety Features for Work Zones"; and "Standard Specifications for Highway Bridges", as hereinafter specified.
    - c. The requirements of the Americans with Disabilities Act (ADA) laws in all respects as specified in the "2010 Standards for Accessible Design".

- d. FHWA's "Portable Changeable Message Signs Handbook" (PCMS).
- e. Maintenance of traffic and Work Area protection features specified herein and as shown on Contract Drawings and/or sketches to be furnished to the Contractor.
- f. In the event of a technical conflict between a requirement in the publications referenced herein and the Specifications and Contract Drawings, the requirements of the Contract Sections and Contract Drawings shall control.
- g. There may be more than one Work Area within the confines of a closed Roadway or Traffic Lane. Each Work Area shall be individually protected as specified herein.
- h. There may be other ongoing construction contracts within the vicinity of the Work Area. The Contractor shall not move, modify or relocate any item associated with these other contracts without prior approval of and coordination with the Construction Manager.
- i. Perform Work in such a manner and sequence as to interfere as little as possible with the passage of vehicles, pedestrians and other kinds of public traffic.
- j. All existing roadway items such as guiderail, pavement markings, curbs, signals and signs damaged by the Contractor shall be restored by them to the satisfaction of the Construction Manager at no additional cost to New Jersey Department of Environmental Protection (NJDEP).

C. Contractor-Furnished Materials and Equipment

- 1. Provide and maintain in good working order all materials, equipment, temporary construction signs and facilities required for proper maintenance of traffic and Work Area protection, as specified herein and/or shown on the Contract Drawings. All said equipment/devices shall remain the property of the Contractor, unless otherwise shown on the Contract Drawings.
- 2. All traffic control devices shall be properly installed prior to the commencement of the work to which they apply and shall be properly maintained by the Contractor thereafter. The devices shall remain in place as long as the conditions or restrictions to which they apply exist. Traffic control devices not applicable to existing conditions and restrictions shall be removed or covered over. Where roadway operations are implemented in stages, only those devices that apply to existing conditions and restrictions shall be in place.



3. All items provided under Paragraph 1.01.C.1 shall be new or undamaged previously used materials in serviceable condition conforming to requirements specified herein.
4. Provide and maintain in serviceable condition the following, where shown on the Contract Drawings or as directed by the Construction Manager:
  - a. Portable Changeable Message Signs
    - (1) Trailer Mounted Flashing Arrow Sign Unit (FASU).
  - b. Channelizing Devices
    - (1) Cones.
    - (2) Drums.
    - (3) Type III Barricades.
  - c. Vehicle-strong Barriers
    - (1) Water-filled Barrier: Conform to Contract Section 347113 and Test Level 3 as per National Cooperative Highway Research Program (NCHRP).
  - d. Temporary Signs: Conform to requirements of Contract Section 344116 (Type 1, unless otherwise shown on the Contract Drawings) hereof.
  - e. Temporary Sign Supports: All temporary maintenance of traffic and Work Area protection sign supports and mountings shall be constructed to hold the signs in their proper position and to resist swaying in the wind.
    - (1) Wooden Sign Supports: Wood conforming to requirements of Contract Section 344116.
    - (2) Portable Sign Supports: "Windmaster" as manufactured by Marketing Displays, Inc., Farmington Hills, MI.; or approved equal.
  - f. Back-Up Trucks: Nominal actual weight of 15,000 lbs. with nominal 24,000 lbs. gross vehicle weight registration and rear-most wheels situated close to rear of truck body. Standard "ICC" type rear bumpers are not an acceptable substitute for the required rear wheel location. Actual vehicle weight may vary depending on recommendations of the manufacturer of the vehicle-mounted impact attenuator selected. In addition, equip trucks with:
    - (1) Standard 4-lamp flashing hazard signal lights (parking and tail lights);

- (2) Four-lamp sealed beam rotating yellow warning light providing 35,000 candle power per lamp with an apparent flash rate of 120 flashes per minute. Truck mount such lights 7 to 10 feet above the Roadway and locate so as to be visually unobstructed by any part of truck body, load or equipment;
    - (3) Vehicle-Mounted Impact Attenuator: "TMA" units as manufactured by Energy Absorption Systems, Inc., Chicago, IL; or approved equal.
  - g. Temporary Roadway Plates: Steel plates, sized to cover Roadway excavations with thickness and edge support adequate to accommodate HS-20-44 loading per Section 3.7.6 in the AASHTO "Standard Specifications for Highway Bridges".
- 5. Submit the following to the Construction Manager in accordance with Section 13300:
  - a. Catalog Cuts and Data Sheets: Complete manufacturer's data for all equipment and materials.

D. General Work Area Protection

- 1. Contractor shall designate a supervisory-level employee with requisite onsite experience to act as the Traffic Control Coordinator (TCC). The TCC shall supervise the Traffic Management crew who shall be properly trained, supplied, staffed and equipped to deploy and remove the maintenance of traffic and Work Area protection elements required for each of the Contractor's construction activities, as shown on the Contract Drawings and in Paragraph 1.01.D.3 herein.
- 2. Traffic Maintenance crew training shall be specifically developed from this Section. The contents of Contractor's Training programs shall specifically include the Contract Drawings, Traffic Standard Details and all other requirements included on the Contract Drawings.
- 3. Prior to commencement of each day's Work, furnish and install where shown on the Contract Drawings, the traffic control delineations, guiding devices, signals, signs and pedestrian protection, roadway plates, barricades and barriers. Periodically inspect, maintain, relocate, replace, cover, remove or reconstruct the devices. Maintain safe control of traffic flow and demarcate areas of Work at all times.
  - a. Verify that construction material and equipment not removed from areas of Work during non-working periods are protected in such a manner that they shall not constitute a traffic hazard.
  - b. Do not park any vehicles other than construction vehicles required for construction operations within the demarcated protected areas of Work.

- c. Promptly remove traffic control delineations, guiding devices, signals, signs, pedestrian protection, roadway plates, barricades and barriers, where shown on the Contract Drawings, whenever operations under this Contract no longer require said Work Area protection.
  - d. Where shown on the Contract Drawings, existing permanent and temporary pavement markings and traffic guides that conflict with markings and traffic guides to be installed shall be concurrently removed prior to placement of new pavement markings and traffic guides as follows:
    - (1) On wearing surfaces that will be subsequently replaced, resurfaced or abandoned during the Work of this Contract, remove obsolete temporary marking tape and remove or obliterate obsolete thermoplastic or paint markings by grinding, scraping or other means as approved by the Construction Managers as to completely obscure all obsolete markings for the duration of the Work.
    - (2) On finished wearing surfaces, completely remove temporary marking tape and completely remove obsolete permanent markings by grinding, scraping or other means as approved by the Construction Manager. Use of blackout paint or other coating material on any finished wearing surface is prohibited.
    - (3) Grind or chip off all adhesive residue resulting from removed or relocated traffic guides.
  - e. Prior to the end of each work period and not less than twice a day on non-work days, the TCC shall visually inspect and maintain all elements of the maintenance of traffic and Work Area protection installations.
4. Throughout Progress of Work of This Numbered Section
- a. Maintain visual and physical accessibility to fire hydrants. Provide 24-hour advance notice to the Construction Manager in the event of hydrant obstruction.
  - b. Conduct Work Area protection operations so that Traffic Lane ingress and egress to intersecting Roadways, adjacent structures or property, and bus and taxi stops, where present, can be maintained. Obtain the approval of the Construction Manager and provide 24-hour advance notice to the Construction Manager in the event that Work Area protection operations obstruct access to Work Areas.
5. Placement and Removal of Temporary Signs and Traffic Control Devices
- a. Do not locate signs or other traffic delineations, guiding devices and signs in a manner that would: obstruct or interfere with motorists' view of

- approaching, merging or intersecting traffic; obstruct other permanent signs or route markers; or mislead or misdirect the motorist.
- b. Do not place traffic control signs under an overpass or elevated building, or within overpass or building shadow areas, unless otherwise shown on the Contract Drawings.
  - c. On roadways passing below an overpass or elevated building, do not begin or end traffic cone or other delineation and guiding devices under or less than 100 feet from an overpass or building. Extend delineation and guiding devices as required to comply with this requirement.
  - d. The work for installation and removal of temporary traffic control devices shown on the Contract Drawings shall be completed utilizing a moving maintenance and protection of traffic operation having a back-up vehicle with impact attenuator and FASU spaced a short distance from the operation (approximately 50 feet) as approved by the Construction Manager. Devices shall be installed in the direction of traffic and removed in the opposite direction of traffic.
6. Temporary roadway plates, where shown on the Contract Drawings, shall be supported on all edges, and shall maintain the surface condition of the active roadway consistent with the posted speed limit. Where shown on the Contract Drawings, secure plates against displacement by use of suitable steel pins.
- a. Secure plate against displacement and bed in well-tamped pre-mixed cold patch material ramped 1:30 at exposed edges, or
  - b. Cut a recess in the Roadway surface sized to snugly fit the plate and evenly support the plate around its perimeter. Locate the top of the plate flush with or less than one inch below the adjacent Roadway surface. Secure the plate in the recess in a manner approved by the Construction Manager.
  - c. Submit construction details of all Roadway plating and pedestrian planking installations for approval by the Construction Manager before its placement.
7. Where excavations within pedestrian walkways including Traffic Lane crosswalks will be open to walkway pedestrian traffic prior to completion of construction, provide appropriate pedestrian railings and steel plate, wood plank or plywood covers surfaced with an approved heavy-duty non-skid paint coating containing a grit additive. Temporary walkway covers over excavations shall be a minimum of 4-feet wide, designed and constructed to carry a minimum of 150 psf. Railings shall be approximately 3 feet 6 inches above the walkway cover and consist of a 2-inch by 4-inch wood top rail, 1-inch by 4-inch intermediate rail and a toe board 5-1/2 inches high all securely fastened to 2-inch by 4-inch wood posts spaced not more than 8 feet apart. Securely fasten wood walkway covers and posts to wood

sleepers spanning excavation trench. Chamfer or asphalt ramp exposed edges and secure against displacement. Where applicable, Contractor's installations shall meet the requirements of the ADA laws in all respects.

8. Use Vehicle-strong Barriers where the Work Area contains open excavations or when materials and/or equipment are to remain in the Work Area without the presence of workers, unless otherwise shown on the Contract Drawings. Flare exposed ends of the barriers away from the Active Roadway by extending and terminating the barriers beyond the clear zone, in accordance with AASHTO's "Roadside Design Guide". Where flaring of the barriers beyond the clear zone cannot be achieved, protect the barrier end with Portable Impact Attenuators. Tapered barrier end section shall not be used unless approved by the Construction Manager.
9. Each Work Area not protected by Vehicle-strong Barriers shall be protected by a back-up truck when workers are present, unless otherwise shown on the Contract Drawings.
10. Vehicles used by the Contractor during performance of Work shall be considered as equipment vehicles and when not protected by a Vehicle-strong Barrier, said vehicle shall be protected by a back-up truck, unless otherwise shown on the Contract Drawings.
11. Construction material and equipment shall not be stored outside the Work Area, without approval by the Construction Manager.
12. Slow-Moving Vehicles traveling on a Roadway outside of demarcated protected Work Areas shall be followed (approximately 50 feet behind) by a vehicle displaying the same flashing hazard signal lights and sealed beam rotating yellow warning light as required for back-up trucks.
13. Traffic lanes and other areas closed by the Contractor shall be cleared of all materials, equipment and debris to the satisfaction of the Construction Manager, prior to reopening the lanes to traffic.

E. Spare Materials and Equipment

1. Where shown on the Contract Drawings, initially furnish and subsequently maintain the quantities of spare materials and equipment at the construction site, or at another nearby location approved by the Engineer.
2. Totally revamp FASU after each single bulb failure.

F. Notwithstanding provisions herein requiring or permitting the authority to approve or disapprove of any traffic control or delineation and guiding device provided by the Contractor, the Contractor shall ensure the suitability and performance of all such traffic

control devices such that inconvenience to the traveling public is held to an absolute minimum.

## PART 2 PRODUCTS

(Not Used)

## PART 3 EXECUTION

(Not Used)

END OF SECTION 011433

## SECTION 012901 - MEASUREMENT AND PAYMENT

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

A. Summary:

1. Section includes administrative and procedural requirements for Bid Items.
2. Related Requirements:
  - a. Section 014300 "Quality Requirements" for general testing and inspecting requirements.
  - b. Section 01500 "Temporary Facilities"

#### 1.02 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services. Payment will be made for actual quantities installed.
- B. Lump Sum price is an amount incorporated in the Agreement, applicable during the duration of the Work as total compensation for materials, equipment, or services, used to complete this item of work. Contractor is to prepare a detailed Schedule of Values, acceptable to the Construction Manager, breaking down and listing the costs that are included in the lump sum total. This Schedule of Values will be used by the Construction Manager to review partial payments during the Contract period.
- C. Allowance is an amount incorporated in the Agreement, applicable during the duration of the Work, estimated by the Owner that is a cost for services from third parties or for work that cannot be quantified at the time of Bid but is required to complete the work. Contractor shall refer to General Conditions Article 9.6 Allowances. The Contractor shall not modify any Allowance in the Bid. The Allowance is a cost to be incurred by the Contractor and paid as detailed in Section 012901. Changes to Allowances shall be added to or deducted from the Contract Sum by appropriate modification as detailed in Article 10 and 11 of the General Conditions.

#### 1.03 MEASUREMENT AND PAYMENT – GENERAL

- A. The following subsections describe the measurement of and payment for the work to be done under the items listed in the Bid.

- B. The Contractor shall accept as compensation, as herein provided, in full payment for furnishing all materials, labor, tool, equipment, and incidentals necessary to complete the work and for performing all work required by the Contract; also for all loss or damage caused by the actions or inactions of the Contractor its subcontractors, material suppliers and any other agents of the contractor, during the execution of the work and until its final acceptance by the owner, and for all risks of every description connected with the execution of the work, except as provided herein,
- C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall diminish the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.
- D. The quantities listed in the bid documents do not govern final payment. Payments to the Contractor will be made only for the actual quantities of contract items constructed in accordance with the Plans and Specifications. If, upon completion of the construction, these actual quantities show either an increase or decrease from the quantities given in the bid documents, the contract unit prices will prevail.
- E. The payment of progress payments by the State shall not be construed as an absolute acceptance of the Work done up to the time of such payments. "Acceptance" shall mean only written acceptance signed by the DPMC. Acceptance by the DPMC will be made promptly after the contract has been fully completed, final inspection made, and the final certificate of the Engineer of Record is issued.
- F. The prices for those items which involve excavation shall include all costs for excavation, excavation dewatering and disposal, and installation of all temporary sheeting and bracing, unless specifically noted otherwise. Disposal for excavated material shall be paid under a separate line item. Payment for additional excavation will be at the sole discretion of the Construction Manager, if and where directed.
- G. In all items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price therefore, shall be in addition to the cost of excavating earth, and no deduction will be made in the amount for earth excavation. Payment for additional rock excavation will be at the sole discretion of the Construction Manager, if and where directed, and will only be utilized when the rock, as defined in the Rock Excavation Item description, encountered during excavation has impeded the Contractor's typical production rates.
- H. The Bid may request bids on one or more Line Items to be incorporated into the Project "if and where directed" by the Construction Manager. Such items or quantities may not be located on the Plans. The estimated quantities set out in the Bid for such items are presented solely for the purpose of obtaining a representative bid price, but are not



intended to indicate the State's anticipation as to the quantities of such items which are to be actually incorporated into the Project.

Incorporation of such items shall only be made on written directions of the State. In the absence of written directions, no such items shall be incorporated into the Project and if incorporated will not be paid for. The State may order incorporation of such items at any location within the Project, and at any time during the Contract Time.

- I. Underrun of Unit Price Item – If during the progress of the Work the actual quantity of any unit price item (except Allowances or “If and Where” items) required to complete the the Work will fall below seventy five (75) percent of the estimate quantity for that item set forth in the bid schedule, the Contractor may file a Change Order request to revise the unit price for that item as outlined in Article 10 and Article 11 of the General Conditions, to provide equable compensation due to the reduced quantity.
- J. Overrun of Unit Price Item - If during the progress of the Work the actual quantity of any unit price item (except Allowances or “If and Where” items) required to complete the the Work exceeds one hundred and twenty five (125) percent of the estimate quantity for that item set forth in the bid schedule, the State reserves the right and the Contractor agrees to negotiate a new unit price for such item. In no event shall the negotiated new price exceed the unit bid price. If the State and the Contractor cannot agree on a new unit price, then the State shall order the Contractor and the Contractor agrees to provide the additional quantities of the item on a time and material basis for the actual and reasonable costs as determined under Article 10, but in no event at a unit price exceeding the unit bid price.

#### 1.04 SCHEDULE OF VALUES:

- 1. Coordination: Coordinate preparation of the schedule of values for all Lump Sum items with preparation of Contractor's construction schedule. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
  - a. Application for Payment forms with continuation sheets.
  - b. Submittal schedule in accordance with Article 6 of the General Conditions
  - c. Items required to be indicated as separate activities in Contractor's construction schedule.
- 2. Submit the Lump Sum Schedule of Values to Construction Manager for approval no later than fourteen (14) days after the Notice to Proceed.

#### 1.05 LIMITS OF NORMAL EXCAVATION

- A. In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described below, unless other limits are indicated on the Drawings or specified.
- B. For pipes in trench, the normal width of the trench shall be measured between vertical planes which are a distance apart equal to the sum of 24 inches plus the outside diameter of the barrel of the pipe. If the width so computed is less than 3 feet, a width of 3 feet shall be taken as the normal width for payment. The normal depth shall be measured to a distance of 6 inches below the bottom of the pipe in earth and 8 inches in rock.
- C. For concrete placed directly against undisturbed earth, the normal width and depth of the excavation for such concrete shall be measured to the neat lines of the concrete as indicated on the Drawings or as ordered.
- D. For concrete placed against rock surfaces resulting from rock excavation, the normal width and depth of the excavation shall be measured to 4 inches outside the neat lines of the concrete as indicated on the Drawings or as ordered.
- E. For other structures, including catch basins and manholes, the normal width shall be measured 1 foot outside the neat lines of the widest part of the structure. The normal depth shall be measured to the underside of that part of the structure plus stone bedding shown on the details, for which the excavation is made.
- F. Wherever bell holes are required for jointing pipe, they shall be provided without additional compensation over and above that resulting from measurements as above described.

#### 1.06 ADDITIONAL EXCAVATION

- A. The quantity of earth excavation outside the normal width or depth (limit of normal excavation) to be included for payment under this item shall be the additional number of cubic yards excavated, measured to the depths and lengths ordered by the Construction Manager.

#### 1.07 EXCAVATION OF TEST PITS, IF AND WHERE DIRECTED

- A. The quantity of earth excavation to be paid for under this item shall be the number of cubic yards excavated, measured to the extent of the work done as directed by the Construction Manager for test pits. Material excavated during test pit activities will be returned into the excavation upon acceptance by the Construction Manager. Excavated material will be returned in the reverse order it was removed (i.e. most recently excavated material returned first).

1.08 CATCHBASINS (INLETS)

- A. The number of catchbasins, including earth excavation, dewatering, bedding, backfilling, catchbasin bases and risers, frames and covers and setting frames and covers to final grades, to be paid for under this item shall be equal to the actual number of catchbasins constructed.

1.09 MANHOLES

- A. The number of manholes, including earth excavation, dewatering, bedding, backfilling, manhole bases and risers, frames and covers and setting frames and covers to final grades, to be paid for under this item shall be equal to the actual number of manholes constructed.

1.10 STORM WATER TREATMENT DEVICES

- A. The number of Storm Water Treatment Devices (SWTD) units, including earth excavation, dewatering, bedding, backfilling, manhole bases and risers, frames and covers and setting frames and covers to final grades, to be paid for under this item shall be equal to the actual number of devices constructed.

1.11 SHEETING LEFT IN PLACE, IF AND WHERE DIRECTED

- A. The quantity of sheeting left in place is to be paid for under this bid item as directed by the Construction Manager, and shall be measured by the square foot.
- B. The number of square feet of sheeting to be measured shall be ONLY that left in place, as specified above. No measurement shall be made for sheeting, bracing, and cofferdamming which is left in place at the option of the Contractor or which is removed from the excavation, it being understood and agreed that the compensation for all such sheeting and for cost of furnishing, placing, cutting, and removal thereof is included in the price to be paid for the items involving earth excavation for which sheeting is used.
- C. The unit price or prices for this item shall constitute full compensation for all sheeting including bracing and other accessories left in place as specified.

1.12 PAVEMENT

- A. The unit price for DGA-base course shall constitute full compensation for furnishing material for DGA-base course as specified and as indicated on the drawings or as directed by the Construction Manager, and within payment limits. Placing and compacting the DGA-base course will be paid for under the appropriate item.
- B. The unit price for base course pavement shall constitute full compensation for constructing and maintaining the base course pavement, as specified and as indicated.

Base course pavement shall be maintained and repaired as directed by the Construction Manager until the surface pavement course is installed

- C. The unit price or prices for surface course pavement shall constitute full compensation for milling the temporary trench pavement to a depth of 2” minimum, and constructing the surface course pavement, as specified and as indicated. Surface course shall not be installed by the Contractor until directed by the Construction Manager
- D. The area of work contains several areas of historically significant cobblestone paver roadways. All such roadways in the work area, whether exposed or covered, are to be removed without mechanical equipment and safely stored by the Contractor. The Contractor shall remove only the minimum amount of pavers required to perform the work. Temporary bituminous pavement, a minimum of 4 inches thick, shall be placed on the trench surface until the Construction Manager directs the Contractor to re-install the removed cobblestone pavers. The temporary pavement is to be removed and paver installed per the details. Cobblestone pavers broken or lost by the Contractor are to be replaced in kind by the Contractor. Replacement pavers are to be matched in size, color and texture to the original pavers and be approved by the Construction Manager prior to installation. The cost to remove, store, install and remove temporary pavement and reinstall pavers is to be included in this item.
- E. The prices included in the mobilization item for the replacement of thermoplastic pavement markings (all types) shall be full compensation for all tools, labor, equipment, materials, traffic control, protection of pavement markings against traffic and weather and any incidentals necessary for the installation of the pavement markings as required. The price shall be full compensation for all pavement markings of any size and color required. Pavement markings replaced must be approved and accepted by the Municipality and/or Hudson County prior to payment.

#### 1.13 SERVICES OF UNIFORMED SPECIAL OFFICERS

- A. Under this item, the Contractor shall be reimbursed for certain charges for the services of uniformed special officers (shown as traffic enforcement agents on the MPT plans) rendered in connection with traffic control, as noted on the Contract Drawings or as required by the Municipalities, New Jersey Transit or the Port Authority of New York and New Jersey.
- B. An allowance for this item with an established bid amount of \$760,000.00 is included in the bid items. Contractor shall not modify or change this amount in its Bid.
- C. The actual amount to be paid under this item shall consist of the contractual hourly rate. The Contractor will be responsible for coordinating with the Municipalities to set up payment terms and accounts as required. The Contractor will be required to submit sufficient backup to DEP, including invoices from the Municipalities, plus daily officer

sign-in logs, including names, start and end times, and work zone locations of the officers working each day.

#### 1.14 SUBSURFACE UTILITY EXPLORATION

- A. Contractor to provide the services of a pre-qualified utility locating service to provide Quality A level utility locations as required by the Contractor and approved by the Construction Manager. Quality Level A, also known as "locating", is the highest level of accuracy presently available and involves the full use of the subsurface utility engineering services. It provides information for the precise plan and profile mapping of underground utilities through the nondestructive exposure of underground utilities, and also provides the type, size, condition, material and other characteristics of underground features

#### 1.15 MOBILIZATION

- A. The lump sum price for this item shall constitute full compensation for all tasks related to project mobilization and, as specified and as indicated in Section 012901 - 3.01.A, and not specifically paid for under other items. De-mobilization costs will not be paid separately but shall be included in the cost of the work.

#### 1.16 EXTRA WORK

- A. Extra work, if any, shall be performed in accordance with Article 10 of the General Conditions and will be paid for in accordance with Article 11 of the General Conditions.

### PART 2 - PRODUCTS

(Not Used)

### PART 3 - EXECUTION

#### 3.01 SCHEDULE OF BID PRICES

- A. Item 1: Mobilization

- 1. Description: All tasks related to a one-time mobilization/demobilization of personnel, equipment and materials to/from the work site for other contract items that will be performed by the Contractor. Mobilization shall include, but not be limited to the movement of equipment, personnel, material, supplies, etc. to/from the Work site. Payment for bonds, insurance, etc. is also covered under this item. Unless specifically covered under other Contract Items, all items from Division 1 of the Detailed Specifications are included under the lump sum price bid for Mobilization. These items include, but are not limited to: the establishment of field

offices and other temporary facilities; scheduling; construction photographs and videotapes; project closeout items; and providing professional construction surveying services for unit item payment and as-built information.

2. Costs to provide Soil Erosion and Sediment Control as shown on the Plans and required by the Hudson-Passaic-Essex Soil Conservation District are to be included in this Item
3. Costs for all traffic control devices, signs and temporary and permanent pavement markings shown on the Drawings will be included in this Item. Costs for Uniformed Special Officers as defined in 1.11, will be paid for separately.
4. Cost to prepare the following reports are to be included in this Item, all reports are to be submitted to the Construction Manager for review and approval prior to the Contractor mobilizing to the project The Contractor will not be permitted to proceed with mobilization until the Plans listed below are complete and accepted by the NJDEP
  - a. Project Logistics Plan – this plan will cover work staging, access, restricted areas, Contractor office trailer location, storage areas, site safety and security.
  - b. Contractor Health and Safety Plan – a Project specific plan that is consistent with the Occupational Safety and Health Act (OSHA) requirements. The Plan will address on-site and off-site health and safety issues, and emergency notifications and procedures.
  - c. Construction Quality Control and Assurance Plan – This Plan is to detail Project specific construction monitoring procedures to assure compliance with the Plans and Specifications. It shall include procedures for sampling, analytical testing, data validation and reporting requirements for on-site and off-site testing of materials to be incorporated into the work.
  - d. Environmental Pollution Control Plan – A Project specific plan that will describe how the Contractor will control environmental disturbances during construction and contingency measures for controlling potential spills from construction and operational activities and must include noise and dust control measures. Contractor shall prepare a Sampling, Analysis and Monitoring Plan (SAMP), and a Materials Management Plan (MMP) to address hazardous materials if encountered.
  - e. Construction Vibration Control Monitoring and Settlement Monitoring Plans.
  - f. Noise Control and Mitigation Plan.

- g. Storm Water Management Plan to meet NJDEP stormwater regulations
  - h. Pre-construction nest survey to identify active bird nests of nesting birds identified to be protected under the US fish and Wildlife's Migratory Bird Treaty Act.
  - i. Preconstruction photos and videos in accordance with General Conditions Article 4.
5. Payment: This Pay Item is limited to 5% of the Total Bid Cost. Mobilization/Demobilization shall be paid for under the following schedule
- a. 25% of Mobilization Lump Sum to be paid at 5% total project approved payment request, exclusive of the Mobilization Lump Sum price.
  - b. Additional 25% of Mobilization Lump Sum to be paid at 10% total project approved payment request, exclusive of the Mobilization Lump Sum price.
  - c. Remainder of Mobilization Lump Sum less \$80,000.00 to be paid at 15% total project approved payment request, exclusive of the Mobilization Lump Sum price.
  - d. The final \$80,000.00 held in this item will be paid upon completion of all cleanup and demobilization activities and with the approval of the State and Construction Manager.

B. Item 2: Temporary Facilities Maintenance

- 1. Description: Maintenance of the temporary facilities, for the time required, shall consist of maintaining the user utilities (sewer, water, electric, temporary heat), project identification, traffic regulation, temporary facilities (field offices, sheds, office for Construction Manager), equipment, support facility installation, security and protection, operation, termination, and removal as described in Specification Section 01500 Temporary Facilities. Maintenance of the field offices/ Construction Manager offices shall include the monthly rent. The field/ Construction Manager office equipment shall be repaired or replaced within 48 hours of becoming inoperable or defective. Equipment should be maintained in working order for the duration of the contract.
- 2. Unit of Measure: Progress payments shall be paid monthly and shall consist of the total Lump Sum Bid Price divided by the total number of months in the Contractual Performance Period, shown on the Bid form.

C. Item 3: Sawcut Existing Roadway.

1. Description: Sawcutting, with diamond bladed pavement saw or other approved method, of existing roadway pavements, up to a depth of 12 inches, prior to excavation and/or trenching.
2. Unit of Measurement: Linear feet of pavement sawcut along excavation/trench lines.

D. Item 4: Demolish Existing Roadway.

1. Description: Demolish, excavate, remove and dispose of existing roadway pavement(s) and associated items, including, but not limited to, asphalt pavement, concrete pavement, concrete aprons, sidewalks and curbs, cobbles, sand, gravel and broken stone.
2. Unit of Measure: Square feet of roadway demolished, measured in-place prior to removal.

E. Item 5: Connect to Existing Manhole

1. Description: Excavation, providing soil support as necessary, coring of concrete, masonry and/or brick, installation of sleeves, couplings and/or mechanical seals through manhole walls, placement grout, hydraulic cement or the similar, to provide a complete and leak-free connection to the existing manhole.
2. Unit of Measure: Each completed connection to existing manhole or similar structure.

F. Item 6: Sealing Existing Manholes

1. Description: Furnish and install new water-tight manhole frames and covers on existing manholes as indicated on the Drawings, in accordance with the Contract Documents. Price includes removal of existing casting, preparing structure to accept watertight unit, provide and install watertight unit, backfill and restore pavement, matching existing thicknesses.
2. Unit of Measure: Each completed installation of water-tight manhole frames and covers.

G. Item 7: Plug Existing Pipe, Where Required

1. Description: At locations shown on the plans or as directed by the Construction Manager, furnish and install masonry plugs in existing manholes or inlets, consisting of concrete block, the placement of grout, hydraulic cement or the similar, to provide a complete and leak-free plug in accordance with Contract Documents.



2. Unit of Measure: Each completed installation of pipe plugs.

H. Item 8: Abandon Existing Manholes in Place

1. Description: At locations shown on the plans or as directed by the Engineer, abandon existing manholes in accordance with Contract Documents.
2. Unit of Measure: Each completed Abandoned Manhole.

I. Item 9: Abandon Existing Inlets in Place

1. Description: At locations shown on the plans or as directed by the Engineer, abandon existing inlets in accordance with Contract Documents.
2. Unit of Measure: Each completed Abandoned Inlet.

J. Item 10: Type A Catchbasin

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete storm water catch basins with a Type A casting, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new catch basins with Type A casting.

K. Item 11: Type B Catchbasin

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete storm water catch basins with a Type B casting, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new catch basins with Type B casting.

L. Item 12: Type Double B Catchbasin

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete storm water catch basins with a Type B castings, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new catch basins with Type B double castings.

M. Item 13: Manhole, 4 foot interior diameter

1. Description: Excavation, dewatering providing soil support as necessary, furnish and install new pre-cast concrete storm water manholes, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new manhole.

N. Item 14: Manhole, 5 foot interior diameter

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete storm water manholes, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new manhole.

O. Item 15: Manhole, 6 foot interior diameter

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete storm water manholes, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new manhole.

P. Item 16: Storm Sewer, 10-inch Ductile Iron Pipe

1. Description: Excavation and trenching, dewatering, providing soil support as necessary, furnish, install & compact pipe bedding and backfill, furnish and install 10-inch Class 50 ductile iron pipe as required by the Contract Documents or as directed by the Construction Manager.
2. Unit of Measure: Linear feet of pipe installed, as measured at grade, from interior wall of connecting structure to interior wall of terminating structure, unless otherwise noted in the Contract Documents.

Q. Item 17: Storm Sewer, 12-inch Reinforced Concrete Pipe

1. Description: Excavation and trenching, dewatering, soil support as necessary, furnish, install & compact pipe bedding and backfill materials, furnish and install 12-inch reinforced concrete pipe. as required by the Contract Documents or as directed by the Construction Manager.

2. Unit of Measure: Linear feet of pipe installed, as measured at grade, from interior wall of connecting structure to interior wall of terminating structure, unless otherwise noted in the Contract Documents.

R. Item 18: Storm Sewer, 15-inch Reinforced Concrete Pipe

1. Description: Excavation and trenching, dewatering, soil support as necessary, furnish, install & compact pipe bedding and backfill materials, furnish and install 15-inch reinforced concrete pipe. as required by the Contract Documents or as directed by the Construction Manager.
2. Unit of Measure: Linear feet of pipe installed, as measured at grade, from interior wall of connecting structure to interior wall of terminating structure, unless otherwise noted in the Contract Documents.

S. Item 19: Storm Sewer, 18-inch Reinforced Concrete Pipe

1. Description: Excavation and trenching, dewatering, soil support as necessary, furnish, install & compact pipe bedding and backfill materials, furnish and install 18-inch reinforced concrete pipe. as required by the Contract Documents or as directed by the Construction Manager.
2. Unit of Measure: Linear feet of pipe installed, as measured at grade, from interior wall of connecting structure to interior wall of terminating structure, unless otherwise noted in the Contract Documents.

T. Item 20: Storm Sewer, 24-inch Reinforced Concrete Pipe

1. Description: Excavation and trenching, dewatering, soil support as necessary, furnish, install & compact pipe bedding and backfill materials, furnish and install 24-inch reinforced concrete pipe. as required by the Contract Documents or as directed by the Construction Manager.
2. Unit of Measure: Linear feet of pipe installed, as measured at grade, from interior wall of connecting structure to interior wall of terminating structure, unless otherwise noted in the Contract Documents.

U. Item 21: Storm Sewer, 30-inch Reinforced Concrete Pipe

1. Description: Excavation and trenching, dewatering, soil support as necessary, furnish, install & compact pipe bedding and backfill materials, furnish and install 30-inch reinforced concrete pipe. as required by the Contract Documents or as directed by the Construction Manager.

2. Unit of Measure: Linear feet of pipe installed, as measured at grade, from interior wall of connecting structure to interior wall of terminating structure, unless otherwise noted in the Contract Documents.
- V. Item 22: Roadway Base Course, 12-inch DGA
1. Description: Proof roll and prepare sub-grade. Furnish, place, grade and compact Dense Graded Aggregate (DGA) to a depth of not less than 12 inches, unless otherwise directed by the Construction Manager.
  2. Unit of Measure: Square yards of DGA, measured in-place post compaction, to the limits shown on the details or as directed by the Construction Manager.
- W. Item 23: Roadway Base Course, 8-inch Hot Mix Asphalt
1. Description: Furnish, place, grade and compact Asphalt Base Course to a depth of not less than 8 inches, unless otherwise directed by the Construction Manager.
  2. Unit of Measure: Square yards in place to the limits shown on the details or as directed by the Construction Manager
- X. Item 24: Roadway Top Course, 2-inch Hot Mix Asphalt
1. Description: When directed by the Construction Manager, mill off top 2 inches of pavement to the limits shown on the details, furnish, place, grade and compact Asphalt Top Course to a depth of not less than 2 inches, unless otherwise directed by the Construction Manager.
  2. Unit of Measure: Square yards in place to the limits shown on the details or as directed by the Construction Manager
- Y. Item No. 25: Remove, Store and Re-install Cobblestone Pavers
1. Description: When directed by the Construction Manager, remove cobblestone pavers, store in a safe location, provide 8 in. thick DGA subbase, 4 in. thick Base Course bituminous temporary pavement. When directed by the Construction Manager, remove the temporary bituminous pavement and install the sand bedding and re-install the Pavers per the Details
  2. Unit of Measure: Square yards in place to the limits shown on the details or as directed by the Construction Manager
- Z. Item 26: Remove and Replace Concrete Curb

1. Description: Demolish, remove and dispose of existing curb, furnish and install new concrete curb, as required by the Contract Documents or as directed by the Construction Manager.
2. Unit of Measure: Linear feet of curb installed, as measured in place along the face of the new curb.

AA. Item 27: Remove and Replace Concrete Sidewalk, 4-inch Thick

1. Description: Demolish, remove and dispose of existing concrete sidewalk, from expansion joint to expansion joint. Furnish and install new concrete sidewalk, 4-inches thick, as required by the Contract Documents or as directed by the Construction Manager.
2. Unit of Measure: Square Feet of new concrete sidewalk, as measured in place.

BB. Item 28: Remove and Replace Concrete Driveway, 6-inch Thick

1. Description: Demolish, remove and dispose of existing concrete driveway and apron, from expansion joint to expansion joint. Furnish and install new concrete driveway, 6-inches thick, as required by the Contract Documents or as directed by the Construction Manager.
2. Unit of Measure: Square Feet of new concrete driveway, as measured in the field.

CC. Item 29: Dispose of Non-hazardous Excavation

1. Description: Load, haul and dispose of excess soils and non-hazardous excavated materials encountered during excavation. Provide manifests, transport and dispose of materials in accordance with New Jersey Department of Environmental Protection requirements and as required in the Contract Documents. Unit price to include testing, preparation of any manifests, bills of lading, waste characterization forms, or other documents necessary for shipment and disposal of non-hazardous excavation. Unit price to include any waste classification sampling required by the receiving facility and/or any treatment and disposal of the non-hazardous material at the identified facility, and any fees for disposal charged by the receiving facility.
2. Unit of Measure: Tons, as measured in truck, provided via material manifest, unless otherwise directed by the Construction Manager.

DD. Item 30: Dispose of Hazardous Excavation

1. Description: Load, haul and dispose of hazardous excavated materials encountered during excavation. Provide manifests, transport and dispose of materials in accordance with New Jersey Department of Environmental Protection

requirements and as required in the Contract Documents. Unit price to include testing, preparation of any manifests, bills of lading, waste characterization forms, or other documents necessary for shipment and disposal of non-hazardous excavation. Unit price to include any waste classification sampling required by the receiving facility and/or any treatment and disposal hazardous material at the identified facility and any fees for disposal charged by the receiving facility.

2. Unit of Measure: Tons, as measured in truck, provided via material manifest, unless otherwise directed by the Construction Manager.

EE. Item 31: Excavation of Test Pits, If and Where Directed

1. Description: Excavation of test pits as directed by the Construction Manager. Material excavated during test pit activities, including pavement, will be returned into the excavation upon acceptance by the Construction Manager. Excavated material will be returned in the reverse order it was removed (i.e. most recently excavated material returned first).
2. Unit of Measure: Cubic Yards of excavated material, measured in-place immediately following excavation.

FF. Item 32: Additional Excavation, If and Where Directed

1. Description: Excavation in excess of those noted on plans or as directed by the Construction Manager to remove unsuitable materials. Load, haul and dispose of additional excavated materials. Provide manifests, transport and dispose of materials in accordance with New Jersey Department of Environmental Protection requirements and as required in the Contract Documents. Unit price to include testing, preparation of any manifests, bills of lading, waste characterization forms, or other documents necessary for shipment and disposal of non-hazardous excavation. Unit price to include any waste classification sampling required by the receiving facility and/or any treatment and disposal at the identified facility. and any fees for disposal charged by the receiving facility.
2. Unit of Measure: Cubic Yards of excess material, measured in-place immediately following excavation.

GG. Item 33: Additional Excavation - Rock, If and Where Directed

1. Description: Additional effort required to perform excavation when rock is encountered.
2. Rock shall be defined as material, natural or manmade, that requires hydraulic hammer to remove and has a volume 1 cubic yard or greater. Blasting or chemical agents to break rock will not be allowed.

3. Load, haul and dispose of additional excavated rock materials. Provide manifests, transport and dispose of materials in accordance with New Jersey Department of Environmental Protection requirements and as required in the Contract Documents. Unit price to include testing, preparation of any manifests, bills of lading, waste characterization forms, or other documents necessary for shipment and disposal of non-hazardous excavation. Unit price to include any waste classification sampling required by the receiving facility and/or any treatment and disposal at the identified facility.
4. Unit of Measure: Cubic Yards of rock excavated, measured in-place immediately following excavation. Payment for additional rock excavation will be at the sole discretion of the Construction Manager and will only be made when the rock encountered during excavation has impeded the Contractor's typical production rates.

HH. Item 34: Storm Water Treatment Devices, 3 foot diameter

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete water quality unit, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new water quality unit.

II. Item 35: Storm Water Treatment Devices, 4 foot diameter.

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete water quality unit, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new water quality unit.

JJ. Item 36: Storm Water Treatment Devices, 6 foot diameter.

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete water quality unit, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new water quality unit.

KK. Item 37: Storm Water Treatment Devices, 7 foot diameter

1. Description: Excavation, dewatering, providing soil support as necessary, furnish and install new pre-cast concrete water quality unit, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new water quality unit.

LL. Item 38: Storm Water Treatment Devices, 8 foot diameter.

1. Description: Excavation, providing soil support as necessary, furnish and install new pre-cast concrete water quality unit, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new water quality unit.

MM. Item 39: Storm Water Treatment Devices, 12 foot diameter

1. Description: Excavation, dewatering, providing temporary soil support as necessary, furnish and install new pre-cast concrete water quality unit, in accordance with the Contract Documents. Backfill and compact as required by Contract Documents or as instructed by the Construction Manager.
2. Unit of Measure: Each completed installation of new water quality unit.

NN. Item 40: Utility Relocations, If and Where Directed

1. Description: The cost to relocate utilities that interfere or conflict with the work. Payment will be on a Time and Materials basis in accordance with the Contract Documents. Contractor shall coordinate all utility relocation work with the owner of that utility and as instructed by the Construction Manager.
2. Unit of Measure: Based on Time and Material costs submitted and approved by the Construction Manager. Contractor shall submit all proposed equipment, labor, materials, and preliminary schedule for approval by the Construction Manager prior to the beginning the work. Contractor shall submit daily equipment, labor, and material quantities for verification by the Construction Manager at the end of each day of work.
3. Payment – An allowance for this item with an established amount of \$475,000.00 is included in the bid items.

OO. Item 41: Services of Uniformed Special Officers



1. Description: Coordinate with the City of Hoboken, NJ Transit and Port Authority, the services of Uniformed Traffic Control Officers in accordance with Section 012910:1.13, and as instructed by the Construction Manager.
2. The Contractor is to be reimbursed for actual costs paid. No mark up on costs is allowed.
3. Payment – An allowance for this item with an established amount of \$760,000.00 is included in the bid items.

PP. Item 42: Misc. Concrete Pavement Repair, If and Where Directed

1. Description: Furnish, place, grade and compact Reinforced Concrete Pavement to a depth of not less than 8 inches, unless otherwise directed by the Construction Manager. Bedding to be paid for under Item 22 - Roadway Base Course, 12-inch DGA
2. Unit of Measure: Installed square feet of concrete pavement, measured in place.

QQ. Item 43: Sheeting Left in Place, If and Where Directed

1. Description: Total square feet of trench sheeting left in place as directed by the Construction Manager and as described in Section 012901:1.10.
2. Unit of Measure: Total square feet left in place as directed by the Construction Manager

RR. Item 44: Select Sand Fill, If and Where Directed

1. Description: Additional fill required to backfill over-excavations of unsuitable material to the normal backfill limits as indicated on the plans or if and where directed by the Construction Manager. Separate payment shall not be made for Select Sand Fill that is paid under other Bid Items.
2. Unit of Measure: Cubic yards of Select Sand Fill, measured in-place, post compaction

SS. Item 45: Clean Stone, If and Where Directed

1. Description: Additional stone required to backfill over-excavations of unsuitable material to the normal backfill limits as indicated on the plans or if and where directed by the Construction Manager. Separate payment shall not be made for ¾" Clean Stone that is paid under other Bid Items.

2. Unit of Measure: Cubic yards of  $\frac{3}{4}$ " Clean Stone, measured in-place, post compaction.

TT. Item 46: Subsurface Utility Exploration (SUE) Quality Level A Service.

1. Description: To provide a Level I (potholing) test pit to locate utility or other potential obstruction as detailed in paragraph 1.14 of this Section, as indicated on the plans or if and where directed by the Construction Manager. The work includes developing work plans; obtaining relevant permits; coordination with local municipalities for work/ street opening permits and coordination with utilities; and reporting. The data will be used to determine if a pipe run needs to be adjusted in advance of the work being performed. Note, this Item is not intended to pay the Contractor for utility location and protection unless specifically shown or directed by the Construction Manager. The cost of all utility location and protection, with the exception of those covered under this Item, are to be included in the cost of work.
2. Unit of Measure: Each test hole performed with corresponding submitted report for the locations that are specifically identified on the plans for SUE.

END OF SECTION 012901

## SECTION 013443 – ENVIRONMENTAL PROCEDURES

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Environmental protection considerations for the Project, including:
  - 1. Submittals;
  - 2. General Requirements;
  - 3. Protection of Natural Resources;
  - 4. Temporary Erosion and Sedimentation Control;
  - 5. Toxic Substances;
  - 6. Control and Disposal of Excess Material, Trash, and Debris;
  - 7. Control and Disposal of Chemical and Sanitary Wastes; and
  - 8. Dust Control.

#### 1.02 REFERENCES

- A. Code of Federal Regulations (CFR):
  - 1. 40 CFR Part 761 – Identification and Listing of Hazardous Waste.
  - 2. 40 CFR 61 Subpart M - National Emission Standards for Asbestos.
- B. New Jersey Department of Environmental Protection (NJDEP):
  - 1. New Jersey Flood Hazard Area Control Act rules (N.J.A.C. 7:13).
- C. National Registers of Historic Places (16 U.S.C., paragraph 470a).

#### 1.03 SUBMITTALS FOR REVIEW AND APPROVAL

- A. The Contractor shall submit the following for review and approval prior to the start of construction:
  - 1. Excavated soil handling plan. This plan shall detail the contractor's plans and methods for either, a.) pre-excavation soil sampling plan or b.) excavated soil stockpiling plan. Both plans are to detail the methods to sample and

characterize the soils, disposal of excess material and identification of disposal facility.

2. Proposed protection and removal procedures for historic and scientific specimens. Provide procedures for the identification and protection of historic architectural features to be removed, safe conduct of the Work, careful removal and disposition of preserved features, and the protection and storage of preserved features. Include Contractor's proposed schedule of removal of designated items.

#### 1.04 SUBMITTALS FOR REVIEW AND INFORMATION

- A. The Contractor shall submit the following to the Construction Manager for review and information prior to Substantial Completion:
  1. A certificate that all materials and operating equipment installed as a part of this Contract, the installation thereof and all equipment used in the construction, are in compliance with all applicable Federal, State, and local laws, ordinances, regulations, and permits concerning environmental pollution control and abatement.

### PART 2 - PRODUCTS

(Not Used)

### PART 3 - EXECUTION

#### 3.01 GENERAL REQUIREMENTS

- A. Provide and maintain environmental protection defined herein.
- B. Comply with all Federal, State, and local laws, ordinances and regulations pertaining to environmental protection.
- C. Ensure compliance by subcontractors with the provisions of this and various other sections of these Contract Sections.
- D. Use of equipment from which factory-installed, anti-pollution and noise control devices are removed or rendered ineffective, either intentionally or through lack of proper maintenance is prohibited.
- E. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations to

minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions noted in individual Sections.

### 3.02 PROTECTION OF NATURAL RESOURCES

- A. General: It is intended that the natural resources within the Project boundaries and outside the limits of permanent work performed be preserved in their existing condition or be restored to an equivalent of the existing condition upon completion of the Work. Confine onsite construction activities to areas defined by the Contract Drawings and Contract Sections.
- B. Protection of Existing Waterways and Highways:
  1. Do not dump debris or rubbish of any kind into or allow to fall into drainage swales, waterways, onto adjacent banks, or onto highways. Take care to prevent damage and injury to personnel, vessels, and vehicles using rivers, highways, or pedestrian ways. Provide devices and maintain as required to prevent such occurrences. Promptly remove any material or items falling into a river, onto adjacent banks, or onto highways and immediately report to the Construction Manager and the jurisdictional agency.
- C. Land Resources:
  1. Except in areas indicated to be cleared, do not remove, cut, deface, injure, or destroy trees, shrubs, and vegetation without special permission from the Construction Manager. Do not fasten or attach ropes, cables, or guys to any existing nearby trees for anchorage.
  2. The use of herbicides is not permitted unless otherwise specified.
  3. Protect existing trees and vegetation to remain and that could be injured, bruised, defaced, and otherwise damaged by construction operations. Remove rocks that are displaced into areas not cleared.
  4. Protect monuments, markers, and works of art prior to the start of operations.
  5. Repair and restoration:
    - a. All trees and other landscape features scarred or damaged by the Contractor's equipment and operations shall be repaired and restored to their original condition.
  6. Construction facilities:

- a. The location of the Contractor's staging area, storage area and other construction buildings on public or privately-owned property required temporarily in the performance of the Work, require review by the Construction Manager. Store equipment and materials at the job site in conformance with applicable local statutes, ordinances, regulations, and rulings of the proper jurisdictional authority. Do not store unnecessary materials or equipment on the jobsite and take care to prevent any structure from being loaded with a weight that will endanger its structural integrity or the safety of persons. Do not store materials on or encroach upon private property without the written consent of the owners of such private property.
- b. Storage of equipment or materials will not be allowed on any public right-of-way without the expressed approval by the municipality and Construction Manager.
- c. Storage of equipment or materials will not be allowed on any easement running through private property without the expressed approval of the property owner and Construction Manager.

D. Water Resources:

1. At all times, take measures to prevent oil or other hazardous substances from entering the ground, drainage areas, and local bodies of water. Do not discharge the waste material from the washing out of concrete mixing trucks, concrete pumping and grouting operation equipment into sewer manholes, catch basins, sewers, streets or sidewalks.
2. Protection of Existing Wetlands and Watercourses:
  - a. Plan, schedule, and undertake work in a manner that will ensure the protection and preservation of existing wetlands and watercourses.
  - b. Undertake work in and around wetlands and water courses in a manner to prevent any impact upon health, safety, and welfare.
  - c. Contractor to obtain written confirmation from the Construction Manager that all work in and around any wetland or watercourse is complete and areas have been restored as required.
3. Storm Water Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

E. Flood Plain Management:

1. Design and undertake work that may involve floodplains in full compliance with the New Jersey Flood Hazard Area Control Act rules at N.J.A.C. 7:13.

F. Staging Areas:

1. Do not use in connection with this Contract, for storage, as a staging area, or as a preparation site, any cultural resource facility, building, site, or cleared area that is, as of the date of this Contract, on or eligible for listing on the State or National Registers of Historic Places (16 U.S.C., paragraph 470a), without the prior approval of the Construction Manager.
2. For the purpose of the preceding paragraph, the term “cultural resource” includes districts, sites, building, structures, and objects significant in American history, architecture, archaeology, or culture.

G. Historical and Scientific Specimens:

1. Protect and preserve intact all historic architectural features indicated on the Drawings and designated by the Construction Manager. Protect these features from damage, including, but not limited to that resulting from the elements, vandalism, and effects of excavation, demolition, removal, and construction operations. Remove reserved features in a manner to prevent damage and pack or crate in a manner to protect from damage. Mark all containers with proper identification and deliver to designated onsite areas for storage or transfer to a warehouse. Replace or repair lost, or damaged designated architectural features as directed by the Construction Manager. Protect the right of ownership of the property owner with regard to all preserved items.
2. If during the course of Work, artifacts or other evidence of archaeological, historic, or scientific value are discovered or accidentally exposed, report such artifacts or evidence immediately to the Construction Manager. Halt work in the immediate area and protect the artifacts or other evidence from damage, including that resulting from the elements, vandalism, and the effects of excavation, demolition, removal, and construction operations until such time as qualified officials from the NJDEP are able to conduct appropriate investigations. Do not proceed with Work in the immediate area until authorization to proceed is obtained from the Construction Manager. Deliver any such evidence or artifacts found during construction operations or subsequent investigations required by this Section into the custody of the Construction Manager. Such evidence or artifacts do not become the property of the Contractor. Any delay in the progress of the Work as a result of encountering archaeological or historic artifacts on the project is to be mitigated by the Contractor.

### 3.03 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Temporary Erosion and Sedimentation Control: Comply with requirements of the Soil Erosion and Sediment Control Plan (SESC Plan) as approved by the Hudson-Essex-Passaic (HEP) Soil Conservation District and the associated New Jersey Pollutant Discharge Elimination System (NJPDES) Stormwater General Permit for Construction Activities (5G3 Permit). Upon receipt of the final SESC Plan approval from HEP SCD, Contractor shall apply to NJDEP for Request for Authorization under the 5G3 Permit.
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to Section 015713 and requirements of the approved SESC Plan or authorities having jurisdiction, whichever is more stringent.
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the Work.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.04 TOXIC SUBSTANCES

- A. Contractor is responsible for collecting representative samples of the contaminated soil and submitting the samples to a New Jersey State certified laboratory for analysis for off-site disposal purposes as described in Section 021600. Contractor will have three options for excavated materials;
  - 1. Replace excavated material in the trench as backfill at the location where it was excavated, in accordance with NJDEP Linear Construction Guidelines. Material reused in this manner cannot contain any free or residual product.
  - 2. Pre-sample the soils along the alignment for waste classification and disposal using test pits, vacuum truck or other soil extraction means approved by the Construction Manager.



3. If excess material is not immediately removed from the site to the designated disposal facility, stockpile excess excavated material at a suitable site controlled by the Contractor for sampling, waste classification, and disposal.
- B. Asbestos and Hazardous Materials Procedure: In the event the Contractor, during the course of the Work, encounters the presence of asbestos or any materials containing asbestos, or PCBs or any other hazardous materials not previously identified, promptly notify the Construction Manager. Do not perform any work pertinent to the asbestos or hazardous material prior to receipt of special instructions from the Construction Manager. Any delay in the progress of the Work as a result of encountering either asbestos or hazardous materials on the project will be mitigated by the Contractor. Within 24 hours of this notification to the Construction Manager of the encountering of the presence of asbestos or hazardous materials, the Contractor will meet with the Construction Manager to re-plan and work around the affected area.
- C. Comply with all applicable provisions of the National Emission Standards for Asbestos (40 CFR 61 Subpart M).
- D. Comply with the local regulations of PCBs. Since these chemicals are used in some existing insulation, existing fixed and vehicular transformers, assure proper marking, handling, and disposal of any PCBs in accordance with the regulations of 40 CFR 761.
  1. Do not use PCB chemical substance, mixture, equipment, container, sealant, coating, or dust-control agent except in accordance with regulations of 40 CFR 761.
  2. Immediately report in writing any PCB chemical substance, mixture, equipment, container, sealant, coating or dust control agent, found stored within the Work Site to the Construction Manager and stop work in the area.

### 3.05 CONTROL AND DISPOSAL OF EXCESS MATERIAL, TRASH, AND DEBRIS

- A. Excess excavated material must be sampled, analyzed for waste classification purposes, and disposed of in an off-site facility licensed to receive such material as described in Section 021600. Prior to shipping any material, Contractor shall provide all licenses, permits of the identified facility (facilities), and the facility's agreement to accept this material to the Construction Manager for review.
- B. Dispose of rubbish and debris in accordance with all local ordinances.
- C. Waste Materials: No waste or erosion materials shall be allowed to enter natural or manmade water courses. Erosion materials from excavations and borrow areas shall be contained within the affected work area. The Contractor shall develop methods for controlling waste and erosion.

- D. Burning: No burning of waste will be allowed.

### 3.06 CONTROL AND DISPOSAL OF CHEMICAL AND SANITARY WASTES

- A. Dispose of sewage through connection to municipal sanitary sewage systems. Where such systems are not available, use chemical toilets or comparably effective units with wastes periodically emptied. Include provisions for pest control and for masking or elimination of odors.
  - 1. Maintaining Sewers and Drains: The Contractor shall provide for and maintain the flow in all sewers, drains, house or inlet connections, and all water courses that may be encountered during progress of the work, at the Contractor's cost. Unless otherwise directed, the Contractor shall not allow the contents of any sewer, drain, house, or inlet connection to flow into trenches. The Contractor shall immediately remove from the proximity of the work all offensive matter, using such means as may be required at the Contractor's cost.
- B. Store chemical waste in corrosion-resistant containers, remove from the Project site, and dispose of as necessary, but not less frequently than monthly. Provide for disposal of chemical waste in accordance with standard established practices as approved by the Construction Manager. Conduct fueling and lubricating of equipment and motor vehicles onsite in a manner that affords the maximum protection against spills and evaporation. Dispose of lubricants to be discarded, including burned oil, in accordance with approved procedures meeting state, and local regulations. For oil and hazardous material spills that may be large enough to violate state, and local regulations, notify the Construction Manager immediately.

### 3.07 DUST CONTROL

- A. Refer to Section 020804.

### 3.08 CONSTRUCTION NOISE CONTROL

- A. Noise Control: The Contractor shall take every action possible to minimize the noise caused by its operation. Conduct all operations in compliance with the latest requirements of the local noise control code for maximum noise levels due to construction work. Noise-producing work shall be performed in less sensitive hours of the day or week as directed by the Construction Manager or local ordinance.

END OF SECTION 013443

## SECTION 013543 – ENVIRONMENTAL ENGINEERING CONTROLS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Section includes specifications and requirements for the maintenance of environmental engineering controls to protect human health and the environment from soils impacted with contaminants above New Jersey Department of Environmental Protection (NJDEP) Soil Remediation Standards (N.J.A.C. 7:26D) and historic fill at Recognized Environmental Condition (REC) locations. Locations are included in an Environmental Results Report, dated October 22, 2019, which is not part of this Contract but available to the Contractor for review.
- B. The Contractor Scope of Work is being conducted under the direction of a Licensed Site Remediation Professional (LSRP) hired by the Contractor (Contractor's LSRP). In addition to Linear Construction Project requirements, some REC locations are subject to a Remedial Action Permit and deed notice with engineering controls, and will require notification and coordination with the LSRP of Record for the REC locations (REC's LSRP).
- C. Environmental engineering controls are required to protect human health and the environment from soils not fully characterized as clean fill pursuant to the NJDEP Fill Material Guidance for SRP Sites and in accordance with the NJDEP Linear Construction Technical Guidance under the direction of an LSRP hired by the Contractor (Contractor's LSRP).
- D. Alterations, improvements, and disturbances to engineering controls shall be conducted in accordance with requirements in the Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C) under the direction of the Contractor's LSRP and the NJDEP Soil Remedial Action Permit requirements in place for the REC location. Contractor is responsible for coordinating alterations, improvements, and disturbances to engineering controls with the REC's LSRP.

#### 1.02 REFERENCES

- A. Code of Federal Regulations (CFR):
  - 1. 40 CFR Part 261 - Identification and Listing of Hazardous Waste.
  - 2. 29 CFR 1910.120 – Hazardous Waste Operations and Emergency Response.
- B. New Jersey Department of Environmental Protection (NJDEP):

1. Administrative Requirements for the Remediation of Contaminated Sites (NJAC 7:26C).
2. Remediation Standards (N.J.A.C. 7:26D).
3. Technical Requirements for Site Remediation (N.J.A.C. 7:26E).
4. Well Construction and Maintenance, Sealing of Abandoned Wells (N.J.A.C. 7:9D).
5. Linear Construction Technical Guidance (January 2012).
6. Fill Material Guidance for SRP Sites (April 2015).
7. Guidance Document for the Remediation of Contaminated Soils (January 1998).
8. Technical Guidance on the Capping of Site Undergoing Remediation (July 2014).
9. Historic Fill Material Technical Guidance (April 2013).
10. Presumptive and Alternative Remedy Technical Guidance (February 2018).
11. Remedial Action Permits for Soils Guidance (February 2010).
12. Guidance for Characterization of Concrete and Clean Material Certification for Recycling (January 2010).
13. Field Sampling Procedures Manual (August 2005, as updated).

C. Contract Provided Documents:

1. Rebuild by Design Hudson River Project *Environmental Results Report* (February 2019).

1.03 QUALITY ASSURANCE

- A. In accordance with the NJDEP Linear Construction Technical Guidance, the LSRP hired by the Contractor (Contractor's LSRP) will serve as the LSRP of Record for the Linear Construction Project and will be responsible for compliance with the Linear Construction requirements in Subchapter 16 of the Administrative Requirements for the Remediation of Contaminated Sites, N.J.A.C. 7:26C-16.1 et. seq.
- B. Contractor shall conduct environmental work in accordance with local, State, and Federal requirements in conjunction with the requirements of these Specifications. The Contractor shall notify the Construction Manager no less than 24 hours in advance if the environmental requirements of this work cannot be met.

- C. Work conducted by the Contractor that is not in accordance with this Section and Section 013443 shall be rejected by the Construction Manager.
- D. The Contractor shall conduct the work in accordance with the Material Management Plan and Air Monitoring Plan in conjunction with this Section and Sections 020804 and 021600.

#### 1.04 SUBMITTALS

- A. Analytical data (collected within one (1) year of use) and a clean fill certification letter (if acceptable to the Contractor's LSRP and REC's LSRP for imported clean fill that will be used for construction purposes, including thermal fill). Clean fill certification letter and analytical data is required from each supplier providing the clean fill. Provide analytical data and clean fill certification letters with each Material Certification that is submitted for geotechnical/construction purposes.
- B. Receipts and/or weight tickets for imported clean fill that will be used for construction purposes, including thermal fill, asphalt, concrete, and imported clean stone, and imported clean fill.
- C. Contractor must retain a clearly labeled 5-gallon bucket of each clean fill material used at each REC location.
- D. Shop drawings showing typical details of engineering controls to be utilized by the Contractor over impacted soil to remain within the excavation.
- E. Figures and surveyed coordinates identifying the locations of the engineering controls and modifications to the controls.
- F. As-built drawing showing the surveyed locations of the completed engineering controls. The thickness and type of each engineering control shall be denoted on the drawing.
- G. Reports, correspondence and communications provided to the REC's LSRP.
- H. Reports and correspondence provided to the NJDEP Bureau of Operation, Maintenance, and Monitoring Deed Notice Inspection.

#### 1.05 DEFINITIONS

- A. "Contractor's LSRP" means the Licensed Site Remediation Professional retained by the Contractor to comply with the Linear Construction Project requirements in Subchapter 16 of the Administrative Requirements for Site Remediation, N.J.A.C. 7:26C-16.1 et. seq.

- B. “Recognized Environmental Condition” shall be as defined in the Rebuild by Design Hudson River Project Environmental Results Report (October 22, 2019).
- C. “REC’s LSRP” means the Licensed Site Remediation Professional retained by the Person Responsible for Conducting the Remediation for the REC location.

## PART 2 - PRODUCTS

### 2.01 EQUIPMENT

- A. Equipment shall be free of contamination or decontaminated to comply with Section 021600 prior to contacting materials used for engineering controls to prevent cross contamination.
- B. Equipment shall comply and be operated in accordance with applicable OSHA, federal, state and local regulations.

### 2.02 MATERIALS

- A. Imported clean materials for engineering controls, restoration, or backfill.
- B. Additional materials as identified.

## PART 3 - EXECUTION

### 3.01 ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES TO EXISTING ENGINEERING CONTROLS

- A. No person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Property which disturbs any engineering control at the Property without first obtaining the express written consent of the NJDEP and the LSRP for the REC site. Nothing herein shall constitute a waiver of the obligation of any person to comply with applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration. To request the consent of the NJDEP, contact:

Department of Environmental Protection  
Bureau of Operation, Maintenance, and Monitoring Deed Notice Inspection Program  
P.O. Box 413  
401 E. State Street  
Trenton, NJ 08625-0413

- B. NJDEP's express written consent is not required for any alteration, improvement, or disturbance provided that the responsible party (LSRP) for the REC property, lessee or operator):
1. Notifies the NJDEP of the activity by calling the DEP Hotline, at 1-877-WARN-DEP or 1-877-927-6337, within 24 hours after the beginning of each alteration, improvement, or disturbance for emergencies;
  2. The Contractor's LSRP will submit a written report, describing the alteration, improvement, or disturbance, to the REC's LSRP within 30 days for review and submittal to the NJDEP within 60 calendar days after the end of each alteration, improvement, or disturbance. The Contractor's LSRP shall include in the report the nature of the alteration, improvement, or disturbance, the dates and duration of the alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the alteration, improvement, or disturbance, a description of the notice the Contractor's LSRP gave to those persons prior to the disturbance, the amounts of soil generated for disposal, if any, the final disposition and any precautions taken to prevent exposure. The Contractor's LSRP shall submit the report to:  
  

Department of Environmental Protection  
Bureau of Operation, Maintenance, and Monitoring Deed Notice Inspection  
Program  
P.O. Box 413  
401 E. State Street  
Trenton, NJ 08625-0413
  3. Ensure that applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance, and during the restoration;
  4. Ensure that exposure to contamination in excess of the applicable remediation standards does not occur.
- C. The Contractor's LSRP shall also certify any soils proposed for backfilling excavations, or that engineering controls are returned to pre-construction/disturbance conditions or equivalent engineering control.
- D. The Contractor shall be responsible for restoring the Work area to match pre-existing conditions or an equivalent engineering control as directed by the REC's LSRP. Approval by the REC's LSRP is required for placement of certified clean fill materials.
- E. Work conducted in wetlands shall be restored back to original conditions as per Land Use Regulation Program (LURP), United States Coast Guard (USCG), and United States Army Corps of Engineers (USACE) permits. The site shall be cleared of any

debris, equipment, garbage, etc. as part of the site restoration activities. It will be the Contractor's responsibility to protect existing monitoring wells at the site including any repair or replacement due to any damages during field activities. Any permanent closure of existing monitoring wells will require prior approval of the DEP's LSRP and well abandonment by a New Jersey licensed driller to comply with Well Construction and Maintenance, Sealing of Abandoned Wells, N.J.A.C. 7:9D.

- F. A soil remedial action permit modification is required for any permanent alteration, improvement, or disturbance and the REC's LSRP shall submit the following within 30 days after the occurrence of the permanent alteration, improvement, or disturbance:
1. A Remedial Action Workplan or Linear Construction Project notification and Final Report Form, whichever is applicable;
  2. A Remedial Action Report and Termination of Deed Notice Form; and
  3. A revised recorded Deed Notice with revised Exhibits, and
  4. A Remedial Action Permit Modification or Remedial Action Permit Termination form and Remedial Action Report.
- G. No lessor, lessee or operator shall be required to obtain a Remedial Action Permit Modification for any temporary alteration, improvement, or disturbance, provided that the site is restored to the condition described in the Exhibits to the Deed Notice, and the lessor, lessee, or operator complies with the following:
1. Restores any disturbance of an engineering control to pre-disturbance conditions within 60 calendar days after the initiation of the alteration, improvement or disturbance;
  2. Ensures that applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance, and during the restoration;
  3. Ensures that human exposure to contamination in excess of the Remediation Standards, N.J.A.C. 7:26D, does not occur; and
  4. Describes, in the next biennial certification the nature of the temporary alteration, improvement, or disturbance, the dates and duration of the temporary alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the temporary alteration, improvement, or disturbance, the notice the DEP gave to those persons prior to the disturbance.



### 3.02 INSTALLATION OF ENGINEERING CONTROLS

- A. Restore any disturbance of an engineering control to pre-disturbance conditions within 60 calendar days after the initiation of the alteration, improvement or disturbance.
- B. Any soils with contaminant concentrations above the most stringent NJDEP soil Remediation Standards, N.J.A.C. 7:26D, that are left in-place by the Contractor shall use the following caps for engineering controls to protect human health and the environment or equivalent engineering control:
  - 1. Clean fill (6" thick minimum), as determined by the NJDEP Fill Material Guidance for SRP Sites;
  - 2. Asphalt and Concrete (6" thick minimum), including imported clean sub-base materials; and
  - 3. Retaining walls.
- C. If clean fill is utilized as a cap for the engineering and the fill contains fines that are susceptible to erosion than the surface of the fill shall be stabilized in accordance with soil erosion and sediment control measures.
- D. If clean fill is utilized as a cap for the engineering control the Contractor shall install a visible warning layer (demarcation) at the bottom of the cap/top of impacted soil covering the entire footprint of the cap. The visible warning layer (demarcation) may include one of the following:
  - 1. High visibility vinyl construction fence; or
  - 2. Geotextile fabric.No plastic poly shall be utilized for the warning layer (demarcation).
- E. If excavated soils are not fully characterized as clean fill pursuant to the NJDEP Fill Material Guidance for SRP Sites and Contractor intends to reuse the material in the immediate excavation area, then more extensive sampling and a reuse workplan will be required.

END OF SECTION 013543

## SECTION 014150 - HEALTH AND SAFETY REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Section includes specifications and requirements for health and safety during performance of Work, including identification of applicable regulations, submittals, notification requirements, and health and safety execution specifications.

#### 1.02 REFERENCES

- A. Applicable regulations and publications include, but are not limited to, the following:
  - 1. Occupational Safety and Health Administration (OSHA), Title 29 CFR Part 1910, Occupational Safety and Health Standards, and Title 29 CFR Part 1926, Safety and Health Regulations for Construction Sites.
  - 2. National Fire Protection Association (NFPA), Flammable and Combustible Liquids Code, NFPA 30, most recent revision.
  - 3. United States Environmental Protection Agency (USEPA), Standard Operating Safety Guidelines, November 1984.
  - 4. Department of Health and Human Services (DHHS), "Manual of Analytical Methods", 3rd edition Volumes I and II, DHHS (National Institute for Occupational Safety and Health [NIOSH]) Publication 84-100.
  - 5. American National Standards Institute (ANSI), Practices for Respiratory Protection, Z88.2, most recent version.
  - 6. ANSI, Emergency Eyewash and Shower Equipment, Z358.1, 1981.
  - 7. ANSI, Protective Footwear, Z41.1, 1983.
  - 8. ANSI, Respirator Use Physical Qualification for Personnel, Z88.6, 1984.
  - 9. ANSI, Practice for Occupational and Educational Eye and Face Protection, Z87.1, 1979.
  - 10. NIOSH/OSHA/ United States Coast Guard (USCG)/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHHS/ Public Health Service (PHS)/ Centers for Disease Control (CDC)/NIOSH, October 1985.

11. NIOSH Pocket Guide to Chemical Hazards, DHHS/PHS/CDC/NIOSH, June 2000 or most recent.
12. USEPA, Health and Safety Requirements for Personnel Engaged in Field Activities, USEPA Order No. 14402.
13. Department of Transportation (DOT) Standards and Regulations, 49 CFR 171 and 49 CFR 172.
14. American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices (most recent version).
15. Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Environmental Protection Agency (EPA)/600/4-87-006, September 1986.

- B. Where two (2) or more regulations/documents conflict, the one(s) offering the greatest degree of protection shall apply.

#### 1.03 CONTRACTOR'S RESPONSIBILITY FOR HEALTH AND SAFETY

- A. Contractor shall comply with any and all State, Federal, and local ordinances and Regulations.
- B. Contractor shall be responsible for the Health and Safety of Contractor's employees, its Subcontractors, suppliers, agents, inspectors, visitors, the general public, and any others associated with or interacting with Contractor who provides labor, goods, or other services on the site.
- C. Contractor shall be responsible for emergency response planning and notification, and for actual response to any and all emergencies that may occur during the course of the Work, including emergencies that may occur when Contractor is not present at the site.
- D. Contractor is responsible for communicating daily with the Construction Manager regarding Health and Safety issues for the Construction Manager's safe conduct of the Construction Manager's duties, but such communication shall not imply any duty or responsibility on the part of the Construction Manager with regard to Health and Safety of Contractor's employees, its subcontractors, suppliers, the general public, or others. The Construction Manager's responsibility and duty with regard to Health and Safety shall be limited to the Construction Manager's employees. Contractor shall have responsibility and duty to the Construction Manager to communicate Health and Safety issues accurately and in a timely manner to allow the Construction Manager to take appropriate actions to protect the Construction Manager's employees and the DEP's employees.

- E. Contractor shall designate a dedicated Contractor's Site Safety and Health Officer (SSHO) on the Site during the Work who shall, at a minimum, have at least one (1) year of experience as an SSHO on an uncontrolled hazardous waste site, and have 40-hour OSHA Hazardous Waste Operations training and 8-hour OSHA Supervisor training. Contractor's SSHO shall be solely dedicated to Health and Safety issues from the start of the site activities through completion.
- F. The SSHO shall, on a daily basis, enforce the requirements of safety for all Contractor personnel on site at all times. The SSHO shall ensure that all Contractor personnel, Subcontractor personnel, and Contractor visitors, follow the Health and Safety Plan (HASP), including wearing the designated level of personal protective equipment (PPE). If the SSHO elects to require a higher level of protection than that specified in the HASP, the extra costs associated with such higher level shall be borne by Contractor, unless such extra costs are approved in advance in writing by the Construction Manager.
- G. Prior to mobilization and continually through the duration of the Work, the SSHO shall inspect the Site and document area-specific and worker-specific protection requirements.
- H. After mobilization, the SSHO shall monitor activities and shall document the need for additional worker protection as required, based on activities performed and Action Levels specified in the HASP.
- I. The SSHO shall, on a daily basis, verify that all activities are performed in accordance with the HASP and all federal, state, local, and Health and Safety standards, regulations, and guidelines.
- J. In the event of a health or safety risk, as determined by the SSHO or by other Contractor personnel or by the Construction Manager, Contractor shall not proceed with the Work until a method for handling the risk has been determined in consultation with the Construction Manager and implemented. Any health or safety risk resulting in a stoppage of Work shall be reported immediately to the Construction Manager.
- K. Contractor shall be responsible for implementing a "Behavior Based Safety" process and providing site training, observation, and feedback for Contractor personnel employed at the Site.
- L. Contractor shall be responsible for stability of excavations and embankments caused by the Contractor's Work. Contractor shall designate one competent person as defined in 29 CFR Part 1926, Subpart P, Excavations, to inspect and document excavation safety conditions daily, and to ensure excavation safety prior to any personnel entering an excavation.

#### 1.04 SUBMITTALS

A. Contractor shall prepare and submit a HASP to the Construction Manager as a part of their startup submittals per Section 012910 Measurement and Payment – Lump Sum. The Contractor shall follow all applicable local, State, and federal Health and Safety standards, regulations, and guidelines implemented through, but not limited to, the OSHA, NIOSH, ACGIH, and USEPA. Where these are in conflict, the most stringent requirement shall be followed. The following points shall be addressed in the Contractor's HASP:

1. Names of key personnel and alternates responsible for Health and Safety, including a Contractor Health and Safety Representative and SSHO. The Construction Manager must approve the SSHO.
2. A Health and Safety risk or Job Safety and Hazard Analysis (JSHA) associated with each portion of the Work (i.e., list potential chemical and physical hazards), including JSAs for excavation work around active utilities, excavation safety, and truck traffic into and out of the Site.
3. Employee and Subcontractor training assignments to assure compliance with 29 CFR 1910.120.
4. A requirement that the Contractor notify the New Jersey One Call System (811) to locate public utilities prior to the start of the Work.
5. Personal protective equipment (PPE) to be used for each of the site tasks and operations being conducted, as required by the PPE program in 29 CFR 1910.120 and 29 CFR 1926.
6. Medical surveillance requirements in accordance with the program in 29 CFR 1910.120.
7. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used by the Contractor, including methods of maintenance and calibration of monitoring and sampling equipment.
8. Corrective actions and upgrading of personnel protection based on monitoring of air, personnel, and environmental sampling, with specific Action Levels identified.
9. Site control measures in accordance with the control program required in 29 CFR 1910.120 and 29 CFR 1926.
10. Decontamination procedures in accordance with 29 CFR 1910.120 and Contract Section 025100.

11. An emergency response plan meeting Federal, State, and local requirements for safe and effective responses to emergencies, including the necessary PPE and other equipment must be incorporated into the HASP. Explanation of potential emergencies and contingency plan of action, including description of the route to the nearest appropriate hospital, hospital route map, and posting of emergency telephone numbers at the site.
  12. If confined space entry is required, include confined space entry and training procedures in accordance with 29 CFR 1910.146, and a list of all anticipated confined space entries required by Contractor in the course of the Work.
  13. A spill containment program meeting the requirements of all applicable local, State, and federal Health and Safety standards.
  14. A list of Health and Safety and emergency equipment available on the site.
  15. A description of engineering controls used to reduce the hazards of equipment operation and exposure to site hazardous chemicals.
  16. An air monitoring plan describing the method, type, frequency, locations of air monitoring, laboratories, and type of analysis to be performed at the Work area for the purpose of employee safety and safety of the general public.
  17. Open trench excavation procedures in accordance with applicable OSHA Regulations.
  18. Procedures for earthwork near buried utilities, where hand digging should be performed within 24 inches of known utility lines unless more stringent requirements are specified by law, Regulation, or the affected utility.
  19. Training for emergency response procedures, Heat stress program consistent with the references, Cold stress program consistent with the references, Lockout/Tagout where the operation of machinery and/or equipment in which the unexpected energization on start up or the release of stored energy could cause injury to personnel.
- B. Contractor's Daily Construction Report shall include a summary of daily safety issues and a summary of Contractor's Daily Safety Meeting.
- C. Contractor shall submit monthly health and safety reports that include:
1. The names of all Contractor and Subcontractor personnel employed at the Site at any time during the month, and the names and duties of key personnel including Contractor's Project Manager, Project Superintendent, SSHO, and excavation-competent person.

2. A summary of all Health and Safety incidents describing any medical treatment that was provided during the month, the current Work status of any individuals affected the names of individuals who may have observed the incident, and actions taken by Contractor to address the unsafe act or unsafe condition.
  3. A summary of all Health and Safety near-misses or observations providing an opportunity for shared learning and future hazard avoidance. For any Health or Safety incident or near-miss, list the date, the nature of the incident or near-miss, and the names of individuals involved. A near-miss form for use in submitting near-misses is attached to this Section.
  4. The total number of labor hours worked at the Site during that month.
  5. Internal Health and Safety audits performed by the Contractor as part of the Contractor's HASP.
  6. Results of Contractor behavioral observation and feedback evaluations.
- D. Prior to initiating Work, Contractor shall provide the Construction Manager with documentation of employee and applicable Subcontractor training and medical certifications required by 20 CFR 1910.120 as described in Paragraph 3.01.A of this Section.
- E. Contractor shall submit documentation of training and experience for the designated excavation-competent person.
- F. Contractor shall maintain all required and applicable training and medical monitoring rerecords on-site.
- G. Contractor shall submit a Hot Work Permit, using the form attached to this Section, for any welding, torch cutting, or activities that generate sparks.
- H. Contractor shall conduct a JSHA for significant activities and submit the documentation to the Construction Manager for review prior to the start of the activities. Contractor's JSHA shall be submitted on the JSHA forms attached to this Section, or other form acceptable to the Construction Manager.
- I. Contractor shall submit copies of all periodic crane and drill rig inspections completed.

#### 1.05 NOTIFICATIONS

- A. Contractor shall immediately (within 30 minutes) verbally report to the Construction Manager the occurrence of any and all Health and Safety incidents. An Incident Report form or Near-Miss Report form, as appropriate, attached to this Section, shall be submitted within 24 hours of occurrence of the incident or issue.

- B. Contractor shall immediately and fully investigate any such incident or near miss and conduct a root cause analysis, and shall submit to the Construction Manager, the Contractor's written corrective action plan for such incident within one day after the incident occurs in accordance with Section 013300.
- C. Contractor shall notify the Construction Manager in writing at least five (5) days prior to bringing any hazardous material, equipment, or process to the Site, or using the same on the Site. Contractor shall provide the Construction Manager with a Safety Data Sheet (SDS) for all chemicals brought on to the site.
- D. Contractor shall immediately notify the Construction Manager in writing of any hazard that Contractor discovers or observes on the site and corrective measures planned or taken to eliminate or minimize such hazard. Hazard reporting will be completed as a Near Miss Report as described in of this Section.

## PART 2 - PRODUCTS

### 2.01 EQUIPMENT AND FACILITIES

- A. Contractor shall provide all equipment, temporary facilities, and personnel required to perform activities on site safely in accordance with all Regulations and standards, and with the Contractor's HASP.

### 2.02 PERSONAL PROTECTIVE EQUIPMENT

- A. The appropriate level of PPE shall be determined by the Contractor for specific tasks as described in the Contractor's HASP. If hazards are identified that require a level of protection greater than Level C, Work shall be suspended and the Construction Manager notified. The Contractor's SSHO, shall determine what actions are required prior to restarting Work. Contractor shall determine and document the appropriateness of suggested minimum PPE requirements for Contractor's employees and others at the site.
- B. Contractor shall furnish and maintain materials and equipment for the Health and Safety of Contractor employees, its subcontractors, suppliers, and visitor personnel. Contractor shall provide all required Health and Safety equipment, first aid equipment, tools, monitoring equipment, PPE, and ancillary equipment and methods required to ensure workers' Health and Safety and to comply with the Contractor's HASP. The Construction Manager will furnish PPE and monitoring for Construction Manager's employees and DEP's employees.
- C. Modified Level D protection will be required at all times while on site by all personnel and visitors on the Site, except in Support Zone areas. Level D PPE consists of:



1. Hard hat.
  2. Safety-toed boots (chemical resistant).
  3. Safety glasses with permanent side shields.
  4. Work clothes (long pants, shirts with sleeves).
  5. Work gloves.
  6. High visibility reflective safety vests.
  7. Hearing protection (as needed to prevent exposure exceeding 85 dB level).
- D. If additional protection consisting of Level C PPE is required during the Work, Level C PPE shall include protection from organic compounds and consist of Level D protection with the following additions:
1. Air purifying respirator, half-face or full-face (depending on required protection factor) with organic vapor/High Efficiency Particulate Air cartridges meeting NIOSH/Mine Safety and Health Administration Specifications.
  2. Disposable poly-coated chemically protective coveralls.
  3. Disposable chemically resistant outer gloves (nitrile).
  4. Disposable chemically resistant inner gloves (nitrile).
  5. Chemically resistant, steel-toed, and steel-shanked boots (PVC, neoprene, or nitrile), or outer booties.
- E. In most cases, Level C will be the maximum allowed level of PPE. Level B may be allowed provided that personnel are properly trained and certified and exposure levels are below immediately dangerous to life and health (IDLH) conditions.

## 2.03 OTHER HEALTH AND SAFETY EQUIPMENT

- A. Contractor is required to have the following equipment available on the site for the Health and Safety of Contractor, subcontractors, suppliers, visitors, the DEP, and the Construction Manager:
1. First aid kits.
  2. Fire suppression equipment (appropriate to location and type of flammable materials present).
  3. OSHA-approved emergency eyewash facilities.

4. Personnel decontamination facilities and equipment.
5. Other equipment or supplies as determined to be necessary or prudent by Contractor or the Construction Manager.
6. Flammable liquids storage cabinet, if necessary.
7. Fall protection equipment.
8. Heavy Blankets.

### PART 3 - EXECUTION

#### 3.01 TRAINING

- A. Contractor shall provide the following training to each worker except those who will be restricted to the Support Zone:
  1. Initial 40-hour (or 80-hour where appropriate) OSHA hazardous waste Health and Safety training and current annual 8-hour refresher training.
  2. Eight-hour OSHA hazardous waste supervisory training (required for the Contractor's Superintendent and SSO).
  3. Enrollment in a medical monitoring program, with clearance within the previous 12 months from a licensed physician allowing the worker to participate in field activities and use respiratory protective equipment. Contractor shall not submit detailed medical information for employees.
  4. Current respiratory fit testing certification.
  5. Current cardiopulmonary resuscitation (CPR) and first aid certification for at least two workers assigned to Work on the Site.
  6. For one who is assigned the role of a "competent person," documentation of sufficient and relevant training and experience to perform the assigned duties and responsibilities of that role. As defined in 29 CFR 1926.31, the competent person shall be "one who is capable of identifying existing and predictable hazards, and who has authority to take prompt corrective measures to eliminate them." Relevant training and experience shall be in the same type of Project activities included in the Work under this Contract.
- B. Contractor shall designate one "competent person" as defined in 29 CFR Part 1926, Subpart P, Excavations, to inspect and document excavation safety conditions daily, and to ensure excavation safety prior to any personnel entering an excavation.

### 3.02 WORK PLANNING AND MEETINGS

- A. Contractor shall conduct a daily Health and Safety meeting, prior to beginning Work for that day, to address Health and Safety issues, changing site conditions, activities and personnel. All Contractor and Subcontractor employees working on the site on that day shall attend the meeting. All meetings shall be documented and attendees shall sign acknowledgement of their presence at the meeting. Daily meetings shall include a Safety Task Analysis Review (STAR) evaluation of the Work to be conducted and to document meeting attendance and discussion points. The STAR evaluation and daily safety meeting shall be documented on STAR forms, which are attached to this Section.
- B. Subcontractor personnel who are not in attendance for the daily Health and Safety meeting shall be briefed on the meeting notes upon arrival at the site and prior to commencing their Work activities. Employees shall sign acknowledgement of briefings prior to commencing Work.
- C. Contractor shall hold and document additional safety meetings at the start of each major task and whenever site conditions affecting personnel safety change. Any major task undertaken shall require the completion of a JSHA as described in 1.05H of this Section.

### 3.03 ENGINEERING CONTROLS

- A. Contractor shall, at a minimum, provide the following engineering controls to reduce the hazards of equipment operation and exposure to site hazardous chemicals:
  - 1. Roll-over cages for bulldozers, back hoes, loaders, and tractors.
  - 2. Back-up alarms for all trucks and moving equipment.
  - 3. Wetting of soil or other means to control dust during the Work.
  - 4. Decontamination of personnel and equipment in accordance with Contract Section 025100.
  - 5. Barricades for open trenches and excavations.
  - 6. Sloping, benching, shoring, drainage systems, or other controls as necessary to ensure stability of excavations and embankments.
  - 7. Providing a dedicated flag person to manage traffic along public ROWs (if deemed necessary by Construction Manager).
  - 8. Others as determined to be necessary or prudent by Contractor or as directed by the Construction Manager.

- B. Contractor shall post ground level warning signs every 50 feet below all overhead utilities on site.

#### 3.04 MONITORING

- A. Contractor shall perform heat exposure and cold exposure monitoring activities as required by weather conditions.
- B. The Contractor shall perform all air monitoring activities described in the Contractor's HASP required to provide Health and Safety protection to the Contractor's and Subcontractor's personnel.
- C. The Site Perimeter Community Air Monitoring shall be conducted by the Contractor.

#### 3.05 EVALUATION OF PERFORMANCE

- A. Contractor shall routinely conduct internal safety audits on Subcontract and Sub-subcontract Work sites in accordance with the Contractor's HASP. The focus of these routine audits will be on compliance with OSHA and local occupational safety regulations.
- B. Contractor shall conduct routine behavioral observations and provide immediate feedback during Work activities to promote safe behavior of Contractor employees and Subcontractor employees. Contractor behavioral observation and feedback sampling will be conducted in accordance with the Contractor's BEST observation and feedback process which is attached at the end of this Section.

END OF SECTION 014150

### **HEALTH AND SAFETY FORMS FOLLOW**

### EHS INCIDENT REPORT

#### Section One: Background Information

Your Name	_____	Today's Date	_____
Company Name	_____	Site Name	_____
Project Manager	_____	Project Number	_____
Project Name	_____		

Were there any witnesses to the incident? ☐ Yes ☐ No

If yes, list name(s)/office locations (including Contractors):

\_\_\_\_\_

\_\_\_\_\_

Was weather a factor? (Check one) ☐ Yes ☐ No

If yes, please describe weather conditions:

\_\_\_\_\_

\_\_\_\_\_

#### Section Two: Injury, Illness and Exposure

Was there an injury, illness or exposure associated with this incident?

☐ Yes ☐ No

If yes, please complete this section.

If no, please proceed to Section Three.

Name of Injured:	_____	Job Title:	_____
Male/Female:	_____	Date of Hire:	_____
Date of Birth:	_____	SSN:	_____
Date/Time of Injury/Exposure:	_____	Time Employee Began Work:	_____
Supervisor:	_____	H&S Coordinator:	_____
Log Number:	_____		

Employee's Home Address: \_\_\_\_\_

\_\_\_\_\_

NOTE: the Occupational Safety and Health Administration requires the above information for regulatory reporting.

Where did the incident occur (place name, address)?

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Please describe the incident:

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Was injured person/persons using required PPE? (Circle one)

☐ Yes

☐ No

Were there any unsafe conditions at the time of the incident? (Check one)

☐ Yes

☐ No

If yes, please describe:

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Please describe what the employee was doing just before the incident (was there an unsafe act involved?):

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What was the severity of the injury / exposure (please check):

☐ First Aid Only ☐ Medical Treatment Only ☐ Fatality ☐ Non-Occupational ☐ No Treatment Necessary

What was the nature of the injury / exposure (please check):

<input type="checkbox"/> Fractures	<input type="checkbox"/> Blisters	<input type="checkbox"/> Heat Exhaustion	<input type="checkbox"/> Dislocations
<input type="checkbox"/> Respiratory Allergy	<input type="checkbox"/> Toxic Respiratory	<input type="checkbox"/> Exposure	<input type="checkbox"/> Concussion
<input type="checkbox"/> Heat Burns	<input type="checkbox"/> Toxic Ingestion	<input type="checkbox"/> Faint/Dizziness	<input type="checkbox"/> Abrasions
<input type="checkbox"/> Chemical Burns	<input type="checkbox"/> Cold Exposure	<input type="checkbox"/> Toxic Respiratory	<input type="checkbox"/> Lacerations
<input type="checkbox"/> Radiation Burns	<input type="checkbox"/> Frostbite	<input type="checkbox"/> Dermal Allergy	<input type="checkbox"/> Punctures
<input type="checkbox"/> Bruises	<input type="checkbox"/> Heatstroke	<input type="checkbox"/> Ergonomic	<input type="checkbox"/> Sprains
<input type="checkbox"/> Bites	<input type="checkbox"/> Other:		

Parts of Body Affected (Specify Right/Left):

Date medical care was received:

Was employee taken to the emergency room?

☐ Yes

☐ No

Was employee hospitalized overnight as an in-patient?

☐ Yes

☐ No

Facility Where Medical Care Was Received:

Clinic/Hospital Name:

Name of Attending Physician:

Clinic/Hospital Address:

Clinic/Hospital Telephone Number:

**Section Three: Environmental Incident**

Did one of the following occur: a spill to land over one quart, any spills to surface water, a significant release to the air, a violation of permit conditions, receipt of a Notice of Violation, or an event that causes potentially significant damage to the environment?

☐ Yes ☐ No

If yes, please complete this section.

What type of environmental incident occurred?

☐ Spill to Land ☐ Spill to Water ☐ Release to Air ☐ Permit Violation ☐ Notice of Violation ☐ Other

If other, specify:

Please describe the incident in detail:

If the incident was a spill or release, what material was involved and what amount?

Was there a violation of permit limits associated with the incident?

☐ Yes

☐ No

If yes, list permits and issuing agencies:

Were the required regulatory agencies notified?

☐ Yes

☐ No

If yes, which agencies were notified?

**Section Four: Property Damage / Loss**

Did the damage exceed \$500.00

☐ Yes ☐ No

If yes, please complete this section.

What type of loss and/or property damage occurred?

☐ Equipment Failure ☐ Collision ☐ Contamination ☐ Weather ☐ Fire ☐ Vandalism/Theft ☐ Other

If other, specify:

Describe the incident of loss or damaged property in detail (Contractor's):

Describe the incident of loss or damage of property in detail (3rd Party):

Was an insurance representative contacted? ☐ Yes ☐ No  
If yes, list name of agent and time

What was the approximate cost of the loss / property damage?

**Section Five: Analysis and Corrective Action**

Were there any behavioral factors that contributed to the incident? (Check one) ☐ Yes ☐ No  
If yes, please describe (describe any unsafe acts or conditions):

What can be done to prevent a recurrence of this type of incident?

List corrective actions that were taken to prevent this type of incident in the future:

Person Responsible for taking corrective action:

**Forward this form within 24 hours to the Construction Manager**

Contractor's SSHO Signature

Date

Contractor's Site Manager Signature

Date

**CONTRACTORS ARE REQUIRED TO SUBMIT A ROOT CAUSE ANALYSIS TO THE  
CONSTRUCTION MANAGER FOR ALL INCIDENTS.**



### EHS OPPORTUNITY OR NEAR MISS REPORT

Reported by:

Incident Date/Time:

Date Reported:

Site Location:

**Report Type (check one):**

☐ EHS Opportunity (suggestion for improvement, good EHS idea to share, or EHS observation)

☐ EHS Near Miss (event that could have resulted in an incident under different circumstances)

**Event Description:**

Describe key aspects such as the operation in progress, worker experience, potential outcome of event, and any contributing conditions. Use additional sheets as necessary.

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**Hazard Category (check all that apply):**

☐ Slip/trip/fall

☐ Traffic/vehicle

☐ Plant/Animal

☐ Chemical

☐ Electrical

☐ Faulty equipment

☐ Weather

☐ Not following procedures

☐ Fire

☐ Improper PPE

☐ Improper body position/tool use

☐ Other: \_\_\_\_\_

**Possible Outcome (check all that apply):**

☐ Injury/illness

☐ Property damage

☐ Environmental release

**Were you able to correct the problem?**

☐ Yes

☐ No

If no, whom did you inform: \_\_\_\_\_

☐ N/A

**Potential Outcome if Circumstances Occurred:**

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**Corrective Action Taken:**

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### HOT WORK PERMIT

Permit Valid

For 1 Work Day

Site Name: \_\_\_\_\_

Project Number: \_\_\_\_\_

EHS Officer: \_\_\_\_\_

Client: \_\_\_\_\_

Hot Work Description: \_\_\_\_\_

\_\_\_\_\_

Workers/Welders Conducting Hot Work: \_\_\_\_\_

#### Permit MUST be completed in its Entirety Before Hot Work Begins

	Yes	No
Has Project supervisor been notified of intended Hot Work?		
Does client representative need to be notified of the intended Hot Work?		
Will Hot Work impact the general public, clients, or operation employees?		
Will the intended Hot Work need to be coordinated with other contractors who may be working on the site to make them aware of any hazards and the scope of work to be performed?		
Have hazardous energy sources been identified, isolated, and locked out/tagged out before the start of the Hot Work?		
Will Hot Work be conducted within a confined space?		
All testing equipment (i.e., CGI, oxygen meter, etc.) and firefighting equipment (i.e., extinguisher, etc.) have been checked to ensure proper operation and calibration before the start of this Hot Work?		
Has a fire watch been designated and on station?		
Have coatings on metal surfaces been tested for ignitability and flame spread?		
Has the area been cleared of all flammable materials?		
Have all fuel sources been identified and protected?		
Has the area been restricted with proper barriers and signs?		
Has the area been tested to be certain that atmosphere is 0% LEL before starting Hot Work?		
Have flame sensitive areas and equipment (including cylinders and gas delivery lines) exposed to slag and sparks been protected by flame resistant blankets or removed from the area?		
Have all equipment and hoses been protected from falling metal structures and debris?		
Have escape routes been identified before starting work?		
Is ventilation equipment needed? Type needed:		

**The Following Protective Equipment Will be Required:**

	Yes	No		Yes	No
Welding Goggles/Shield Tint			Supplied Air Respirator		
Safety Boots			Head Protection		
Leather gloves			Safety Harness		
Hearing Protection			Welding Leathers – Top		
APR Cartridge			Welding Leathers – Bottom		

**Permit Valid for 1 Work Day**

The following procedures will be applicable prior to Hot Work on tanks or other types of enclosed structures. (Check all that apply and fill in appropriate information.)

☐ Ventilate to 0% LEL

☐ Confined Space Entry Permit

☐ Mechanical Ventilation Required

☐ Cold Cut Only

Method Allowed: \_\_\_\_\_

☐ Hot Cutting Permitted

Method Allowed: \_\_\_\_\_

Inert to < \_\_\_\_\_ % Oxygen

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**Approvals:**

\_\_\_\_\_  
Date

\_\_\_\_\_  
Construction Manager

\_\_\_\_\_  
Site Safety and Health Officer

\_\_\_\_\_  
Fire Watch

\_\_\_\_\_  
Performed Hot Work Employee

*File Permit in Project Work File and Health and Safety Department*

## JOB SAFETY AND HAZARD ANALYSIS

[illegible]



IDENTIFY POTENTIAL HAZARDS	IDENTIFY CONTROLS	PRE-TASK REVIEW (Yes/No/NA)
ABRASIONS	AIR MONITORING	1. HAS A JOB HAZARD/SAFETY ANALYSIS BEEN COMPLETED AND REVIEWED? _____
BIOLOGICAL HAZARDS (plants, animals, insects)	BARRICADES/FENCING/SILT FENCING	
CAVE-IN (trench/excavation work)	BUDDY SYSTEM	
CHEMICAL/THERMAL BURN	APPROPRIATE CLOTHING/MONITORING OF WEATHER	2. IS JOB SCOPE UNDERSTOOD BY ALL PERSONNEL? _____
CUTS	CONFINED SPACE PROCEDURES	
DERMATITIS	DECONTAMINATION PROCEDURES	
DROPPING MATERIALS/TOOLS TO LOWER LEVEL	DRINKING WATER/FLUIDS	3. PROPER SAFETY EQUIPMENT ON JOB SITE? _____
DROWNING/FLOWING WATER	DUST ABATEMENT MEASURES	
FUGITIVE DUST	EQUIPMENT INSPECTION	4. PERMIT ISSUED? _____
ELECTRICAL SHOCK	EXCLUSION/WORK ZONES	WHAT TYPE: HOT WORK _____ EXCAVATION _____
ELEVATED/OVERHEAD WORK	EXHAUST VENTILATION	CONFINED SPACE _____ OTHER _____
ENERGIZED EQUIPMENT	FALL PROTECTION - TYPE	
FIRE	FIRE EXTINGUISHER/FIRE WATCH	5. PROPER TOOLS FOR JOB ON SITE? _____
FLAMMABILITY	FLOTATION DEVICES/LIFELINES	
FOREIGN BODY IN EYE	GROUND ON EQUIPMENT/TANKS	6. OXYGEN/FLAMMABILITY CHECKED? _____
HAZARDOUS MATERIALS (exposure or release)	GROUND FAULT INTERRUPTER	
HEAT OR COLD STRESS	GROUND HYDRAULIC ATTACHMENTS	7. REVIEWED MSDS's FOR ANY HAZARDOUS SUBSTANCE THAT MIGHT BE PRESENT? _____
HEAVY EQUIPMENT OPERATION	HAND SIGNAL COMMUNICATION	
HEAVY LIFTING	HAZARDOUS/FLAMMABLE MATERIAL STORAGE	
HIGH NOISE LEVELS	HAZARDOUS PLANT/ANIMAL TRAINING	8. PROPER TRAINING FOR ALL PERSONNEL? _____
IMPACT NOISE	HEARING PROTECTION (Specify)	
INABILITY TO MAINTAIN COMMUNICATION	HOSES, ACCESS TO WATER	9. ARE THERE ANY PLANNED DEVIATIONS FROM SET PROCEDURES OR EQUIPMENT MODIFICATIONS? _____
INCLEMENT WEATHER	HOTWORK PROCEDURES	If so, contact supervisor to check applicability of MOC procedures.
OVERHEAD WORK	INSECT REPELLENT or PRECAUTIONS	
OVERHEAD UTILITIES	ISOLATION OF EQUIPMENT OR PROCESS (LOCKOUT/TAGOUT)	
UNDERGROUND UTILITIES	STORMWATER CONTROL PROCEDURES/METHODS	
PINCH POINTS	MACHINE/EQUIPMENT GUARDS	10. IS THERE ANY WORK PLANNED THAT COULD CAUSE ACTIVATION OF EMERGENCY PROCEDURES? _____
PRESSURIZED LINES	MANUAL LIFTING EQUIPMENT	If so, have these procedures been discussed and communicated?
SLIPS, TRIPS, FALLS	PROTECTIVE EQUIPMENT (specify)	
SPRAINS/STRAINS	PROPER LIFTING TECHNIQUES	
TRAFFIC	PROPER TOOL FOR JOB	
CONFINED SPACE	RADIO COMMUNICATION	
NEW OR RENTAL EQUIPMENT	RESPIRATOR, (specify type)	
SURFACE WATER RUN-ON/RUN-OFF	SAFETY HARNESS/LANYARD/SCAFFOLD	
ODOR/VOC EMISSIONS	SLOPING, SHORING, TRENCH BOX	
COMPRESSED GAS CYLINDERS	VEHICLE INSPECTION	1. HAS WORK AREA BEEN CLEANED UP? _____
GENERATED WASTES (solids/liquids)	SPILL PREVENTION MEASURES/SPILL KITS	2. HAVE ALL LOCKS/TAGS BEEN REMOVED AND SIGNED OFF BY INDIVIDUALS? _____
KNOWN/UNKNOWN VISITORS	EQUIPMENT MANUALS/TRAINING	3. HAVE WORK PERMITS BEEN TURNED IN? _____
VISIBILITY	EMERGENCY PROCEDURES/INCIDENT MANAGEMENT PLAN	4. STAR SUBMITTED TO HSE DEPARTMENT? _____
NEW PERSONNEL	APPROPRIATE LABELS/SIGNAGE	5. WERE THERE ANY UNPLANNED DEVIATIONS FROM SET PROCEDURES OR EQUIPMENT MODIFICATIONS? _____
HOISTS/RIGGING/SLINGS/WIRE ROPE	DERIVED WASTE MANAGEMENT PLAN	If so, contact supervisor to check applicability of MOC procedures.
SPECIAL OPERATIONS/INSTRUCTIONS (attach)	VISITOR ESCORT/ORIENTATION/SECURITY	
ERGONOMICS	WINDOW CLEANING/DEFROST	
	PROPER WORK POSITION/TOOLS	

## SECTION 014300 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Section covers Quality Assurance and Quality Control requirements for this Contract.
- B. The Contractor is responsible for controlling the quality of work, including work of its subcontractors, and suppliers and for assuring the quality specified in the Specifications is achieved.
- C. Refer to the General Conditions Article 6 - Contractor's Responsibilities.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by the DEP or Construction Manager, are not limited by provisions of this Section.
- C. Related Requirements:
  - 1. Division 02 through 34 Sections for specific test and inspection requirements.
  - 2. General Conditions Article 4.7 Shop Drawings and Other Submittals.

#### 1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):

1. E329: Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.

#### 1.04 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Construction Manager.
- C. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by a Nationally Recognized Testing Laboratory (NRTL), a National Voluntary Laboratory Accreditation Program (NVLAP), or a testing agency qualified to conduct product testing and acceptable to Construction Manager, to establish product performance and compliance with specified requirements.
  1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).



- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of Construction Manager.

#### 1.05 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two (2) or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Construction Manager for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Construction Manager for a decision before proceeding.

#### 1.06 SUBMITTALS

- A. Shop Drawings: Provide plans, sections, and elevations, indicating materials and size of construction.
  - 1. Refer to General Conditions Article 4.7 for Shop Drawing requirements.
  - 2. Provide axonometric drawings for conditions difficult to illustrate in two (2) dimensions.
- B. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- C. Qualification Data: For Contractor's quality-control personnel.
- D. Contractor's Statement of Responsibility: When required by Construction Manager, submit copy of written statement of responsibility sent to Construction Manager before starting work on the following systems:
  - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Contractor's Engineer.
- E. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications

in the form of a recent report on the inspection of the testing agency by a recognized authority.

F. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.07 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days after Notice to Proceed, and not less than five (5) days prior to preconstruction conference. Submit in format acceptable to Construction Manager. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
  1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  2. Special inspections required by Construction Manager and indicated on the "Statement of Special Inspections."
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and accepted mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of accepted and rejected results. Include work Construction Manager has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements and schedule. Comply with requirements of Construction Manager.

#### 1.08 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspection.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For the DEP's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents,

established for compliance with standards and regulations bearing on performance of the Work.

#### 1.09 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of New Jersey and who is experienced in providing engineering services of the kind indicated.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of Construction Manager shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency that is acceptable to the Construction Manager with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329, and with additional qualifications specified in individual Sections.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect

installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
  - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Codes and Standards: Refer to General Conditions Article 1.3 Intent of the Contract.
- L. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, the Contractor shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the Contractor's personnel, subcontractors, and the Construction Manager.
- M. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and specifications and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. The Contractor shall not use material and equipment for any purpose other than that intended or specified unless the Construction Manager authorizes such use.
- N. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.

#### 1.10 OFFSITE INSPECTION

- A. When the specifications require inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, such services shall be performed by inspection organization acceptable to the Construction Manager.

- B. The Contractor shall give appropriate written notice to the Construction Manager not less than 60 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

#### 1.11 MATERIALS AND EQUIPMENT

- A. The Contractor shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.
- B. The Contractor shall comply with manufacturer's printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and operation. Should circumstances occur where the Contract Documents are more stringent than the manufacturer's printed instructions, the Contractor shall comply with the Specifications. In cases where the manufacturer's printed instructions are more stringent than the Contract Documents, the Contractor shall advise the Construction Manager of the disparity and conform to the manufacturer's printed instructions. In either case, the Contractor is to apply the more stringent Specification or recommendation, unless accepted otherwise by the Construction Manager.

#### 1.12 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as the DEP's responsibility, the DEP will engage a qualified testing agency to perform these services.
  - 1. The DEP will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  - 2. The Contractor shall furnish a construction schedule and a minimum of 48-hour notice of readiness for testing and inspection of the Work. The Construction Manager shall determine the exact time and location of field sampling and testing, and may require such additional sampling and testing to determine that materials and equipment conform with data previously furnished by Contractor and with the Contract Documents.
  - 3. The Contractor shall schedule the Work to permit adequate time for testing and re-testing should test results not conform to the contract documents. Lack of testing or inspection which is attributable to insufficient notice by the Contractor or failure of the Contractor to cooperate, will be cause for rejection of the Work.
  - 4. The Contractor shall deliver materials in sufficient quantities to the DEP's testing agency as may be required. Laboratory testing shall be performed within a reasonable time, consistent with the specified standards.

5. The Contractor shall furnish material samples and cooperate in the field sampling and testing activities, interrupting the work when necessary. The Contractor shall furnish personnel, facilities and access to assist in the sampling and testing activities.
  6. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to the DEP (as called for in the Individual Specifications Sections) are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by Construction Manager. Perform quality-control services required of Contractor by Construction Manager, whether specified or not.
  2. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
  3. Comply with manufacturers' instructions, including each step in sequence.
  4. When manufacturers' instructions conflict with Contract Documents, request clarification from the Construction Manager before proceeding.
  5. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
  6. Perform Work by persons qualified to produce required and specified quality.
  7. Verify field measurements are as indicated on shop drawings or as instructed by manufacturer.
  8. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
  9. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by the DEP, unless agreed to in writing by the DEP.
  10. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.



11. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  12. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  13. Submit additional copies of each written report directly to Construction Manager, when they so direct.
- C. Tolerances:
1. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
  2. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from the Construction Manager before proceeding.
  3. Adjust products to appropriate dimensions; position before securing products in place.
- D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Article 4.7 of the General Conditions.
- E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- F. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- G. Testing Agency Responsibilities: Cooperate with Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Construction Manager and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- H. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Free and Safe access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- J. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to the DEP, the Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

#### 1.13 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a DPMC Pre-qualified testing agency as required by Construction Manager, as indicated in individual Specification Sections and as follows:
  1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
  2. Notifying Construction Manager and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  3. Submitting a certified written report of each test, inspection, and similar quality-control service to Construction Manager with copy to Contractor.
  4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  6. Retesting and reinspecting corrected work.

### PART 2 - PRODUCTS

(Not Used)

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

### 3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

### 3.03 QUALITY CONTROL

- A. Quality control is the responsibility of the Contractor, and the Contractor shall maintain control over construction and installation processes to ensure compliance with specified requirements.
- B. Certifications for personnel, procedures, and equipment associated with special processes (e.g., welding, cable splicing, instrument calibration, surveying) shall be maintained in the Contractor's field office, available for inspection by the Construction Manager. Copies shall be made available to the Construction Manager upon request.
- C. Means and methods of construction and installation processes are the responsibility of the Contractor, and at no time is it the intent of the Construction Manager to supersede or void that responsibility.

### 3.04 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Construction Manager.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Construction Manager's reference during normal working hours.

### 3.05 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017329.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014300

NO TEXT ON THIS PAGE

## SECTION 015000 - TEMPORARY FACILITIES

### PART 1 - GENERAL

#### 1.01 SCOPE OF WORK

- A. The Contractor shall provide all temporary facilities for the proper completion of the Work, as required and as specified.

1. Section includes:

- a. User charges:
  - (1) Sewer.
  - (2) Water.
  - (3) Electric.
  - (4) Temporary heat.
- b. Project identification.
- c. Traffic regulation.
- d. Temporary facilities:
  - (1) Field offices and sheds.
  - (2) Office for Construction Manager.
- e. Equipment.
- f. Support facility installation.
- g. Security and protection.
- h. Operation, termination, and removal.

#### 1.02 REFERENCES

- A. American National Standards Institute (ANSI):
- 1. A 117.1: Accessible and Usable Buildings and Facilities.
- B. American Society for Testing and Materials (ASTM):

1. E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
2. E136: Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 deg. C.

C. National Fire Protection Association (NFPA):

1. 70: National Electrical Code.
2. 241: Standard of Safeguarding Construction, Alteration, and Demolition Operations.
3. 701: Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

1.03 USE CHARGES

- A. General: Costs for installation, removal and use of temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to the Owner, Construction Manager, Engineer, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.
1. The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required by pertinent health and safety regulations.
  2. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. The Contractor shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or on adjacent property.
- C. Potable Water Service: Pay water-service use charges for potable water used by all entities for construction operations.
1. For all necessary operations at the site of the Work (except as noted in the next paragraph below) the Construction Manager, without charge therefor, shall provide reasonable quantities of water at the existing pressure from a mutually convenient hydrant of the water distribution system. The Contractor shall furnish all necessary pipe or hose extensions to conduct the water to the points of use and



shall exercise due care not to waste water. The Contractor shall not contaminate the water supply and shall comply with all applicable regulations and code requirements.

- D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.
  - 1. The Contractor shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of the Work and during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.
- E. The Contractor shall provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight. Notwithstanding the availability of potable water and effluent water services from the existing system, the Contractor shall be solely responsible for the provision of water for leakage and other testing, for concrete protection and to prevent freezing of equipment, as required by the Contract.
- F. Temporary Heat:
  - 1. If temporary heat is required for the protection of the Work, the Contractor shall provide and install suitable heating apparatus, shall provide adequate and proper fuel, and shall maintain heat as required. Costs for temporary heating, cooling, and ventilating required to execute the Work shall be borne by the Contractor.
  - 2. Temporary heating apparatus shall be installed and operated in such manner that finished Work will not be damaged thereby.
  - 3. If permanent natural gas piping is used for temporary heating units, the Contractor shall not modify or reroute gas piping without the prior approval of the natural gas supplier. The Contractor shall provide separate gas metering as required by the natural gas supplier.
  - 4. The Contractor shall provide 24-hour monitoring of temporary heating, cooling and ventilating equipment.

#### 1.04 PROJECT IDENTIFICATION

- A. Project Identification Sign:
  - 1. One (1) painted sign of construction, design, and content to be determined, to be located as directed by the Construction Manager.
  - 2. One (1) painted sign, 32 sq ft area, bottom 6 feet above ground.

3. Content:
    - a. Project title, logo, and name of Owner as indicated on Contract Documents.
    - b. Names and titles of authorities.
    - c. Names and titles of Construction Manager.
    - d. Name of Prime Contractor and major Subcontractors.
  4. Graphic Design, Colors, Style of Lettering: Designated by Construction Manager.
  5. Lettering: Series of Standard Alphabet for Highway Signs, Public Roads Administration, Federal Works Agency.
- B. Project Informational Signs:
1. Painted informational signs of same colors and lettering as Project Identification sign, or standard products; size lettering for legibility at 100-foot distance.
  2. Provide at each field office, storage shed, and directional signs to direct traffic into and within site. Relocate as Work progress requires.
  3. Provide state traffic agency directional traffic signs to and within site.
  4. No other signs are allowed without the Owner's permission except those required by law.
- C. Design sign and structure to withstand 60 miles/hr. wind velocity.
- D. Sign Painter: Experienced as professional sign painter for minimum three (3) years.
- E. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.
- F. Show content, layout, lettering, color, foundation, structure, sizes, and grades of members.
- G. Sign Materials:
1. Structure and Framing: Newmetal, structurally adequate.
  2. Sign Surfaces: Exterior grade plywood with medium density overlay, minimum 3/4-inch thick, standard large sizes to minimize joints.
  3. Rough Hardware: Galvanized.

4. Paint and Primers: Exterior quality, two (2) coats; sign background of white color.
5. Lettering: Exterior quality paint, colors as selected by the Owner.

H. Installation:

1. Install project identification sign within 15 days after date fixed by Notice to Proceed.
2. Erect at Owner-designated location.
3. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
4. Install sign surface plumb and level, with butt joints. Anchor securely.
5. Paint exposed surfaces of sign, supports, and framing.

I. Maintenance: Maintain signs and supports clean, repair deterioration, and damage.

J. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore the area.

1.05 TRAFFIC REGULATION

A. Signs, Signals, And Devices:

1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by authority having jurisdictions.
2. Traffic Control Signals: As approved by authority having jurisdictions.
3. Traffic Cones and Drums, Flares and Lights: As approved by authority having jurisdictions.

B. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

C. Haul Routes:

1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
1. Drawings indicate haul routes designated by authorities having jurisdictions for use of construction traffic.
2. Confine construction traffic to designated haul routes.

3. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

D. Traffic Signs and Signals:

1. Provide signs approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
2. Relocate as Work progresses, to maintain effective traffic control.

E. Removal:

1. Remove equipment and devices when no longer required. Repair damage caused by installation.
2. Remove post settings.

#### 1.06 SUBMITTALS

- A. Refer to General Conditions Article 4.7 for Shop Drawing submission requirements.
- B. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- C. Erosion and Sedimentation-Control Plan: Show compliance with requirements of Hudson-Essex Soil Conservation District.
- D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- E. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
- F. Dust-Control Plan: Submit coordination drawing and narrative that indicates the dust-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Street sweeping to be done on a daily basis in work zones.
2. Street sweeping of haul areas outside work zones on a weekly basis or more frequently if required by the City of Hoboken.
3. Use sufficient water to prevent air borne dust and dirt.
4. Other dust-control measures approved by the Construction Manager.

#### 1.07 QUALITY ASSURANCE

- A. 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.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.

#### 1.08 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before the Construction Manager's acceptance, regardless of previously assigned responsibilities.
- B. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.
- C. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails.
- B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide galvanized-steel bases for supporting posts.
- C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E84 and passing NFPA 701 Test Method 2.

### 2.02 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. The Contractor shall maintain a temporary field office near the Work for their own use during the period of construction at which readily accessible copies of all Contract Documents shall be kept. The office shall be located where it will not interfere with the progress of the Work. In charge of this office there shall be a competent superintendent of the Contractor as specified under "Supervision of Work" in the General Conditions.
- C. Temporary Storage Yards: The Contractor shall construct temporary storage yards for storage of Products that are not subject to damage by weather conditions.
- D. Temporary Storage Buildings:
  - 1. The Contractor shall provide environmental control systems that meet the recommendations of suppliers and manufacturers of the equipment and materials stored.
  - 2. The Contractor shall arrange for a chain link partition fence to provide security of contents and ready access for inspection and inventory.
- E. The Contractor shall store combustible materials (paints, solvents, fuels) in a well ventilated and remote building meeting all applicable safety standards.

## 2.03 OFFICE FOR CONSTRUCTION MANAGER

- A. Promptly after starting work at the site, the Contractor shall provide and equip a suitable office for the exclusive use of the Construction Manager and the Contractor shall maintain this office thereafter until the completion of the Work to be done under this Contract. This office shall be a separate building located where it will not interfere with the progress of the Work. An acceptable, suitably constructed and equipped trailer of adequate size and design for the purpose may be furnished as the Construction Manager's office.
  - 1. If a trailer is furnished, it shall have a minimum width of 12 feet, a length as required to obtain the square footage specified below, and an insulated floor.
  - 2. The office and furniture shall be relatively new and in good condition.
  - 3. The equipment, supplies, and services furnished shall be acceptable to the Construction Manager.
- B. The Contractor shall furnish insurance coverage of adequate amount to replace not only the Contractor's equipment, but all property belonging to the Construction Manager and the Construction Manager's staff, at replacement cost.
- C. The office shall be of suitable height and of ample size to accommodate the furniture and equipment listed below, without crowding (at least 200 sq. ft. of floor area). It shall be weathertight and acceptably insulated and suitably ventilated; the floor shall be tight and of sufficient construction to withstand the loads imposed upon it.
  - 1. The office shall be partitioned so as to provide seven (7) separate rooms, as follows.
    - a. Two (2) private offices.
    - b. One (1) private conference/meeting room.
    - c. One (1) lunch area/kitchenette complete with sink, counter, and storage cabinets.
    - d. Two (2) private washrooms (1 male and 1 female).
    - e. One (1) storage/drawing room.
  - 2. Each room will have a door, with lock and key, and a minimum of two (2) screened windows which can be both opened and locked shut.
  - 3. The office shall have two (2) exterior doors, with cylinder locks and keys.

4. The exterior doors shall also be provided with a hasp, for which the Construction Manager will furnish his own locks.
  5. The office shall contain acceptable toilet facilities, to include a toilet, sink with hot and cold water, exhaust fan, and mirror.
  6. The Contractor shall make arrangements and pay all costs associated with tying the office sanitary system into an approved disposal system.
- D. The Contractor shall furnish a parking area large enough to accommodate a minimum of four (4) cars adjacent to the office, for the exclusive use of the Construction Manager.
- E. The Contractor shall furnish the following furniture, equipment, supplies, and services:
1. One (1) plan table or sloping plan shelf, about 3 feet by 6 feet, with a reasonably smooth top, and one (1) suitable swivel stool.
  2. Eight (8) additional folding chairs.
  3. Shelves, tables, and bookcases as recommended by the Construction Manager.
  4. Electric lights, desk lamps and outlets. The Contractor shall pay for installation and all charges for the energy used.
  5. Broom and dustpan.
  6. Two (2) desks for general office use. Each about 3 feet by 5 feet, all with a desk chair of the armchair swivel type.
  7. Plan rack accepted by the Construction Manager.
  8. Plan storage cabinet as accepted by the Construction Manager.
  9. Two (2) four-drawer, legal size, metal filing cabinets each with locks. The Contractor shall furnish up to two (2) additional filing cabinets if so requested by the Construction Manager.
  10. Private line, touch-tone telephones with internal electronic that allows the telephone to be used on both touch-tone and digital pulse services. Telephone to be ATT or equal. Provide touch-tone service where available. A phone shall be furnished for each desk. One-line service and intercom feature shall be provided. A second dedicated phone line shall be provided for the fax machine. The Contractor shall pay all charges for local calls.
  11. Telephone answering machine or private voicemail service.



12. Class ABC type fire extinguisher of at least 4-pound capacity.
13. Insulated waterproof chest for storage and moist curing of concrete cylinders; size and construction with capability of maintaining required curing temp.
14. Supply of drinking water in a suitable dispenser, with hot and cold supply and refrigerator space.
15. Paper cups, paper towels, liquid soap, and toilet paper; each with suitable dispenser or holder.
16. A waste basket for each desk, and a supply of appropriately sized plastic trash bags.
17. Thermostatically controlled heating unit or system of adequate capacity to maintain a minimum temperature of not less than 68 degrees F under all cold weather conditions. The Contractor shall provide all fuel used and service necessary.
18. Thermostatically controlled, refrigerant type, air conditioner of adequate capacity to maintain a maximum temperature of not more than 72 degrees F under all hot weather conditions. The Contractor shall provide all service necessary and provide all power used.
19. Metal clothing locker, or closet, 36-inches wide by 18-inches deep by 72-inches high, minimum dimensions.
20. Metal storage cabinet 36-inches wide, by 18-inches deep by 72-inches high, with a minimum of five (5) adjustable shelves, and a door lock.
21. The Contractor shall arrange for complete janitor service to be provided on a weekly basis.
22. One (1) copying machine with supplies and service. Machine shall be capable of copying 8.5x11, 8.5x14, and 11x17 paper sizes and in color. Copy rate shall be at least 20 copies per minute for 8.5x11 paper size.
23. Fax Machine with surge suppressor and dedicated telephone line.
24. Outdoor minimum-maximum thermometer with range of -40 degrees F to +120 degrees F and reset provisions.
25. 200-foot reel-mounted stainless steel Engineer's tape, Richter No. RI 553112 or equivalent.

- F. Computers: Provide two (2) desktop computers in the primary field office adequate for use by Construction Manager and the Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:
1. Processor: Intel Pentium D or Intel CoreDuo, 3.0 GHz processing speed.
  2. Memory: 4 gigabyte.
  3. Disk Storage: 300 gigabyte hard-disk drive and combination DVD-RW/CD-RW drive.
  4. Display: 22-inch LCD monitor with 256-Mb dedicated video RAM.
  5. Full-size keyboard and mouse.
  6. Network Connectivity: 10/100BaseT Ethernet.
  7. Operating System: Microsoft Windows XP Professional or Microsoft Windows Vista Business.
  8. Productivity Software:
    - a. Microsoft Office Professional, 2016 or higher, including Word, Excel, and Outlook.
    - b. Adobe Reader 7.0 or higher.
    - c. WinZip 7.0 or higher.
  9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three (3) functions.
  10. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 384 Kbps upload and 1 Mbps download speeds at each computer.
  11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
  12. Backup: External hard drive, minimum 40 gigabyte, with automated backup software providing daily backups.
- G. The Contractor shall provide office space and facilities until the office, furnishings, and equipment described above are ready for use, but by so doing he shall not be relieved of

his obligation to provide and equip the specified Construction Manager's office as promptly as possible.

- H. Unless otherwise directed by the Construction Manager, after the date of completion of the Work as stated in the final estimate, the Contractor shall remove the office and all such temporary facilities from the site, the same to become his property, and leave the premises in a condition acceptable to the Construction Manager.
- I. The Contractor shall provide one (1) new digital camera, complete with all connections, cables, software and batteries as necessary to provide a complete working system. The digital camera shall be manufactured by HP, Olympus, Canon, or equal. The digital camera shall, at a minimum, contain the following minimum features: 4 Megapixels, 3x optical zoom, and 3x digital zoom. In addition, the Contractor shall provide the following additional accessories: Camera case, two (2) 64 Mb storage cards, USB card reader, and rechargeable batteries with charging station.
- J. The desktop PC, printer and digital camera furnished as part of the office for the Construction Manager shall become the property of the Owner at Substantial Completion of the Project. This equipment to be in satisfactory condition to the Owner at the completion of the Project. Equipment not in satisfactory condition shall be replaced with new similar equipment by the Contractor at no additional cost to the Owner.
- K. Provide janitorial service with two (2) cleanings per week.
- L. Remove snow and ice as required to minimize accumulations and for the safety of all personnel.
- M. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
  - 1. Store combustible materials apart from building.

## 2.04 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated, with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: 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 for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

## PART 3 - EXECUTION

### 3.01 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 by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011100.

### 3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.

1. Arrange with utility company for time when service can be interrupted, if necessary, to make connections for temporary services.

- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

- F. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service underground unless otherwise indicated.

- G. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one (1) telephone line for each field office.
1. Provide additional telephone lines for the following:
    - a. Provide a dedicated telephone line for each facsimile machine in each field office.
    - b. Provide one (1) telephone line(s) for Owner's use.
  2. At each telephone, post a list of important telephone numbers.
    - a. Police and fire departments.
    - b. Ambulance service.
    - c. Contractor's home office.
    - d. Contractor's emergency after-hours telephone number.
    - e. Construction Manager's offices.
    - f. The Owner's office.
    - g. Principal subcontractors' field and home offices.
  3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

### 3.03 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Parking: Provide temporary parking areas for construction personnel. The Contractor shall not use public roads or undesignated areas for parking.
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. 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 properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs as indicated on Drawings.
  2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  3. Maintain and touchup signs so they are legible at all times.

#### 3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
1. Comply with work restrictions specified in Section 011100.
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to provisions shown on the soil erosion- and sedimentation-control drawings, Hudson-Essex-Passaic Soil Conservation District and Section 015713.
1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.

4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
  - D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
  - E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
  - F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
  - G. Site Enclosure Fence: Prior to commencing earthwork, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates. The Owner shall not assume liability for breaches of security on the Contractor's Work Area. It is the Contractor's responsibility to secure its construction materials, tools and equipment. The Owner is not responsible for providing security services, and is not responsible for any loss, theft or damage to any equipment/material within the Contractor's Work Area.
    1. Maintain security by limiting number of keys and restricting distribution to authorized personnel.
  - H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- 3.05 CLEANING CONSTRUCTION MANAGER'S AND CONSTRUCTION OFFICES DURING CONSTRUCTION
- A. Contractor to maintain the grounds within his working limits and around any equipment or storage areas. This includes removal of waste material, cutting of grass, weed whacking around storage racks and material, snow plowing, and snow shoveling.
  - B. The Contractor shall make arrangements with, and obtain permits from, any authorities having jurisdiction for disposal of waste and debris.
  - C. The Contractor shall wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, the Contractor shall sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose of offsite.

- D. The Contractor shall provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, the Contractor shall dispose of such waste materials, debris, and rubbish off site.
- E. At least weekly, the Contractor shall brush sweep entry drive and roadways, and all other streets and walkways affected by the Work and where adjacent to the Work.

### 3.06 OFFICE FOR CONSTRUCTION MANAGER

- A. Locate the Construction Manager's field office where directed by the Owner and the Construction Manager.
- B. Communication Services: The Contractor shall arrange and provide on-site telephone service and cable Internet access including router/firewall for use during construction. The Contractor shall pay for all installation and basic monthly billing charges. The Contractor shall reinstate service outages resulting from construction activities within one (1) working day.
- C. Maintain all temporary buildings clean and free from nuisances so as to avoid danger to plant property or structures, and to prevent complaints from plant personnel, and prohibit interferences with the operation of the existing plant.
- D. Maintain in good repair and appearance, and provide daily cleaning service and replenishment, as required, of paper towels, paper cups, hand soap, toilet paper, first-aid kit supplies, and bottled water.
- E. Provide and maintain services including power, heating and ventilating.

### 3.08 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.
  - 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.
- 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 property of Contractor. The Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. 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, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700.

END OF SECTION 015000

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## SECTION 015300 - TEMPORARY RETAINING STRUCTURES

### PART 1 GENERAL

#### 1.01 SCOPE

- A. Provide excavation support systems as indicated and in compliance with Contract Documents.
- B. Design, furnish, and install excavation support systems to maintain lateral support, prevent loss of ground, limit soil movements to acceptable limits and protect from damage existing and proposed improvements including pipelines, utilities, structures, roadways, railroads, and other facilities.
- C. The requirement of specified excavation support systems in areas indicated on the Contract Drawings does not relieve the Contractor from the responsibility of furnishing and installing proper temporary excavation support systems in other areas.
- D. Common types of excavation support system include, but are not limited to: singular or multiple stages comprised of cantilevered or internally braced soldier piles and lagging, steel sheetpile wall, timber sheetpile wall, trench box, or combinations thereof. Trench box temporary excavation support system is only acceptable for pipe or utility trench excavations approved by the Construction Manager. Temporary unsupported open cut excavation with stable sloping sides is allowed where applicable.
- E. Extraction of steel sheetpile wall, timber sheetpile wall, or soldier piles are not permitted unless otherwise indicated, specified, or approved by the Construction Manager.
- F. Wherever the word "sheeting" is used in this Section or on the Contract Drawings, it shall be in reference to any type of excavation support system specified except trench box.
- G. Construction of the excavation support systems shall not disturb the existing structures or the completed proposed structures. Damage to such structures shall be repaired at Contractor's expense.
- H. Adjacent structures are those that are bear upon soils above the proposed excavation depth and within a distance equal to twice the total depth of the excavation away from the closest edge of the excavation. Monitor and protect adjacent structures as specified and indicated.

## 1.02 MEASUREMENT AND PAYMENT

- A. Payment for temporary retaining structures including design, installation, maintenance, removal, and any incidental work as required will be in the price for other items in the Bid. Such price and payment shall constitute full compensation for furnishing all plant, labor, materials and equipment for work required by this Section.
- B. Temporary Retaining Structures left in place at the direction of the Construction Manager will be measured and paid for under Item 43 of the Bid.

## 1.03 REFERENCES

- A. American Concrete Institute (ACI):
  - 1. 304: Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- B. ASTM International (ASTM):
  - 1. A36: Standard Specification for Structural Steel.
  - 2. A572: Standard Specification for High-Strength Low Alloy Columbium-Vanadium Structural Steel.
  - 3. A615: Standard Specifications for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- C. American Wood-Preserves Association (AWPA) Standards:
  - 1. P23-10: Standard for Chromated Copper Arsenate Type C (CCA-C).
  - 2. P50-10: Standard for Fire Retardant FR-2 (FR-2).
- D. American Welding Society (AWS):
  - 1. D1.1: Structural Welding Code.
- E. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29: Subpart P - Excavations, Trenching and Shoring.

## 1.04 SUBMITTALS

- A. Construction Manager approval is required for submittals in accordance with General Conditions Article 4.7.
- B. Shop Drawings:

1. A detailed layout of temporary retaining structures on standard size (22 inches x 34 inches) sheets. These shop drawings shall bear the stamp and signature of the Registered Professional Engineer licensed in the State of New Jersey. These drawings shall clearly show:
  - a. All pertinent dimensions and locations of these structures with reference to the project centerline (Wall-line, Baseline, etc.).
  - b. Material grade, weight, length and designation of steel sheet pile section(s) used.
  - c. Bracing details.
  - d. Excavation sequence and procedure.
  - e. Provisions made for dewatering, indicating stage of excavation vs. necessary drawdown, water loading conditions, soil loads, and equipment loads.
  - f. Any other items incidental or significant to this work.
  - g. Equipment Description. Complete hammer, extractors, and other installation appurtenances.

#### 1.05 DESIGN CALCULATIONS

- A. Design of excavation support systems shall meet the following minimum requirements:
  1. Support systems shall be designed for earth pressures, hydrostatic pressure, equipment, temporary stockpiles, construction loads, roadways, railroads, and other surcharge loads.
  2. Design a bracing system to provide sufficient reaction to maintain stability.
  3. Limit movement of ground adjacent to the excavation support system to be within the allowable ground deformation as specified.
  4. Design the embedment depth below bottom of excavation to minimize lateral and vertical earth movements and provide bottom stability. Toe of braced temporary excavation support systems shall not be less than 5 feet below the bottom of the excavation.
  5. Design excavation support systems to withstand an additional 2 feet of excavation below proposed bottom of excavation without redesign except for the addition of lagging and/or bracing.

6. Maximum width of pipe trench excavation shall be as indicated on the Contract Drawings.
7. Do not cast permanent structure walls directly against excavation support walls.
8. The design location of the excavation support wall shall be determined such that the installed wall and bracing system components are all located outside the limits of the permanent structure. Construction tolerances (e.g. wall verticality) shall be considered in determining the plan location.

#### 1.06 QUALITY CONTROL

- A. The Contractor shall establish and maintain quality control for all operations to assure compliance with contract specifications and maintain records of its quality control for all construction operations, including but not limited to the following:
  1. Designing.
  2. Materials (type, strength, etc.).
  3. Fabrication, installation, and workmanship.
  4. Full and proper engagement of interlock (inspection and strength).
  5. Placing (location, alignment, etc.).
  6. Driving (pile hammer and rate of operation).
  7. Cutting.
  8. Welding.
  9. Final sheet pile position; depth of penetration; tip and top elevations.
  10. Stockpiling and Storage.
  11. Removal and disposal of damaged piles.
  12. Prepare design, including calculations and drawings, under the direction of a Professional Engineer registered in the State of New Jersey and having the following qualifications:
    - a. Not less than one (1) years' experience in the design of specific excavation support systems to be used.
    - b. Completed not less than five (5) successful excavation support system projects of equal type, size, and complexity within the last five (5) years.

13. Excavation Support System Installer's Qualifications:
    - a. Not less than three (3) years' experience in the installation of similar types and equal complexity as the proposed system.
    - b. Completed not less than three (3) successful excavation support systems of similar type and equal complexity as the proposed system.
  14. Install all excavation support systems under the supervision of a supervisor having the following qualifications:
    - a. Not less than five (5) years' experience in installation of systems of similar type and equal complexity as the proposed system.
    - b. Completed at least five (5) successful excavation support systems of similar type and equal complexity as the proposed system.
  15. All welding shall be performed in accordance with AWS D1.1.
  16. If the Contractor uses a subcontractor to perform this work, subcontractor must be pre-approved by DPMC prior to performing any activities.
- B. Reporting: The original and two (2) copies of these records and tests, as well as the corrective action taken, shall be furnished to the Construction Manager daily. Format of the report shall be as prescribed in Section 014300.

#### 1.07 DELIVERY, STORAGE AND HANDLING OF MATERIALS

- A. Provide in accordance with Section 016610.
- B. Materials delivered to the site shall be undamaged and shall be accompanied by certified test reports. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion, or damage to the interlocks. Storage of sheet piling should also facilitate inspection.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Structural Steel: All soldier piles, wales, rakers, struts, wedges, plates, waterstop, and accessory steel shapes shall conform to ASTM A36.
- B. Steel Sheet Piling: ASTM A572, continuous interlocking type and shall be hot-rolled sheet pile.
- C. Timber Lagging Left in Place: Pressured treated per AWWA standards.

- D. Raker Ties: ASTM A615 Grade 60.
- E. Concrete: Refer to Section 033000.
- F. Tamping tools adapted for backfilling voids after removal of the excavation support system.
- G. Provide specific trench box sizes for each pipe and utility excavation with structural capacity of retaining soil types as described in OSHA's 29 CFR Part 1926 Subpart P.

## 2.02 EQUIPMENT

- A. A vibratory hammer shall be utilized for driving the sheet piling providing that such operations do not exceed vibration/noise requirements of the specifications. Impact hammer shall be utilized when vibratory hammer is unable to drive sheet piling to required depth and/or unable to meet vibration requirements. Impact hammer shall also meet noise requirement.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Installation of the excavation support systems shall not commence until the related earth excavation and dewatering submittals have been reviewed by the Construction Manager with all comments satisfactorily addressed.
- B. Install excavation support systems in accordance with the excavation support plan.
- C. Do not drive sheeting within 100 feet of newly placed concrete less than seven (7) days old.
- D. Carry out program of excavation support in such a manner as to prevent undermining or disturbing foundations of existing structures of Work ongoing or previously completed.
- E. Bottom of the trench box excavation support system shall be above the pipe invert prior to installing the pipe.
- F. Install and read geotechnical instrumentation in accordance with the excavation support plan. Notify the Construction Manager immediately if any geotechnical instrumentation is damaged. Repair or replace damaged geotechnical instrumentation at the sole option of the Construction Manager and at Contractor's expense.
- G. Continuously monitor movements of the ground adjacent to excavation support systems and adjacent structures. In events of the measured movements approaching or



exceeding the allowable movements, take immediate steps to arrest further movement by revising procedures such as providing supplementary bracing, filling voids behind the trench box, supporting utilities, or other measures (Construction Contingency Plan).

- H. Notify utility owners if existing utilities interfere with the excavation support system. Modify the existing utility with the utility owner's permission or have the utility owner make the modifications at Contractor's expense.

### 3.02 GROUND DEFORMATION ADJACENT TO EXCAVATION SUPPORT SYSTEMS

- A. Allowable Vertical (heave/settlement) and Lateral Movements: 2 inches maximum for the trench box excavation support system, and 1 inch maximum for other types of excavation support systems at any location behind the excavation support system.
- B. Monitoring personnel shall use a procedure for reading and recording geotechnical instrumentation data which compares the current reading to the last reading during data collection to eliminate spurious readings.
- C. Plot the observed ground deformation readings versus time. Annotate the plots with construction loading and excavation events having an impact on the readings. Evaluate plots by means of secondary rate-of-change plots to provide early warning of accelerating ground movements.
- D. Notify the Construction Manager when the allowable ground deformation is exceeded.
- E. Implement Construction Contingency Plan under direction of the temporary excavation support system designer and the Construction Manager.

### 3.03 REMOVAL OF EXCAVATION SUPPORT SYSTEMS

- A. Sheet piling shall be removed unless directed by the Construction Manager to leave in place.
- B. When indicated, remove the excavation support system without endangering the constructed or adjacent structures, utilities, or property. Immediately backfill all voids left or caused by withdrawal of excavation support systems with bank-run gravel, screened gravel or select borrow by tamping with tools specifically adapted for that purpose.
- C. The excavation support system left-in-place shall be cut-off a minimum of 2 feet below the bottom of the next higher foundation level or a minimum of 5 feet below finished grade.
- D. Conduct survey of the locations and final cut-off elevations of the excavation support systems left in place.

3.04 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 017700.

END OF SECTION 015300

## SECTION 015713 - EROSION CONTROL, SEDIMENTATION, AND CONTAINMENT OF CONSTRUCTION MATERIALS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide all Work and take all measures necessary to control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials (including excavation and backfill) within protected working area as to prevent damage to any stream or wetlands.

#### 1.02 REFERENCES

- A. New Jersey Department of Environmental Protection (NJDEP):
  - 1. Environmental Guidelines for Planning, Designing and Constructing Interceptor Sewers.
  - 2. Standards for Soil Erosion and Sediment Control, 7<sup>th</sup> edition (latest revision).
- B. United States Environmental Protection Agency (USEPA):
  - 1. Guidelines for Erosion and Sediment Control, Planning and Implementation.
  - 2. Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity.
- C. Plans approved by the Hudson-Essex County Soil Conservation District.

#### 1.03 SUBMITTALS

- A. Submit the following shop drawings in accordance with General Conditions Article 4.7.
- B. Two (2) weeks prior to the start of the work, submit to the Construction Manager, for review, a plan with detailed sketches showing the proposed methods to be used for controlling erosion during construction.

#### 1.04 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Use acceptable procedures, including use of water diversion structures, diversion ditches, settling basins, and sediment traps.

- C. Operations restricted to areas of work indicated on drawings and area which must be entered for construction of temporary or permanent facilities.
- D. If construction materials are washed away during construction, remove materials from fouled areas.
- E. Stabilize diversion outlets by means acceptable to the Construction Manager.
- F. The Construction Manager has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of temporary mulches, mats, or other control devices or methods to control erosion.

## PART 2 - PRODUCTS

### 2.01 BALES

- A. Hay or straw or other suitable material acceptable to the Construction Manager.

### 2.02 WOOD STAKES

- A. 2 inches by 2 inches by 3 feet.

### 2.03 INLET FILTERS

- A. In accordance with Hudson-Essex-Passaic Soil Conservation requirements.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Do not discharge chemicals, fuels, lubricants, bitumen, raw sewage and other harmful waste into or alongside any body of water or into natural or man-made channels.
- B. Design erosion and sediment controls to handle peak runoff resulting from storm events.
- C. The Contractor shall be responsible for inspecting and maintaining these control measures to ensure their proper function and adequate sediment storage at all times. The Contractor shall remove sediment once it reaches 50 percent of the capacity of the structure. Sediment collected shall be disposed of offsite at the Contractor's cost.

### 3.02 INSTALLATION

- A. Install baled hay or straw erosion checks in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the Construction Manager.
- B. Install checks immediately after site is cleared and before trench excavation. Locate checks, surrounding stored material, approximately 6 feet from material.
- C. Hold bales in place with two (2) 2 inches by 2 inches by 3 feet stakes or other approved means so that each bale is butted tightly against adjoining bale thereby precluding short-circuiting of erosion check.
- D. Construct earth berms or diversions to intercept and divert runoff water from critical areas.
- E. Discharge silt-laden water from excavations onto filter fabric mat and/or baled hay or straw sediment traps to ensure that only sediment-free water is returned to watercourses.
- F. Do not place excavated soil material adjacent to water-course in manner that will cause it to wash away by high water or runoff.
- G. Prevent damage to vegetation by excessive watering or silt accumulation in the discharge area.
- H. Do not dump spoiled material into any streams, wetlands, surface waters, or unspecified locations.
- I. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands or surface waters.
- J. Do not pump silt-laden water from trenches or excavations into surface waters, streams, wetlands, or natural or man-made channels leading thereto.
- K. Prevent damage to vegetation adjacent to or outside of construction area limits.
- L. Do not dispose of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in streams, wet-lands, surface waters, or natural or man-made channels leading thereto, or unspecified locations.
- M. Do not alter flow line of any stream unless indicated or specified.

END OF SECTION 015713

## SECTION 016610 - DELIVERY, STORAGE, AND HANDLING

### PART 1 - GENERAL

#### 1.01 GENERAL

- A. This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the Work. Specific requirements, if any, are specified with the related item.

#### 1.02 TRANSPORTATION AND DELIVERY

- A. Transport and handle items in accordance with manufacturer's printed instructions.
- B. Before shipping to the site, contact the Construction Manager, in writing, giving at least 14 days prior notice to enable the Construction Manager or its authorized inspector to inspect the equipment if necessary.
- C. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one (1) month prior to installation without written authorization from the Construction Manager.
- D. Ship equipment, material and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.
- E. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended. All spare parts shall be cross-referenced to their applicable the Specification Section.
- F. Carefully pack and crate equipment for shipment. Protect polished and machined metal surfaces from corrosion and damage during shipment and installation. Specially pack electrical equipment to prevent damage by moisture. Cover equipment having exposed bearings and glands to exclude foreign matter. Carefully pack machines for shipment and protect electrical equipment from moisture damage. Protect bearings, seals, and glands from grit and dirt.
- G. Identify each component with durable identifying labels or tags securely attached to each piece of equipment, crate, or container.
- H. Finished surfaces of all exposed flanges shall be protected by fiberboard blank flanges strongly built and securely bolted thereto.
- I. Deliver spare parts at same time as pertaining equipment. Deliver spare parts to the DEP after completion of Work.

- J. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- K. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- L. Assume responsibility for equipment material and spare parts just before unloading from carrier at site.
- M. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- N. Provide equipment and personnel to unload all items delivered to the site.
- O. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. Notify Construction Manager verbally, and in writing, of any problems.
- P. Pay all demurrage charges if failed to promptly unload items.

#### 1.03 STORAGE AND PROTECTION

- A. Store and protect products and equipment in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Construction Manager. Instructions shall be carefully followed and a written record of this kept by the Contractor for each product and pieces of equipment.
- B. Arrange storage of products and equipment to permit access for inspection. Periodically inspect to make sure products and equipment are undamaged and are maintained under specified conditions.
- C. Provide protective maintenance during storage consisting of manually exercising equipment, inspecting mechanical surfaces for signs or corrosion or other damage, lubricating, applying any coatings as recommended by the equipment manufacturer necessary for its protection and all other precautions to assure proper protection of all equipment stored and for compliance with manufacturers' requirements related to warranties. Log all protective maintenance for each piece of equipment in the written record noted above.
- D. Store loose granular materials on solid flat surface in a well-drained area. Prevent mixing with foreign matter.

- E. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous, and reinforcing steel shall be stored off the ground or otherwise to prevent accumulation of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in manner to reduce breakage, cracking and spalling to a minimum.
- F. All mechanical and electrical equipment and instruments shall be covered with canvas and stored in a weathertight building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it shall be satisfactory to the Construction Manager. Building shall be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer and to prevent condensation on the equipment being stored.
  - 1. All equipment shall be stored fully lubricated with oil, grease, and other lubricants unless otherwise instructed by the manufacturer.
  - 2. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Log all rotation maintenance for each piece of equipment in the written record noted above.
  - 3. Upon installation of the equipment, the Contractor shall start the equipment, at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use. Log all startup for each piece of equipment in the written record noted above.
  - 4. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.
  - 5. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guaranty the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

## PART 2 - PRODUCTS

(Not Used)



PART 3 - EXECUTION

(Not Used)

END OF SECTION 016610

## SECTION 017329 - CUTTING, CORING, AND PATCHING

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

A. Section includes:

1. Alterations to existing buildings or structures.
2. Cutting, coring, and patching.

B. All cutting, coring, and rough patching shall be performed by the Contractor. Finish patching shall be the responsibility of the Contractor.

C. Work includes:

1. Alterations:

- a. Cutting, moving, or removal of items as shown on Contract Drawings.
- b. Cutting, moving, or removal of items not shown to be cut, moved or removed, but which must be cut, moved or removed to allow new Work to proceed. Patch or reinstall Work or items which are to remain in finished Work after cutting, moving or removal, and make joints and finishes match adjacent or similar Work.
- c. Removal of existing surface finishes as needed to install new Work and finishes.
- d. Removal of abandoned items and removal of items serving no useful purpose, such as piping and electrical conduit.
- e. Repair or removal of dangerous or unsanitary conditions.
- f. Removal of unsuitable or extraneous materials not marked for salvage, such as debris, rotted wood, rusted trench covers, and deteriorated concrete and masonry.

2. Cutting and Patching:

- a. Removal and replacement of defective Work and Work not conforming to Contract Documents.
- b. Uncovering Work to provide observation by Construction Manager or inspection or tests by others of covered Work.

- c. Removal of samples of installed materials for testing.
- d. To make several parts fit properly.
- 3. Temporary enclosures and services.

## 1.02 REFERENCES

- A. American Society for Testing and Materials International (ASTM):
  - 1. E84: Standard Test Method for Surface Burning Characteristics of Building Materials.

## 1.03 ALTERATIONS, CUTTING, AND PROTECTION

- A. The Contractor is responsible to survey and record condition of existing facilities to remain in-place that may be affected by alteration operations. After alteration work is complete, survey conditions again and restore existing facilities to pre-alteration condition.
- B. Perform Work of moving, removal, cutting, and patching with trades qualified to perform Work in manner causing least damage to each type of Work.
- C. Provide shoring, needling, and bracing to keep structures structurally secure and free of damaging deflection for installation of new structural members.
- D. Do not pile material to endanger existing structures.
- E. Discoveries of construction, furnishings, and articles having historic or private value shall remain in possession of the DEP.
  - 1. Promptly notify Construction Manager.
  - 2. Protect discovery from damage from elements or Work.
  - 3. Construction Manager will promptly transmit decision for disposition of discovery.
  - 4. Store items to be retained by the DEP in safe, dry place on-site, or legally dispose of items which the DEP releases.

## 1.04 HOLES IN EXISTING CONCRETE

- A. When the Contractor is required to make new holes in existing concrete for piping, conduit, cables, or equipment, the Contractor shall accurately and carefully mark out the locations and the extent of cutting required and coordinate with the trade(s) involved. The Contractor shall make new holes using one (1) of the methods described below:

1. Prior to drilling any openings, the Contractor shall determine the location, if any, of existing services concealed in and/or behind the construction to be drilled. X-ray the walls or slabs, if required to determine the location.
2. The Contractor shall chip with an electric hammer with chisel point. Adjust the location of holes as necessary to avoid electrical conduits if encountered. Cut reinforcing steel after permission is received.

#### 1.05 PROTECTION AND CONTINUITY OF UTILITIES AND OPERATIONS

- A. Protect existing utilities so they will continue to function during and after construction.
- B. Where interference with such facilities occurs, cooperate with owner of facility and, if necessary, alter facility to eliminate interference.
- C. Service Continuity:
  1. Provide and maintain continuous electrical, plumbing, and water services to all residential and commercial buildings within the Project area.
  2. Temporary outages are permitted only during cutover work at such times and places as pre-arranged with the Construction Manager. Keep such outages to minimum number and length of time. Make no outages without prior acceptance.
  3. Include costs for temporary equipment, materials, and Work required in Contract Price.
  4. Remove temporary equipment and materials when no longer required or at completion of Work.

#### 1.06 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Adhere strictly to the manufacturer's current printed recommendations regarding temperature at time of application for all work involving epoxy, cement base coating and protective coating.
- C. Use only products of the specified Repair Mortar System Manufacturer(s) or an approved equal.
- D. Any changes in the specified repair mortar work methods shall be allowed only with the written acceptance of the Construction Manager.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Concrete repair mortar shall be a non-shrink, commercial formulation requiring only the addition of water with minimum 28-day compressive strength of 5,000 psi.
- B. Provide a non-shrink cementitious repair mortar material as manufactured by:
  - 1. Sika Repair 224 manufactured by Sika Corp.
  - 2. EMACO S88CI manufactured by Master Builder, Inc.
  - 3. Underlayment F-120 by Sauereisen, Inc.
- C. Materials for finish patching shall be equal to those of adjacent construction.

### 2.02 PRODUCTS FOR PATCHING, EXTENDING, AND MATCHING

- A. Provide same products, salvaged materials, types of construction, or finish as that in existing structure, as needed to patch, extend, or match existing Work.
  - 1. Generally, Contract Documents will not define products or standards of workmanship present in existing construction, determine products by inspection, and necessary testing and workmanship by use of existing as sample of comparison.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. All cutting and coring shall be performed in such a manner as to limit the extent of patching.
- B. All holes cut through concrete and masonry walls, slabs, or arches shall be core drilled unless otherwise accepted. No structural members shall be cut without acceptance of the Construction Manager and all such cutting shall be done in a manner directed by the Construction Manager. No holes may be drilled in beams or other structural members. All work shall be performed by mechanics skilled in this type of Work.
- C. Rough patching shall be such as to bring the cut or cored area flush with existing construction unless otherwise shown. Finish patching shall match existing surfaces.

### 3.02 PREPARATION

- A. Where new work conceals existing surfaces or spaces, the Contractor shall remove foreign substances such as accumulated dirt, dust, grease, sludge, and odoriferous material before concealing existing surfaces.
- B. Where surfaces are to remain exposed, the Contractor shall remove foreign substances described above.

### 3.03 REMOVAL, RELOCATION, AND SECURING MATERIALS AND EQUIPMENT

- A. Where existing materials and equipment are removed or relocated, remove materials no longer used such as studs, straps, conduits, ducts, wires, anchors, piping and supports. Remove or cut off concealed or embedded materials such as conduit, boxes, anchors, piping or other materials to not less than 3/4-inches below finished surface.
- B. Materials that cannot be removed shall be secured to adjacent structure to prevent coming loose.
- C. Repair affected surfaces to conform to type, quality, and finish of adjacent surfaces.

### 3.04 CUTTING

- A. Inspect existing conditions of Work, including components subject to damage or movement during cutting, patching, excavating, or backfilling.
- B. After uncovering Work, inspect conditions affecting installation of new materials.
- C. Do not cut or notch structural members without specific written acceptance of Construction Manager.
- D. Cutting shall be performed with a concrete saw and diamond saw blades of proper size.
- E. Corners of square or rectangular openings shall be cored. Do not overcut corners of openings. Corners shall be chipped out square, if required, so as not to cause cracking at the corners.
- F. Provide for control of slurry generated by sawing operation on both sides of element.
- G. When cutting reinforced concrete, the cutting shall be done so as not damage bond between the concrete and reinforcing steel left in structure. Cut shall be made so that steel neither protrudes nor is recessed from face of the cut.
- H. Adequate bracing and/or shoring of area to be cut shall be installed prior to start of cutting. Check area during sawing operations for cracking and provide additional bracing as required to prevent a partial release of cut area during sawing operations.

- I. Provide equipment of adequate size to remove cut panel.

### 3.05 CORING

- A. Coring shall be performed with an accepted non-impact rotary tool with diamond core drills. Size of holes shall be suitable for pipe, conduit, sleeve, equipment, or mechanical seals to be installed.
- B. Provide protection for existing equipment, utilities and critical areas against water or other damage caused by drilling operation.
- C. Slurry or tailings resulting from coring operations shall be removed from the area following drilling.

### 3.06 PATCHING

- A. Prepare surfaces to receive cementitious repair mortar in accordance with manufacturer's instructions.
- B. Mix the cementitious repair mortar material components in accordance with the manufacturer's instructions. Concrete surfaces should be surface saturated dry (SSD) with no standing water prior to mortar application.
- C. Work a wet scrub coat of the mortar per the manufacturer's recommendations into the pores and voids in the substrate and over the substrate prior to mortar application by trowel.
- D. Apply the cementitious repair mortar using a steel trowel to work the material into the surface. Fill voids from deepest to shallowest areas as the application work proceeds. Strictly follow the manufacturer's application requirements.
- E. Once the repair areas are filled with repair mortar, strike off the mortar level with the surrounding concrete substrate. Do not leave a broom finish. Finish with a steel trowel until closed up at the surface and flat.
- F. Cure the repair mortar in strict accordance with the manufacturer's instructions.

### 3.07 CLEANING

- A. Perform periodic and final cleaning as specified in Section 017423, and:
  1. Clean DEP-occupied areas daily.
  2. Clean spillage, overspray, and heavy collection of dust in DEP-occupied areas immediately.

- B. At completion of alterations work in each area, provide final cleaning and return space to condition suitable for use by the DEP.
- C. Remove debris from site each day. Removed material, except that listed or marked by the Construction Manager for retention, becomes property of Contractor.

3.08 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 017329



## SECTION 017423 - CLEANING UP

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Execute cleaning during progress of Work and at completion of Work.
- B. Refer to Specification Sections for specific cleaning for Products or Work.

#### 1.02 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with local codes, ordinances, regulations, and anti-pollution laws. Do not burn or bury rubbish or waste materials on Project site. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to property and persons or damage surfaces of material to be cleaned.
- B. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

### PART 3 - EXECUTION

#### 3.01 CLEANING DURING CONSTRUCTION

- A. Comply with General Conditions.
- A. At all times, maintain areas covered by the Contract and adjacent properties and public access roads free from accumulations of waste, debris, and rubbish caused by construction operations.
- B. During execution of Work, clean site, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish. Unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- C. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

- D. Cover or wet excavated material leaving and arriving at the site to prevent blowing dust. Clean the public access roads to the site of any material falling from the haul trucks.
- E. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, Work done under this Contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the Work. The ditches, channels, drains, pipes, structures, and Work, etc., shall, upon completion of the Work, be left in a clean and neat condition.
- F. On or before the completion of the Work, the Contractor shall, unless otherwise specifically directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- G. Provide on-site containers for collection and removal of waste materials, debris, and rubbish in accordance with applicable regulations.

### 3.02 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and anti-pollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated 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 the Work area.
  - f. Remove labels that are not permanent.
  - g. Leave Project clean and ready for use by public.
- C. Pest Control: Comply with pest control requirements in Section 015000. Prepare written report.

### 3.03 CLEANING OF CONCRETE STRUCTURES

- A. Clean thoroughly, using water under pressure.
  - 1. Isolate reservoir from system to avoid possibility of contaminating materials entering collection system and/or discharging to the Hudson River.
  - 2. Cleaning shall:
    - a. Remove deposits of foreign nature.
    - b. Broom walls, floor, and ceiling.
    - c. Avoid damage to structure.
  - 3. Water used in cleaning shall be collected and removed from site.

END OF SECTION 017423

## SECTION 017700 - CONTRACT CLOSEOUT

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

- A. General Conditions Article 8 Close-out.

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final Completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.

#### 1.03 SUBMITTALS

- A. Submit the following shop drawings in accordance with General Conditions Article 4.7.
- B. As-Built Drawings.
- C. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- D. Certified List of Incomplete Items: Final submittal at Final Completion.
- E. Certificates of Release: From authorities having jurisdiction.
- F. Certificate of Insurance: For continuing coverage.
- G. Warranties.
- H. Operation and Maintenance Manuals.
- I. Spare Parts.

#### 1.04 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting the DEP unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Divisions 02 through 34 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Divisions 02 through 34 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Construction Manager. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Construction Manager's signature for receipt of submittals.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Advise Construction Manager of pending insurance changeover requirements.
  - 2. Complete startup and testing of systems and equipment.
  - 3. Perform preventive maintenance on equipment used prior to Substantial Completion.

4. Instruct the North Hudson Sewerage Authority's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in General Conditions Article 8.3.
  5. Participate with Construction Manager in conducting inspection and walkthrough with local emergency responders.
  6. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.
  7. Remove labels that are not permanent labels.
  8. Complete final cleaning requirements.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Construction Manager 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 Construction Manager, 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.
- 1.05 DEMONSTRATION AND INSTRUCTIONS
- A. Conform to the requirements of Section 017823.
  - B. For equipment or systems requiring seasonal operation, perform demonstration for other seasons within six (6) months.
  - C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with the DEP's personnel in detail to explain all aspects of operation and maintenance.
  - D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at designated location.

- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F. Required instruction time for each item of equipment and system is specified in individual sections.

#### 1.06 PROJECT RECORDS DOCUMENTS

- A. The Contractor shall record any actual revisions to the Work and maintain one (1) set of the following Project Record Documents on site:
  - 1. Contract Drawings, Specifications, and Addenda.
  - 2. Change orders, field orders, and other written notices.
  - 3. Shop drawings, product data, and samples.
  - 4. Records of surveying and layout Work.
  - 5. Project As-Built Drawings.
- B. The Contractor shall record information on the Project As-Built Documents concurrent with construction progress and store these documents separately from the documents used for construction.
  - 1. The DEP will supply a set of Contract Drawings. The Contractor shall mark thereon all revisions as the Work progresses in order to produce a set of As-Built Drawings.
  - 2. The Contractor shall note any changes made during construction by any of the Contractor's forces or those of any subcontractors.
  - 3. The Contractor shall dimension the locations of buried or concealed Work, especially piping and conduit, with reference to exposed structures.
  - 4. The Contractor shall dimension the installed locations of concealed service lines on the site by reference from the center line of the service to other structural points which are easily identified and located in the finished Work.
  - 5. Certificates of Substantial Performance and Total Performance shall not be issued until As-Built Drawings are complete and submitted, and the Contractor has satisfied all requirements for Substantial Performance and Total Performance of the Work.
- C. For Project Record Documents and Record Shop Drawings, the Contractor shall legibly mark each item to record actual construction including:

1. Field changes of dimensions and details.
  2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  3. Measured locations of internal utilities and appurtenances which are concealed in construction, referenced to visible and accessible features of the Work.
  4. Changes in the Work caused by site conditions, or originated by the DEP, the Construction Manager, the Contractor, Preselected Equipment Vendors, or subcontractors and by addenda, supplemental drawings, site instructions, supplementary instructions, change orders, correspondence, and directions of any regulatory authorities.
  5. Record the location of concealed mechanical services and electrical main feeders, junction boxes and pullboxes.
- D. Upon completion of the Work, the Contractor shall prepare two (2) CD-ROM sets of the Record Shop Drawings and an index.
- E. The Record Shop Drawings CD-ROM index shall identify the DEP's project number, project name, and Contract number and the contents of each CD in the following format:
1. The index shall include the following columns of information for each Record Shop Drawing:
    - a. CD number.
    - b. Specification Section number.
    - c. Specification title.
    - d. Shop drawing transmittal number.
    - e. Shop drawing equipment description including Preselected Equipment Vendor and Supplier.
  2. The index shall be printed by the following two (2) sorts:
    - a. Primary sort: Specification Section number. Secondary sort: Shop Drawing transmittal number.
    - b. Primary sort: CD number. Secondary sort: Specification Section number.



3. The index shall be generated using Microsoft Excel software. A copy of the electronic file shall be furnished to the DEP.
4. The Contractor shall remove the Engineer seal from all documents.
5. The Contractor shall provide a set of Project Record Documents on CD-ROM in an electronic format compatible with the plant CD-ROM record standards. All drawings are to be provided electronically on CD-ROM in both AutoCAD (latest version) and Adobe Acrobat PDF (latest version). Also provide a set of CD-ROMs containing the software implemented on this project, including standard software and custom application software. Also provide a set of CD-ROMs containing the various programming tools and files necessary for maintenance, editing, backing up, and restoring programmable equipment implemented on this Project.

#### 1.07 EQUIPMENT INVENTORY SPREADSHEET

- A. As part of the DEP's asset management program, the Contractor shall complete all fields for the equipment inventory file for each piece of equipment and device provided under this Contract, as a requirement for Substantial Performance. An electronic format of the equipment inventory spreadsheet will be provided on a CD to the successful General Contractor.

#### 1.08 EQUIPMENT PREVENTATIVE MAINTENANCE SPREADSHEET

- A. As part of the DEP's asset management program, the Contractor shall complete all fields for each piece of equipment and device provided under this Contract, as a requirement for Substantial Completion. The Contractor shall transfer all of the manufacturer's recommended preventative maintenance tasks and frequencies into the spreadsheet. An electronic format of the equipment inventory spreadsheet will be provided on a CD to the DEP.

#### 1.09 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

#### 1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

- B. Deliver to and place in location as directed by DEP; obtain receipt prior to final payment.
- C. Coat parts to protect from moisture.
- D. Crate in containers designed for prolonged storage suitable for handling with hoisting equipment containers.
- E. Stencil on containers:
  - 1. Manufacturer/supplier name.
  - 2. Unit name.
  - 3. Spare part name.
  - 4. Manufacturer catalogue number.
  - 5. Other identifying information.
  - 6. Precautionary information.

#### 1.11 FINAL COMPLETION PROCEDURES

- A. Submittals prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
  - 1. Submit a final Application for Payment in accordance with the General Conditions.
  - 2. Certified List of Incomplete Items: Submit certified copy of Construction Manager's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Construction Manager. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  - 4. Provide all Warranties required by the Contract.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Construction Manager

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.

#### 1.12 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization 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. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order.
2. Include the following information at the top of each page:
  - a. Project name.
  - b. Date.
  - c. Name of Engineer and Construction Manager.
  - d. Name of Contractor.
  - e. Page number.
3. Submit list of incomplete items in the following format:
  - a. MS Excel electronic file. Construction Manager will return annotated file.
  - b. PDF electronic file. Construction Manager will return annotated file.
  - c. Three (3) paper copies. Construction Manager will return two (2) copies.

#### 1.13 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties in the name of the DEP on request of Construction Manager for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit the DEP's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Contract Documents.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch 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.
  4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

NOT USED

## PART 3 - EXECUTION

### 3.01 FINAL CLEANING

- A. General: Perform final cleaning in accordance with Section 017423.
- B. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000.

### 3.02 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired.

Restore damaged construction and permanent facilities used during construction to specified condition.

1. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION 017700

## SECTION 017823 - OPERATION AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Section includes procedural requirements for providing, compiling and submitting operation and maintenance data required for this Project.
- B. Contractor shall also comply with General Conditions Article 8.

#### 1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. General contents of data.
  - 2. Specific data for each equipment and system.
  - 3. Manual for materials and finishes.
  - 4. Assembly.

#### 1.03 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

#### 1.04 SUBMITTALS

- A. Operations and Maintenance (O&M) Manual Content: O&M manual submittal requirements are specified in individual Specification Sections for the Products for which they must be supplied. Submit reviewed manual content formatted and organized by this Section and as defined in General Conditions Article 4.7.
  - 1. Construction Manager will comment on whether content of operations and maintenance submittals are acceptable.
  - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

- B. Initial O&M Manual: Submit draft copy of each manual as defined in General Conditions Article 4.7. Construction Manager will comment on whether general scope and content of manual are acceptable.
- C. Pre-Final Manual Submittal: Submit two (2) copies of each manual in final form prior to requesting inspection for Substantial Completion and as defined in General Conditions Article 4.7. Construction Manager will return one (1) copy with comments.
  - 1. The Contractor to correct or revise each manual to comply with Construction Manager's comments.
- D. Submit six (6) copies of each corrected manual as a final manual within 15 days of receipt of Construction Manager's comments and prior to commencing startup, commissioning, and/or training.
- E. After acceptance, deliver one (1) electronic copy to the Construction Manager.

#### 1.05 FORMAT (HARDCOPY)

- A. Prepare data in the form of an O&M instructional manual.
- B. Binders: Commercial quality, 8-1/2 x 11-inch three-hole post type binders with hardback, 3-inch maximum binder size. When multiple binders are used, correlate data into related consistent groupings. Three-ring binders are not acceptable.
- C. Arrange contents by Specification Section numbers and sequence of Table of Contents of this Project Manual.
- D. Provide tabbed fly leaf for each separate product and system, with printed description of product and major component parts of equipment. Insert type tab labels must be secured or bonded to prevent the labels from falling out.
- E. Text: Manufacturer's printed data or typewritten data on 20-pound paper.
- F. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages and insert into clear plastic envelopes that can be secured into the three-hole post binders.

#### 1.06 FORMAT (ELECTRONIC DOCUMENTATION)

- A. The Contractor must provide O&M manual information specific to the configuration of the Project in electronic form. Documents should be formatted like a web site complete with index page and Table of Contents. The electronic format must be such that the DEP is able to load the files onto a server to provide online access via any standard web browser. The Contractor shall make use of HTML (for text-based documents) and PDF

(for CAD type drawings) file formats. The complete document shall be provided on a CD.

- B. The electronic O&M data must be organized in a logical manner to aid operation in troubleshooting and information retrieval.

#### 1.07 QUALITY ASSURANCE

- A. Preparation of data shall be performed by personnel:
  - 1. Trained and experienced in O&M of described equipment.
  - 2. Familiar with requirements of this Section.
  - 3. Skilled as technical writers to the extent required to communicate the essential data to the Reader.
  - 4. Skilled as drafters competent to prepare any required drawings.

### PART 2 - PRODUCTS

(Not Used)

### PART 3 - EXECUTION

#### 3.01 GENERAL CONTENTS OF DATA

- A. Each individual manual shall contain equipment data pertaining to not more than one (1) Specification Section number as indicated in the Contract Documents.
  - 1. Completed Form 017823-1, Contractor's Submittal Form. An electronic copy of Form 017823-1 will be provided to the Contractor.
- B. Title Sheet: First page in data listing following:
  - 1. Title: "OPERATION AND MAINTENANCE INSTRUCTIONS".
  - 2. Title of Project: As shown on Contract Documents.
  - 3. Name(s) of applicable building(s) or structure(s) in which equipment is located.
  - 4. Name of equipment as described in Contract Documents.
  - 5. Contractor's name, address, and telephone number.



6. Subcontractor's name, address, and telephone number if equipment is provided by subcontractor.
7. Contractor's or subcontractor's purchase order number, manufacturer's shop order number, or other such numbers required for parts and service ordering.
8. Manufacturer's name, address, and telephone number.
9. Name, address, and telephone number for local source of supply for parts and service.

C. Equipment List: Immediately following title sheet containing the following:

1. Table of Contents: Immediately following equipment list. Arrange in logical, systematic order and shall include as minimum each tabbed divider. Each page shall be numbered.
2. Tabbed Dividers: Insert tabbed section dividers between each major section.
  - a. Provide title of section on each tab.
  - b. Provide Table of Contents for each tabbed section, arranged in systematic order.
3. Equipment Data Sheets: Provide catalog sheets showing configuration, manufacturer's specifications, models, options, and styles of equipment and major components being provided. Product data sheets will show project specific information with inapplicable information deleted by crossing out or removal. Include in tabbed section(s).
4. Text:
  - a. Include only those sheets applicable to Project.
  - b. Each sheet shall:
    - (1) Identify specific equipment or part installed.
    - (2) Identify text applicable to equipment or part installed.
    - (3) Do not include inapplicable information or neatly strike it out.
5. Drawings:
  - a. Supplement text with drawings to clearly illustrate following:
    - (1) Equipment and components.

- (2) Relations of component parts of equipment and systems.
  - (3) Control and flow diagrams.
  - b. Actual drawings of equipment from manufacturer. “Typical” drawings are not acceptable, unless they accurately illustrate actual installation for this Contract.
6. Specially written information, as required to supplement text for particular installation.
- a. Provide explanation of interrelationships of equipment and components, and effects one component has on another or entire system.
  - b. Provide overall instructions and procedures for equipment tying in instructions and procedures for separate components into unified instructional package.
  - c. Provide glossary of any special terms used by the manufacturer if applicable.
  - d. Organize in consistent format under separate headings for different O&M procedures.
  - e. Provide logical sequence of instructions in order of O&M action required for each procedure.

### 3.02 SPECIFIC DATA FOR EACH ITEM OF EQUIPMENT AND/OR SYSTEM

#### A. For each item of equipment and system include:

- 1. Completed Equipment Data Form typewritten on copy of Form 017823-2 to Section 017823. An electronic copy of Form 017823-2 will be provided to the Contractor.
- 2. Description of equipment and component parts:
  - a. Function.
  - b. Normal operating characteristics.
  - c. Limiting conditions.
  - d. Performance curves.
  - e. Engineering data.

- f. Test as applicable.
  - g. Complete nomenclature and model number of replaceable parts including keyed labeled exploded diagram.
  - h. Complete nameplate data.
- 3. Operating Procedures:
  - a. Startup and break-in.
  - b. Normal operating instructions.
  - c. Regulation and control.
  - d. Stopping and shutdown.
  - e. Emergency instructions.
  - f. Summer and winter operating instructions, as applicable.
  - g. Special operating instructions.
- 4. Maintenance Procedures:
  - a. Routine maintenance operations.
  - b. Guide to troubleshooting.
  - c. Disassembly, repair, and reassembly instructions.
  - d. Alignment, adjusting, and checking instructions.
- 5. Servicing and Lubrication Schedule:
  - a. List of lubricants required and quantity to be applied.
  - b. Schedule of lubrication.
  - c. Schedule for other routine maintenance.
- 6. Manufacturer's printed instructions regarding safety precautions for both (a) protection of personnel operating equipment and systems and (b) prevention of damage to equipment and systems.
- 7. Description of sequence of operation of controls.

8. Assembly drawings and diagrams required for maintenance.
  9. Manufacturer's parts list and illustrations:
    - a. Predicted life of parts subject to wear.
    - b. Items recommended to be stocked by the DEP as spare parts and quantities of same.
  10. Accepted control diagrams such as ladder diagrams, instrumentation loop diagrams, and electrical schematics.
  11. Bill of material.
  12. Other data as required under applicable Specification Sections.
  13. Operating Procedures:
    - a. Routine and normal operating instructions.
    - b. Sequences required.
    - c. Special operating instructions.
  14. Maintenance Procedures:
    - a. Routine maintenance operations.
    - b. Guide to troubleshooting.
    - c. Disassembly, repair, and reassembly instructions.
    - d. Adjustment and checking instructions.
  15. Manufacturer's printed instructions regarding safety precautions for both:
    - a. Protection of personnel operating equipment and systems.
    - b. Prevention of damage to equipment and systems.
  16. List of all the original manufacturer's components, spare parts with diagram, and recommended quantities to be maintained in storage by the DEP.
  17. Other data as required under pertinent sections of Specifications.
- B. Prepare and include additional data when need for such data becomes apparent during instruction of the DEP's personnel. Differences between the equipment O&M manual

and the manufacturers training session shall result in the training, and/or O&M Manual being corrected.

### 3.03 ASSEMBLY

- A. Assemble in three (3) sets.
- B. Remove bindings of individual manuals.
- C. Insert index tabs labeled with the respective piece of equipment to separate individual manuals.
- D. Provide a Table of Contents at the front of each volume showing the equipment items in the order in which they appear in the volume. Each equipment items shall include the functional name, applicable specifications section, and the plan listing, if any.
- E. The preventive maintenance schedule shall be bound in the front of each section immediately following the index tab sheet. The schedule shall be identified with respect to the piece of equipment it is referring to.
- F. Sheet Size: 8-1/2 x 11 sheets.
- G. Drawings may be on 11 x 17-inch sheets folded to 8-1/2 x 11 inches.
- H. Engrave on covers and end of binder, title OPERATIONS AND MAINTENANCE INSTRUCTIONS, name of Project, DEP's project number, date of Contract, and volume number with subject matter of contents, and Construction Manager's name.

FORM 017823-1      Page 1 of 4 CONTRACTOR SUBMITTAL FORM			
TO:      (Construction Manager) (Address) (City, State, Zip) (Attn:)		DATE: SPECIFICATION SECTION TITLE: SECTION NO.: MANUFACTURER/ VENDOR:	
FROM: (Contractor) (Address) (City, State, Zip)		NO. OF COPIES SUBMITTED TO CONSTRUCTION MANAGER: SIGNATURE OF CONTRACTOR:	
GENTLEMEN: We have checked the O&M manual submittal dated _____, 20__, and have found it to be in accordance with the requirements of Specification Section 017823 as noted below.			
FORMAT Size:    8-1/2 x 11 or 11 x 17 Paper:  20-lb minimum Text:    Printed data/neatly typed Drawings:      Standard size bound in text; in text-size labeled envelopes Tabbed Section Dividers Cover Label:    Title Project name Building/structure ID Equipment name Specification section Binders:         3-ring			

FORM 017823-1      Page 2 of 4 CONTRACTOR SUBMITTAL FORM			
Provided	Not Applicable	Page No.	
3.01 GENERAL CONTENTS			
			A. Section number - one specification only
			B. Title Page
			1. Title
			2. Project title
			3. Building/structure ID
			4. Equipment name
			5. Contractor ID
			6. Subcontractor ID
			7. Purchase order data
			8. Manufacturer ID
			9. Service/parts supplier ID
			C. Product List
			D. Table of Contents
			E. Tabbed Sections
			F. Pertinent data sheets
			1. Annotated as needed
			G. Text
			1. Pertinent to project
			2. Annotated
			H. Drawings
			1. Supplement text
			a. Illustrate product and components
			b. Relations of equipment systems
			c. Control and flow diagrams
			2. Actual drawing of project equipment

FORM 017823-1      Page 3 of 4 CONTRACTOR SUBMITTAL FORM			
Provided	Not Applicable	Page No.	
3.01 GENERAL CONTENTS			
			I. Special Information
			1. Interrelationships of equipment and components
			2. Instructions and procedures provided
			3. Instructions organized in consistent format
			4. Instructions in logical sequence
			5. Glossary
			J. Warranty, Bond, Service Contract
3.02 SPECIFIC CONTENTS (EQUIPMENT/SYSTEMS ONLY)			
			A. For each item of equipment
			1. Complete Form 2 to Section 017823
			2. Description of Unit and Components
			a. Equipment functions
			b. Normal operating characteristics
			c. Limiting conditions
			d. Performance curves
			e. Engineering data
			f. Test data
			g. Replaceable parts list (with numbers)
			h. Nameplate data
			i. P&ID numbers
			3. Operating Procedures
			a. Startup, break-in
			b. Routine/normal operation
			c. Regulation and control
			d. Stopping and shutdown
			e. Emergency



FORM 017823-1      Page 4 of 4 CONTRACTOR SUBMITTAL FORM			
Provided	Not Applicable	Page No.	
3.02 SPECIFIC CONTENTS (EQUIPMENT/SYSTEMS ONLY)			
			3. Operating Procedures (continued)
			f. Seasonal operation
			g. Special instructions
			4. Maintenance Procedures
			a. Routine/normal instructions
			b. Troubleshooting guide
			c. Disassembly/repair/assembly
			d. Alignment, adjusting and checking instructions
			5. Servicing and Lubrication
			a. List of lubricants
			b. Lubrication schedule
			c. Maintenance schedule
			6. Safety Precautions/Features
			7. Sequence of Operation of Controls
			8. Assembly Drawings
			9. Parts List and Illustrations
			a. Predicted life
			b. Spare parts list
			10. Control Diagrams/Schematics
			11. Bill of Materials
			12. Other Data as Required

FORM 017823-2      Page 1 of 4			
EQUIPMENT DATA FORM			
PROJECT NAME			
CONTRACT NO.			
CONTRACTOR			
EQUIPMENT NO.		ASSET NO.*	
DESCRIPTION		MAINT. NO.*	
LOCATION			
MANUFACTURER			
PURCHASED FROM			
VENDOR ORDER NO.		PURCHASE \$	
DATE OF PURCHASE			
LOCAL SUPPLIER			
ADDRESS			
PHONE NO.			
MODEL NO.			
NO. OF UNITS		SERIAL NOS.	
*By Owner			

FORM 017823-2      Page 2 of 4 EQUIPMENT DATA FORM			
NAMEPLATE DATA			
ELECTRIC MOTOR		PUMP/HVAC UNIT	
MANUFACTURER		MANUFACTURER	
TYPE	[ ] AC [ ] DC	TYPE	
HORSEPOWER		SIZE	
RPM		CAPACITY	
VOLTAGE		PRESSURE	
AMPERAGE		ROTATION	
PHASE		IMPELLER SIZE	
FRAME		IMPELLER MATERIAL	
DRIVE/REDUCER		OTHER (I&C)	
MANUFACTURER		MANUFACTURER	
TYPE	[ ] GEAR [ ] V-BELT [ ] CHAIN [ ] VARIDRIVE	TYPE	
		SIZE	
SERVICE FACTOR		CAPACITY	
RATIO		RANGE	

[illegible]

FORM 017823-2      Page 4 of 4 EQUIPMENT DATA FORM				
LUBRICANT/RECOMMENDED SPARE PARTS LIST				
EQUIPMENT NO.		ASSET NO.*		
DESCRIPTION		MAINT. NO.*		
LUBRICANT LIST				
REFERENCE SYMBOL	LUBRICANT TYPE (MILITARY STANDARD)	RECOMMENDED LUBRICANT AND MANUFACTURER		
List symbols in "Maintenance Operation" (Page 3).	List general lubricant type.	List specific lubricant name, viscosity, and manufacturer.		
RECOMMENDED SPARE PARTS LIST				
PART NO. **	DESCRIPTION	UNIT	QUANTITY	UNIT COST
ADDITIONAL DATA AND REMARKS				
<p>* By Owner</p> <p>** Identify parts provided by this contract with two asterisks.</p> <p>Note: Attach additional sheets if necessary; identify each sheet at top with equipment number and description.</p>				

END OF SECTION 017823

## SECTION 020120 - PROTECTING EXISTING UNDERGROUND UTILITIES

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Protecting existing underground utilities.
  - 1. Removing and plugging abandoned lines.
  - 2. Compaction.
  - 3. Alternative support methods.
  - 4. Protecting thrust blocks.

#### 1.02 REFERENCES

- A. ASTM International (ASTM):
  - 1. C425: Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
  - 2. C700: Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.

#### 1.03 DEFINITIONS

- A. Controlled Low Strength Fill: Refer to Section 033400.
- B. Class C Concrete: Refer to Section 033000.

#### 1.04 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300:
  - 1. Record drawings to include record survey coordinates and elevations.
  - 2. Proposed locations for test pits.

#### 1.05 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.

## 1.06 PROJECT/SITE CONDITIONS

- A. Pipelines will be indicated on the drawings, but the right is reserved to the Construction Manager to make such modifications in locations as may be found desirable to avoid interference with existing utilities.

## 1.07 MEASUREMENT AND PAYMENT

- A. No separate payment shall be made for Protecting Underground Utilities. Payment shall be included in the unit price or lump sum price for the payment item requiring utility protection, in accordance with Section 012901.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Except as indicated, or as specifically reviewed and approved by the Construction Manager, where existing utilities to remain must be removed, reconstruct utilities with new material of the same size, type, and quality as that removed.
- B. Vitrified Clay Sewer Pipe and Couplings: For pipe 8 inches or less in diameter, replace with plain-end pipe conforming to ASTM C700.
  - 1. Compression Couplings: ASTM C425, compression couplings.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Notify Construction Manager and contact New Jersey One Call at 811 at least 72 hours before digging operations are scheduled to begin.
- B. Test Pits: Excavate test pits to field verify the locations, depth of bury, diameter, and pipe material of existing underground utilities at crossings and at tie-in points before ordering materials or commencing excavation. Immediately notify the Construction Manager if conflicts are encountered.

### 3.02 PREPARATION

- A. Where utilities are parallel to or cross work, but do not conflict with work, notify the utility owner at least 48 hours in advance of construction at the crossing. Coordinate the construction schedule with the utility owner.

### 3.03 PROCEDURES

- A. Protect in Place: Protect utilities in place, unless abandoned, and maintain the utility in service, unless otherwise indicated or specified.
- B. Damage to Utilities to Remain: If existing utilities to remain are damaged, immediately notify utility owner, and repair to owner's satisfaction.

### 3.04 COMPACTION

- A. Protecting Existing Utilities:
  - 1. Backfill and compact under and around utilities. Compaction shall conform to Section 312333.
  - 2. Where compaction cannot adequately be performed around utility due to the presence of encroaching existing utilities, utilize controlled low strength fill unless otherwise directed.

### 3.05 PROTECTION OF THRUST BLOCKS

- A. Protect thrust blocks on existing waterlines or sewer force mains in place or shore to resist the thrust by a means accepted by the Construction Manager and reconstruct. If the thrust blocks are exposed or rendered to be ineffective in the opinion of the Construction Manager, reconstruct them to bear against firm unexcavated or backfill material.
  - 1. Provide firm support by backfilling affected portion of the trench for a distance of 2 feet on each side of the thrust block to be reconstructed from the pipe bedding to the pavement subgrade with either:
    - a. Controlled low strength fill, or
    - b. Native material compacted to a relative compaction of 95 percent. See Section 312333 for compaction requirements.
  - 2. Excavate the backfill material for construction of the thrust block.
  - 3. Test compaction of the backfill material before pouring any concrete thrust block. Concrete shall conform to Section 033000.

### 3.06 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 020120



NO TEXT ON THIS PAGE

## SECTION 020804 - DUST AND VOLATILE EMISSION CONTROL

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Contractor shall conduct excavation operations and maintain the Project site in a manner that minimizes the creation and dispersion of dust and limits volatile organic compound (VOC) emissions. Dust control shall be used during the entire Project. VOC emission control shall be used during contaminated soil excavation and handling as directed by the Construction Manager. The Contractor is responsible for control of dust and VOC Emissions at all times during Contract, 24 hours a day, seven (7) days a week, including nonworking hours, weekends, and holidays.
- B. Monitor perimeter and exclusion zone air quality to ensure compliance with applicable regulations and requirements.
- C. The purpose of these measures is to minimize the potential exposure of non-Project personnel to airborne contaminants emanating from Project activities.

#### 1.02 SUBMITTALS

- A. An area wide monitoring program shall be developed as part of the control system to monitor atmospheric releases and impact on workers and local receptors. The contractor shall engage a DPMC pre-qualified air monitoring consultant or Certified Industrial Hygienist (CIH) to develop an area-wide monitoring program. Control and monitoring program should consider contaminants in soil, groundwater, and sediment that could be released during Work. Contaminants should be based on known contaminants at Recognized Environmental Concern (REC) Sites and Known Contaminated Sites (KCS) plus sampling condition in on-site soils. Action levels should be established for each contaminant of concern based on background concentrations along with Federal, State, and local regulatory requirements and guidelines.
- B. Submit a dust control and VOC emission control plan that outlines in detail sources of dust and VOCs and the measures to be implemented by the Contractor to comply with this Section, including suppression, windscreens and barriers, prevention, cleanup, and other measures. Measurement and verification process shall be clearly stated.
- C. Submit photographs of dust and VOC emission control mitigation measures to Construction Manager.

## PART 2 - PRODUCTS

### 2.01 DUST AND VOLATILE EMISSIONS CONTROL

- A. Submit product literature and Material Safety Data Sheets for dust suppression wetting agents and stabilizers and for VOC mitigation materials.
- B. Dust suppression wetting agents shall be water soluble, non-toxic, non-reactive, non-volatile, and non-foaming. Windscreens shall be a durable fabric mesh of 50 percent porosity, attached to a construction fence. Wind barriers shall be solid wood fences, solid durable fabric attached to a construction fence, or other solid barriers intended to block the passage of wind.
- C. Covers for stockpiles shall be plastic tarps or other material covering. Contaminated soil covers are not permitted.
- D. The Contractor shall use the following materials to control VOC emissions at the Project site. All materials shall be applied by the Contractor in accordance with the manufacturer's recommendations.
  - 1. The Contractor shall provide and apply foam concentrate that is designed for, and is capable of suppressing VOC emissions at the project site. The Contractor shall submit product information to the Construction Manager for review and approval.
  - 2. The Contractor shall provide foam stabilizer that is designed to extend the duration of effectiveness of the foam concentrate in areas where prolonged emission suppression is required. Foam stabilizer shall not contain per- and polyfluoroalkyl substances (PFAS), perfluorooctanesulfonic acid (PFOS), and/or perfluorononanoic acid (PFNA). The Contractor shall submit product information to the Construction Manager for approval.

## PART 3 - EXECUTION

### 3.01 DUST AND VOLATILE EMISSIONS CONTROL

- A. The Contractor shall apply water or other approved dust suppression materials to the site when dust control is necessary, according to all Federal, State, and local rules, regulations, and guidelines. These materials shall be applied without interfering with excavation equipment or site operations and without creating nuisance conditions such as ponding or runoff.
- B. If VOC emissions, as measured at the perimeter of the site, exceed an action level of 10 ppm total VOCs, a temporary foam blanket shall be applied to the source area. Areas where temporary foam may be necessary include the open active excavation,

the excavating bucket, and the soil stockpile. The temporary foam shall be capable of suppressing vapors for a period up to 24 hours. Permanent foam shall be applied to the open inactive excavation if warranted by VOC levels in exceedance of 10 ppm total VOCs. If the 10 ppm action level is exceeded and an open excavation exists at the completion of the work day, permanent foam capable of suppressing vapors for a period in excess of 24 hours shall be applied to the excavation. Foam application shall be made as often as necessary to maintain airborne concentrations below the action level.

END OF SECTION 020804

SECTION 021600 - EXCESS CLEAN FILL, CONTAMINATED SOIL, AND  
GROUNDWATER MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. It is essential that any contaminated soil or groundwater encountered during the Project be handled in a manner that is protective of human health, safety, and the environment and in compliance with Contract Documents and regulatory requirements.
- B. This Section describes procedures for the management of regulated material (contaminated or potentially contaminated soil and/or groundwater) that may be encountered throughout the project area. The Work shall include the excavation, handling, stockpiling, sampling, analysis, and the ultimate disposal or reuse of contaminated soil, if encountered. The Work shall also include the dewatering, treatment, sampling, analysis, and the ultimate disposal of contaminated groundwater, if encountered.
  - 1. Remove and dispose of contaminated fill, as defined in Section 012901.

1.02 REGULATORY REQUIREMENTS

- A. The Contractor shall comply with all Federal, State, and local codes, standards, ordinances, guidance, and permits, including, but not limited to, the following:
  - 1. United States Department of Labor (USDOL) OSHA 29 CFR 1910 General Industry.
  - 2. USDOL OSHA 29 CFR 1926 Safety and Health Regulations for Construction.
  - 3. United States (US) Department of Transportation (DOT) 49 CFR 171-180 and amendments.
  - 4. New Jersey DOT - Updated 2007 Standard Specifications for Road and Bridge Construction.
  - 5. Surface Water Quality Standards (NJAC 7:9B).
  - 6. Ground Water Quality Standards (NJAC 7:9C).
  - 7. New Jersey Pollutant Discharge Elimination System (NJPDES) Rules (NJAC 7:14A).
  - 8. Solid Waste Regulations (NJAC 7:26).

9. Hazardous Waste Regulations (N.J.A.C. 7:26G).
  10. Underground Storage Tanks (NJAC 7:14B).
  11. Soil Erosion and Sediment Control Act of 1975 as amended (NJAC 2:90-1.1 et seq.).
- B. The Contractor shall comply with the following if the Work involves handling of contaminated media:
1. Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C 7:26C).
  2. Remediation Standards (N.J.A.C. 7:26D).
  3. Technical Requirements for Site Remediation (N.J.A.C. 7:26E).
  4. New Jersey Department of Environmental Protection (NJDEP) - Field Sampling Procedures Manual (August 2005, as updated).
  5. Protocol for Addressing Extractable Petroleum Hydrocarbons (Version 5.0, August 9, 2010).
  6. NJDEP - Historic Fill Material Technical Guidance (April 2013).
  7. NJDEP - Linear Construction Technical Guidance (January 2012).
  8. NJDEP - Fill Material Guidance on SRP Sites (April 2015).
  9. Guidance for the Characterization of Concrete and Clean Material Certification for Recycling (January 12, 2010).
  10. The Standards for Soil Erosion and Sediment Control in New Jersey (Revised July 2017).

#### 1.03 HEALTH AND SAFETY PLAN

- A. This project shall be conducted under the requirements of Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1910 and 29 CFR 1926. The Contractor shall prepare a Site-Specific Health and Safety Plan in accordance with this Section. If contamination is documented to exist, the Health and Safety Plan shall include exposure risk.
- B. The Contractor shall provide the initial 40 HOUR initial training and annual eight (8) hour training and medical monitoring for all Contractor employees scheduled to work in or with regulated material as specified in OSHA 29 CFR 1910.

#### 1.04 MATERIALS HANDLING PLAN

- A. If contaminated soil and/or groundwater will be handled during construction, the Contractor shall prepare a Materials Handling Plan (MHP), which shall include the following information:
1. Stockpiling/Staging Requirements and Procedures for clean fill and for excavated wastes.
    - a. Prepare stockpile location in accordance with the approved soil erosion and sediment control plans.
  2. Spill Protection Requirements
  3. Waste Characterization
    - a. Regulated material consists of material of whatever nature encountered that is classified as regulated or hazardous in the NJDEP Solid Waste Regulations, N.J.A.C 7:26-1 et seq. or N.J.A.C 7:26-8.
    - b. Submit the results of material sampling and analysis, waste facility applications and acceptance documentation, and fee payment requirements to the Construction Manager at least 15 days before planned removal of regulated material.
  4. Off-Site Disposal and Transportation
    - a. Disposal procedure and location the disposal facility.
  5. Waste Disposal Documentation
    - a. Comply with the requirements specified in Section 014300.
    - b. Submit to the Construction Manager a bill of lading for each truckload of regulated material removed from the Project Limits. Ensure that the bill of lading and waste manifest include the following information:
      - i. Transport subcontractor name, address, permit number, and telephone number.
      - ii. Type and quantity of material removed.
      - iii. Weight of vehicle with weigh slip.
      - iv. Recycling or disposal facility name, address, permit number, and telephone number.

- v. Date removed from the Project Limits.
- vi. Signature of transport vehicle operator.
- c. The Construction Manager will sign the bills of lading for the DEP as the generator of the Project Limits. Submit one (1) copy of the bill of lading to the Construction Manager by the end of each working day that the transport vehicle leaves the site. For hazardous regulated material, the manifest will verify the type and quantity of hazardous regulated material being transported off-site.
- d. The Uniform Hazardous Waste Manifests are required by the Federal Resource Conservation and Recovery Act (RCRA) (40 CFR Subpart B Parts 262.20 to 262.23) and N.J.A.C 7:26G for all off-site shipments of hazardous regulated materials.
  - i. The DEP is the generator of the waste. The DEP will obtain an EPA Identification Number (EPA ID#) and supply this information to the Construction Manager for inclusion on the Uniform Hazardous Waste Manifest. The Construction Manager will provide the Contractor with an EPA ID# if the Project contains hazardous regulated material.
  - ii. Complete the manifest form in accordance with all applicable regulations and mail to the Bureau of Environmental Program Resources at 951 Parkway Avenue, PO Box 600, Trenton, NJ 08625-0600 to ensure that the “final disposition” (TSD to Generator) copy of the manifest is mailed back to the office responsible for the record keeping requirements.
  - iii. The Construction Manager will keep a copy of the original manifest for the Contract files. The Bureau of Environmental Program Resources will distribute the original manifests in accordance with the regulations and also for retention of the manifests per regulatory requirements.
  - iv. The Contractor is responsible for all manifest discrepancies. Immediately report discrepancies to the Construction Manager and resolve to the satisfaction of the Construction Manager. The Construction Manager will forward a copy of manifest discrepancy letters to the Bureau of Environmental Program Resources.
- e. Once the material leaves the project limits, the Contractor is responsible for ensuring that the handling procedures, placement methods, and disposal location are according to applicable Federal, State, and local laws, rules, and requirements, including permits that may be issued for the



project. If the disposal of contaminated material results in a violation notice from any governmental authority, immediately correct the violation. Indemnify and defend the DEP for any violation incurred, penalty assessed, or any claims, suits, losses, demands or damages of whatever kind or nature arising out of, or claimed to arise out of, the improper disposal of excess materials. If the Contractor does not correct the violation to the satisfaction of the governmental authority that issued the violation notice, the Contractor is responsible for assessed penalties including costs incurred by the DEP to remedy the violations.

6. Backfilling and Capping
  7. Decontamination Procedure
  8. Contaminated Groundwater Management Procedures
  9. Emergency Response Procedures
- B. A description of the MHP components is provided in the following paragraphs. The MHP shall be submitted as a draft for review by the Construction Manager. The MHP will incorporate all comments and then be finalized for approval.
1. Contaminated Soil Management Procedures.
  2. Contaminated Groundwater Management Procedures.
  3. Procedures for Handling Free Product, if encountered.
  4. Spill Protection and Prevention Procedures.
  5. Excavated materials from the Project will be characterized and disposed at a licensed disposal/recycling facility.
  6. Stockpiling/Staging Requirements and Procedures
    - a. If the contaminated soil is to be stockpiled, the Contractor shall coordinate with the Construction Manager to determine the best option for the temporary stockpiling/staging of materials. The Contractor shall obtain approval from the Construction Manager prior to moving contaminated soil within the site (away from the immediate work location) for disposal/storage.
    - b. Stockpiled materials shall be protected in accordance with any permit issued for this project, including approved soil erosion and sediment control plans.

- i. Place regulated materials in stockpile location. Do not place regulated materials in the same stockpile with any other materials.
  - ii. Stockpiles cannot exceed the dimensions given in the soil erosion and sediment control permit plans.
  - iii. If the materials are left in place more than 30 days, the surface of the stockpile shall be seeded and stabilized.
  - iv. Remove and dispose of all materials that are classified as regulated or hazardous after the Construction Manager approves the submittals.
- c. All proposed stockpile locations (temporary or longer-term) for contaminated material shall be identified on a site plan and presented to the Construction Manager for approval two (2) weeks in advance of stockpiling activities. In the event that materials requiring off-site transportation are generated that have not been fully characterized for waste disposal, the Contractor shall coordinate with the Construction Manager to determine the best options for the temporary storage of this material. Once a designated staging area is approved by the Construction Manager, these soils shall be stockpiled in accordance with the following minimum handling criteria:
  - i. Excavation, material handling and stockpiling shall be performed in a manner that minimizes the mixing of materials containing different levels and types of contamination in accordance with N.J.A.C. 7:26E-5.2(b).
  - ii. No re-handling of soils in designated, temporary stockpile storage areas shall be carried out without the approval and presence of the Construction Manager. No material shall be removed without suitable segregation, stockpiling, sampling, testing and characterization and completion of a bill of lading and/or hazardous or non-hazardous waste manifest.
  - iii. The transfer of all materials from excavation(s) to the designated staging area shall be conducted in such a manner as to not allow the spread of contaminated materials. Transfer of contaminated soils shall be performed in accordance with all applicable waste transportation and management requirements. At a minimum, all soils transported by truck shall be covered to minimize fugitive dust.
  - iv. Access shall be restricted to authorized personnel only.

7. Stockpiled contaminated materials shall be placed on an impervious surface lined with polyethylene sheeting (with a minimum thickness of 20 mils) within the designated temporary stockpile storage areas. Excavated material shall be stockpiled. The stockpile will be securely covered with polyethylene sheeting at the end of each work day and maintained throughout the stockpile period to prevent wind dispersion and contact with precipitation. If dust suppression becomes necessary during the soil stockpiling, at the discretion of the Construction Manager, exposed soils shall be wetted.
8. If any petroleum contaminated soil is encountered, the soil shall be removed from the excavation to the extent practical and necessary to complete the proposed Work. The petroleum contaminated soil shall be stockpiled separate from other soil.
9. All material entering or leaving the staging area shall be under the direct supervision of the Contractor. Stockpiles shall be inspected by the Contractor at a minimum of once each week and after every storm event. Inspection results will be recorded in a Daily Log to be maintained at the site and available for inspection by the Construction Manager or designee. A copy of the inspection log will be provided to the Construction Manager with other weekly submittals.
10. Stockpile areas will be graded to shed water such that storm water runoff is diverted from stockpiled materials and hay bale berms/silt fencing will be placed around the perimeter of the area. Straw bales will be used as needed near catch basins, surface waters and other discharge points. Stockpile slopes will be no steeper than 1 horizontal to 1 vertical (1 to 1).
11. Soil and groundwater movement on site will be recorded on a Daily Soil Tracking Log to record all incoming and outgoing material for the duration of disposal activities. The log will include up-to-date records that identify the origin of each waste stream in the staging area; indicate the date the materials were received; list the specific storage location; indicate the date the materials were transported from the storage area to the final destination; and the location of the final destination.

#### 1.05 WASTE CHARACTERIZATION

##### A. Waste Characterization

1. For off-site disposal purposes, the Contractor is responsible for collecting representative samples of the contaminated soil and submitting the samples to a New Jersey State certified laboratory for analysis. The Contractor will sample and analyze material in strict accordance with the most recent versions of the NJDEP Field Sampling Procedures Manual. The disposal facility will dictate the waste characterization analytical parameters and sampling frequency.

2. The Contractor shall determine the process for waste characterization. If the Contractor decides to sample soil in areas designated for removal prior to excavation, the Contractor shall provide a sampling and analysis plan for in-situ waste characterization that meets the licensed disposal/recycling facility requirements. If the Contractor decides to stockpile the soil prior to disposal, the Contractor shall provide a sampling and analysis plan for stockpiled soil waste characterization that meets the licensed disposal/recycling facility requirements. The selection between in-situ and stockpile waste characterization may be dictated by the ability to stockpile the soil within the Project area pending disposal.
3. The results of the waste characterization analysis will determine whether the contaminated soil is hazardous or non-hazardous (i.e., ID-27) waste.

B. Off-Site Disposal and Transportation

1. Prior to disposal activities, the Contractor will ensure that all operations associated with disposal/recycling of materials are in compliance with applicable Federal and New Jersey Department of Transportation regulations, as well as all applicable local requirements. The Contractor shall hold an A-901 license for the collection or disposal of solid or hazardous waste and a Certificate of Public Convenience and Necessity (CPCN) for solid waste, pursuant to NJSA 13:1E-126 et. seq. and NJSA 48:13A-1 et. seq. Transporters of solid or hazardous waste shall also have an A-901 license and CPCN.
2. The Contractor will specify the proposed transportation/storage/disposal (TSD) facility. A commitment letter will be obtained from the TSD facility indicating the capacity to accept the type and volume of waste material and stating that it will be open for business during the Contract duration to accept the volume of waste materials. The Contractor will ensure that the hauler of record and TSD facility possess the proper licenses, credentials and experience to transport and dispose of the subject material.
3. The Contractor will provide the Construction Manager with a list of permitted alternative TSD facilities to be utilized in the event the approved facility ceases to accept waste materials generated under this contract. The DEP will not bear any additional costs if the alternative TSD facility is used for waste disposal.
4. The Contractor will maintain a Daily Soil Tracking Log that will record the source location, type, quantity, and characteristics of all excavated, stockpiled, and transported regulated material.
5. The Contractor shall comply with all applicable regulations, including, but not limited to:
  - a. Vehicle placard requirements.

- b. Container requirements.
  - c. Manifest requirements.
  - d. Responsibilities and requirements for collectors and haulers of hazardous and non-hazardous solid waste.
  - e. Posted weight limitations on roads and bridges.
  - f. Other local restrictions on storage and transportation of waste/debris.
6. Any material deemed hazardous shall be removed from the site within 90 days as per NJDEP regulations (NJAC 7:26). No hazardous material shall be reused.
  7. Excess contaminated non-hazardous soil must be disposed off-site within 180 days of excavation as per NJDEP regulations (NJAC 7:26). The licensed hauler shall transport the contaminated soil directly to the selected disposal facility. A non-hazardous bill-of-lading (BOL) will be used to document the transportation and final disposition of contaminated soil during construction. The DEP will be identified as the generator associated with the BOL and the DEP or designee will sign each BOL. The soil designated for off-site disposal will be trucked off-site to the selected licensed TSD facility.
  8. Containers of waste will be immediately sealed as each container is filled. The Contractor shall continuously maintain custody of all non-hazardous and hazardous material generated at the Work site including security, short term storage, transportation, and disposition until custody is transferred to the off-site TSD facility. All vehicles used to transport material to off-site facilities shall be covered to prevent loss soil during transport.
  9. Should the disposal facility reject material transported from the site, and said material is returned to the Project site, the material shall be separately stockpiled in an area that does not “cross contaminate” other materials, compromise construction activities, or violate existing permits and approvals. The Contractor, in consultation with the DEP, shall assess said stockpiled material for disposal options.
  10. Potentially contaminated soil designated for additional testing will be stockpiled in accordance with the Materials Handling Plan. The types and frequencies of tests to be conducted will be based on knowledge of the material, previous pre-characterization and waste characterization data, conditions encountered during excavation, and the permit requirements of the receiving recycling or disposal facility.
  11. The licensed hauler shall transport the contaminated material to the disposal/recycling facility with no unauthorized stops in between, except as

required by regulatory authority. The hauler shall use appropriate vehicles and operating practices to prevent spillage or leakage from occurring during transport. Remove excess soil adhering to the wheels or under carriage of the vehicles before leaving the Project Limits. If soil or water escapes to the public roads, immediately clean the road to restore it to the original condition and immediately notify the Construction Manager. Do not transport contaminated material over public roads if they contain free liquid or are sufficiently wet to be potentially flowable during transport.

C. Waste Disposal Documentation

1. The Contractor will maintain copies of all documentation and submit copies of each of the following to the Construction Manager:
  - a. Waste characterization sampling logs, sample location maps, and laboratory analysis reports;
  - b. Documentation of the disposal facility's regulatory permit to accept waste and specific disposal analytical/procedural requirements criteria for accepting waste;
  - c. Documentation of the disposal facility's acceptance of the regulated material prior to transporting any material off site;
  - d. Transportation manifests/bills of lading; and,
  - e. Waste disposal recycling documentation (e.g., weight tickets) in hard copy and electronic (spreadsheet) formats from the receiving facility.
2. Copies of each manifest/bill of lading shall be submitted to the Construction Manager within seven (7) business days following transportation from the site, and within five (5) business days after delivery to the disposal facility. All manifests/bills of lading must be fully executed by the disposal facility for this task to be considered complete.
3. Immediately submit written notification to the Construction Manager if problems arise, regarding the facility chosen to accept the contaminated material for off-site management, that would require the return of waste, or if the chosen facility has violated any environmental regulation that may result in regulatory enforcement action. Propose an alternate disposal facility, and obtain the Construction Manager's written approval of off-site management at such facility.

D. Backfilling and Capping

1. Imported backfill material must comply with the NJDEP's April 2015 *Fill Material Guidance for SRP Sites*. The Contractor shall submit the clean fill source and supporting documentation to the Construction Manager prior to the start of construction to demonstrate it meets certified clean fill requirements. All fill materials brought on-site shall comply with current NJDEP Soil Remediation Standards for Residential properties.
2. Place clean fill materials in stockpile location. Do not place clean fill in the same stockpile with any other materials.
3. Stockpiles cannot exceed the dimensions given in the soil erosion and sediment control permit plans.
4. Fill materials
  - a. Suitable Material: Material from on-site excavation that meets all of the specified requirements for its intended use, but is excess of the amount of material required for the intended use. Wet subgrade material which meets other requirements for suitable material is suitable.
  - b. Unsuitable Material: Material that fails to meet requirements for suitable materials; or contains any of the following:
    - i. Organic clay, organic silt, or peat; as defined in ASTM D2487.
    - ii. Vegetation, wood, roots, leaves, and organic, degradable material.
    - iii. Stones or rock fragments over 6 inches in any dimension.
    - iv. Porous biodegradable matter, excavated pavement, construction debris, rubbish, or refuse.
    - v. Ice, snow, frost, or frozen soil particles.

E. Decontamination Procedures

1. The Contractor will designate an area for implementing decontamination procedures (e.g., steam cleaning, manual scrubbing, etc.) for all equipment contacting contaminated material and vehicles leaving the site in accordance with Section 025100. The Contractor will remove soil from the truck tires as needed to ensure that contamination is not tracked off site. In addition, all roads in the construction area will be swept to keep the roadway free of dirt and debris. Recovered wastes resulting from decontamination shall be properly characterized, transported and disposed off-site in accordance with applicable Federal, State, and local requirements.

F. Contaminated Groundwater Management Procedures

1. Groundwater dewatering during construction will be necessary. Groundwater throughout the project is known to be or assumed to be contaminated. Thus, the contaminated dewatering fluids shall be removed from the excavation and disposed properly.
2. The Contractor shall select the groundwater disposal method based on anticipated dewatering rates, treatment options, proximity of storm sewers and surface water bodies, the permeability of the subsurface materials, and groundwater quality as determined by an engineer engaged by the Contractor. The Pollution Prevention Control (PPC) Plan shall document the method for handling, treatment, and disposal of contaminated groundwater.
3. The potential options for managing the generated groundwater are:
  - a. Discharge to surface water;
  - b. Discharge to groundwater;
  - c. Discharge to a sanitary sewer; and
  - d. Transportation to a permitted treatment facility.
4. Discharge to surface water will require a New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Surface Water (DSW) Permit issued by the NJDEP Division of Water Quality. The NJDEP provides a General Groundwater Remediation Cleanup (BGR) permit for non-petroleum contamination, which authorizes discharges of treated groundwater to surface waters.
5. NJPDES Discharge to Ground Water (DGW) Permits can also be issued by the NJDEP Site Remediation Program.
6. Discharge to a sanitary sewer will require a permit from the receiving utility. The Contractor may be required to obtain a Treatment Works Approval (TWA) prior to discharge to public utility as well depending on groundwater characteristics. Groundwater should be considered contaminated until confirmed via sampling.
7. If the dewatering effluent requires treatment prior to discharge to surface water or discharge to groundwater, it is likely that a Treatment Works Approval will be required from the NJDEP Division of Water Quality prior to application for the discharge permit.



8. The Contractor shall apply for and obtain a Construction Dewatering General Permit (B7) from the NJDEP Division of Water Quality for the authorization of a short-term groundwater discharge for lowering the groundwater table during construction related dewatering of uncontaminated groundwater. Discharges associated with industrial processes, site remediation activities, and sanitary sewerage systems are not covered under the General Permit B7.
9. The Contractor shall also apply for and obtain a Dewatering Permit-by-Rule or Water Allocation Permit from the NJDEP's Division of Water Supply and Geoscience, as needed, when the pumping or lowering of any groundwater at an average rate of 100,000 gallons per day, over a 30-day period.
10. Permitting information can be found on the following NJDEP permitting webpages:
  - a. NJDEP BGR DSW Permitting: [http://www.nj.gov/dep/dwq/gp\\_bgr.htm](http://www.nj.gov/dep/dwq/gp_bgr.htm)
  - b. NJDEP DGW Permitting: [http://www.nj.gov/dep/dwq/dgw\\_home.htm](http://www.nj.gov/dep/dwq/dgw_home.htm)
  - c. NJDEP Treatment Works Approval: <http://www.nj.gov/dep/dwq/twa.htm>
  - d. NJDEP Dewatering Permitting:  
[http://www.nj.gov/dep/watersupply/a\\_wtable.html](http://www.nj.gov/dep/watersupply/a_wtable.html)
  - e. NJDEP Air Permitting: <https://www.nj.gov/dep/aqm/rules27.html>
11. At all times, the Contractor shall maintain and operate proper and adequate dewatering in order to keep the construction site dry and in such condition that construction of structures and placement and compaction of fill and backfill may proceed unhindered by saturation of the area. The Contractor shall provide and maintain pumps, well points, sumps, suction and discharge lines, or other dewatering system components necessary to convey all water away from excavations. The Contractor shall prevent surface water from flooding or spilling into excavations.
12. The Contractor shall obtain any local and State permits required for construction dewatering as discussed above. Cost of permits shall be paid by the Contractor. The Contractor shall adhere to all terms of the environmental permits.
13. All discharges from dewatering activities to surface waters, groundwater, or storm sewers shall be free of sediments. The Contractor shall collect effluent samples from the treatment system at the frequency required by the permit and analyze the samples for the parameters specified in the permit. The Contractor shall provide the sample results to the Construction Manager to document that the discharge meets the permit limits.

PART 2 - PRODUCTS  
Not Used

PART 3 – EXECUTION  
Not Used

END OF SECTION 021600

## SECTION 023214 - VIBRATION AND NOISE MONITORING

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This specifies requirements for furnishing all labor, materials, equipment to perform all activities related to vibration and noise monitoring as specified here in.
  - 1. Vibration monitoring associated with the installation of earthwork and/or installation of piles, pipes and sheet piles.
  - 2. Provide vibration monitoring during vibration inducing construction activities within 150 feet of any structure. The Contractor shall provide seismographs at locations determined in the vibration monitoring plan as approved by the Construction Manager.
  - 3. Furnish, install, maintain, monitor, and remove vibration monitoring equipment as specified herein.
  - 4. Monitor vibrations and noise levels originating from construction activities as indicated herein.
  - 5. Modify construction operation procedures if existing operation creates vibration or noise exceedances as specified herein.
  - 6. Provide noise monitoring during all construction activities.
  - 7. Furnish, install, maintain, monitor, and remove noise monitoring equipment as specified herein

#### 1.02 REFERENCES

- A. Unless otherwise noted, the latest edition of the following codes and standards shall govern this work. If any conflicts exist between these codes and standards the more restrictive requirements shall govern.
- B. American Society for Testing and Materials International (ASTM)
  - 1. ASTM E90: Standard Test Method for Laboratory Measurement of Air-borne Sound Transmission Loss of Building Partitions and Elements.
  - 2. ASTM C423: Standard Test Methods for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

- C. Federal Highway Administration (FHWA), FHWA-HEP-06-02: Construction Noise Handbook.

#### 1.03 RELATED SECTIONS

- A. General Conditions 4.7 – Shop Drawings and Other Submittals.
- B. Section 012901 – Measurement and Payment.
- C. Section 014300 - Quality Requirements.
- D. Section 016100 – Control of Materials
- E. Section 017423 - Cleaning Up.
- F. Section 017700 - Contract Closeout.

#### 1.04 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment: Section 012901

#### 1.05 SUBMITTALS

- A. Submit the following qualifications in accordance with General Conditions 4.7.
  - 1. Submit the following qualifications four (4) weeks prior to the start of any construction activities.
    - a. Qualifications of the Contractor's vibration consulting firm, as specified in Paragraph 1.06.C.
    - b. Qualifications of the Contractor's Acoustical Engineer, as specified in Paragraph 1.06.C.
    - c. Qualifications of the Contractor's Engineering Technician, as specified in Paragraph 1.06.D.
- B. At least five (5) weeks prior to the start of any construction activities provide Vibration and Noise Monitoring Plans, prepared by the Vibration consulting firm and/or the Acoustical Engineer, and installation details specified herein. This shall include but not limited to the following:
  - 1. Drawings showing the layout and locations of instruments, including wire diagrams for power and/or communications. Power lines carrying 110 volts or more shall be enclosed in conduits of the size and materials required by the NEC.
  - 2. The scheduled start date and length of construction activities which require vibration and noise monitoring.

3. Instrument identification numbers.
  4. Details of supports, fixtures, etc. required for installation of instruments and associated systems.
  5. The location of any underground utilities in proximity to the construction operation.
  6. Proposed construction method(s). The duration and type of equipment to be used during construction and an explanation of how the vibrations will be maintained at an acceptable level.
    - a. Identify equipment location and processes.
  7. Identification of the zones of potential construction influence for vibrations and noise.
  8. Vibration and noise sensitive buildings near the Project.
  9. Vibration Calculations: Prepare calculations of maximum peak particle velocity vibration level expected at the nearest residential, commercial, and all other structures and railways.
  10. Noise Calculations: prepare calculations of one-hour  $L_{eq}$  noise levels expected at the nearest residential and commercial buildings.
  11. Update the Vibration and Noise Monitoring plans at least in three (3) month intervals from the initial acceptance date.
  12. Vibration and Noise reduction Methods: To the extent required to meet the ground vibration peak particle velocity, ground-borne noise (interior) limits, and airborne (exterior) noise limits specified herein, modify construction operations to reduce vibration and noise.
  13. Manufacturers materials and equipment data sheets.
  14. Design of noise mitigation strategies, methods, procedures, and technology and locations and types of noise reduction measures that may be required.
  15. Location of noise sensitive locations and any specified measures to be undertaken to minimize the impact of work on these locations.
- C. Provide vibration and noise measurement equipment calibration certificates for equipment used on site by the Contractor.
- D. The procedure for tracking peak particle velocity throughout construction activities (e.g., Pile Driving Operations: pile tip vs. vibrations may be correlated through time of day. A

record of the time of day at each depth interval, included on the pile driving records, would be required to correlate to a time-based readout of peak particle velocity).

- E. Equipment Sound Level Data Reporting Form for each item of construction equipment to be used.
- F. Laboratory calibration conformance certificate for all noise measuring equipment used by the Contractor prior to performing any noise level monitoring. Submit updated certificates following subsequent yearly calibrations, or upon completion of repairs to the instrument, for the duration of the Contract.
- G. Manufactures Certificate of Compliance that equipment is noise attenuated.
- H. Daily reports, while performing vibration-inducing operations, detailing each source of vibration, location of monitoring, and the vibration records highlighting peak particle velocities. All daily reports shall be stamped and signed by the Vibration Consulting Firm's Professional Engineer and provided within 24 hours of the end of each day's activities indicating a site plan drawing showing the location of the instrument and maximum and average vibration recorded during the work day period.
- I. Contractor shall submit a final report summarizing the collected data upon completion of each construction operation.

#### 1.06 QUALITY ASSURANCE

- A. Provide in accordance with Section 014300.
- B. Contractor's or Contractor's Vibration consultant and/or Acoustical Engineer, responsible for furnishing and installing all vibration and noise instruments, including all equipment specified here in, maintaining the instruments, as required, and interpreting all data provided or collected shall have the qualifications specified here in. The personnel may be employed by the contractor or may be employed by a specialized consulting firm.
- C. Vibration and/or Acoustical Engineer Qualifications:
  - 1. A State of New Jersey Licensed Professional Engineer responsible for designing and monitoring vibration and noise specified here in and interpretation of the data.
  - 2. Not less than six (6) years' experience in the installation and monitoring of the vibration and noise instrumentation specified here in.
  - 3. Completed not less than five (5) successful vibration and noise installation and monitoring projects of similar scope and magnitude within the past ten (10) years.
  - 4. Shall be onsite to supervise and conduct the pre/post installations of each type of instrumentation. The qualified engineer shall be onsite and supervise the first five (5) installations of each type of instrument, shall oversee and establish the formal

initial readings, shall oversee interpretation of all collected and provide vibration and noise data.

D. Engineering Technician Qualifications:

1. To be responsible full-time on site during the implementation of the vibration and noise monitoring plan.
2. Not less than three (3) years of direct field experience in the installation and monitoring of the types of vibration and noise instruments specified herein and have supervised vibration and noise monitoring programs of a similar scope and magnitude with similar work conditions.
3. Shall be available to supervise all instrument installations, establish initial readings, collect baseline data, and vibration and noise data when the acoustical engineer is not present on-site.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements specified in Section 016100.

1.08 SITE CONDITIONS

- A. Geotechnical Investigation Results Report: The report is for information only, which is part of the Contract Documents. The boring logs are included as an appendix in the report and indicate subsurface conditions encountered only at the borehole location. This report shall not be construed as to guarantee that other subsurface materials will not be present or that proportions of materials will not vary from that shown on the boring logs. The borehole locations and soil profiles are part of the Contract Drawings.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Seismographs shall be “Minimate Pro4” manufactured by Instantel Inc., or approved equal, and shall have the following minimum features:
1. Seismic Range: 0.01 to 10 inches per second with an accuracy of plus or minus 5-percent of measured peak particle velocity or better at frequencies between 4 and 125 Hertz, and with a resolution of 0.001 inch per second or less.
  2. Acoustic Range: 88 to 148 dB (L) with an accuracy and resolution of plus or minus 1 decibel.
  3. Frequency Response (plus or minus 3 decibel points) 2 to 250 Hertz.

4. Three Channels for vibration monitoring plus a fourth channel for linear or sound level microphone.
  5. Two power sources: Internal rechargeable battery and a charger and 115 volts ac. Battery must be capable of supplying power to monitor vibrations continuously for up to 24 hours.
  6. Capable of internal dynamic calibration.
  7. Computer software to perform analysis, produce reports of continuous monitoring, and to perform zero-crossing frequency analyses of waveform data on magnetic disks.
  8. Self-triggering waveforms capture mode that provides the following information: plot of waveforms, peak particle velocities, and frequency peaks.
  9. Continuous monitoring mode capable of recording events up to 10 seconds long, and histogram mode to record events continuously.
  10. All geophones shall be external to the seismograph to allow solid bolting or anchoring to surfaces with “Red Head” anchors or approved equals.
- B. Sound Level Meters provided by the Contractor shall comply with the requirements of the current revision of ANSI S1.4, Type 2 (Precision) Sound Level Meters (SLM). SLM to be capable of measuring the  $L_{max}$  and ten minute to one hour  $L_{eq}$  on the A-weighted scale required by for ground borne noise level limits.

## 2.02 NOISE CONTROL MATERIALS

- A. Noise control materials may be new or used. Used materials shall be sound and free of damage and defects and shall be of quality and condition to perform their design function. All equipment and materials specified herein will remain the property of the Contractor or Contractor’s subcontractors, vendors, and suppliers, as applicable.
- B. All construction equipment shall incorporate the latest noise attenuation features available to the manufacturer.
- C. Acoustical materials and curtains shall have a Sound Transmission Class (STC) rating of STC 30 or greater, based on sound transmission loss data according to ASTM E90. The noise absorption face of the curtain shall have a Noise Reduction Coefficient (NRC) rating of 0.85 or greater, based on sound absorption coefficient data taken according to ASTM C423.



## PART 3 - EXECUTION

### 3.01 GENERAL REQUIREMENTS

- A. Provide access to instrument locations and maintain instrument locations from damage.
- B. Perform Work within the permissible noise and vibration levels, Work Schedule limitations, and procedures provided herein, and applicable Federal, State, County, and Municipal codes, regulations, and standards.
- C. The property owners for any and all structures to be monitored for vibration with seismographs shall be notified in writing two (2) weeks in advance of any work and prior to accessing any property to install equipment.
- D. No vibration producing construction activities may be started until the appropriate instrumentation is provided by the Contractor and approved by the Construction Manager.
- E. Other than those provided as part of the Contract, the Contractor is responsible for obtaining permits, variances, equipment certifications, and other documents required.
- F. Modify vibration and noise control measures based on results of the vibration and noise measurements undertaken and any reported nuisance conditions, define operational and/or equipment restrictions.
- G. The Construction Manager may issue a Stop Work notice if the vibration and noise level limits set herein are exceeded and cannot be mitigated.

### 3.02 VIBRATION AND NOISE MONITORING

- A. Furnish specified instruments to be installed, operated and interpreted by the vibration consulting firm and/or Acoustical Engineer's personnel, as specified herein and indicated.
- B. Noise monitoring stations shall be installed in at least one (1) location in each Work area throughout the Project.
- C. Take initial background readings of all noise stations for a one week period prior to the start of construction activity in the area.
- D. Take initial background readings at all seismograph locations for three days prior to the start of construction activities in the area.
- E. Perform all vibration-inducing operations so that vibrations reaching adjacent structures and facilities are within specified limits.

### 3.03 DATA REDUCTION, PROCESSING, PLOTTING, AND REPORTING

- A. The Contractor shall be responsible for the reduction, processing, plotting, and reporting of data collected from the instrumentation installed.
- B. The Contractor shall be responsible for reviewing the data in real-time and/or daily and immediately inform the Construction Manager of any exceedances to the response limits.
- C. The Contractor shall be responsible for providing weekly reports, including all instruments that are located within active construction zones.
- D. When the Construction Manager determines from the data, provided by the Contractor, that a change or trend is apparent, that while not exceeding the vibration and/or noise limits specified, precautionary measures may be taken. The Construction Manager will notify the Contractor in order to verify the data trends and take appropriate action in accordance with approved Instrumentation Monitoring Plan.
- E. Where data provided to Construction Manager from the Contractor, indicating an exceedance in the vibration and/or noise limit, all construction activities shall stop, and the actions indicated in the Vibration and Noise Monitoring Plan shall be implemented.
- F. None of the above shall relieve the Contractor of responsibility for the safety of the work.

### 3.04 VIBRATION LEVEL LIMITS

- A. Vibration level limits measured in peak particle velocity (PPV), defined as the maximum of the ground motion velocities measured in the vertical, longitudinal, and transverse directions measured in inches per second (in/s), for construction activities and operations of temporary systems shall be follows:

- 1. New Construction:

- a. The maximum PPV level limits, in any direction, for all new concrete construction shall not exceed the table below measured by a portable seismograph placed adjacent to the new construction at the closest point to the vibration source. The maximum permissible PPV shall be reduced if damage is detected. It is assumed that the vibration-inducing construction activity shall have an influence zone of 100 feet radius when considering the protection of new construction.

<u>Type of Concrete</u>	<u>Age of concrete (hours)</u>	<u>Peak Particle Velocity</u> <u>in./sec</u>
Mass Concrete		
(footings, mats, slab-on-grade,	0-10	1.0
fill concrete, etc.)	11 and over	2.0

Concrete Structures	0-11	0.5
(walls, columns, elevated	11-24	1.0
slabs, etc.)	24 and over	2.0

2. Building and above ground structures:

- a. The maximum PPV level limits, in any direction, for all construction activities at historical buildings, as indicated in the Contract documents, shall not exceed 0.5 in/s as measured by a portable seismograph placed adjacent to or within the historical building at the location closest to the vibration source. The maximum permissible PPV shall be reduced if movement or cracking is detected or if the pre-construction survey identifies a historic building with a lower PPV should be imposed. It is assumed that the vibration-inducing construction activity shall have an influence zone of 150 feet radius when considering the protection of historic buildings. Monitoring of vibrations at such buildings shall be undertaken for the duration of construction activities that will influence the structure.
- b. The maximum PPV level limits, in any direction, for all construction activities at buildings and structures other than historical buildings shall not exceed 1.9 in/s as measured by a portable seismograph placed adjacent to or within the building or structure at the location closest to the vibration source. The maximum permissible PPV shall be reduced if movement or cracking is detected or if the pre-construction survey identifies a building or structure with a lower PPV should be imposed. It is assumed that the vibration-inducing construction activity shall have an influence zone of 150 feet radius when considering the protection of buildings and structures. Monitoring of vibrations at such structures shall be undertaken for the duration of construction activities that will influence the structure.

3. PATH Tunnels, HBLR and NJT structures and facilities: The maximum PPV level limits in any direction, for all construction activities shall not exceed 1.0 in/s above the existing ambient vibrations levels in these structures as measured by the Contractor during background readings.

- B. In the event any data indicates that vibration level limits are being exceeded, immediately suspend all vibration-inducing operations and submit a report to the Construction Manager. Revise operations to reduce vibrations and submit a copy of the revised procedure to the Construction Manager at no additional cost to the NJDEP.
- C. If evidence of displacement or damage to utilities, equipment, or structures is observed or reported, immediately notify the Construction Manager and Stop Work in the area. Revise operation to reduce vibrations and submit a copy of the revised procedure to the Construction Manager.

- D. Restore or replace utilities, equipment, or structures damaged by vibrations at no additional cost to the NJDEP.

### 3.05 GROUND-BORNE NOISE

- A. Ground-borne noise levels within buildings structures due to construction activities, specifically pile driving, is limited to  $L_{eq}$  noise levels, a measured over a 10 minute period, listed in the table below.
- B. The ground-borne noise will be measured at the interior of the nearest occupied building to the construction activity. Measurements shall be conducted once a day during both daytime and nighttime (when applicable) hours to measure ground-borne noise levels at the building location from the construction activities. Noise measurements shall also be conducted at the closest occupied level of the nearest building to the construction activities as specified herein. The ground-borne noise level limits will be adjusted to ambient plus 5 dBA at those locations where the interior background noise levels are higher than the levels listed in the table below.

Ground-Borne Noise Level Limits – $L_{eq}$ (dBA)		
Category of Land Use	Daytime (8 am to 10 pm)	Nighttime (10 pm to 8 am)
Residential	55 dBA	40 dBA
Hotel	5 dBA	45 dBA
Offices	55 dBA	n/a
Commercial spaces	60 dBA	n/a

### 3.06 AIR-BORNE NOISE LEVEL LIMITS

- A. Noise levels for public exposure shall comply with the following noise level restrictions in all areas:
1. In no case expose the public to construction noise levels exceeding 90 dBA on “slow” response or impulsive noise level exceeding 125 dBA maximum transient level “fast” response as measured on a general purpose sound level meter.
  2. Conduct construction activities in such a manner that the noise levels 200 feet from the Work area or the nearest affected building, which ever is closer, do not exceed the levels listed in the table below.
  3. In areas outside of the Work area and not designated as a special zone, prevent stationary noise sources, parked mobile sources or any other source or

combination of sources from producing repetitively scheduled or long-term noise lasting more than 10 percent of the construction duration from exceeding the limit in the table below.

- B. Test the equipment and demonstrate compliance with noise limits specified herein.
- C. Perform the work in a manner to minimize nuisance conditions such as noise that exhibits a specific audible frequency or tone (e.g. back-up alarms, unmaintained equipment, and brake squeal) or impact noise.

Construction Noise Limits		
Land Use	Noise Level – $L_{eq}$ (dBA) (whichever is greater)	$L_{max}$ Level (dBA, slow)
Daytime (8 am to 5 PM)		
Residence and building where people normally sleep	75 or Background +5	85  90 (impact equipment)
Commercial Spaces	80 or Background +5	None
Industrial Spaces	80 or Background +5	None
Evening (5 pm to 10 pm)		
Residence and building where people normally sleep	65 or Background +5	85
Commercial Spaces	80 or Background +5	None
Industrial Spaces	80 or Background +5	None
Nighttime (10 pm to 8 am)		
Residence and building where people normally sleep	Background +5 (if <70 dBA)  Background +3 (if > 70 dBA)	80  80
Commercial Spaces	None	None
Industrial Spaces	None	None

Notes:

1. Noise from impact equipment is exempt from the  $L_{eq}$  requirement, however, is subject to a lot-line  $L_{max}$  limit of 90 dBA
2. All measurements will be taken at the affective lot-line in accordance to what is stated herein.
3. Noise level limits are averaged over 20 minute intervals
4.  $L_{max}$  noise level limits are the maximum noise level that occurs over a 20 minute period.

### 3.07 EQUIPMENT NOISE CERTIFICATION

#### A. Requirements for Construction Equipment:

1. Ensure the Contractor and subcontractor construction equipment used in the Work area is tested for compliance with state noise emission limits during the first day of use on the Project, with compliance data provided to the Construction Manager for review.
2. Retest equipment at six month intervals while in use in the Work Area, and certify new equipment before being placed into service at the Work area.
3. For each piece of equipment used, provide an Application for Certificate of Equipment Noise Compliance. Ensure that the equipment identification number used for the Certificates is consistent with the identification number used in the Noise Monitoring Plan. Do not use equipment onsite without valid Certificates of noise Compliance. The Certificates at a minimum shall have the following information:
  - a. Contractor Name
  - b. Contract name and number
  - c. Equipment type, manufacturer, and model number
  - d. Identification number
  - e. Rated power & capacity
  - f. Operating condition during test
  - g. Measured noise level at 20 to 50 feet from equipment on both the left and right sides

h. Maximum allowable noise level for equipment based on FHWA-HEP-06-02.

i. Authorized signature from the Contractor.

B. Test Procedures for Construction Equipment:

1. Operate engine powered equipment by Contractor at maximum governed rpm under full load conditions during tests.
2. Test portable and mounted impact hammers, such as hoes rams, jackhammers, to be used for concrete breaking, during first day of actual operation at the Work area under maximum load conditions as rated by the equipment manufacture.
3. Noise Certification Measurement: Use an acoustic calibrator of the type recommended by the sound level meter manufacturer before measurements.
4. As specified herein, take measures at two locations: two from the right and left sides of the equipment, at a distance of 50 feet and a height of five feet above ground level, with equipment operating at maximum governed rpm under full load conditions for a minimum period of one minute. Reduce noise measurements made at less than 50 feet, due to space limitations at test location by the values in the following table:

Adjustments for Close-In Equipment Noise Measurements	
Distance (feet)	Measured Values to be Subtracted from Measured Noise Level to Estimate Sound Level at 50 feet (dBA)
19-21	8
22-23	7
24-26	6
27-29	5
30-33	4
34-37	3
38-42	2
43-47	1
48-50	0

C. Noise Certificate Compliance:

1. Complete and maintain a noise report for each piece of equipment used with certification that the equipment noise emissions does not exceed those prescribed in FHWA-HEP-06-02.
2. If noise levels obtained during tests exceed those specified in FHWA-HEP-06-02, remove such equipment from use until equipment is modified and retested, or substitute other equipment to meet the noise level requirements.
3. Equipment will be subject to spot noise level testing at the Construction Manager's discretion to determine that the equipment in use meets the requirements specified herein.

3.08 LOSS OR DAMAGE TO INSTRUMENTS

- A. Protect all instruments and appurtenant fixtures, leads, connections, and all other components of instrumentation systems from damage due to construction operations, weather, traffic, rodents, and vandalism.
- B. If an instrument installed by the Contractor, is damaged or inoperative, the Contractor's qualified instrumentation personnel shall repair or replace the instrument within 72 hours. Where damage is due to the Contractor's actions, including purchase of defective equipment, repair or replace equipment at no additional cost to the Owner. The Contractor shall stop construction operations in the vicinity of the affected area until the necessary repairs or replacement is to the satisfaction of the Construction Manager. Notify the Construction Manager at least 24 hours before repairing or replacing a damaged or inoperative instrument. The Construction Manager will be the sole judge of whether repair or replacement is required.

3.09 DISCLOSURE OF DATA

- A. Do not disclose any vibration and noise data to third parties and do not publish data without approval of Construction Manager.

3.10 DISPOSAL OF INSTRUMENTS

- A. All instrumentation shall be removed upon completion of the work unless otherwise directed by the Construction Manager.
- B. To the extent practicable, where instruments have to be removed from floors, walls, ceilings, and facades preserve the appearance of the instrumented area, restore the surface to its original condition to the satisfaction of the property owner and/or the Construction Manager.



- C. Cleanup all instrumented locations in accordance with Section 017423

3.11 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 017700.

END OF SECTION 023214

## SECTION 023219 - SUBSURFACE UTILITY LOCATING (POTHOLING)

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Section includes materials and procedures for performing pothole operations to locate existing underground utilities.

#### 1.02 REFERENCES

- A. American Society of Civil Engineers (ASCE):
  - 1. 38-02: Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 013300.
- B. Submit request to Construction Manager for premarking of pothole locations at least seven (7) calendar days prior to the commencement of field activities.
- C. Submit a traffic control/protection plan to the Construction Manager at least 14 calendar days prior to the commencement of field activities.
- D. Submit proposed method of potholing, including description of equipment to be used, and schedule for potholing for acceptance at least 14 calendar days prior to the commencement of field activities. Obtain Construction Manager's approval of pothole locations prior to commencement of field activities.
- E. Submit field logs to the Construction Manager within two (2) working days after the completion of pothole excavations in each area. Include dates of potholing operations and any additional discovered information or pertinent data. Include for each pothole excavation field log:
  - 1. Pothole number.
  - 2. Date of pothole.
  - 3. Depths to top and bottom of utility (measured from existing grade over utility at pothole).
  - 4. Miscellaneous Contractor's notes.

- F. Submit temporary steel cap and/or steel plate bridging shop drawings at least seven (7) calendar days prior to the commencement of field activities. Refer to Section 033400.
- G. Submit controlled low strength material design at least seven (7) calendar days prior to the commencement of field activities. Refer to Section 033000.
- H. Submit asphalt concrete mix design at least seven (7) calendar days prior to the commencement of field activities.

#### 1.04 PROCEDURES

- A. Subsurface utility-locating (potholing) services shall conform to CI/ASCE 38-02. For the purpose of this scope, “locate” means to obtain the horizontal and vertical position of the utility line by excavating a circular test hole or narrow trench (where approved of and/or requested by the Construction Manager). Construct test holes using vacuum excavation or comparable nondestructive equipment in a manner that will cause no damage to the utility.
- B. Subsurface utility locating shall consist of test hole excavations at locations indicated on the pothole plans as approved by the Construction Manager. Narrow trench excavations (slot potholes) may be required at locations approved by the Construction Manager or to locate multiple parallel utilities.

#### 1.05 MEASUREMENT AND PAYMENT

- A. Measurement and payment for subsurface utility locating by circular test hole will be based on a unit cost basis for each utility located to a maximum depth of 6 feet. Any additional excavation shall be measured and paid for based on additional unit vertical foot basis. The cost paid to Contractor shall constitute full compensation for furnishing labor, materials, tools, and equipment associated with performing the work involved for each utility located.
- B. Measurement and payment for subsurface utility locating by narrow trench excavation will be based on a unit cost basis for each utility located to a maximum depth of 6 feet. Any additional excavation shall be measured based on additional unit vertical foot basis. The cost paid to Contractor shall constitute full compensation for furnishing all labor, materials, tools, and equipment associated with performing all work involved for each utility located.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Controlled Low Strength Material Backfill at Test Holes and at Exploratory Trenches

1. Controlled Low Strength Material backfill shall conform to Section 033400.
- B. Asphalt Concrete Pavement Repair at Exploratory Trenches and at Test Holes
  1. Asphalt concrete paving shall conform to Section 321200 or 321300.

## PART 3 - EXECUTION

### 3.01 POTHOLING OPERATIONS

- A. Underground Service Alert Requirements: Comply with New Jersey One Call requirements for notification prior to excavation. Contact New Jersey One Call at 811 no less than three (3) and no more than 10 days prior to the start of exploratory excavation. Verify whether or not a representative of each utility or agency will be present during excavation, and coordinate with said individual(s). Take any precautions required by the utility owner.
- B. Furnish, install, maintain, and remove necessary traffic signs, barricades, lights, signals, cones, pavement markings, and other traffic control devices. Perform traffic control in accordance with NJDOT and OSHA Regulations for Construction Projects.
- C. Conduct potholing operations in a manner that minimizes the damage potential to existing underground utilities in order to ensure that the existing facilities will remain in operation without interruption. Contractor shall be responsible for, and repair to pre-existing condition (at Contractor's expense) any existing underground utilities damaged by potholing operations. Backfill and repair test hole excavations immediately after obtaining the measurement data. Backfill and repair trench excavations requiring use of temporary steel plate bridging within four (4) working days. Provide not less than seven (7) days' notice to the Construction Manager for scheduling field survey activities. Advise Construction Manager of number of pothole excavations completed and number remaining.
- D. Coordinate, cooperate with, and facilitate field data collection by Contractor's surveyor. Pothole excavations shall sufficiently expose subsurface utilities to allow surveyor to easily determine and measure the following data:
  1. Elevation at top and bottom of utility.
  2. Elevation of existing grade over utility at pothole.
  3. Coordinates at surface.
  4. Utility type.

5. Outside diameter of utility or width of duct banks.
  6. Utility material and condition.
- E. Location and Depiction of Existing Utilities: Existing utility plans shall be present and utilized during potholing activities. The plans shall be compared to utility/agency paint markings following Underground Service Alert notification as well as locations premarked by the Contractor's surveyor. If discrepancies are found between the plans and paint markings, promptly notify the Construction Manager prior to commencement of any excavation.

### 3.02 EXCAVATION

- A. Protect utilities or underground structures from damage during potholing. Immediately report any damaged utilities to the affected utility's owner and the Construction Manager. Repair immediately any damaged utilities in accordance with the respective utility owner's requirements. Neatly cut and remove existing pavement. Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, or other protective coverings, utilizing vacuum excavation or hand digging.
1. Hand Digging: Hand digging is the method of excavating a pothole by manual means with hand-held, non-mechanical equipment such as a shovel.
  2. Vacuum Excavation: Vacuum excavation shall consist of air or water pressure to break up the soil and a vacuum device to collect the spoil. Determine if air or water vacuum excavation shall be used depending upon specific site and environmental characteristics. Soil type such as heavy clay may require water vacuum excavation. Utilize air vacuum excavators if mud from water vacuum excavators cannot be disposed properly. Use air vacuum excavators if damage to utilities, such as cutting through cables, will occur with the use of water vacuum excavators.
    - a. Air: Air vacuum excavators shall utilize a high velocity air stream to penetrate, expand, and break up the soil. Remove the loosened particles of soil and rock from the excavation through the use of a vacuum.
    - b. Water: Water vacuum excavation systems shall excavate the pothole using high-pressure water to reduce and loosen the soil. Remove the wet soil and mud slurry to a spoil tank using a vacuum.

### 3.03 TEMPORARY STEEL PLATE BRIDGING, WITH A NONSKID SURFACE (WHERE REQUIRED FOR APPROVED TRENCHES)

- A. Provide steel plate bridging with a nonskid surface and shoring to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

1. Steel plates used for bridging shall extend a minimum of 12 inches beyond the edges of the trench.
  2. Install steel plate bridging to operate with minimum noise.
  3. Shore the trench to support the bridging and traffic loads.
  4. Use temporary paving with cold asphalt concrete to feather the edges of the plates as necessary to provide a smooth transition and to prevent plate movement.
  5. Secure bridging against displacement by using adjustable cleats, shims, or other devices.
- B. Install steel plate bridging and shoring using the following method:
1. Attach approach plate(s) and ending plate (if longitudinal placement) to the roadway by a minimum of two (2) dowels predrilled into the corners of the plate and drilled 2 inches into the pavement. Butt subsequent plates to each other. Compact fine graded asphalt concrete to form ramps, maximum slope 8.5 percent with a minimum 12-inch taper to cover all edges of the steel plates. When steel plates are removed, backfill the dowel holes in the pavement with either graded fines of asphalt concrete mix or concrete slurry.
- C. Maintain the steel plates, shoring, and asphalt concrete ramps.
- D. Unless specified, use of steel plate bridging at any given location shall not exceed four consecutive working days in any given week. Cover backfilling of excavation with a minimum of 3 inches of temporary layer of cold mix asphalt concrete.
- E. The following table shows the required minimal thickness of steel plate bridging required for a given trench width. In addition, plate thickness shall be sufficient for all anticipated loads.
- | <b>Trench Width<br/>feet (cm)</b> | <b>Minimum Plate Thickness<br/>inches (cm)</b> |
|-----------------------------------|--|
| 1 (30)                            | 1/2 (15)                                       |
| 1-1/2 (47)                        | 3/4 (23)                                       |
- F. The Contractor may use standard steel plate with known coefficient of friction equal or exceeding 0.35.
- G. Use a “ROUGH ROAD” sign (W8-8) or “BUMP” sign (W8-1) with black lettering on an orange background in advanced of steel plate bridging. This is to be used along with any other required construction signing.

### 3.04 POTHOLE REPAIR

- A. After excavating a test hole or trench, provide and install a temporary steel cap (over test hole) or temporary steel plate bridging (over trench) to facilitate data gathering by Construction Manager's surveyor.
- B. Following data gathering by surveyor, remove temporary steel caps and/or steel plate bridging, and backfill excavation with accepted material as follows:
  - 1. Test Hole Excavations: Sand-cement slurry backfill per Part 2 of this Section. Bring to grade with asphalt cement pavement per Part 2 of this Section. Match existing pavement thickness plus 1 inch.
  - 2. Exploratory Trenches: Backfill per Part 2 of this Section. Match existing pavement thickness plus 1 inch.
- C. The finished surface of the repair shall be of like material and constructed to the same finished grade as the adjacent pavement. The finished surface shall be such that it does not allow water to pond. There shall be no discernable difference in surface level at the joint between the existing pavement and the completed repair.

### 3.05 DISPOSAL OF CUTTINGS

- A. Dispose of cuttings off-site.

### 3.06 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 023219

## SECTION 024100 - DEMOLITION

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide demolition of existing conditions as indicated and in compliance with Contract Documents.

#### 1.02 REFERENCES

- A. United States Environmental Protection Agency (USEPA):
  - 1. 832: Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 013300.
  - 1. Demolition Plan.

#### 1.04 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Demolition Plan: Provide description of sequence, duration of each task, methods, and equipment used for demolition (including disposal).

#### 1.05 MEASUREMENT AND PAYMENT

- A. No separate payment shall be made for demolition, except as noted. Payment shall be included in the unit price or lump sum price for the payment item requiring demolition, in accordance with Section 012901.

### PART 2 - PRODUCTS

(Not Used)



## PART 3 - EXECUTION

### 3.01 PREPARATION

#### A. Survey Markers and Monuments:

1. Provide three (3) reference points, established by a State of New Jersey licensed land surveyor, for each survey marker or monument temporarily removed. Record locations and designations of survey markers and monuments prior to removal.
2. Store removed markers and monuments during demolition work and replace upon completion of Work. Reestablish survey markers and monuments in conformance with recorded reference points. Forward letter to Construction Manager, signed by a licensed land surveyor, verifying reestablishment of survey markers and monuments.

#### B. Burning of demolition debris is prohibited.

#### C. Protect existing structures, equipment, and appurtenances to remain.

#### D. Obtain permission from Construction Manager before abandoning or removing existing structures, materials, equipment and appurtenances.

#### E. Provide fire extinguishers in areas where demolition work is performed by use of an open flame. Exercise necessary precautions for fire prevention.

#### F. Maintain circulation of traffic within area at all times during demolition operations.

#### G. Make necessary arrangements with and perform work required by utility companies and municipal departments for discontinuance or interruption of utility services due to demolition work.

#### H. Confine apparatus, storage of materials, demolition work, new construction, and operations of workmen to areas that will not interfere with continued use and operation of the public street and sidewalk. Provide and maintain lights, barriers, and temporary passageways for free and safe access.

#### I. Provide shoring or bracing where necessary to prevent settlement or displacement of existing or new structures.

### 3.02 DEMOLITION

#### A. Demolish and remove existing construction, utilities, equipment, and appurtenances.

- B. Protect persons and property throughout progress of Work. Provide safe working conditions for personnel.
- C. Wet down work during demolition operations to prevent dust from arising. Minimize spread of dust and airborne particles.
- D. Cap or plug with concrete and fill with non-shrink grout, pipes and other conduits which are abandoned in place, as shown on the Contract Drawings or as directed by the Construction Manager.
- E. Removed materials, equipment, and appurtenances, not designated for relocation, become property of Contractor and shall be disposed of offsite.

### 3.03 SALVAGE

- A. Store materials and/or equipment to be salvaged or relocated as directed by the Construction Manager. Protect salvaged items from damage during Work.
- B. Salvage fire hydrants not to be reset/relocated under this Contract for future use by City of Hoboken. Store in vicinity of original location and place so as not to interfere with construction.

### 3.04 REPAIR/RESTORATION

- A. Repair or remove items that are damaged. Repair and install damaged items to condition at least equal to that which existed prior to start of Work.

### 3.05 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 024100

## SECTION 025100 - DECONTAMINATION

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

- A. This Section covers the decontamination of personnel and equipment as they move from the Exclusion or Work Zones to Support Zones and off-site. Decontamination is required throughout Work activities.

#### 1.02 LAWS AND REGULATIONS

- A. All work under this Contract shall be accomplished in accordance with regulations of local, county, State, and Federal agencies and utility authority standards as they apply.

#### 1.03 SAFETY

- A. Methods of operation utilized in Work related to these specifications shall be such as to provide maximum protection against injury or death to workmen or the public. Requirements of the United States and New Jersey Occupational Safety and Health Acts as to safety regulations and procedures shall be adhered to for all Work covered under these Specifications.

#### 1.04 SUBMITTALS

- A. Prior to mobilization, Contractor shall submit personnel decontamination procedures as part of the Contractor's Health and Safety Plan (HASP) specified in Section 014150. Contractor shall provide the following information:
  - 1. Number and location of decontamination and wheel wash stations.
  - 2. Decontamination methods and equipment that shall be used in accordance with applicable New Jersey Department of Environmental Protection (NJDEP) requirements.
  - 3. Procedures to prevent cross-contamination of clean areas during remedial activities.
  - 4. Methods and procedures to minimize worker contact with contaminants during removal of personal protective equipment (PPE).
  - 5. Procedures for inspection and decontamination of vehicles leaving the site.
  - 6. Procedures for disposal of personal PPE.

7. Procedures for the collection of all decontamination water and residuals.
8. Procedures for minimizing generation of waste water.

#### 1.05 DECONTAMINATION FACILITIES

- A. Contractor shall construct and maintain decontamination facilities for equipment and trucks as described in the Contract Documents.
- B. Contractor shall construct and maintain decontamination facilities for personnel.
- C. Construction of new decontamination facilities is not required if existing decontamination facilities from previous phases of Work are available and optimally located.

### PART 2 – PRODUCTS

#### 2.01 DECONTAMINATION EQUIPMENT

- A. Contractor shall provide all equipment necessary to complete decontamination activities such as, but not limited to:
  1. Power washer (heated if needed), shower, brushes, and receptacle for PPE, etc.

### PART 3 – EXECUTION

#### 3.01 VEHICLE/EQUIPMENT DECONTAMINATION

- A. Work zones shall be established as specified in the Contractor's HASP and Technical Execution Plan.
- B. Contractor shall inspect and decontaminate all vehicles and equipment that have entered the Exclusion Zone. All decontamination shall take place in Decontamination Zones.
- C. Decontamination of vehicles and equipment shall include removal of soil and residues from the chassis (which includes undercarriage, suspension, wheel wells, tires, and wheels) and other parts of the vehicle known to have been contaminated or visually appearing to be contaminated.
- D. Contractor shall take care while decontaminating vehicles to avoid contaminating personnel, other parts of the vehicle or equipment, or the surroundings. Personnel involved in vehicle and equipment decontamination shall be dressed in the appropriate level of PPE as determined by the HASP. All personnel shall follow applicable safety procedures described in Section 014150.

- E. Contractor shall decontaminate haul trucks after loading and before the haul trucks exit exclusion zones if inspection indicates the presence of contaminants. Contractor shall ensure that haul trucks exit through the Decontamination Zone and receive proper decontamination and inspection.

### 3.02 PERSONNEL DECONTAMINATION

- A. Contractor shall ensure that personnel who have entered the Exclusion Zone perform decontamination as required in the HASP as specified in Section 014150 prior to exiting the Decontamination Zone.

### 3.03 DECONTAMINATION METHODS

- A. Physical decontamination techniques used during truck and equipment decontamination include, but are not limited to brushing and spraying with a heated water pressure washer until all visible contamination and debris is removed.
- B. Brushing shall consist of removal of loose materials with the use of a broom and/or brushes.
- C. A heated pressure washer shall be used to provide application of water of sufficient temperature, pressure, residence time, and agitation to remove soil and contaminated residuals from surfaces.
- D. Surfactants and detergents must be approved by the Construction Manager prior to use in decontamination operations. Materials which may be detrimental to water treatment, handling, or disposal shall not be allowed.
- E. All equipment decontamination procedures shall be performed in a decontamination facility or area.
- F. Overspray barriers shall be provided, if necessary or as directed by the Construction Manager on each side of the decontamination area to prevent contamination of adjacent areas.
- G. Contractor shall manage decontamination residuals, including water, soil, residues, used PPE, and other materials removed during decontamination as specified in Paragraph 3.04 Management of Decontamination Residuals.

### 3.04 MANAGEMENT OF DECONTAMINATION RESIDUALS

- A. Decontamination liquids shall be collected by Contractor during personnel decontamination, truck and equipment decontamination.
- B. Decontamination liquids shall be disposed offsite at Construction Manager-approved disposal facility.

- C. Contractor shall dewater and collect decontamination solids. Dewatered decontamination solids shall be allowed to air dry in a stockpile pad for off-site disposal at Construction Manager-approved disposal facility. The Contractor will be responsible for loading this material into trucks.
- D. Contractor shall manage contaminated PPE when working in impacted areas as Impacted Material to be sent to a Construction Manager-approved disposal facility.
- E. When the decontamination pad is no longer required, the Contractor shall remove the contents, including but not limited to gravel, sumps, and liner, and dispose of the material at an off-site disposal facility approved by the Construction Manager.

END OF SECTION 025100

## SECTION 030130 - CONCRETE REPAIR

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide concrete repair as indicated and in compliance with Contract Documents.
- B. Complete repair mortar system installation in accordance with this Section and the mortar system manufacturer's instructions regarding surface preparation, application, inspection and requirements for safety.
- C. Complete crack repair work in accordance with this Section and crack repair material manufacturer's instructions.
- D. Complete joint repair work in accordance with this Section and the joint repair material manufacturer's instructions.
- E. The areas of concrete repair shall be determined by the Contractor and Construction Manager and shall include any location where acidic attack of the concrete surfaces has reached a depth of 1/2-inch or deeper and at any air voids, "bugholes" or poorly consolidated concrete areas where the specified filler/surface materials cannot be used for filling or surfacing of the concrete.
- F. The repair work specified herein is intended to cover the requirements for repair of concrete only, to a maximum depth of approximately 2-inch. If after blasting and cleaning, an area is discovered that requires a repair greater than 2-inch deep, or an area is discovered that requires repair or replacement of reinforcing steel, notify the Construction Manager so that details may be provided to the Contractor to complete the repair.

#### 1.02 REFERENCES

- A. American Concrete Institute (ACI):
  - 1. 503.4: Standard Specification for Repairing Concrete with Epoxy Mortars.
- B. ASTM International (ASTM):
  - 1. C33: Standard Specifications for Concrete Aggregates.
  - 2. C150: Standard Specification for Portland Cement.
  - 3. C321: Standard Test Method for Bond Strength of Chemical-Resistant Mortars.
  - 4. C882: Test Method for Bond Strength of Epoxy Resin Systems.

5. D570: Test Method for Water Absorption of Plastics.
  6. D638: Test Method for Tensile Properties of Plastics.
  7. D695: Test Method for Compressive Properties of Rigid Plastics.
  8. D790: Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
  9. D4262: L.R. Standard Test Method for pH of Chemically Cleaned or Acid Etched Concrete Surfaces.
  10. E337: L.R. Standard Practice Test Method for Measuring Humidity with a Psychrometer.
- C. National Association of Corrosion Engineers (NACE):
1. 6D-173: “A Manual for Painter Safety”.
  2. 6F-163: “Surface Preparation of Steel or Concrete Tank Interiors”.
  3. TPC2: “Coatings and Linings for Immersion Service”.

#### 1.03 MEASUREMENT AND PAYMENT

- A. Crack Repair: The quantities in linear feet to be measured for payment shall be the actual length of cracks repaired by the methods and materials specified under paragraphs:
1. Paragraph 2.05 Epoxy Crack Repair Binder.
  2. Paragraph 2.06 Flexible Polyurethane Crack Repair Material.
  3. Paragraph 2.07 Rigid Polyurethane Crack Repair Material.
  4. Paragraph 3.04 Epoxy Crack Repair.
  5. Paragraph 3.05 Rigid and Flexible Polyurethane Crack Repair.
- B. Spall Repair Depth 2-inch or Less: The quantities in square feet to be measured for payment shall be the actual square footage of spalled concrete repaired by the method and materials specified under Paragraph 3.06 Spall Repair.
- C. Spall Repair Depth Greater than 2-inch: The quantities in cubic feet to be measured for payment shall be the actual cubic footage of spalled concrete repaired by the method and materials specified under Paragraph 3.06 Spall Repair.



- D. Joint Repair: The quantities in linear feet to be measured for payment shall be the actual length of joints repaired by the methods and materials specified under Paragraph 3.07 Joint Repair.

#### 1.04 SUBMITTALS

- A. Submit the following in accordance with Section 013300.
  - 1. Procedures proposed for the accomplishment of repair work. Include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations to be coordinated with other works in progress.
  - 2. Manufacturer's recommendations and product data sheets for all repair materials including performance criteria, surface preparation, ambient condition requirements and applications, curing requirements, volatile organic compound (VOC) data, and safety requirements.
  - 3. Material Safety Data Sheets (MSDS) for any materials brought on-site including all repair system materials, solvents and abrasive blast media.
  - 4. Qualifications of foreman and epoxy gun operators and demonstration of meeting the minimum requirements specified.
  - 5. Design Mixes: Provide concrete and cement mortar in conformance with Section 033000 and as specified herein.
  - 6. ANSI/NSF 61 Certification that repair material proposed for use in structures to contain potable water are non-toxic and have no adverse effect on the quality or appearance of potable water.

#### 1.05 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Subcontractor shall be pre-approved by the DPMC prior to performing any activities.
- C. Furnish the names and qualifications of all subcontractors proposed for use for this Work in the application of epoxy polyurethane polymer-modified and cement-based compounds.
- D. Include in applicator qualifications:
  - 1. A letter from the manufacturer of the specified materials, on the manufacturer's letterhead, signed by an officer of the company, stating that the subcontractor/applicator has been trained in the proper techniques for the preparation of the surface, and proper methods for mixing, placing, curing, and caring of the manufacturer's products. This letter shall further state that the subcontractor/applicator is on the manufacturer's approved list of contractors.

- E. Adhere to the manufacturer's recommendations regarding temperature at time of application for all work. Do not use epoxy materials when either the temperature of the concrete to be repaired or the ambient temperature is below 50 degrees F for a period of 24 hours before, during, or for a period of 48 hours after the completion of the repair. Temporary heat may be used to meet the specified requirements.
  - F. Use new epoxy, repair materials and use within the shelf life limitations set forth by the manufacturer. Clearly mark the shelf life limitations of each container.
  - G. The Contractor is ultimately responsible for the concrete repair work. Inspections by the Construction Manager or others do not limit the Contractor's responsibility.
  - H. Make all parts of the work accessible for inspections by the Construction Manager. Correct any conditions not in conformance with the specifications as determined by the Construction Manager at no additional cost to the DEP.
  - I. Provide a Representative on site at all times when work is ongoing to represent the Contractor and to have authority to receive and execute all instructions given by the Construction Manager.
  - J. Allow changes in the specified repair work methods only with the permission of the Construction Manager.
  - K. Provide technical field support or training services required by the accepted material manufacturers at no additional cost to the DEP.
  - L. Provide materials from a single manufacturer for all components of a single repair.
- 1.06 DELIVERY, STORAGE AND HANDLING
- A. Comply with the requirements in section 016610.
  - B. Provide shelter to store materials in area or areas designated by the Construction Manager solely for concrete repair purposes. This area must be above ground and have controlled humidity and temperature as specified by the repair materials manufacturer(s). Confine mixing, thinning, clean-up and associated operations and storage of repair mortar materials debris before authorized disposal, to these areas.
  - C. Mix all specified materials in the sheltered mixing operation and materials from direct sunlight and inclement weather. Protect facilities from staining and damage.
  - D. Do not dispose of waste materials on-site.
  - E. Store waste in a location approved by the Construction Manager temporarily in closed, nonflammable containers until final disposal. Keep no rubbish in Contractor's area longer than 24 hours.

- F. Deliver all materials to the job site in new, unopened containers. Each container shall bear the manufacturer's name and label. Labels on all material containers shall contain the following information:
  - 1. Name of product.
  - 2. Manufacturer's batch number.
  - 3. Manufacturer's name.
  - 4. Generic type of material.
  - 5. Hazardous material identification label.
  - 6. Shelf life date.
- G. Clearly mark all containers indicating any safety hazards associated with the use of or exposure to the materials.
- H. Handle and store materials to prevent damage or loss of label. Protection of materials is the Contractor's responsibility.

#### 1.07 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
  - 1. Comply with the repair material manufacturer's recommendations as to environmental conditions under which materials can be applied and cured.
  - 2. Do not apply materials when dust is being generated.
- B. Protection:
  - 1. Cover or otherwise protect finish work or other surfaces not being repaired.
- C. Ventilation:
  - 1. Provide ventilation to meet product requirements prior to, during, and after application.

### PART 2 - PRODUCTS

#### 2.01 WATER

- A. The water used for mixing concrete repair products shall be clear, potable, and free of deleterious substances.

2.02 AGGREGATE

- A. All aggregates shall conform to ASTM C33 and Section 033000.

2.03 EPOXY BONDING AGENT

- A. Epoxy bonding agent shall conform to ASTM C881 Type I, II, IV or V; Grade 2 for epoxy resin adhesives, depending on the application. The class of epoxy bonding agent shall be suitable for all ambient and substrate temperatures.
- B. Products:
  - 1. Sika Corp.; Sikdur 32.
  - 2. Euclid Chemical Company; Duralcrete.
  - 3. Or approved equal.

2.04 ANTI-CORROSION COATING

- A. Anti-corrosion coating shall be a three-component, epoxy-modified cementitious material.
- B. Products:
  - 1. Sika Chemical Corp.; Sika Armatec 110.
  - 2. Sto Concrete Restoration Division; CR 246.
  - 3. Euclid Chemical Company; Duralprep.
  - 4. Or approved equal.

2.05 EPOXY CRACK REPAIR BINDER

- A. Epoxy crack repair binder shall be a two-component, 100 percent solids, high-modulus, low viscosity epoxy adhesive suitable for crack grouting by injection.
- B. Products:
  - 1. Sika Corp.; Sikadur 52.
  - 2. Euclid Chemical Company; Duralcrete LV.
  - 3. BASF Chemical Company; SBC Concreative 1380.
  - 4. Or approved equal.

2.06 FLEXIBLE POLYURETHANE CRACK REPAIR MATERIAL

- A. Flexible polyurethane crack repair material shall be a one-component, water-activated polyurethane hydrophilic injection grout capable of 700 percent expansion. Polyurethane grout shall form a tough flexible foam seal that is impenetrable to water.
- B. Products:
  - 1. Prime Resins; Prime Flex 900 XLV.
  - 2. Avanti International; Scotch Seal 5600 Chemical Grout.
  - 3. Or approved equal.

2.07 RIGID POLYURETHANE CRACK REPAIR MATERIAL

- A. Rigid polyurethane crack repair material shall be a one-component, water-activated polyurethane hydrophobic injection grout capable of 700 percent expansion. Polyurethane grout shall form a tough rigid foam seal that is impenetrable to water.
- B. Products:
  - 1. De Neef Construction Chemicals; Hydro-Active Cut.
  - 2. Prime Resins; Prime Flex 920.
  - 3. Sika Corp.; Sikafix HH LV.
  - 4. Or approved equal.

2.08 EPOXY REPAIR MORTAR

- A. Epoxy Repair Mortar shall be two-component, 100 percent solids, and 100 percent reactive epoxy resin system.
- B. Spall repair mortar for use in horizontal applications.
  - 1. Products:
    - a. BASF Building Systems; Concreseive Paste LPL.
    - b. Sika Corp.; Sikadur 22 Lo-Mod.
    - c. Or approved equal.
- C. Spall repair mortar for use in vertical and overhead applications.
  - 1. Products:

- a. Sika Corp.; Sikadur 23 Lo-Mod Gel.
- b. Or approved equal.

2.09 SPALL REPAIRS USING NON-SHRINK CEMENTITIOUS MORTAR

A. Products:

1. BASF Building Systems; EMACO S88 CI.
2. BASF Building Systems; Thorite.
3. Sauereisen, Inc.; Underlayment F-120.
4. Or approved equal.

2.10 SPALL REPAIRS USING POLYMER MODIFIED CEMENTITIOUS MORTAR

A. Repair spalls not requiring formwork using a two-component, polymer-modified cementitious mortar having a minimum 28-day compressive strength of 7,000 psi.

B. Spall repair mortar for use in horizontal applications.

1. Products:

- a. Sika Corp.; Sikatop 122 Plus.
- b. Euclid Chemical Company; Duraltop Fast Set.
- c. Or approved equal.

C. Spall repair mortar for use in vertical applications.

1. Products:

- a. Sika Corp; Sikatop 123 Plus.
- b. Euclid Chemical Company; Duraltop Gel.
- c. Or approved equal.

2.11 SPALL REPAIRS REQUIRING FORMWORK

A. Repair spalls repair requiring formwork using a two-component, polymer-modified cementitious mortar/pea gravel mixture and shall have a minimum 28-day compressive strength of 6,000 psi. Mix each unit of mortar with Saturated Surface Dry (SSD) pea gravel to form the repair material following the manufacturer's recommendations.

B. Products:

1. Sika Corp.; Sikatop 111 Plus.
2. Euclid Chemical Company; Duraltop Flowable Mortar.
3. Approved equal.

2.12 WATERPROOF MEMBRANE

- A. Waterproof membrane patch shall be a hypalon sealing strip secured to the concrete substrate with an epoxy adhesive.
- B. Install sealing system per manufacturer's recommendations.
- C. Products:

1. Sika Corp.; Sikadur Combiflex.
2. Approved equal.

2.13 CEMENT BASED TEXTURED COATING

A. Products:

1. Sika Corp.; Sikatop 144.
2. Euclid Chemical Company; Duraltop Coating.
3. BASF Building Systems; Thoroseal/Acryl 60.
4. Approved equal.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform exterior work during dry weather and appropriate temperature conditions in accordance with the manufacturer's recommendations. Protect unfinished work during inclement weather with tarpaulins or heavy gage polyethylene sheeting.
- B. Perform work in spaces within structures at temperature and conditions suitable for proper curing in accordance with the manufacturer's recommendations.
- C. Coordinate concrete rehabilitation work with other work being performed.

- D. Remove scaling, broken, loose and disintegrating materials by use of hand tools or power-driven saws, down to solid unyielding material.
- E. Clean surfaces thoroughly of efflorescence, oils, grease and other objectionable material in area to be repaired in accordance with the manufacturer's recommendations.

### 3.02 EPOXY BONDING AGENT

- A. Use epoxy bonding agent to adhere fresh mortar to existing concrete. Roughen existing concrete surfaces prior to application of bonding agent. Concrete surface shall be clean and sound, free of all foreign particles and laitance. Prepare and clean concrete surfaces as indicated above. Place repair material while bonding agent is still tacky or per the written instructions of the manufacturer. Reapply bonding agent if bonding agent cures prior to placement of repair material.
- B. Conform to all the requirements of ACI 503.4 and as specified herein.

### 3.03 ANTI-CORROSION COATING

- A. Sandblast, clean and coat reinforcing steel that is cut or exposed with an anti-corrosive coating.
- B. Cover all exposed parts of the steel with the coating and apply according to manufacturer's recommendations.

### 3.04 EPOXY CRACK REPAIR

- A. Cracks on horizontal surfaces: When permitted by the Construction Manager, repair existing structural cracks by gravity feeding an epoxy crack repair binder into the prepared crack.
  - 1. Grout concrete surface at the crack to form a minimum 1/4-inch wide by 1/4-inch deep V-notch and clean to remove all loose and foreign particles. Fill crack with clean, dry sand and pour epoxy crack repair binder into V-notch, completely filling crack.
  - 2. As binder penetrates into crack, apply additional binder to the V-notch.
- B. Cracks on vertical or horizontal surfaces: Repair existing structural cracks by pressure injecting an epoxy crack repair binder into the prepared crack. Seal cracked surfaces and install injection ports per manufacturer's recommendations.
  - 1. Do not cut reinforcement steel when drilling holes injection ports. If rebar is encountered during drilling, abandon the hole and relocate. Patch the abandoned hole immediately with epoxy mortar flush with the surface of the existing concrete.



2. Once the surface sealing material has cured, inject crack with epoxy crack repair binder as directed by the manufacturer.
3. Remove injection ports upon satisfactory completion of crack injection and patch with epoxy mortar.

### 3.05 RIGID AND FLEXIBLE POLYURETHANE CRACK REPAIR

- A. Repair leaking cracks by pressure injecting with a waterproof hydrophilic or hydrophobic injection grout seal crack surfaces and install injection ports per manufacturer's recommendations.
- B. Do not cut rebar when drilling holes for injection ports. If rebar is encountered during drilling, abandon the hole and patch immediately with epoxy mortar flush with the surface of the existing concrete.
- C. Once the surface sealing material has cured, inject crack with waterproof hydrophilic or hydrophobic injection grout as directed by the manufacturer.

### 3.06 SPALL REPAIR

- A. Saw cut the perimeter of the repair area to a minimum depth of 1/4-inch below the surface of the concrete.
- B. Chip all loose concrete in the repair area to remove loose and degraded concrete to a minimum of 1/4-inch or until a sound substrate is reached.
- C. Clean the area and repair to the original dimensions with spall repair patching material according to the manufacturer's recommendations.
- D. Make final finished surface of patches flat, level and even with the existing concrete surface. Do not feather repair mortar to meet existing concrete surface.
- E. Finish final patches on horizontal surfaces consistent with the finish on the existing structure.

### 3.07 JOINT REPAIR

- A. Remove sealant, bond breaker, and joint filler.
- B. Remove unsound concrete on the joint.
- C. Remove laitance and provide a clean dry surface.
- D. Prepare an epoxy mortar by combining epoxy crack repair binder with aggregate following the manufacturer's instructions.

- E. Restore surface to original dimensions by troweling epoxy mortar onto the existing substrate in a manner to ensure bonding following the manufacturer's instructions.
- F. Cure repair in accordance with the manufacturer's instructions.
- G. Install new joint filler, bond breaker, and sealant.

#### 3.08 WATERPROOF MEMBRANE PATCH

- A. Clean and install waterproof membrane textured patches on existing concrete areas requiring a textured patch according to manufacturer's recommendations.

#### 3.09 CEMENT BASED TEXTURED COATING

- A. Clean existing concrete areas requiring a textured coating and apply the cement based textured coating according to manufacturer's recommendations.
- B. Complete other concrete rehabilitation prior to applying coating.

#### 3.10 CURING

- A. Cure repair materials in accordance with manufacturer recommendations.

#### 3.11 CLEANING

- A. Mechanically remove excess material from walls, floors, etc. after material has cured.
- B. Clean excess materials caused by work under this Section from existing surfaces by the use of power sanders. Vacuum surfaces to receive final cleaning and finishing specified under other sections of the Specifications. Sand cracks flush to adjacent surfaces.
- C. Remove misplaced sealants using methods and materials recommended by the manufacturers. Leave finished work and work area in a neat and clean condition.

#### 3.12 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 030130

## SECTION 031000 - CONCRETE FORMWORK

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide design and furnish materials for fabricating, erecting and removing formwork, falsework and shoring for cast-in-place concrete as indicated and in compliance with Contract Documents.
- B. Use formwork to cast all cast-in-place concrete structures.

#### 1.02 MEASUREMENT AND PAYMENT

- A. No measurement will be made under this section. Include costs in terms of Work for which concrete formwork and falsework is required.

#### 1.03 REFERENCES

- A. American Concrete Institute (ACI):
  - 1. 117/117R: Standard Tolerances for Concrete Construction and Materials.
  - 2. 309.2R: Identification and Control of Visible Effects of Consolidation on Formed Concrete Surfaces.
  - 3. 318/318R: Building Code Requirements for Structural Concrete and Commentary.
  - 4. 347: Guide to Formwork for Concrete.
- B. Engineered Wood Association (APA)
- C. National Institute of Product Standards and Technology:
  - 1. Voluntary Product Standard PS 1 Structural Plywood.

#### 1.04 DESIGN REQUIREMENTS

- A. Design formwork in conformance with methodology of ACI 347R for anticipated loads, lateral pressures, depth of concrete placement and rate of concrete placement. Design shall consider any special requirements due to the use of self-consolidating, plasticized and/or retarded set concrete. All forms and shoring shall be designed at the Contractor's expense.

## 1.05 QUALIFICATIONS

- A. Formwork Designer: Formwork, falsework, and shoring design shall be by an engineer licensed in the State of New Jersey.

## 1.06 SUBMITTALS

- A. Submit product data for form ties, spreaders, chamfer strips, form coatings, and bond breakers.
- B. Submit sample of form ties.

## 1.07 QUALITY ASSURANCE

- A. Comply with requirements in Section 014300 and as specified.
- B. Design of Formwork:
  - 1. The Contractor shall assume responsibility for the design, engineering and construction of formwork. Forms shall be designed to produce concrete members identical in shape, lines and dimensions to members shown on the Contract Documents.
  - 2. When high range water reducer (superplasticizer) is used in concrete mix or when self-consolidated concrete is specified, forms shall be designed for full hydrostatic pressure per ACI 347.
  - 3. The formwork shall be designed for the loads and lateral pressures in accordance with ACI 347 and wind loads as specified by the local building code.
  - 4. Construction and contraction joints, openings, offsets, keyways, recesses, moldings, chamfers, blocking, screeds, bulkheads, waterstops, anchorages, inserts, and other features shall be provided.
  - 5. Formwork shall be designed to be readily removable without impact, shock, or damage to 'green' concrete surfaces and adjacent materials.
  - 6. The maximum panel deflection shall be 1/360 of the span between structural members.
- C. Unless otherwise specified herein, formwork shall be constructed so that the concrete surfaces will conform to the tolerance limits as given in ACI 117.
- D. Materials, fabrications and workmanship found defective shall be promptly removed and replaced and new acceptable work shall be provided in accordance with Contract requirements at no additional cost to the DEP.

## 1.08 DELIVERY, STORAGE AND HANDLING

- A. Comply with the requirements in Section 016610.
- B. Materials shall be delivered to the site in an undamaged condition and at such intervals as will avoid delay in the Work.
- C. Material shall be stored and protected in a clean, properly drained location. Material shall be kept off the ground under a weather-tight covering permitting good air circulation. Formwork materials shall be stored on dry wood sleepers, pallets, platforms or other appropriate supports which have slope for positive drainage. Materials shall be protected from distortion, excessive stresses, corrosion and other damage. Materials shall not be stored on the structure in a manner that might cause distortion or damage to the supporting structure.

## PART 2 - PRODUCTS

### 2.01 LUMBER

- A. Lumber used in form construction shall be Southern Yellow Pine, No. 2, S4S, Standard Grade Rules Southern Pine Inspection Bureau. Boards shall be 6 inches or more in width.

### 2.02 PLYWOOD

- A. Only grade-marked plywood conforming to APA shall be provided.
- B. Plywood used in form construction shall be Grade B-B, Class 1 plyform, mill-oiled, and sanded on both sides in conformance with U.S. Product Standard PS 1 Structural Plywood.
- C. Thickness shall be sized to maintain alignment and surface smoothness, but not less than 5/8-inch thick.

### 2.03 STEEL FORMS

- A. Commercial grade sheets not less than 16 gauge shall be provided.
- B. Stock material that is free from warps, bends, kinks, cracks, and rust or other matter that could stain the concrete shall be provided.

### 2.04 FORM MATERIAL LOCATIONS

- A. Wall Forms and Underside of Slabs and Beams:

1. Materials: Plywood, hard plastic finished plywood, overlaid waterproof particleboard, or steel in new and undamaged condition, of sufficient strength and surface smoothness to produce specified finish.

B. Column Forms:

1. Rectangular Columns: As specified for walls.
2. Circular Columns: Fabricated steel or fiber reinforced plastic with bolted together sections or spirally wound laminated fiber form internally treated with release agent for height of column.

C. All Other Forms: Materials as specified for wall forms.

D. Rustication Grooves and Chamfer Strips: Nonabsorbent material, compatible with form surface, fully sealed on all sides prohibiting loss of paste or water between the two (2) surfaces.

## 2.05 FORM TIES

A. Locate form ties on exposed surfaces in a uniform pattern. Place form ties so they remain embedded in the concrete except for a removable portion at each end. Form ties shall have conical or spherical type inserts with a maximum diameter of 1 inch. Construct form ties so that no metal is within 1-1/2 inch of the concrete surface when the forms, inserts, and tie ends are removed. Do not use wire ties. Ties shall withstand all pressures and maintain forms within acceptable deflection limits.

B. Tapered form ties shall be tapered through-bolts or through-bolts that utilize a removable tapered sleeve.

C. Integral steel water stop 0.103 inch thick and 0.625 inch in diameter tightly and continuously welded to tie. Neoprene water stop 3/16-inch thick and 15/16 inch diameter whose center hole is one-half diameter of tie or molded plastic water stop of comparable size.

D. Elastic Vinyl Plug:

1. Design and size of plug shall allow insertion with tool to enable plug to elongate and return to original length and diameter upon removal forming watertight seal.
2. Manufacturer:
  - a. Dayton Superior, Miamisburg, OH; A58 Sure Plug.

E. Mechanical EPDM Rubber Plug:

1. Mechanical plug for taper tie.
2. Manufacturers:
  - a. Greenstreak Group Inc.
  - b. or Approved Equal
3. Friction fit plugs will not be allowed.

#### 2.06 FORM CAULKING

- A. Form caulking shall be a one-component, gun-grade silicone sealant that is capable of producing flush, watertight and non-absorbent surfaces and joints. Sealant shall be compatible with the type of forming material and concrete ingredients used.
- B. Products:
  1. Series 1200 Construction Caulking; GE Silicones, Waterford, NY.
  2. Dow Corning 999-A; Dow Corning Co., Midland, MI.
  3. or Approved Equal

#### 2.07 CHAMFER STRIPS

- A. Provide 3/4 inch by 3/4-inch chamfer strips milled from clear, straight-grain pine, surfaced each side, or having extruded vinyl type with or without nailing flange unless otherwise shown on the Contract Documents.

#### 2.08 INSERTS

- A. Provide galvanized cast steel or galvanized welded steel inserts, complete with anchors to concrete and fittings such as bolts, wedges, and straps.

#### 2.09 DOVETAIL ANCHOR SLOTS

- A. Provide dovetail anchor slots manufactured from 22 gage, galvanized steel with removable felt or polyurethane filler shall be provided where specified or shown on the Contract Documents.

#### 2.10 FORM RELEASE AGENT

- A. Form release agent shall not bond with, stain, or adversely affect concrete surfaces and shall not impair subsequent treatments of concrete surfaces when applied to forms. A

ready-to-use water-based material formulated to reduce or eliminate surface imperfections and containing no mineral oil or organic solvents.

- B. Certified as meeting the requirement of ANSI/NSF 61 for contact with potable water.
- C. Manufacturers and Products:
  - 1. BASF, Shakopee, MN; MBT, Rheofinish 211.
  - 2. Cresset Chemical Company; Crete-Lease 20-VOC.
  - 3. Unitex Chemicals; Farm Fresh.
  - 4. Magic Kote: Symons Corporation, Des Plaines, IL.

### PART 3 - EXECUTION

#### 3.01 FORM TOLERANCES

- A. Comply with the requirements of ACI 117 for tolerances for formed surfaces except as specified in Table 031000-1.

<b>Table 031000-1</b>	
Vertical alignment (plumbness)	1/4-inch in any 10 feet and 1-inch maximum for entire length
Variation in the lines and surfaces of foundation mats, base slabs and walls	1/4-inch in any 10 feet and 1-inch max. for entire length
Variation from the level or from the grades indicated on the drawings	1/4-inch in any 10 feet
Variation of the linear building lines from established position in plan	1/2-inch in any 20 feet and 1-inch maximum for entire length
Variation of distance between walls	1/4-inch in any 10 feet and 1-inch maximum for entire length and height
Variation in the sizes and locations of sleeves, floor openings and wall openings	Minus 1/4-inch. Plus 1/2-inch.
Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls	Minus 1/4-inch. Plus 1/2-inch.
Offset between adjacent panels of formwork facing material	1/2-inch (ACI 117 Class C finish).
Offset between adjacent panels of formwork facing material for exposed surfaces where appearance is of importance	1/8-inch (ACI 117 Class A finish).



- B. Tolerances are not cumulative.
- C. Where equipment is to be installed, comply with manufacturer's tolerances if more restrictive than above.
- D. Failure of the forms to produce the specified concrete surface and surface tolerance shall be grounds for rejection of the concrete work. Rejected work shall be repaired or replaced at no additional cost to the DEP.

### 3.02 PREPARATION

- A. Clean form surfaces to be in contact with concrete or foreign material prior to installation. Tape, gasket, plug, and/or caulk joints, gaps, and apertures in forms so that the joint will remain watertight and withstand placing pressures without bulging outward or creating surface irregularities.
- B. Coat form surfaces in contact with concrete with a form release agent prior to form installation.
- C. Keep form coatings off steel reinforcement, items to be embedded, and previously placed concrete.
- D. Steel Forms: Apply form release agent to steel forms as soon as they are cleaned to prevent discoloration of concrete from rust.

### 3.03 ERECTION AND INSTALLATION

- A. Forms shall be constructed in accordance with ACI 347 to required dimensions, plumb, straight and mortar tight, and all joints and seams shall be made mortar-tight. Forms shall be substantial, properly braced, and tied together to maintain position and shape and to resist all pressures to which they may be subject. Unless otherwise indicated on the Contract Documents, formwork shall be constructed so that the concrete surfaces will conform to the tolerance limits in ACI 117 and herein specified.
- B. Provide means for holding adjacent edges and ends of form panels tight and in accurate alignment to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Forms shall be tight and shall prevent the loss of mortar and fines during placing and vibration of concrete.
- C. Provide one cleanout and inspection opening 12 inches wide by 18 inches high every 7 feet at the bottom of each lift of forms.
- D. Provide exterior corners in concrete members with chamfers as specified.
- E. Provide means for removing forms without injury to the surface of finished concrete.

- F. Do not embed any form-tying device or part thereof other than metal in the concrete.
- G. Locate large end of taper tie on the exterior side of the wall.
- H. Use only form or form-tying methods that do not cause spalling of the concrete upon form stripping or tie removal.
- I. Form surfaces of concrete members except where placement of the concrete against the ground is shown in the drawings or as indicated below. The dimensions of concrete members shown in the drawings apply to formed surfaces, except where otherwise indicated. Add 2 inches of concrete where concrete is placed against trimmed undisturbed ground in lieu of forms. Placement of concrete against the ground shall be limited to footings and other non-exposed concrete and only where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing.
- J. Openings shall be of sufficient size to permit final alignment of pipes or other items without deflection or offsets of any kind. Allow space for packing where items pass through the wall to ensure water tightness. Provide openings with continuous keyways and water stops. Provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with additional reinforcement as shown in the typical structural details. Reinforcing shall be at least 2 inches clear from the opening surfaces and encased items.
- K. Set anchor bolts and other embedded items accurately before placing concrete and hold securely in position until the concrete is placed and set. Check special castings, channels, or other metal parts that are to be embedded in the concrete prior to and again after placing concrete. Check nailing blocks, plugs, and strips necessary for the attachment of trim, finish, and similar work prior to placing concrete.

#### 3.04 PROTECTION

- A. During installation, the forms shall not be used as a storage platform or as a working platform until the forms have been permanently fastened in position.

#### 3.05 PIPES AND WALL CASTINGS CAST IN CONCRETE

- A. Install wall spools, wall flanges, and wall anchors before placing concrete. Do not weld, tie, or otherwise connect the wall castings or anchors to the reinforcing steel.
- B. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will occur during construction.

- C. Pipes or wall castings located below operating water level shall have water stop ring collars and shall be cast in place. Do not block out such piping and grout after the concrete section is cast unless permitted, authorized or directed by the Construction Manager in writing. Pipes fitted with thrust rings shall be cast in place.

### 3.06 REMOVAL OF FORMS

- A. Forms shall be removed in accordance with ACI 347 recommendations without damage to concrete and in a manner to ensure complete safety to the structure. Forms, form ties, and bracing shall not be removed without specific permission of the Contractor's Registered Professional Engineer.
- B. The following table indicates the minimum allowable time after the last cast concrete is placed before forms, shoring, or wall bracing may be removed, during which the air surrounding the concrete is above 50 degrees.

<b>Table 031000-2</b>	
Sides of footings and encasements	24 hours
Walls, vertical sides of beams, girders, columns, and similar members not supporting loads	48 hours
Slabs, beams, and girders	10 days (forms only)
Shoring for slabs, beams, and girders	Until concrete strength reaches 70 percent specified 28-day strength
Wall bracing	Until top or roof slab concrete reaches 70 percent specified 28-day strength

- C. Removal times will be increased if the concrete temperature following placement is permitted to drop below 50 degrees F.
- D. Do not remove supports and reshore.

### 3.07 PATCHING OF TAPERED TIE HOLES

- A. Clear tie hole of all loose debris with a taper tie void brush and flush debris from tie hole with air or water.
- B. Install elastic vinyl plug from larger tie hole end in accordance with manufacturer's instructions using an insertion tool as recommended by the manufacturer.

- C. Coat entire annular surface of the hole with epoxy bonding compound prior to filling with non-shrink, non-metallic patching mortar. Apply epoxy in accordance with manufacturer's instructions.
- D. Fill each side of hole with mortar. Apply mortar to the exterior side of the wall first. Consolidate mortar solidly into the hole.
- E. Clear tie hole of all loose debris with a taper tie void brush and flush debris from tie hole with air or water.
- F. Install mechanical plug in accordance with manufactures instructions.
- G. Coat entire annular surface of the hole with epoxy bonding compound prior to filling with non-shrink, non-metallic patching mortar. Apply epoxy in accordance with manufacturer's instructions.
- H. Fill each side of hole with mortar. Apply mortar to the exterior side of the wall first. Consolidate mortar solidly into the hole.

### 3.08 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 031000

## SECTION 032100 - REINFORCEMENT BARS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide concrete reinforcement as indicated and in compliance with Contract Documents:
  - 1. Section includes:
    - a. Reinforcement bars.
    - b. Welded wire reinforcement.
    - c. Reinforcement accessories.

#### 1.02 MEASUREMENT AND PAYMENT

- A. No measurement will be made under this Section. Include costs in items of concrete work for which reinforcement is required.

#### 1.03 REFERENCES

- A. ASTM International (ASTM):
  - 1. A82: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - 2. A184: Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
  - 3. A185/A185M: Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
  - 4. A496: Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
  - 5. A497: Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete Reinforcement.
  - 6. A767: Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
  - 7. A775: Standard Specification for Epoxy-Coated Reinforcement Steel Bars.

8. A884: Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.

B. American Concrete Institute (ACI):

1. 301: Standard Specification for Structural Concrete.
2. 315: Details and Detailing of Concrete Reinforcement.
3. 318: Building Code Requirements for Structural Concrete.
4. SP-66: ACI Detailing Manual.

C. Concrete Reinforcing Steel Institute (CRSI):

1. Manual of Standard Practice.
2. Placing Reinforcing Bars.

D. American Welding Society (AWS):

1. D1.4: Structural Welding Code, Reinforcement Steel.

- E. Where reference is made to one of the above standards, the version in effect at the time of bid opening shall apply.

#### 1.04 SUBMITTALS

- A. Unless otherwise acceptable to the Construction Manager, each submittal shall include reinforcement only for the individual structure to which it pertains.

B. Shop Drawings:

1. Submit bar lists and placing drawings for all reinforced concrete and masonry structures in accordance with Section 013300.
2. Detail reinforcement in conformance with ACI SP-66.
3. Clearly indicate bar sizes, spacing's, locations, and quantities of reinforcement steel and wire reinforcement, bending schedules, and supporting and spacing devices. Show joints, with applicable joint reinforcement.
4. Coordinate bar splicing and placement with Contractor's concrete placing schedule and joint locations. Do not add or delete joints without permission from the Construction Manager.

5. Show wall reinforcement in elevation.
  6. Show slab reinforcement in plan view.
  7. Show location and size of all penetrations greater than 12-inches in diameter or least dimension of the opening with the corresponding added reinforcement around the penetrations.
  8. Clearly show marking for each reinforcement item.
  9. Indicate locations of reinforcement bar cut-offs, splices, and development lengths.
- C. Submit Certificates: Submit AWS qualification certificates for welders employed on the Work Testing shall be conducted and witnessed by an independent testing laboratory prior to welding reinforcement. Maintain qualification and certification records at the job site, readily available for examination of test results.
- D. Submit certified copies of mill test reports of reinforcement analysis dated within the last three months for each shipment of reinforcement with specific lots in shipments identified.
- E. Chemical composition of reinforcement steel: Ladle analysis indicating percentage of carbon, phosphorous, manganese and sulfur present in steel.
- F. Do not fabricate reinforcement until shop and placement drawings have been reviewed and accepted by the Construction Manager.
- G. Perform concrete reinforcement work in accordance with ASTM A184/A184M.
- H. An independent testing Engineer may be retained by the DEP to visually inspect and test reinforcing steel welds in accordance with AWS D1.4/D1.4M.

#### 1.05 QUALIFICATIONS

- A. Welders: AWS qualified within previous 12 months.

#### 1.06 INSPECTION AND TESTING

- A. In no case shall any reinforcement steel be covered with concrete until the installation of the reinforcement has been observed by the Construction Manager and the Construction Manager's authorization to proceed with the concreting has been obtained. The Construction Manager shall be given 48 hours minimum prior notice of the readiness of placed reinforcement for observation. The forms shall be kept open until the Construction Manager has finished observations of the reinforcement steel.

- B. Provide Construction Manager with access to fabrication plant to facilitate inspection of reinforcement. Notify Construction Manager of commencement and duration of shop fabrication, in sufficient time to allow for proper inspection.

#### 1.07 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements in Section 016610.
- B. Keep reinforcement steel free from mill scale, rust, dirt, grease, or other foreign matter.
- C. Ship and store reinforcement steel with bars of the same size and shape fastened in bundles with durable tags, marked in a legible manner with waterproof markings showing the same "mark" designations as those shown on the submitted placing drawings.
- D. Store reinforcement steel off the ground, protected from moisture and kept free from dirt, oil or other injurious contaminants.
- E. Provide equipment for handling epoxy coated reinforcement steel with protected contact areas. Lift bundles of coated reinforcement at multiple pick-up points to minimize bar to bar abrasion from sags in bundles. Do not drop or drag coated reinforcement steel or bundles.
- F. Store coated reinforcement steel on protective cribbing.
- G. Coating damage due to handling, shipment and placing need not be repaired in cases where damaged area is 0.1 sq. inch or smaller. Repair damaged areas larger than 0.1 sq. inch. Maximum amount of damage, including repaired and unrepaired areas, shall not exceed 2 percent of surface area of each bar.

#### 1.08 QUALITY ASSURANCE

- A. Comply with requirements in section 014300.

### PART 2 - PRODUCTS

#### 2.01 REINFORCEMENT STEEL

- A. Reinforcement Steel: ASTM A615/A615M, 60 ksi yield grade; deformed billet steel bars.
- B. Epoxy Coated Reinforcement Steel: Deformed bars conforming to ASTM A615, Grade 60 (420), with epoxy coating in accordance with ASTM A775.
- C. Welded Wire Reinforcement:



1. Provide welded wire reinforcement conforming to ASTM A185.
2. Provide deformed welded wire reinforcement to ASTM A497.
3. Provide support bars and reinforcement bar supports as specified herein to obtain the concrete cover indicated.
4. Provide welded wire reinforcement heavier than W2.9 in flat sheets.

## 2.02 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 16 gage annealed type.
- B. Chairs, Bolsters, Bar Supports, and Spacers: sized and shaped for strength and support of reinforcement during concrete placement.
- C. Use wire reinforcement supports coated with dielectric material including epoxy or other polymer for a minimum distance of 2 inches from the point of contact with epoxy-coated reinforcement.
- D. Provide 3-inch by 3-inch plain precast concrete blocks, precast concrete doweled blocks or concrete brick for support of bottom reinforcement in foundation mats, base slabs, footings, pile caps, grade beams and slabs on grade. Provide block thickness to produce concrete cover of reinforcement as indicated.
- E. Mechanical Couplers
  1. Use of mechanical couplers is subject to the approval of the Construction Manager. Reinforcement Tension Bar Splicers:
    - a. Cadweld or Lenton rebar splicers by Erico Products, Inc.
    - b. Zap ScrewLok rebar splicer by Barsplice Products, Inc.
    - c. DB-SAE splicer system by Richmond Screw Anchor Company, Inc.
    - d. C2D rebar flange coupler by Williams Form Engineering Corporation.
    - e. or Approved Equal.
  2. Develop minimum 125 percent of yield capacity of bars spliced in tension when tested as assembly in accordance with ASTM A370 and A615.
- F. Reinforcement Compression Bar Splicers:

1. Manufacturers: G-Loc splicers by Gateway Building Products Division and Speed-Sleeve by Erico Products, Inc.
  2. or Approved Equal.
- G. Provide epoxy for grouting reinforcement bars specifically formulated for such application for the moisture condition, application temperature, and orientation of the hole to be filled.

## 2.03 FABRICATION

- A. Fabricate concrete reinforcement in accordance with ASTM A184/A184M.
- B. Weld reinforcement in accordance with AWS D1.4 only when permitted by the Construction Manager.
- C. Reinforcement: Clean surfaces, weld and re-protect welded joint in accordance with Manufacturer's instructions.
- D. Locate reinforcement splices not indicated on Contract Drawings, at point of minimum stress. Review location of splices with Construction Manager.
- E. Cold bend bars. Do not straighten or rebend bars.
- F. Do not heat reinforcement steel to bend or straighten.
- G. Bend bars around a revolving collar having a diameter of not less than that recommended by the ACI 318.
- H. Cut bar ends that are to be butt spliced or threaded by saw cutting. Terminate such ends in flat surfaces within 1-1/2 degrees of a right angle to the axis of the bar.
- I. Apply epoxy coating to the deformed reinforcement bars under the following guidelines:
  1. Shop bend reinforcement before coating.
  2. Maintain thickness of the coating at 7 mil +/- 2 mil.
  3. Blast clean bars to near white metal before coating.
  4. Clean and coat cut ends.
  5. Patch damaged areas immediately before visible rust has formed. Patch at the fabrication plant.

6. Provide coatings free from holes, voids, contamination, cracks, and damaged areas. Check coatings visually after curing.
7. Not more than two (2) "holidays" (pinholes not visible to the naked eye) per 12 inch of bar are allowed in the coatings. Test coatings with a 67.5-volt holiday detector in accordance with the Manufacturer's instructions.
8. Check each production lot and certify that all the coated bars are supplied in the fully cured condition.
9. Evaluate the flexibility of the coating by selecting bars from production lots bent 120 degrees (after rebound) around a 6-inch diameter mandrel. Make the bend at a uniform rate in not more than one minute. The longitudinal deformations may be placed in a plane perpendicular to the mandrel radius, and the test specimens shall be at a constant temperature between 70 degrees F and 85 degrees F throughout the bend test.
10. If no cracks in the coating of the bent specimen are visible to the naked eye the coating is satisfactory.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position. Place reinforcement a minimum of 2 inches clear of any metal pipe or fittings.
- B. Do not displace or damage vapor retarder.
- C. Position dowels accurately. Rigidly support, align and securely tie dowels normal to the concrete surface before concrete placement. Setting dowels into wet concrete is prohibited.
- D. Position wall dowels projecting from base slabs on grade with templates or guides held in place above the concrete placement line. Position the templates to obtain the required clearance between the dowels and the face of the walls.
- E. Bars additional to those indicated that may be found necessary or desirable by the Contractor for the purpose of securing reinforcement in position shall be provided by the Contractor at no additional cost to the DEP.
- F. Do not extend continuous reinforcement or other fixed metal items through expansion joints. Provide 2 inches clearance from each face of expansion joint.

- G. Provide additional reinforcement bars to support top reinforcement in slabs. Do not shift reinforcement bars from positions in upper layers to positions in lower layers as a substitute for additional support bars.
- H. Support reinforcement steel in accordance with CRSI “Placing Reinforcement Bars” with maximum spacing of 4 feet-0 inches.
- I. Tie reinforcement steel at intersections in accordance with CRSI “Placing Reinforcement Bars”:
  - 1. Maximum tie spacing for footings, walls and columns: every third intersection or 3 feet-0 inches.
  - 2. Maximum spacing for slabs and other work: every fourth intersection or 3 feet-0 inches.
  - 3. Tie a minimum of 25 percent of all intersecting bars in foundation mats, base slabs, footings, pile caps, slabs on grade and elevated slabs.
  - 4. Secure all dowels in place before placing concrete.
  - 5. Tie wires shall be bent away from the forms and from finished concrete surfaces in order to provide the required concrete coverage.
- J. Locate reinforcement to avoid interference with items drilled in later, such as concrete anchors.

### 3.02 WELDED WIRE REINFORCEMENT

- A. Extend welded wire reinforcement to within 2 inches of edges of slab or section. Lap sheets at least 12 inches or two wire spaces, whichever is greater, at ends and edges and wire tightly together. Stagger end laps.
- B. Unless shown otherwise on Contract Drawings, place welded wire reinforcement in slabs on grade between the upper third point and mid-point of slab. Placing welded wire reinforcement on the subgrade and pulling it up during concrete placement is not permitted.
- C. Support welded wire reinforcement placed over the ground on wired concrete blocks (dobies) spaced not more than 3 feet on centers in any direction.
- D. Support welded wire reinforcement placed over horizontal forms on slab bolsters spaced not more than 30 inches on center.
- E. Mechanical coupler systems may be substituted for dowels at Contractor’s option when permitted by Construction Manager.

- F. Provide additional reinforcement bars to support ties and stirrups in beams where top reinforcement is not continuous.
  - G. Securely support and tie reinforcement steel to prevent movement during concrete placement.
  - H. Ship, handle, and place stainless steel reinforcement bars such that they do not come into direct contact with carbon steel. Use stainless steel or non-metallic tie wires and bar chairs. Use nylon, PVC, or polyethylene spacers where stainless steel bar must be attached to carbon steel, to maintain a minimum 1-inch clearance.
  - I. Unless otherwise shown on the Contract Drawings or permitted by the Construction Manager, do not bend reinforcement bars that project from in-place concrete.
  - J. Do not weld reinforcement steel bars (including tack welded) either during fabrication or erection unless specifically shown on the Contract Drawings or specified herein, or unless prior written permission has been obtained from the Construction Manager. Immediately remove bars that have been welded, including tack welds, without such permission from the work. Comply with AWS D1 when welding of reinforcement is or called for.
  - K. Reinforcement steel interfering with the location of other reinforcement steel, conduits or embedded items may be moved within the specified tolerances or one bar diameter, whichever is greater, up to 3 inches. Make greater displacement of bars to avoid interference only with the permission of the Construction Manager. Do not cut reinforcement to install inserts, conduits, mechanical openings or other items without the prior permission from the Construction Manager.
  - L. Reinforcement shall be clean and free from loose mill scale, dirt, grease, oil, form release agent, dried concrete or any material reducing bond with concrete.
  - M. Setting bars and welded wire reinforcement on layers of fresh concrete as the Work progresses or adjusting reinforcement during the placement of concrete is prohibited.
  - N. Provide and place safety caps on all exposed ends of vertical reinforcement that pose a danger to injury or life safety.
- 3.03 CONCRETE COVER OVER REINFORCEMENT BARS
- A. Conform to ACI 318 and drawings for concrete cover over reinforcement.
- 3.04 REINFORCEMENT AROUND OPENINGS AND PENETRATIONS
- A. Accommodate placement of formed openings and penetrations.

- B. Unless specific additional reinforcement around openings and penetrations is shown on the Contract Drawings, provide additional reinforcement steel on each side of opening or penetration equivalent to one half of the cross-sectional area of the reinforcement steel interrupted by an opening or penetration. The bars shall have sufficient length to be fully developed at each end beyond the opening or penetration.
- C. Refer to details on Contract Drawings for additional diagonal bars around openings or penetrations and bar extension length on each side of openings or penetrations.
- D. Where welded wire fabric is used provide extra reinforcement using fabric or deformed bars around opening or penetration.

### 3.05 SPLICING OF REINFORCEMENT

- A. Splices may be used to provide continuity due to bar length limitations. Minimum length of bars spliced for this reason is 30 feet. Do not splice reinforcement that is detailed to be continuous in the Contract Drawings.
- B. Stagger bar splices.
- C. Provide tension lap splices at all laps in compliance with ACI 318. Class A splices may be used when 50 percent or less of the bars are spliced within the required lap length. Use Class B splices at all other locations.
- D. Except as otherwise indicated on the Contract Drawings, stagger splices in circumferential reinforcement in circular walls using Class B tension splices. Do not splice adjacent bars within the required lap length.
- E. Make splices for reinforcement in tension tie members, with a full mechanical or full welded splice and staggered at least 30 inches.
- F. Make splices in column spiral reinforcement, when necessary, by a lap of 1-1/2 turns.
- G. Make reinforcement continuous through construction joints.
- H. Reinforcement may be spliced at construction joints provided that entire lap is placed within only one (1) concrete placement.

### 3.06 ACCESSORIES

- A. Provide accessories such as chairs, chair bars and the like in sufficient quantities and strength to adequately support the reinforcement and prevent its displacement during the erection of the reinforcement and the placement of concrete.
- B. Use precast concrete blocks where the reinforcement steel is to be supported over soil.

- C. Provide stainless steel bar supports or steel chairs with plastic tips where the chairs are set on forms for a concrete surface that will be exposed to weather, high humidity or liquid (including bottom of slabs over liquid containing areas) unless otherwise noted on Contract Documents.
- D. Do not use metal chairs, ferrous clips, nails, etc. that extend to the surfaces of the concrete. Do not use stones, brick or wood block supports.
- E. Do not use alternate methods of supporting top steel in slabs, such as steel channels supported on the bottom steel or vertical reinforcement steel fastened to the bottom and top mats unless permitted by the Construction Manager.
- F. Mechanical Couplers:
  - 1. Couplers that are located at a joint face can be a type that can be set either flush or recessed from the face as indicated.
  - 2. Seal couplers during concrete placement to completely eliminate concrete or cement paste from entering.
  - 3. Recess couplers intended for future connections a minimum of 1/2 inch from the concrete surface. After the concrete is placed, plug the coupler with plastic plugs that have an O-ring seal and the recess filled with sealant to prevent any contact with water or other corrosive materials.
  - 4. Unless indicated otherwise, provide mechanical coupler spacing and size to match the spacing and size of the reinforcement indicated for the adjacent section.

### 3.07 PLACEMENT OF EPOXY COATED REINFORCEMENT

- A. Pad bundling bands and lift with strong backs or a platform bridge to prevent abrasion of bars by sagging in the bundles.
- B. Do not drop or drag bars or bundles.
- C. Patch and touch up coated bars after placing. Do not place concrete until patching is approved by the Construction Manager.
- D. In systems for lifting, transporting and storing coated bars, pad areas in contact with the bars.

### 3.08 FIELD QUALITY CONTROL

- A. Remove reinforcement with kinks or bends not shown on shop or placement drawings. Remove such reinforcement from job site and replace with new fabricated steel. Do not

field bend of reinforcement unless reinforcement is indicated or specified to be field bent.

- B. Protect reinforcement from rusting, deforming, bending, kinking, and other injury. Clean in-place reinforcement that has rusted or been splattered with concrete using sand or water blasting prior to incorporation into the Work.

### 3.09 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 032100



## SECTION 033000 - CAST-IN-PLACE CONCRETE

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide cast-in-place concrete as indicated and in compliance with Contract Documents.

#### 1.02 REFERENCES

- A. American Concrete Institute (ACI):

1. 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
2. 214R: Recommended Practice for Evaluation of Strength Test Results of Concrete.
3. 301: Standard Specifications for Structural Concrete.
4. 304R: Guide for Measuring, Mixing, Transporting and Placing Concrete.
5. 304.2R: Placing Concrete by Pumping Methods.
6. 305R: Hot Weather Concreting.
7. 306R: Cold Weather Concreting.
8. 308: Standard Practice for Curing Concrete.
9. 309R: Guide for Consolidation of Concrete.
10. 311.4R: Guide for Concrete Inspection.
11. 318: Building Code Requirements for Structural Concrete.

- B. ASTM International (ASTM):

1. A123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. A153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

3. C31: Standard Practice for Making and Curing Concrete Test Specimens in the Field.
4. C33: Standard Specification for Concrete Aggregates.
5. C39: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
6. C40: Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
7. C42: Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
8. C87: Standard Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar.
9. C88: Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
10. C94: Standard Specification for Ready-Mixed Concrete.
11. C109: Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in Cube Specimens).
12. C123: Standard Test Method for Lightweight Particles in Aggregate.
13. C136: Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
14. C138: Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.
15. C143: Standard Test Method for Slump of Hydraulic Cement Concrete.
16. C150: Standard Specification for Portland Cement.
17. C157: Standard Test Method for Length Change of Hardened Hydraulic Cement, Mortar and Concrete.
18. C171: Standard Specification for Sheet Materials for Curing Concrete.
19. C172: Standard Practice for Sampling Freshly Mixed Concrete.
20. C192: Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.

21. C231: Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
22. C260: Standard Specification for Air-Entraining Admixtures for Concrete.
23. C289: Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method).
24. C295: Standard Guide for Petrographic Examination of Aggregates for Concrete.
25. C309: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
26. C311: Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete.
27. C494: Standard Specification for Chemical Admixtures for Concrete.
28. C595: Standard Specification for Blended Hydraulic Cements.
29. C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
30. C881: Standard Test Method for Epoxy Resin Base Bonding Systems for Concrete.
31. C882: Standard Test Method for Bond Strength of Epoxy Resin Systems Used with Concrete by Slant Shear.
32. C989: Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
33. C1017: Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
34. C1064: Standard Test Method for Temperature of Freshly Mixed Portland Cement Concrete.
35. C1107: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
36. C1116: Standard Specification for Fiber Reinforced Concrete.
37. C1240: Standard Specification for Silica Fume for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout.

38. D75: Standard Practice for Sampling Aggregates.
39. E154: Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
40. E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
41. E329: Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction.

C. American Association of State Highway and Transportation Officials (AASHTO):

1. M182: Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats.

1.03 SUBMITTALS

A. Submit the following shop drawings in accordance with Section 013300.

B. Product Data:

1. Manufacturer's specifications and instructions including Safety Data Sheets (SDS) for admixtures and curing materials. Manufacturer's certification of compatibility of all admixtures.

C. Shop Drawings:

1. Provide certificate that cement used complies with ASTM C150 and this Section.
2. Provide certificate of compliance with these specifications from the manufacturer of the concrete admixtures.
3. For each formulation of concrete proposed, provide concrete mix designs and laboratory 7-day and 28-day compressive tests, or submit test results of 7- and 28-day compressive tests of the mix where the same mix has been used on two (2) previous projects in the past twelve months.
4. Proposed special procedures for protection of concrete under wet weather placement conditions.
5. Proposed special procedures for protection and curing of concrete under hot and cold weather conditions.

D. Test and Evaluation Reports

1. Provide results of drying shrinkage tests from trial concrete mixes by the Contractor's testing laboratory firm.

E. Manufacturer's Instructions

1. Provide epoxy bonding compound manufacturer's specific instructions for use. Provide manufacturer's data sheets as to suitability of product to meet job requirements with regard to surface, pot life, set time, vertical or horizontal application, and forming restrictions.

F. Field Quality Control Submittals

1. Provide delivery tickets for ready-mix concrete or weighmasters certificate per ASTM C94, including weights of cement and each size aggregate and amount of water added at the plant and record of pours. Record the amount of water added on the job on the delivery ticket. Water added at the plant shall account for moisture in both coarse and fine aggregate.

1.04 QUALITY ASSURANCE

- A. Provide in accordance with Section 014300.
- B. Unless otherwise indicated, materials, workmanship, and practices shall conform to the following standards:
  1. ACI 301, "Structural Concrete for Buildings."
  2. ACI 318, "Building Code Requirements for Reinforced Concrete."
- C. Where provisions of pertinent codes and standards conflict with this Section, the more stringent provisions govern.
- D. Concrete not meeting the minimum specified 28-day design strength shall be cause for rejection and removal from the work.
- E. Perform concrete work in conformance with ACI 301 unless otherwise specified.
- F. Do not use admixtures, including calcium chloride, which will cause accelerated setting of cement in concrete.
- G. Do not place concrete until design mix, material tests, and trial concrete batch mix compression test results are accepted by the Construction Manager.
- H. The NJDEP shall employ an independent testing laboratory, acceptable to the Construction Manager, to test conformity of materials to specifications. Concrete testing

shall be performed by an ACI Concrete Field Technician, Grade I or equivalent. Allow free and safe access to obtain test samples.

- I. Methods of Sampling and Testing:
  - 1. Fresh Concrete Sampling: ASTM C172.
  - 2. Specimen Preparation: ASTM C31.
  - 3. Compressive Strength: ASTM C39.
  - 4. Air Content: ASTM C231.
  - 5. Slump: ASTM C143.
  - 6. Temperature: ASTM C1064.
  - 7. Unit Weight: ASTM C138.
  - 8. Obtaining Drilled Cores: ASTM C42.
  - 9. Drying Shrinkage: ASTM C157.
- J. Acceptance of Structure: Acceptance of completed concrete work requires conformance with dimensional tolerances, appearance and strength as indicated or specified.
- K. Hot weather concrete to conform to ACI 305R and as specified herein.
- L. Cold weather concrete to conform to ACI 306R and as specified herein.
- M. Reject concrete delivered to job site that exceeds the time limit or temperature limitations specified.
- N. Do not place concrete in water or on frozen or un-compacted ground.
- O. Workability:
  - 1. Concrete shall be of such consistency and composition that it can be worked readily into the forms and around the reinforcement without excessive vibrating and without permitting the materials to segregate or free water to collect on the surface.
  - 2. Adjust the proportions to secure a plastic, cohesive mixture, and one that is within the specified slump range.

3. To avoid unnecessary changes in consistency, obtain the aggregate from a source with uniform quality, moisture content, and grading. Handle materials to minimize variations in moisture content that would interfere with production of concrete of the established degree of uniformity and slump.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide in conformance with Section 016610 and as specified herein.
- B. Deliver concrete to discharge locations in watertight agitator or mixer trucks without altering the specified properties of water-cement ratio, slump, air entrainment, temperature and homogeneity.
- C. Reject concrete not conforming to specification, unsuitable for placement, exceeding the time or temperature limitations or not having a complete delivery batch ticket.

#### 1.06 SITE CONDITIONS

- A. Do not place concrete until conditions and facilities for making and curing control test specimens are in compliance with ASTM C 31 and as specified herein.

#### 1.07 MEASUREMENT AND PAYMENT

- A. The total volume of the Cast-in-Place concrete will not be measured and the work will be paid for at the price included in the bid form for this section based on the percentage of the work completed.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Cement:
  1. Portland Cement, ASTM C150, Type II, Type I, Type 3 or blended hydraulic cement, ASTM C595, Type IP (MS).
  2. Use only one (1) brand of cement in any individual structure. Use no cement that has become damaged, partially set, lumpy, or caked. Reject the entire contents of the sack or container that contains such cement. Use no salvaged or reclaimed cement.
  3. Maximum tricalcium aluminate shall not exceed 8 percent. The maximum percent alkalis shall not exceed 0.6 percent.

B. Fly Ash:

1. Provide fly ash conforming to the following requirements:
  - a. Class F or Class C fly ash conforming to ASTM C 618 for chemical and physical properties.
  - b. Supplemental requirements in percent:
    - (1) Maximum carbon content: 3 percent.
    - (2) Maximum sulfur trioxide (SO<sub>3</sub>) content: 4 percent.
    - (3) Maximum loss on ignition: 3 percent.
    - (4) Maximum water requirement (as a percent of control): 100 percent.
    - (5) Fineness, maximum retained on No. 325 sieve: 25 percent.
2. Fly ash used in concrete that contacts potable water shall be certified as meeting the requirements of ANSI/NSF 61.

C. Ground Granulated Blast Furnace Slag (GGBF):

1. GGBF, when used, shall meet the requirements of ASTM C989, Grade 100 or better.

D. Fine Aggregates:

1. Clean, sharp, natural sand conforming to requirements of ASTM C33 with a fineness modulus between 2.50 and 3.0.

E. Coarse Aggregate:

1. Well graded crushed stone, natural rock conforming to requirements of ASTM C33.
2. Limit deleterious substances in accordance with ASTM C33, Table 3, Severe Weathering Regions, limit clay lumps not to exceed 1.0 percent by weight, and limit loss when tested for soundness using magnesium sulfate to 12 percent.

F. Water and Ice:

1. Use water and ice free from injurious amounts of oil, acid, alkali, salt, organic matter or other deleterious substances and conforms to requirements of ASTM C94.



2. Water shall not contain more than 500 mg/L of chlorides or more than 500 mg/L of sulfate.
3. Heat or cool water to obtain concrete temperatures specified, and in conformance with ACI 305R and ACI 306R.

G. Concrete Admixtures:

1. Maintain compressive strength and maximum water-cement ratios specified in Table 033000-1 when using admixtures. Include admixtures in solution form in the water-cement ratio calculations.
2. Do not use any admixture that contains chlorides or other corrosive elements in any concrete. Admixtures shall be nontoxic after 30 days. Use admixtures in compliance with the manufacturer's printed instructions. The manufacturer shall certify the compatibility of multiple admixtures used in the same mix.
  - a. Class A concrete; an air-entraining admixture conforming to ASTM C260.
  - b. Products:
    - (1) BASF Corporation; MB-AE 90.
    - (2) Sika Corporation, AER.
    - (3) or Approved Equal
  - c. Adjust the admixture content to accommodate fly ash or pozzolan requirements, and other admixtures when used, in order to obtain the specified air content.
4. Water Reducing:
  - a. Class A concrete; a water-reducing admixture conforming to ASTM C494, Type A and compatible with the air-entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations.
  - b. Products:
    - (1) BASF Corporation; Polyheed Series.
    - (2) Sika Corporation, Plastocrete 161.
    - (3) WR Grace & Co.;Darex II-AEA.

(4) Euclid Chemical Company; Eucon NW.

(5) or Approved Equal

5. Water Reducing and Retarding:

a. Class A concrete; a water-reducing and retarding admixture conforming to ASTM C494, Type D and compatible with the air-entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations.

b. Products:

(1) BASF Corporation; Pozzolith Series.

(2) Sika Corporation; Plastiment.

(3) Euclid Chemical Company; Eucon WR-91.

(4) or Approved Equal

6. High-Range Water-Reducing Admixture (Superplasticizer):

a. Class A concrete; a High-Range water-reducing admixture conforming to ASTM C494, Type F or ASTM C1017, Type I.

b. Products:

(1) BASF Corporation; Glenium Series.

(2) WR Grace & Co.; Daracem 100.

(3) Euclid Chemical Company; Eucon SPC.

(4) or Approved Equal

7. Shrinkage Reducing Admixture:

a. Class A concrete; shrinkage-reducing admixture is permitted to be used in the mix to meet shrinkage limitations provided that specified strength is met and there is no reduction in sulfate resistance and no increase in permeability. Quantity of shrinkage-reducing admixture used in the mix shall be added to the quantity of water for purposes of determining the water/cementitious materials ratio.

b. Products:

- (1) BASF Corporation; Tetragurad AS20.
- (2) WR Grace & Co.; Eclipse.
- (3) Euclid Chemical company; Eucon SRA.
- (4) or Approved Equal

H. Epoxy Bonding Agent:

1. Epoxy bonding agent shall conform to ASTM C881 Type I, II, IV or V; Grade 2 for epoxy resin adhesives. The class of epoxy bonding agent shall be suitable for ambient and substrate temperatures.
2. Products:
  - a. Sika Corp.; Sikadur 32.
  - b. Euclid Chemical Company; Duralcrete.
  - c. BASF Corporation, Concrecive Liquid LPL.
  - d. or Approved Equal
3. Vapor Retarder: 10 mil polyethylene sheet conforming to ASTM E1745.

I. Curing Compound:

1. Liquid form, which will form impervious membrane over, exposed surface of concrete when applied to fresh concrete by means of spray gun. Compound shall not inhibit future bond of floor covering or concrete floor treatment. Use Type I-D compound with red fugitive dye, Class B, having 18 percent minimum solids conforming to ASTM C309.
2. Provide a copy of manufacturer's certification that the curing compound meets the requirements of ANSI/NSF 61 for concrete surfaces that will be in contact with potable water.
3. Products:
  - a. BASF Building Systems; Kure 1315.
  - b. Euclid Chemical Company; Super Diamond Clear VOX.
  - c. W. R. Meadows, Inc.; VOCOMP-30.

- d. Dayton Superior Corp; Safe Cure and Seal 30 percent.
    - e. or Approved Equal
  - J. Burlap Mats:
    - 1. Conform to AASHTO M182.
  - K. Sisal-Kraft Paper and Polyethylene Sheets for Curing:
    - 1. Conform to ASTM C171.
- 2.02 MIXES
- A. Conform to ASTM C94, except as modified by these specifications.
  - B. Air content as determined by ASTM C231:
    - 1. 5 +/- 1-1/2 percent for concrete using 1-1/2-inch maximum aggregate size.
    - 2. 6 +/- 1-1/2 percent for concrete using 3/4-inch maximum aggregate size.
  - C. Provide concrete with the following compressive strengths at 28 days and proportion it for strength and quality requirements in accordance with ACI 318. The resulting mix shall not conflict with limiting values specified in Table 033000-1.

<b>Table 033000-1</b>				
<b>Class</b>	<b>Type of Work</b>	<b>28-Day Minimum Compressive Strength (psi)</b>	<b>Minimum Cementitious Content (lbs per C.Y.)</b>	<b>Maximum Water/ Cement Ratio</b>
A	Concrete for all structures and concrete not otherwise specified. Concrete fill at structure foundations, cradle, supports across pipe trenches, and reinforced pipe encasement.	4,000	560 600	0.44 0.42
B	Pavement, concrete topping	3,000	500	0.54
C	Concrete fill below structure foundations, Concrete topping, miscellaneous unreinforced concrete.	2,000	376	0.60
D	Prestressed concrete	6,000	710	0.40
E	Precast concrete	5,000	630	0.40

D. Measure slump in accordance with ASTM C143:

1. Proportion and produce the concrete to have a maximum slump of 4 inches. A tolerance of up to 1 inch above the indicated maximum is allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. Concrete of lower than usual slump may be used provided it is properly placed and consolidated.
2. Mixes containing water reducers shall have a maximum slump of 6 inches after the addition of a mid-range water reducer and maximum slump of 8 inches after the addition of a high range water reducer.

E. Pozzolan Content:

1. Fly ash shall not exceed 20 percent of the total cementitious content.
2. Ground Granulated Blast Furnace Slag (GGBF) will be permitted as a substitute for fly ash at no additional cost to the Owner, in the event that Class F Fly Ash is not available. The slag substitution shall be in the same proportions and percentages of the total cementitious material as shown for fly ash. A higher percentage of GGBF will be allowed if permitted by the Resident Engineer to suit project needs.

3. Use silica fume concrete where indicated on the drawings. Silica fume not to exceed 10 percent of the total weight of the silica fume plus cement.

F. Aggregate Size:

1. Aggregate size shall be 3/4-inch maximum for slabs and sections 8 inches thick and less. Aggregate size shall be 1 inch maximum for sections greater than 8 inches and less than 17 inches. Aggregate size shall be 1-1/2 inches maximum for all larger slabs and sections. Aggregate size for floor topping shall be maximum 3/8-inch.
2. Combined aggregate grading shall be as shown in the following table:

Table 033000-2						
Sieve Sizes	Maximum Aggregate Size					
	1 1/2 inch		1 inch		3/4 inch	
	Percent Passing					
2 inch	100		---		---	
1 1/2 inch	90	to	100	100		---
1 inch	50	to	86	90	to	100
3/4-inch	45	to	75	55	to	100
3/8-inch	38	to	55	45	to	75
No. 4	30	to	45	35	to	60
No. 8	23	to	38	27	to	45
No. 16	17	to	33	20	to	35
No. 30	10	to	22	12	to	25
No. 50	4	to	10	5	to	15
No. 100	1	to	3	1	to	5
No. 200	0	to	2	0	to	2

3. Combined aggregate grading shall be as shown in the following table:

<b>Table 033000-3</b>				
Maximum Aggregate Size	1-1/2 inch	1 inch	3/4-inch	3/8-inch
Aggregate Grade per ASTM C33	467	57	67	8

## PART 3 - EXECUTION

### 3.01 SUBGRADE INSPECTION

- A. Examine the subgrade and the conditions under which work is to be performed and notify the Construction Manager in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions are corrected to comply with specified subgrade conditions in a manner acceptable to the Construction Manager.

### 3.02 MIXING AND TRANSPORTING CONCRETE

- A. General: Conform to concreting procedures set forth in ASTM C94, ACI 304R, and as specified herein.
1. Transport concrete to discharge locations without altering the specified properties of water-cement ratio, slump, air entrainment, temperature and homogeneity.
  2. Discharge concrete into forms within 1-1/2 hours after cement has entered mixing drum or before the drum has revolved 300 revolutions after the addition of water, whichever occurs first.
  3. Do not add water at the jobsite unless permitted by the Construction Manager. If it is necessary to add water to obtain the specified slump, add water per ASTM C94, but do not exceed the maximum water content in the reviewed concrete design mix. Added water shall be incorporated by additional mixing of at least 35 revolutions.
  4. Do not add water to concrete containing high range water reducing admixture. Do not add water to concrete in delivery equipment not acceptable for mixing.
  5. Keep a record showing time and place of each pour of concrete, together with transit-mix delivery slips certifying the contents of the pour.
  6. Discharge of concrete shall be completed within the limits set out in Table 033000-4.

<b>Table 033000-4</b>	
<b>Maximum Time to Concrete Discharge</b>	
<b>Concrete Temperature</b>	<b>Limit</b>
Over 90 Degree F	Remove concrete from jobsite and discard concrete
86 to 90 Degree F	45 minutes
81 to 85 Degree F	60 minutes
70 to 80 Degree F	75 minutes
Below 70 Degree F	90 minutes

- B. Conveying: Convey concrete from agitator or mixer truck to place of final deposit in forms by one of the following methods:
1. Buckets or hoppers with discharge gates having a clear opening equal to not less than one-third the maximum interior horizontal area or five (5) times the maximum aggregate size being used, whichever is greater, and side slopes of not less than 60 degrees to horizontal.
  2. Buggies or wheelbarrows equipped with pneumatic tires.
  3. Round bottom, metal or metal-lined chutes with inclined slope of between 2 to 3 feet horizontally to 1 foot vertically and of sufficient capacity to avoid overflow.
  4. Circular drop pipes with a top diameter of at least eight (8) times the maximum aggregate size, but not less than 6 inch, or tapered to not less than six (6) times maximum aggregate size.

### 3.03 CONCRETE ACCEPTANCE

- A. Accept or reject each batch of concrete delivered to the point of agitator or mixer truck discharge. Sign delivery batch tickets to indicate concrete acceptance.
- B. Reject concrete delivered without a complete concrete delivery batch ticket as specified herein. The concrete supplier will furnish copies of the signed batch ticket to the Contractor and Construction Manager.
- C. The testing agency shall perform field tests at the point of agitator or mixer truck discharge. Accept or reject concrete on the basis of conformity with slump, air content and temperature specified.
- D. The testing agency shall inspect concrete transit truck's barrel revolution counter and gauge for measuring water added to the concrete. Reject concrete that exceeds the maximum barrel revolution of 300, the limits in Table 033000-4 or concrete that has water content exceeding the specified water-cement ratio.



- E. Reject concrete not conforming to specification before discharging into the forms.

### 3.04 PREPARATION AND COORDINATION

- A. Contractor shall notify the Construction Manager of readiness to place concrete in any portion of the work a minimum of five (5) working days prior to concrete placement. Failure to provide this notification will be cause for delay in placing until observations can be completed.
- B. Reinforcement, installation of waterstop, positioning of embedded items, and condition of formwork will be observed by the Construction Manager prior to concrete placement.
- C. Coordinate the sequence of placement such that construction joints will occur only as designed.
- D. Schedule sufficient equipment for continuous concrete placing. Provide for backup equipment and procedures to be taken in case of an interruption in placing. Provide backup concrete vibrators at the Project site. Test concrete vibrators the day before placing concrete.
- E. Compact the subgrade and/or bedding. Saturate the subgrade approximately eight (8) hours before placement and sprinkle ahead of the placement of concrete in areas where vapor barrier is not used. Remove standing water, mud, and foreign matter before concrete is deposited.
- F. Where shown on Contract Drawings, intentionally roughen surfaces of set concrete in a manner to expose bonded aggregate uniformly at joints.

### 3.05 CONCRETE PLACEMENT

- A. Placement shall conform to ACI 304R as modified by this Section.
- B. Alternate sections of concrete walls and slabs may be cast simultaneously. Do not place adjacent sections of walls and slabs until seven (7) days after placement of first placed concrete.
- C. Do not place concrete until free water has been removed or has been diverted by pipes or other means and carried out of the forms, clear of the work. Do not deposit concrete underwater, and do not allow free water to rise on any concrete until the concrete has attained its initial set. Do not permit free or storm water to flow over surfaces of concrete so as to injure the quality or surface finish.
- D. Do not place concrete during inclement weather. Protect concrete placed from inclement weather. Keep sufficient protective covering ready at all times for this purpose.

- E. Deposit concrete at or near its final position to avoid segregation caused by rehandling or flowing. Do not deposit concrete in large quantities in one place to be worked along the forms with a vibrator.
- F. Deposit concrete continuously and in level layers 1 to 2 feet thick. Avoid inclined layers and cold joints. Place concrete at lower portion of slope first on sloping surfaces.
- G. Do not deposit partially hardened concrete in forms. Retempering of partially hardened concrete is not permitted. Remove partially hardened concrete from site at no additional compensation.
- H. Do not allow concrete to fall freely in forms to cause segregation (separation of coarse aggregate from mortar). Limit maximum free fall of concrete to 4 feet. Do not move concrete horizontally more than 4 feet from point of discharge. Space points of deposit not more than 8 feet apart.
- I. At least two (2) hours shall elapse after depositing concrete in the columns or walls before depositing in beams, girders, or slabs supported thereon. Place beams, girders, brackets, column capitals, and haunches monolithically as part of the floor or roof system, unless otherwise shown on Contract Drawings.
- J. Consolidate concrete using mechanical vibrators operated within the mass of concrete and/or on the forms conforming to procedures set forth in ACI 309R and as specified herein.
- K. Conduct vibration to produce concrete of uniform texture and appearance, free of honeycombing, streaking, cold joints, or visible lift lines.
- L. Conduct vibration in a systematic manner with regularly maintained vibrators. Furnish sufficient backup units at job site. Use vibrators having minimum frequency of 8,000 vibrations per minute and of sufficient amplitude to consolidate concrete. Use not less than one vibrator with crew for each 35 to 40 cubic yards of concrete placed per hour.
- M. Insert and withdraw vibrator vertically at a uniform spacing over the entire area of placement. Space distances between insertions such that spheres of influence of each insertion overlap.
- N. Use additional vibration with pencil vibrators on vertical surfaces and on exposed concrete to bring full surface of mortar against the forms so as to eliminate air voids, bug holes and other surface defects. Employ the following additional procedures for vibrating concrete as necessary to maintain proper consolidation of concrete:
  - 1. Reduce distance between internal vibration insertions and increase time for each insertion.

2. Insert vibrator as close to face of form as possible without contacting form or reinforcement.
3. Thoroughly vibrate area immediately adjacent to waterstops without damaging the waterstop.
4. Use spading as a supplement to vibration where particularly difficult conditions exist.

O. Pumping Concrete:

1. Conform to the recommendations of ACI 304.2R except as modified herein.
2. Base pump size on rate of concrete placement, length of delivery pipe or hose, aggregate size, mix proportions, vertical lift, and slump of concrete.
3. Use pipe with inside diameter of at least three times the maximum coarse aggregate size, but not less than 2 inches.
4. Do not use aluminum pipes for delivery of concrete to the forms.

P. Waterstops:

1. Prevent displacement of waterstops during concrete placement.

### 3.06 CURING AND PROTECTION

A. General:

1. Protect concrete from premature drying, hot or cold temperatures, and mechanical injury, beginning immediately after placement and maintain concrete with minimal moisture loss at relatively constant temperature.
2. Comply with curing procedures set forth in ACI 301, ACI 308 and as specified herein.
3. Perform hot weather concreting in conformance with ACI 305R and as specified herein when the ambient atmospheric temperature is 80 degrees F or above.
4. Perform cold weather concreting in conformance with ACI 306R.
5. Concrete required to be moist cured shall remain moist for the entire duration of the cure. Repeated wetting and drying cycles of the curing process will not be allowed.

B. Curing Duration:

1. Start initial curing after placing and finishing concrete as soon as free moisture has disappeared from unformed concrete surfaces. Initial curing starts as soon as concrete achieves final set. Forms left tightly in place are considered as part of the curing system, provided that wooden forms are kept continuously moist. Keep continuously moist for not less than 72 hours.
2. Begin final curing procedures immediately following initial curing and before the concrete has dried. Continue final curing for at least seven (7) days and in accordance with ACI 301 procedures for a total curing period, initial plus final, of at least 10 days.
3. Avoid rapid drying at the end of the final curing period

C. Curing Requirements:

1. Unformed Surfaces: Cover and cure entire surface of newly placed concrete immediately after completing finishing operations and water film has evaporated from surface or as soon as marring of concrete will not occur. Protect finished slabs from direct rays of the sun to prevent checking, crazing and plastic shrinkage.
2. Formed Surfaces: Minimize moisture loss for formed surfaces exposed to heating by the sun by keeping forms wet until safely removed. Keep surface continuously wet by warm water spray or warm water saturated fabric immediately following form removal unless otherwise permitted by the Construction Manager.
3. Water containment and below Grade Structures: Moist cure by the application of water to maintain the surface in a continually wet condition unless otherwise permitted by the Construction Manager. Use water that is free of impurities that could etch or discolor exposed concrete surfaces.
4. Other concrete: Moist cure by moisture-retaining cover curing, or by the use of curing compound.

D. Curing Methods:

1. Water Curing: Use water curing for unformed surfaces. Continuously water cure all exposed concrete for the entire curing period. Provide moisture curing by any of the following methods:
  - a. Keeping the surface of the concrete continuously wet by ponding or immersion.
  - b. Continuous water-fog spray or sprinkling.

- c. Covering the concrete surface with curing mats, thoroughly saturating the mats with water, and keeping the mats continuously wet with sprinklers or porous hoses. Place curing mats so as to provide coverage of the concrete surfaces and edges, with a 4-inch lap over adjacent mats. Weight down the curing cover to maintain contact with the concrete surface.
- 2. Sealing Materials:
  - a. Use common sealing materials such as plastic film or waterproofing (kraft) paper.
  - b. Lap adjacent sheets a minimum of 12 inch. Seal edges with waterproof tape or adhesive. Use sheets of sufficient length to cover sides of concrete member.
  - c. Place sheet materials only on moist concrete surfaces. Wet concrete surface with fine water spray if the surface appears dry before placing sheet material.
  - d. The presence of moisture on concrete surfaces at all times during the prescribed curing period is proof of acceptable curing using sheet material.
- 3. Membrane Curing Compound:
  - a. Apply membrane-curing compound uniformly over concrete surface by means of roller or spray at a rate recommended by the curing compound manufacturer, but not less than 1 gallon per 150 square feet of surface area. Agitate curing material in supply container immediately before transfer to distributor and thoroughly agitate it during application for uniform consistency and dispersion of pigment.
  - b. Do not use curing compounds on construction and expansion joints or on surfaces to receive liquid hardener, dustproofer/sealer, concrete paint, tile, concrete fills and toppings or other applications requiring positive bond.
  - c. Reapply membrane-curing compound to concrete surfaces that have been subjected to wetting within three (3) hours after curing compound has been applied by method for initial application.
- E. Protection from environmental conditions: Maintain the concrete temperature above 50 degrees F continuously throughout the curing period. Make arrangements before concrete placing for heating, covering, insulation or housing to maintain the specified temperature and moisture conditions continuously for the curing period.

1. When the atmospheric temperature is 80 degrees F and above, or during other climatic conditions which will cause too rapid drying of the concrete, make arrangements before the start of concrete placing for the installation of wind breaks or shading, and for fog spraying, wet sprinkling, or moisture-retaining covering.
  2. Protect the concrete continuously for the entire curing period.
  3. Maintain concrete temperature as uniformly as possible and protect from rapid atmospheric temperature changes.
  4. Avoid temperature changes in concrete that exceed 5 degrees F in any one (1) hour and 50 degrees F in any 24-hour period.
- F. Protection from physical injury: Protect concrete from physical disturbances such as shock and vibration during curing period. Protect finished concrete surfaces from damage by construction equipment, materials, curing procedures and rain or running water. Do not load concrete in such a manner as to overstress concrete.
- G. Protection from Deicing Agents: Do not apply deicing chemicals to concrete.

### 3.07 FIELD QUALITY CONTROL

#### A. Hot Weather Requirements

1. During hot weather, give proper attention to ingredients, production methods, handling, placing, protection, and curing to prevent excessive concrete temperatures or water evaporation in accordance with ACI 305R and the following.
  - a. When the weather is such that the temperature of the concrete as placed would exceed 90 degrees F, use ice or other means of cooling the concrete during mixing and transportation so that the temperature of the concrete as placed will not exceed 90 degrees F.
  - b. Take precautions when placing concrete during hot, dry weather to eliminate early setting of concrete. This includes protection of reinforcing from direct sunlight to prevent heating of reinforcing, placing concrete during cooler hours of the day, and the proper and timely application of specified curing methods.
  - c. There will be no additional reimbursement to the Contractor for costs incurred for placing concrete in hot weather.

#### B. Cold Weather Requirements

1. Provide adequate equipment for heating concrete materials and protecting concrete during freezing or near-freezing weather in accordance with ACI 306R and the following.
  - a. When the temperature of the surrounding atmosphere is 40 degrees F or is likely to fall below this temperature, use heated mixing water not to exceed 140 degrees F. Do not allow the heated water to come in contact with the cement before the cement is added to the batch.
  - b. When placed in the forms during cold weather, maintain concrete temperature at not less than 55 degrees F. Materials shall be free from ice, snow, and frozen lumps before entering the mixer.
  - c. Maintain the air and the forms in contact with the concrete at temperatures above 40 degrees F for the first five days after placing, and above 35 degrees F for the remainder of the curing period. Provide thermometers to indicate the ambient temperature and the temperature 2 inches inside the concrete surface.
  - d. There will be no additional reimbursement made to the Contractor for costs incurred for placing concrete during cold weather.

C. Backfill Against Walls

1. Do not place backfill against walls until the concrete has obtained a compressive strength equal to the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, place the backfill uniformly on both sides.
2. Do not backfill the walls of structures that will be laterally restrained or supported by suspended slabs or slabs on grade until the slab is poured and the concrete has reached the specified compressive strength.

D. Concrete Testing

1. Concrete quality testing will be performed on the concrete by independent testing agency retained by the Contractor.
2. The testing agency will use concrete samples provided by the Contractor at the point of agitator or mixer truck discharge to perform slump (per ASTM), air content (per ASTM C231), and temperature tests (per ASTM C1064) and for field control test specimens.
3. The testing agency will submit test reports of concrete field measurements specified above to the Contractor and to the Construction Manager.

4. Provide and maintain facilities for safe storage and proper curing of concrete test specimens on the project site, as required by ASTM C31.
5. Concrete Quality Test Specimen:
  - a. Perform sampling and curing of test specimen in accordance with ASTM C31.
  - b. Testing agency personnel will record truck and load number from the delivery batch ticket, the concrete placement location of each specimen, the date, concrete strength, slump, air content and temperature.
  - c. The testing agency will cast a minimum of one (1) set of four (4) test specimens, each 6-inch diameter by 12-inch long cylinders, for each 50 cubic yard of each mix design of concrete but not less than once a day.
  - d. Test cylinders in accordance with ASTM C39. Test one (1) cylinder at seven (7) days for information; test two (2) 2 cylinders at 28 days for acceptance; and hold one (1) reserve cylinders for verification. Strength acceptance will be based on the average of the strengths of the two (2) 2 cylinders tested at 28 days. If one (1) cylinder of a 28-day test manifests evidence of improper sampling, molding, or testing, other than low strength, discard it and use a reserve cylinder for the test result.
6. The Contractor may take field control test specimens for small quantities of concrete.
7. Concrete acceptance shall be based on the requirements of ACI 318 and ACI 350.
8. Field cured cylinders conforming to ASTM C31 will be required to determine field compressive strength of concrete. Laboratory cured cylinders for concrete quality testing shall not be used for determining field compressive strength.
9. Concrete Coring:
  - a. When the concrete quality test specimen compression tests fail to be in compliance with the Contract Documents or when the Construction Manager detects deficiencies in the concrete, the Contractor will take concrete cores at least 2 inches in diameter from the structure in conformance with ASTM C 42 at locations determined by the Construction Manager.
  - b. Obtain at least three (3) representative cores from each member or area of concrete that is considered potentially deficient.



- c. Obtain additional cores to replace cores that show evidence of having been damaged subsequent to or during removal from the structure.
- d. The testing agency shall compression test the cores taken from the structure in conformance with ASTM C39 and submit test strength test results of cores specified above to the Contractor and to the Construction Manager.
- e. All costs associated with coring and testing of cores will be borne by the Contractor at no additional cost to the DEP.

### 3.08 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 033000

## SECTION 033400 - CONTROLLED LOW STRENGTH MATERIAL (CLSM)

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide and install controlled low strength material as indicated and specified.

#### 1.02 REFERENCES

- A. American Concrete Institute (ACI):

1. 229R: Controlled Low-Strength Materials.
2. 301: Specifications for Structural Concrete.
3. 304R: Guide for Measuring, Mixing, Transporting and Placing Concrete.
4. 305R: Hot Water Concreting.
5. 306R: Cold Water Concreting.
6. 308: Standard Practice for Curing Concrete.
7. 318: Building Code Requirements for Structural Concrete and Commentary.

- B. ASTM International (ASTM)

1. C31: Practice for Making and Curing Concrete Test Specimens in the Field.
2. C33: Specification for Concrete Aggregates.
3. C39: Test Method for Compressive Strength of Cylindrical Concrete Specimens.
4. C94: Standard Specification for Ready-Mixed Concrete.
5. C138: Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.
6. C143: Standard Test Method for Slump of Hydraulic-Cement Concrete.
7. C150: Standard Specification for Portland Cement.
8. C172: Practice for Sampling Freshly Mixed Concrete.

9. C231: Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
10. C494: Standard Specification for Chemical Admixtures for Concrete.
11. C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
12. C940: Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.
13. C1064: Test Method for Temperature of Freshly Mixed Portland Cement Concrete.
14. D75: Practice for Sampling Aggregates.

#### 1.03 SUBMITTALS

A. Submit the following shop drawings in accordance with Section 013300.

1. CLSM mix design and results of strength tests from trial mixes by the Contractor's testing laboratory firm.
2. Submit manufacturer's Stable-Air Generator Admixture product data, installation instructions, and recommendations for material use.
3. Test and Performance - Submit the following data:
  - a. Any required deviations from prescribed tests and special handling instructions for test specimens.
  - b. Controlled Low Strength Material shall have a maximum strength of 200 psi according to ASTM C39 at 56 days after placement.
  - c. Controlled Low Strength Material shall have minimal subsidence and bleed water which is measured as a final bleeding of less than 2.0 percent (retains 98.0 percent of original height after placement, approximately 1/4-inch per foot of depth) as measured in Section 10 of ASTM C940.
  - d. Controlled Low Strength Material shall have a unit weight of 90 - 110 lbs./ft<sup>3</sup> measured at the point of placement.

#### 1.04 QUALITY ASSURANCE

A. Comply with the requirements specified in Section 014300 and as follows.

- B. Do not place CLSM until design mix, material tests and trial batch mix compression test results are approved by the Construction Manager. Approvals are required at least 30 days before placing any production CLSM.
- C. Employ an independent testing laboratory, acceptable to the Construction Manager to test conformity of materials to specifications and to design CLSM mixes.
- D. Furnish, pay for, and deliver representative samples of sufficient quantity of cement, aggregates and admixtures required for trial batch mixes to the testing laboratory. Obtain materials from the batching plant that will be supplying production CLSM in conformance with ASTM D75.
- E. Measure all materials for CLSM, including water, with equipment and facilities suitable for accurate measurement and capable of being adjusted in conformance with ASTM C94. Use scales certified by local Sealer of Weights and Measures within one (1) year of use and accurate when static load tested to plus or minus 0.4 percent of total capacity of scale. Batch all materials by weight except admixtures that may be batched by volume.
- F. The testing laboratory will take control test specimens; conduct slump tests and measure air content and temperature in the field.
- G. Methods of Sampling and Testing:
  - 1. Fresh Concrete Sampling: ASTM C172.
  - 2. Specimen Preparation: ASTM C31.
  - 3. Compressive Strength: ASTM C39.
  - 4. Air Content: ASTM C231.
  - 5. Slump: ASTM C143.
  - 6. Temperature: ASTM C1064.
  - 7. Unit Weight: ASTM C138.

#### 1.05 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Order CLSM from batching plant so that trucks arrive at discharge locations when material is required.

- C. Deliver CLSM to discharge locations in watertight agitator or mixer trucks without altering the specified properties of water-cement ratio, slump, air entrainment, temperature and homogeneity.
- D. Reject CLSM not conforming to this Section, unsuitable for placement, exceeding the time or temperature limitations or not having a complete delivery batch ticket.

#### 1.06 PROJECT/SITE CONDITIONS

- A. Do not place CLSM until conditions and facilities for making and curing control test specimens are in compliance with ASTM C31 and as specified herein.

#### 1.07 MEASUREMENT AND PAYMENT

- 1. No separate payment shall be made for Controlled Low Strength Material (CLSM). Payment shall include in the unit price or lump sum price for the payment item requiring CLSM, in accordance with Section 012901.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Furnish Portland cement conforming to ASTM C150. Use one (1) approved brand from one (1) mill throughout the Contract term unless otherwise approved by the Construction Manager. Use Type II for all work, unless otherwise specified.
- B. Water:
  - 1. Use water that is potable and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances, and conforms to the requirements for water in ASTM C94, and as specified herein.
  - 2. The maximum water-soluble chloride ion in the water shall not exceed 0.060 percent by weight of cement.
- C. Aggregates:
  - 1. Use aggregates for CLSM conforming to ASTM C33 and to the following requirements in this section.
- D. Admixtures:
  - 1. General Requirements: ASTM C494.
- E. Fly Ash: Provide fly ash conforming to the following requirements:

1. Class F fly ash conforming to ASTM C618 for chemical and physical properties.
2. Supplemental requirements in percent:
  - a. Maximum carbon content 3 percent
  - b. Maximum sulfur trioxide (SO<sub>3</sub>) content 4 percent
  - c. Maximum loss on ignition 3 percent
  - d. Maximum water requirement (as a percent of control) 100 percent
  - e. Fineness, maximum retained on No. 325 sieve 25 percent

## 2.02 MIXES

- A. Mix design shall produce a consistency that will result in a flowable product at the time of placement that does not require manual means to move it into place.
- B. Provide mix with compressive strength of maximum 200 psi when measured 56 days after placement
- C. Controlled Low Strength Material shall have minimal subsidence and bleed water which is measured as a Final Bleeding of less than 2.0 percent (retains 98.0 percent of original height after placement, approximately 1/4-inch per foot of depth) as measured in Section 10 of ASTM C940 “Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory”.
- D. The fresh unit weight shall be 90 - 110 lbs./ft<sup>3</sup>, except where specified, and in the absence of strength data the cementitious content shall be a maximum of 150 lbs./cy.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Batch, mix and deliver CLSM in conformance with ASTM C94. Batch all constituents at a central batching or mixing plant.
- B. Seasonal Conditions:
  1. Conform to ACI 305R and as specified herein for hot weather concreting. Do not add retarder admixture to any concrete.
  2. Conform to ACI 306R and as specified herein for cold weather concreting. Do not add accelerator admixture to any concrete.

### 3.02 TRANSPORTING AND MIXING

- A. Conform to concreting procedures set forth in ACI 304R and as specified herein.
- B. Transport CLSM to discharge locations without altering the specified properties of water-cement ratio, slump, air entrainment, temperature, and homogeneity.

### 3.03 FIELD TESTING

- A. General:
  - 1. The testing laboratory will use concrete samples taken at the point of agitator or mixer truck discharge to perform slump, air content, and temperature tests and for field control test specimens.
- B. Notification of Delivery:
  - 1. Notify the Construction Manager of concrete deliveries a minimum of 48 hours in advance of the scheduled placement. Include within this notification, the mix design and quantity of concrete, method and location of placement, frequency of trucks, ordered slump and time of initial delivery.
  - 2. Furnish delivery batch ticket to the representative from the DEP's testing laboratory or to the Construction Manager with each batch delivered to the discharge locations in conformance with ASTM C94.
- C. Test Measurements at Discharge:
  - 1. The testing laboratory firm will take measurement of concrete slump, air content and temperature for each 50 cubic yards (40 cubic meters) of each mix design but not less than once a day. The laboratory will conduct the slump, air content and temperature test measurements in conformance with ASTM C143, ASTM C231, and ASTM C1064, respectively.
  - 2. The testing laboratory will submit test reports of field measurements specified above to the Contractor and to the Construction Manager.
- D. Control Test Specimens:
  - 1. The testing laboratory will cast a minimum of one (1) set of three (3) field control test specimens in conformance with ASTM C31 for each 150 cubic yards (115 cubic meters) of each mix design of concrete but not less than once a day.
  - 2. Laboratory personnel will record truck and load number from the delivery batch ticket, the concrete placement location of each specimen, the date, concrete strength, slump, air content, temperature and truck driver's name.

3. Furnish tightly constructed nonabsorbent test cylinder molds. Use molds of same type and manufacture for all test specimens. Leave molds on cylinders until received in testing laboratory.
4. Furnish boxes for initial curing of test cylinders in conformance with ASTM C31 from time of fabrication until they are transported to the testing laboratory.
5. The testing laboratory will compression test one (1) of each set of three (3) specimens at seven (7) days. Immediately notify the Contractor and the Construction Manager if the seven-day strength is deficient. Test the two (2) remaining cylinders at 65 days for concrete strength acceptance. The acceptance test result is the average of the strengths of the two (2) specimens tested at 56 days. The laboratory firm will submit compression test results of the control test specimens to both the Contractor and the Construction Manager. Evaluation and acceptance of concrete shall conform to ACI 301 and ACI 318.

#### 3.04 CURING AND PROTECTION

- A. Protect CLSM from premature drying, hot or cold temperatures, and mechanical injury, beginning immediately after placement and maintain concrete with minimal moisture loss at relatively constant temperature.
- B. Comply with curing procedures set forth in ACI 301, applicable portions of ACI 308 and as specified herein.
- C. Perform hot weather concreting in conformance with ACI 305R and as specified herein when the ambient atmospheric temperature is 80 degrees F or above.
- D. Perform cold weather concreting in conformance with ACI 306R and as specified herein when the ambient atmospheric temperature is 40 degrees F or below.
- E. Protect Controlled Low Strength Material from traffic until sufficient strength has been achieved for further construction operations

#### 3.05 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 033400



## GEOTEXTILES - SECTION 310519

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide geotextile indicated or in compliance with Contract Documents.

#### 1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. M288: Standard Specification for Geotextile Specification for Highway Applications.
- B. ASTM International (ASTM):
  - 1. C33: Standard Specification for Concrete Aggregates.
  - 2. D1683: Standard Test Method for Failure in Sewn Seams of Woven Apparel Fabrics.
  - 3. D4355: Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
  - 4. D4491: Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  - 5. D4533: Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
  - 6. D4632: Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
  - 7. D4751: Standard Test Method for Determining Apparent Opening Size of a Geotextile.
  - 8. D4833: Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.

#### 1.03 DEFINITIONS

- A. Minimum Average Roll Value (MARV): All property values, with the exception of apparent opening size (AOS), represent minimum average roll values in the weakest principal direction. MARV listings for AOS represent the maximum average roll value.

#### 1.04 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.
  - 1. Manufacturer Certificates.
  - 2. Manufacturer Installation Instructions and Details.
  - 3. Manufacturer Catalog Data.

#### 1.05 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Sustainability Standards Certifications.
- C. Manufacturer Testing Certificates: Provide mill certificate or affidavit signed by a legally authorized official from the company manufacturing the fabric. The mill certificate or affidavit shall attest that the fabric meets the chemical, physical, and manufacturing requirements stated in this specification. Submit to Construction Manager for acceptance at least two (2) weeks prior to shipment.
- D. Manufacturer Installation Instructions and Details: Submit to Construction Manager for review.

#### 1.06 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Label each roll of geotextile fabric with number or symbol to identify production run.
- C. Wrap fabric in a heavy-duty protective covering until it is ready for installation. Recover previously opened rolls with a waterproof cover.
- D. Protect the fabric from direct sunlight, ultraviolet rays, and temperatures greater than 140 degrees F, mud, dirt, dust, and debris at all times during shipment and storage.
- E. Store fabric on clean, dry surfaces, free of foreign substances such as grease, oil, paint, epoxy, cement, or any other substances which would have a deleterious effect on the fabric.
- F. Elevate fabric a minimum of 12 inches above ground level when stored outside.
- G. Do not use hooks, tongs, or other sharp tools and instruments when handling fabric.
- H. Unload or handle fabric in one of the following ways:

1. By placing slings under the rolls.
2. By using a pole inserted through a hollow core, provided the pole extends 1-foot minimum beyond each end of the core and lifting and handling devices are attached to only that portion of the pole located outside the ends of the core.
3. By hand.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Provide the following nonwoven geotextile fabric:
  1. FX-60HS as manufactured by Carthage Mills.
  2. Geotex 601 as manufactured by Propex.
  3. Mirafi 160N as manufactured by TenCate Geosynthetics.
  4. 150EX as manufactured by Thrace - LINQ.
  5. or Approved Equal.
- B. Provide the following woven geotextile fabric except for silt fence:
  1. FX-55 as manufactured by Carthage Mills.
  2. 200ST as manufactured by Propex.
  3. Mirafi 500X as manufactured by TenCate Geosynthetics.
  4. GTF200 as manufactured by Thrace-LINQ.
  5. or Approved Equal.
- C. Provide the following woven geotextile fabric for silt fence:
  1. FX-11 as manufactured by Carthage Mills.
  2. Geotex 2130 as manufactured by Propex.
  3. W100 as manufactured by SKAPS Industries.
  4. Beltech 940 by Belton Industries Inc.

5. or Approved Equal.

## 2.02 PERFORMANCE/DESIGN CRITERIA

- A. The average test results of any roll in a lot sampled for conformance or quality assurance testing shall meet or exceed the MARV.

## 2.03 MATERIALS

- A. Filter Fabric: Permeable sheet of woven or nonwoven plastic yarn.
1. Physical Requirements: AASHTO M288.
  2. Strength Property Requirements: AASHTO M288, Class 1
  3. Service Requirements: Table 310519-1.

<b>Table 310519-1</b>	
Service	Requirement
Subsurface Drainage	AASHTO M288 Table 2
Stabilization	AASHTO M288 Table 4
Permanent Erosion Control	AASHTO M288 Table 5
Temporary Silt Fence	AASHTO M288 Table 6
Paving Fabric	AASHTO M288 Table 7

- B. Fabric – Foundation Preparation: Nonwoven, as noted by Table 310519-2. Woven, as noted by Table 310519-3 (excluding silt fence).

<b>Table 310519-2</b>			
Nonwoven Property	Test Method	Units	Value (MARV)
Grab Strength	ASTM D4632	lbs (N)	150 (670)
Grab Elongation	ASTM D4632	Percent	50
Trapezoidal Tear Strength	ASTM D4533	lbs (N)	60 (270)
Puncture Strength	ASTM D4833	lbs (N)	75 (330)
Permittivity	ASTM D4491	sec <sup>-1</sup>	1.3
Apparent Opening Size (AOS or O95)	ASTM D4751	U.S. Sieve No.	70-100
Ultraviolet Stability	ASTM D4355	Percent	70

<b>Table 310519-3</b>			
Woven Property	Test Method	Units	Value (MARV)
Grab Strength	ASTM D4632	lbs (N)	200 (900)
Grab Elongation	ASTM D4632	Percent	15
Trapezoidal Tear Strength	ASTM D4533	lbs (N)	75 (300)
Puncture Strength	ASTM D4833	lbs (N)	80 (350)
Permittivity	ASTM D4491	sec <sup>-1</sup>	0.02
Apparent Opening Size (AOS or O95)	ASTM D4751	U.S. Sieve No. (mm)	30-70
Ultraviolet Stability	ASTM D4355	Percent	70

- C. Erosion Control Silt Fence: Woven, as noted by Table 310519-4.

<b>Table 310519-4</b>			
Woven Property	Test Method	Units	Value (MARV)
Grab Strength	ASTM D4632	lbs (N)	100 (450)
Permittivity	ASTM D4491	sec <sup>-1</sup>	0.10
Apparent Opening Size (AOS or O95)	ASTM D4751	U.S. Sieve No. (mm)	20-30
Ultraviolet Stability	ASTM D4355	Percent	70

- D. Permeable Backfill for Underdrains: ASTM C33, Coarse Aggregate, No. 67 and meeting physical property requirements.
- E. Metal Geotextile Pins:
1. Diameter: 3/16 inch, minimum.
  2. Length: 18 inches, minimum.
  3. Shape: Pointed at one end with head on other end for retaining washer.
  4. Washer: Steel, with minimum outside diameter of 1-1/2 inches.
- F. Wire Staples: 8 gage minimum.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Prepare the surface to receive fabric to a smooth condition free of sharp objects, obstructions, depressions, debris, and soft or low-density pockets of material.

### 3.02 INSTALLATION

- A. Install geotextile fabric in accordance with manufacturer's printed instructions.
- B. Place geotextile fabric on the foundation subgrade prior to placing screened gravel or crushed stone.
- C. Joints:
  - 1. Unsewn: Overlap fabric 18 inches, minimum.
  - 2. Sewn: Overlap fabric 6 inches, minimum.
- D. Place geotextile fabric to prevent tearing or puncturing.
- E. Lay geotextile fabric loosely but without wrinkles or creases so that placement of the backfill materials will not stretch or tear geotextile fabric. Leave sufficient slack in geotextile fabric around irregularities to allow for readjustments.
- F. Along Foundation Perimeter: Extend geotextile fabric and wrap around screened gravel or crushed stone.

### 3.03 INSTALLATION – TRENCHES

- A. Install in accordance with AASHTO M288, Appendices A1 and A3 except as modified below.
- B. Place filter fabric at the locations indicated or as directed by the Construction Manager. Do not use fabric with defects, rips, holes, flaws, deterioration, or damage of any nature.
- C. Handle and place filter fabric in accordance with the manufacturer's recommendations. Stretch, align, and place the fabric in a wrinkle-free manner.
- D. Insert securing pins with washers through both strips of overlapped fabric at intervals not greater than 3 feet, along a line through the midpoint of the overlap.
- E. Install additional pins regardless of location to prevent any slippage of the filter fabric. Place the fabric so that the upstream strip of fabric will overlap the downstream strip. Push each securing pin through the fabric until the washer bears against the fabric and secures it firmly to the foundation.

- F. Seams: Stitch fabric seams with thread meeting the chemical requirements for plastic yarn or bond by cementing or heat. Stitch fabric with yarn of a contrasting color. The size and composition of the yarn shall be as recommended by the fabric manufacturer. The stitches shall number 5 to 7 per inch of seam. Attach the sheets of filter fabric at the factory or another location to form sections not less than 3 feet wide. Test seams in accordance with method ASTM D1683, using 1-inch square jaws and 12 inches per minute constant rate of traverse. The strengths shall be not less than 90 percent of the required tensile strength of the unaged fabric in any principal direction.

### 3.04 INSTALLATION – TEMPORARY SILT FENCE

- A. Install in accordance with Hudson Essex Passaic Soil Conservation District and as noted on the Contract Drawings.

### 3.05 REPAIR/RESTORATION

- A. Protect the fabric at all times during construction from contamination by oils, dirt, debris, and the like. Remove and replace fabric so contaminated with clean fabric. Repair any damage to the fabric during its installation or during placement of bedding materials or riprap.
- B. Patch tears in geotextile fabric by placing additional section of geotextile fabric over tear with a minimum of 3 feet overlay.
- C. Repair fabric damaged during placing, in other than underdrain piping service, by placing a piece of fabric large enough to cover the torn or punctured area, meet the overlap requirement, and extend a minimum of 12 inches beyond the edge of the damaged area. Repair damaged sections of fabric used in underdrain piping by cutting out the damaged section over the full width of the spiral section and stitching a new fabric section in place for a minimum length of 18 inches.
- D. Replace fabric that has become damaged from vehicular traffic, equipment, or repetitive operations.

### 3.06 PROTECTION

- A. Prohibit construction equipment and traffic from traveling directly on geotextile fabric.
- B. Protect the geotextile during installation from clogging, tears, and other damage. Provide ballast (e.g., sand bags) to prevent uplift by wind.
- C. Do not leave the geotextile uncovered for more than 14 days after installation (excluding silt fence).
- D. Protection from Riprap: Protect the filter fabric from damage due to the placement of riprap or other materials by limiting the height of drop of the material or by placing a 6-

inch cushioning layer of sand on top of the fabric before placing the material. Before placement of riprap, demonstrate that the placement technique will prevent damage to the fabric in the presence of the Construction Manager.

- E. Place cover soil or sand in a manner that prevents soil or sand from entering the geotextile overlap zone, prevents tensile stress from being mobilized in the geotextile, and prevents wrinkles from folding over onto themselves. On side slopes, place soil or sand backfill from the bottom of the slope upward.
- F. Do not drop cover soil or sand onto the geotextile from a height greater than 3 feet.
- G. Do not operate equipment directly on top of the geotextile. Use equipment with ground pressures less than 7 psi to place the first lift over the geotextile. Maintain a minimum of 12 inches of soil between full-scale construction equipment and the geotextile.
- H. Maintain a minimum of 6 inches of material between the fabric and Contractor's equipment, during spreading and compaction of the bedding material. Where embankment material is to be placed on the filter fabric, maintain a minimum of 18 inches of embankment material between the fabric and the Contractor's equipment. Do not operate or drive equipment or vehicles directly on the filter fabric.
- I. Equipment placing cover soil shall not stop abruptly, make sharp turns, spin their wheels, or travel at speeds exceeding 5 mph.

### 3.07 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 310519



## SECTION 312300 - EXCAVATION AND FILL

### PART 1 - GENERAL

#### 1.01 DESCRIPTION:

- A. Provide excavation and fill as indicated and in compliance with Contract Documents.
- B. Section includes:
  - 1. Excavation and fill for: Structures and Pavement; Site Drainage, Test Trenches and Potholes.
  - 2. Refer to Section 312333 for all utility trenching and backfill.
  - 3. Dewatering excavations: refer to Section 312319.
  - 4. Controlled fill using materials from imported and on-site sources.
  - 5. Soil and aggregate materials.
  - 6. Compaction and testing.

#### 1.02 REFERENCES:

- A. American Association of State and Highway Transportation Officials (AASHTO):
  - 1. M147: Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses.
- B. ASTM International (ASTM):
  - 1. C33: Specification for Concrete Aggregates.
  - 2. C136: Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
  - 3. D421: Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants.
  - 4. D422: Test Method for Particle-Size Analysis of Soils.
  - 5. D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup>).

6. D1556: Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
7. D1557: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft<sup>3</sup>).
8. D2167: Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
9. D2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
10. D2940/D2940M: Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.
11. D4318: Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
12. D6938: Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

C. Occupational Safety and Health Administration (OSHA) Standards and Regulations:

1. 29 CFR 1926, Subpart P: Safety and Health Regulations for Construction, Excavations.

1.03 MEASUREMENT AND PAYMENT

- A. Excavation and Fill quantities shall be measured in cubic yards and paid for in accordance with Section 012901.

1.04 CLASSIFICATION OF EXCAVATION

- A. Excavation is not classified.

1.05 DEFINITIONS

- A. Percent Compaction or Compaction Density: The field dry density of compacted material, expressed as a percentage of the maximum dry density.
- B. Field Dry Density or Field Density: In-place density as determined by ASTM D1556 (Sand Cone Method), ASTM D2167 (Rubber Balloon Method), or ASTM D6938 (Nuclear Method).
- C. Maximum Dry Density: Laboratory density as determined by ASTM D698 (Standard Proctor) or ASTM D1557 (Modified Proctor) and occurring at the optimum moisture content of the material being tested.

- D. Proof Roll: Single pass of a drum or rubber tire roller, having a gross load between 25 to 50 tons. Rubber tire rollers shall have tires capable of operating at inflation pressures ranging from 90 to 150 psi. Weight and contact pressure shall be as recommended by geotechnical engineer for the material being tested.

#### 1.06 SUBMITTALS

- A. Submit the following in accordance with Section 013300.
  - 1. Temporary excavation and shoring drawings including fill and grading plan and stockpile location for worker protection in accordance with the General Conditions.
  - 2. Gradation analysis.
  - 3. Dewatering plan including disposal of groundwater.
  - 4. Manufacturer's catalog data and a sample of filter fabric with manufacturer's installation instructions and details.
  - 5. Material Sources: Name of source, location, date of sample, sieve analysis, and laboratory compaction characteristics.
  - 6. Test and Evaluation Reports:
    - a. Field density testing reports: Provide results from field density testing of prepared subgrade and compacted fill.
    - b. Grain-size analysis.
    - c. Laboratory compaction characteristics of soils.
    - d. Water content.
  - 7. Geotextile:
    - a. At least two (2) weeks prior to shipment, submit manufacturer's certificate of compliance and physical property data sheet indicating that requirements for materials and manufacture are in conformance as specified.
    - b. For informational purposes only, submit manufacturer's printed installation instructions.

#### 1.07 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.

- B. Testing will be provided by the Construction Manager as specified. Contractor shall be responsible for cost of testing and inspection conducted as a result of non-conforming work.
- C. Protect excavations by shoring, bracing, sheet piling, underpinning or other methods required to prevent cave-in of loose soil. Protection shall be in accordance with OSHA 29 CFR 1926, Subpart P.

#### 1.08 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Geotextile Fabric:
  - 1. Provide rolls wrapped with protective covering to protect from mud, dirt, dust, and debris. Label each roll with number or symbol to identify production run.
  - 2. Protect from sunlight during transportation and storage. Do not leave exposed to sunlight for more than two (2) weeks during installation operations.

### PART 2 - PRODUCTS

#### 2.01 FILL MATERIALS

- A. Suitable Material: Material from on-site excavation and/or permitted off-site sources that meets all of the specified requirements for its intended use and is not unsuitable. Wet subgrade material which meets other requirements for suitable material is suitable.
- B. Unsuitable Material: Material that fails to meet requirements for suitable materials; or contains any of the following:
  - 1. Organic clay, organic silt, or peat; as defined in ASTM D2487.
  - 2. Vegetation, wood, roots, leaves, and organic, degradable material.
  - 3. Stones or rock fragments over 6 inches in any dimension.
  - 4. Porous biodegradable matter, excavated pavement, construction debris, rubbish, or refuse.
  - 5. Ice, snow, frost, or frozen soil particles.
- C. General Fill: Suitable, unclassified material.

- D. Structural Fill: Suitable material that is classified by the Unified Soil Classification System (USCS) in accordance with ASTM D2487 as GW, GP, GM, GC, SW, SP, SM, SC, CL, ML, CH, MH. Verify that the largest particles in the fill are no greater in dimension than one-half the thickness of the compacted lift thickness.
- E. Embankment Fill: Structural Fill; Classified in accordance with ASTM D2487 classification as CL.
- F. Controlled Low-Strength Material (CLSM): Section 033400.
- G. Concrete Fill: Section 033000. Minimum compressive strength, 3,000 psi.
- H. Granular Fill:
  - 1. Densely Graded: ASTM D2940/D2940M, for bases. AASHTO M147, Grading ABCDEF.
  - 2. Densely Graded: Bank-Run Gravel with the following properties.
    - a. Natural deposit, unprocessed except when needed to remove deleterious materials and stones larger than maximum size allowed.
    - b. Soil particles: ASTM C33, physical property requirements.
    - c. Material source: Submit to CM for acceptance.
    - d. Gradation: Table 312300-1.

Table 312300-1	
Sieve Designation (Square Mesh)	Percentage Passing (By Weight)
6 inches	100
2 inches	80-100
No. 4	20-65
No. 50	10-25
No. 200	0-12

- 3. Open Graded: ASTM C33, coarse aggregate, No. 57.
- 4. Open Graded: Screened Gravel or Crushed Stone: ASTM C33, Coarse Aggregate, No. 67. Soil particles shall conform to the physical property requirements of ASTM C33.

- I. Sand: Natural sand.
- J. Select Borrow:
  - 1. Well-graded, coarse-grained soil; classified in accordance with ASTM D2487 as GW, GW-GM, GW-GC, SW, SW-SM, or SW-SC.
  - 2. Soil particles: ASTM C33, physical property requirements.
  - 3. Gradation: Table 312300-2.

Table 312300-2	
Sieve Designation (Square Mesh)	Percentage Passing (By Weight)
3 inches	100
1-1/2 inches	70-100
3/4 inches	50-85
No. 4	30-60
No. 50	10-25
No. 200	0-5

2.02 EQUIPMENT:

- A. Compaction equipment shall be capable of consistently achieving the specified compaction requirements.

2.03 ACCESSORIES:

- A. Geotextile: Section 310519.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that dewatering support systems are in place before commencing with excavation.
- B. Verify that excavation safety and support systems meeting the requirements of OSHA 29 CFR 1926, Subpart P are in place before commencing with excavation.
  - 1. Minimum slopes for laying back excavations or materials are contained in OSHA 29 CFR 1926, Subpart P; Appendices A and B.

2. Minimum requirements for shoring and bracing are contained in OSHA 29 CFR 1926, Subpart P; Appendix C.
- C. Verify that fill materials submittals have been accepted by Construction Manager before commencing with work requiring the use of these materials.
- D. Verify that erosion and sediment control measures are in place and functioning properly.
- E. Immediately notify the Construction Manager if unexpected subsurface facilities or suspected hazardous materials are encountered during excavation. Discontinue affected work in area until notified to resume work.
- F. Test Pits:
  1. Excavate test pits to field verify the locations of existing underground utilities at crossings and at tie-in points before ordering materials or commencing excavation. Immediately notify the Construction Manager if conflicts are encountered.

### 3.02 PREPARATION

- A. Underpin adjacent structures that could be damaged by excavation work.
- B. Cut pavement with saw or pneumatic tools to prevent damage to remaining pavement. Dispose of large pieces of demolished pavement before proceeding with excavation.
- C. Remove subsurface structures and related obstructions.
- D. Remove boulders within excavation limits.

### 3.03 PROTECTION OF IN-PLACE CONDITIONS

- A. Support and protect from damage – existing pipes, poles, wires, fences, curbs, property line markers, and other features or structures which must be preserved in place to avoid being temporarily or permanently relocated.
- B. Excavation Near Existing Structures:
  1. Discontinue digging by machinery when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of hand tools. Include such manual excavation in work to be done when incidental to normal excavation and under items involving normal excavation.
  2. Excavate test pits near, or at intersection with, existing utilities or underground structures to determine the exact location of existing features.

C. Excavation Near Private Property:

1. Enclose uncut tree trunks adjacent to work in wooden boxes of such height necessary to protect tree from injury due to piled material, equipment, or operations. Operate excavating machinery and cranes so as to prevent injury to overhanging branches and limbs.
2. Protect cultivated hedges, shrubs, and plants which would otherwise be damaged by the work.
3. Where protection of vegetation is not possible, dig up, temporarily transplant, and maintain. After active construction operations in the area have ceased, transplant vegetation to the original positions and provide water and nursery care until growth is re-established.
4. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces. Provide protection on pavement or tracks if construction traffic is unavoidable.

3.04 RESTORATION

- A. Restore private property and structures promptly. Begin restoration work within 24 hours of when damage occurred.
- B. Existing surfaces, features, or utilities that are to remain but are damaged during construction shall be repaired or replaced to at least the condition in which they were found immediately before work began, unless noted otherwise.
- C. Damaged Trees To Remain: Cut all damaged branches, limbs, and roots smoothly and neatly without splitting or crushing. Neatly trim, cut the injured portions and cover with an application of grafting wax or tree healing paint. Replace damaged trees which subsequently die or continue to show lack of growth due to damage, until one (1) year after substantial completion.
- D. Cultivated Vegetation: Includes, but is not limited to: hedges, shrubs, and plants. Vegetation that is damaged shall be replaced with equal kind and of at least the quality before work began.

3.05 EXCAVATION:

- A. Excavate to accommodate new structures and construction operations.
- B. Excavate to lines and grades necessary to provide finish grades.
- C. Excavations that are not shored and deeper than 4 feet shall have banks laid back to a minimum stable slope matching the angle of repose of the excavated material.



- D. Workers shall have an adequate means of exit from excavations that are 4 feet or greater in depth. The means of exit shall not require more than 25 feet of lateral travel.
- E. Establish limits of excavation to allow adequate working space for installing forms and for safety of personnel.
- F. Carry out program of excavation, dewatering, and excavation support systems to eliminate possibility of undermining or disturbing foundations of existing structures or the work.
- G. Provide dewatering system in accordance with Section 312319.
- H. Provide sheeting and shoring in accordance with Section 312333.
- I. Preserve material below and beyond the lines of excavations.
- J. Locate stockpiled excavated material at least 3 feet from edge of excavations to prevent cave-ins or bank slides.
- K. Excavate for depressed mat foundations so that adjacent sections of foundation mat will rest on undisturbed ground.

### 3.06 SUBGRADE PREPARATION

- A. The exposed surface shall be examined by an engineering geologist or soils engineer to determine that the proper bearing material has been exposed.
- B. Materials which are determined to be unsuitable by visual inspection shall be over-excavated below the foundation subgrade and backfilled with structural fill.
- C. Backfill with screened gravel or crushed stone wrapped with nonwoven geotextile fabric. In no case shall the aggregate be placed directly on the exposed subgrade prior to placing the geotextile fabric.
- D. Compact subgrade and proof roll to identify soft spots or other deficiencies prior to filling operations or placing foundations. Correct deficiencies as specified for Paragraph 3.07 Authorized Over-Excavation and repeat proof roll procedure until successful.
- E. When subgrade is below controlled fill, scarify subgrade to bond with subsequent material lifts.
- F. Proof roll foundation subgrade prior to filling operation or placing foundation concrete. Continue until successful proof test is attained.

3.07 AUTHORIZED OVER-EXCAVATION

- A. If proof roll test fails, then remove unsuitable material plus an additional 6 inches and backfill with structural fill.

3.08 UNAUTHORIZED EXCAVATION

- A. Contractor is responsible for backfilling unauthorized excavations with structural fill.

3.09 FILL

- A. Fill to lines and grades necessary to provide finish grades.
- B. Use a placement method that does not disturb or damage other work or existing features.
- C. Maintain fill materials within 3 percent of optimum moisture, to attain required compaction density.
- D. Place and compact material in equal continuous layers.
- E. General fill may be used in open areas, over lot fill, and final trench backfill, unless otherwise directed by the Construction Manager.
- F. Use structural fill beneath and adjacent to buildings and structures, and beneath pavements.
- G. Use concrete fill where footing bearing surfaces are over-excavated or footing is otherwise not bearing on undisturbed soil.
- H. Maximum compacted depth is 6 inches for aggregate materials and 8 inches for soil materials, unless noted otherwise.
- I. Deposit material evenly around structure to avoid unequal soil pressure.
- J. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking, or other damage.

3.10 COMPACTION

- A. Compact to density specified and indicated for various types of material. Control moisture content of material being placed as specified, or if not specified - at a level slightly lower than optimum.

- B. **Compaction Density:** Provide densities in Table 312300-3. The values listed are minimum percentages, unless noted otherwise.

<b>Table 312300-3</b>	
<b>Area</b>	<b>Percentage of Maximum Dry Density as defined by ASTM D1557 (Modified Proctor)</b>
Under pavement, slabs	95
Under structures or within 25 feet of structures	95
Under exterior concrete slab and sidewalks	95
Open or grassed areas	85

### 3.11 EMBANKMENT FILL AND COMPACTION

- A. Begin filling in lowest section of work area. Grade surface of fill approximately horizontal but provide with sufficient longitudinal and transverse slope to allow for runoff of surface water from every point.
- B. Install temporary dewatering sumps in low areas during filling operation where excessive amounts of rain runoff collect.
- C. Reduce moisture content of fill material, if necessary, in source area by aerating it over during warm and dry atmospheric conditions. A large disc harrow with 2 to 3 foot diameter disks may be required for working soil in a drying operation.
- D. Compact uniformly throughout. Keep fill surfaces sufficiently smooth and free from humps and hollows to allow for proper and uniform compaction. Do not permit hauling equipment to follow a single track on the same layer but direct equipment to spread out to prevent over compaction in localized areas. Take care in obtaining thorough compaction at edges of fill.
- E. Slightly slope surface of fill to ensure drainage during periods of wet weather. Do not place fill while rain is falling or after a rain-storm until the Construction Manager considers conditions satisfactory. During such periods and upon suspension of filling operations for periods in excess of 12 hours, roll smooth the surface of fill using a smooth wheel static roller to prevent excessive absorption of rainfall and surface moisture. Prior to resuming compaction operations, remove muddy material off surface to expose firm, compacted material, as determined by the Construction Manager
- F. When fill is placed against an earlier fill or against in-situ material under and around structures, including around piping beneath structures or embankments, slope junction between two sections of fill at 1.5 to 1 (horizontal to vertical). Bench edge of existing

fill 24 inches to form a serrated edge of compact stable material against which to place the new fill. Ensure that rolling extends over junction between fills.

- G. Clean debris, remove loose material, and proof roll previously placed fill which has had time to become desiccated or littered with debris.
- H. After spreading each loose lift to the required thickness and adjusting its moisture content, roll with sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete coverage and uniform compaction of an entire lift. Do not make additional passes until previous pass has been completed.
- I. Fill surface shall be firm and hard when rolled. Reduce moisture content when fill material sinks and weaves under rollers and equipment. Spread out rolling operations over the maximum practicable area to minimize condition of sinking and weaving. Suspend fill operations on portions of embankment where inundations produce surface cracks.
- J. Remove material which fails testing requirements and replace work.

### 3.12 GEOTEXTILE

- A. Install geotextile fabric in accordance with manufacturer's printed instructions and Section 310519.
- B. Place geotextile fabric on the foundation subgrade prior to placing aggregate material.
- C. Overlap geotextile fabric 18 inches minimum for unsown lap joint. Overlap fabric 6 inches at seam for sewn joint.
- D. Do not permit traffic or construction equipment to travel directly on geotextile fabric.
- E. Place geotextile fabric in relatively smooth condition to prevent tearing or puncturing. Lay geotextile fabric loosely but without wrinkles or creases so that placement of the backfill materials will not stretch or tear geotextile fabric. Leave sufficient slack in geotextile fabric around irregularities to allow for readjustments.
- F. Patch all tears in geotextile fabric by placing additional section of geotextile fabric over tear with a minimum of 3 feet overlay.
- G. Extend the geotextile fabric and wrap around aggregate material along the perimeter of the foundation.

### 3.13 FIELD QUALITY CONTROL

- A. See Section 14300 for general requirements for field inspection and testing.

- B. Perform inspection at least once daily to confirm lift thickness and compaction effort for entire fill area.
- C. Perform particle size distribution and gradation analyses using ASTM D422 and following standard practices in ASTM D421. Perform 1 test for every source and submit results to Construction Manager for acceptance. Repeat the moisture density test for every 5,000 cubic yards of material used.
- D. Perform field density testing in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- E. Evaluate field density test results in relation to maximum dry density as determined by testing material in accordance with ASTM D1557 (Modified Proctor).
- F. Perform tests in accordance with ASTM D4318 to determine Liquid Limit, Plastic Limit, and Plasticity Index and submit test results to Construction Manager for acceptance. Minimum of one (1) test per 5,000 cubic yards of soil for use as fill material and whenever classification of material is in doubt as determined by the Construction Manager.
- G. Location of field density tests shall be mutually acceptable to testing laboratory and the Construction Manager.
- H. In the event compacted material does not meet specified in-place density, re-compact material, and re-test area until specified results are obtained.
- I. Frequency of field density tests as noted by Tables 312300-4 and 312300-5:

<b>Table 312300-4</b>	
<b>Area</b>	<b>Frequency</b>
Roadways	1 per lift for each 250 linear feet of fill placed
Paved Areas	1 per lift for each 10,000 square feet of fill placed
Open Areas	1 per lift for each 25,000 square feet of fill placed
Embankment Fills	1 per lift for each 5,000 square feet of fill placed
Regardless of the minimum testing frequency specified, field density tests shall be performed by the Contractor in sufficient number for the Contractor's quality control purposes to ensure that specified density is obtained.	

<b>Table 312300-5</b>	
<b>Area</b>	<b>Frequency</b>
Roadways	1 per lift for every 200 linear of roadway
Paved Areas	1 per lift for every 3,500 square feet of pavement
Open Areas	1 per lift for each 25,000 square feet of open area
Under Structures	1 per lift for every structure
Around Structures	1 per lift for every structure
Embankment Fills	1 per lift for every 10,000 square feet of embankment
Regardless of the minimum testing frequency specified, field density tests shall be performed by the Contractor in sufficient number for the Contractor's quality control purposes to ensure that specified density is obtained.	

### 3.14 ADJUSTING

#### A. Shrinkage:

1. Build embankments or backfill to a height above finished grade which will, in the opinion of the Construction Manager, allow for the shrinkage or consolidation of material. Initially, provide at all points, an excess of at least one percent of total height of backfill measured from stripped surface to top of finished surface.
2. Supply specified materials to build up low places when embankment or backfill settles below the finished grade at any time before substantial completion.

### 3.15 TOLERANCES

- A. Construct finished surfaces to plus or minus 1 inch of the elevations indicated.
- B. Grade areas of cut and fill to plus or minus 0.20 foot of the grades indicated.
- C. Complete embankment edges to plus or minus 6 inches of the slope lines indicated.
- D. Provide the Construction Manager with adequate survey information to verify compliance with above tolerances.

### 3.16 PROTECTION

- A. Formulate excavation, backfilling, and filling schedule and procedures to eliminate possibility of undermining or disturbing foundations of partially and completed structures, pipelines and embankments or existing structures and pipelines.

3.17 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 312300

## SECTION 312319 - DEWATERING

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide dewatering as indicated and in compliance with Contract Documents.
- B. Design, furnish, operate, maintain, and remove temporary dewatering systems to control groundwater and surface water to maintain stable, undisturbed subgrades, and permit work to be performed under dry and stable conditions. Work to be done as part of dewatering includes, but is not limited to:
  - 1. Lower the groundwater level.
  - 2. Lower hydrostatic pressure.
  - 3. Prevent surface water from entering the excavation during construction.
  - 4. Implement erosion control measures for disposing of discharge water.
  - 5. Provide groundwater recharging systems as specified and as indicated.
  - 6. Provide and monitor observation wells and geotechnical instrumentation as specified and indicated.
- C. Groundwater within the excavation area shall be lowered to at least 2 feet below the lowest excavation levels as specified and as indicated.
- D. Common dewatering methods include, but are not limited to, sump pumping, deep wells, well points, vacuum well points, or combinations thereof.
- E. Common groundwater recharge methods include, but are not limited to, deep wells, large sumps, or combination thereof.
- F. The Contractor shall obtain the required permits for discharge from the Contractor's dewatering systems in accordance with the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq), the New Jersey Water Supply Management Act (N.J.S.A. 58:1A-1 et seq), and the Federal Clean Water Act. The discharge location shall be in accordance with permit requirements.

#### 1.02 REFERENCES

- A. Code of Federal Regulations, Title 40 – Protection of Environment (CFR):



1. 40 CFR Part 122: EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.
  - B. New Jersey Pollutant Discharge Elimination System (NJPDES) Rules at N.J.A.C 7:14A.
  - C. New Jersey Treatments Works Approval N.J.A.C. 7:14A-22 and 23.
  - D. New Jersey Water Supply Management Act Rules (N.J.A.C. 7:19-6).
- 1.03 SUBMITTALS
- A. Submit the following in accordance with Section 013300.
    1. Qualification of the Contractor's dewatering specialist's or firm's qualifications a minimum of four (4) weeks prior to dewatering work. The submittal shall include, but not be limited to:
      - a. Qualifications of specialist's or firm's Registered Professional Engineer.
      - b. Qualifications of specialist's or firm's field representative who will oversee the installation, operation and maintenance of the dewatering system.
    2. Submit a dewatering plan, a monitoring plan and, if applicable, a groundwater recharge plan at least two (2) weeks prior to start of dewatering work. Do not submit design calculations. The review will be only for the information of the Construction Manager and third parties for an overall understanding of the Project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:
      - a. Dewatering plan and details stamped and signed by a Registered Professional Engineer registered in the State of New Jersey.
      - b. Certificate of Design: Refer to Section 014300.
      - c. A list of equipment including, but not limited to, pumps, prime movers, and standby equipment.
      - d. Detailed description of dewatering, maintenance, and system removal procedures.
      - e. Monitoring plan and details shall be signed by a Registered Professional Engineer registered in the State of New Jersey. The plan shall include, but not limited to, number and locations of observation wells, and geotechnical

instruments such as settlement markers (reference points on structures) and piezometers and frequency of reading the monitoring devices.

- f. Erosion and sedimentation control measures, and methods for disposal of pumped water.
  - g. List of all applicable laws, regulations, rules, and codes to which dewatering design conforms.
  - h. List of assumptions made for design of dewatering and for groundwater recharge systems, including but not limited to groundwater levels, soil profile, permeability, and duration of pumping and/or recharge.
- 3. Measurement records consisting of observation well groundwater records and the geotechnical instrumentation readings within one (1) day of monitoring.
  - 4. A modified dewatering plan within 24 hours, if open pumping from sumps and ditches results in boils, loss of fines or softening of the ground.

#### 1.04 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Employ the services of a dewatering specialist or firm having the following qualifications:
  - 1. Have completed at least five (5) successful dewatering projects of equal size and complexity and with equal systems within the last five (5) years.
  - 2. Retain the services of a Registered Professional Engineer in the State of New Jersey having a minimum of five (5) years' experience in the design of well points, deep wells, recharge systems, or equal systems.
  - 3. Retain the services of a field representative having a minimum of five (5) years' experience in installation of well points, deep wells, recharge systems, or equal systems.
- C. If subgrade soils are disturbed or become unstable due to dewatering operation or an inadequate dewatering system, notify the Construction Manager, stabilize the subgrade, and modify system to perform as specified.
- D. Notify the Construction Manager immediately if settlement or movement is detected on structures. If the settlement or movement is deemed by the Construction Manager to be related to the dewatering, take actions to protect the adjacent structures and submit a modified dewatering plan to the Construction Manager within 24 hours. Implement the modified plan and repair damage incurred to adjacent structures.

- E. Immediately notify the Construction Manager if oil or other hazardous materials are encountered after dewatering begins.

#### 1.05 HYDRAULIC UPLIFT OF STRUCTURES

- A. The Contractor shall be responsible for the protection of all structures against hydraulic uplift until such structures have been accepted finally by the Construction Manager.

#### 1.06 PRECAUTIONS AGAINST HYDROSTATIC UPLIFT DURING CONSTRUCTION

- A. The Contractor shall maintain a low groundwater elevation in the vicinity of the structures until they are complete. In case of extremely high water during construction of the structures, it may be necessary to flood the structures to maintain stable conditions.

#### 1.07 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.

#### 1.08 SITE CONDITIONS

- A. Subsurface Conditions: Refer to the Geotechnical Investigations Results Report and the Geotechnical Plans.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Provide settlement markers, piezometers and other geotechnical instruments in accordance with the submitted dewatering plan or as specified.
- B. Provide casings, well screens, piping, fittings, pumps, power, and other items required for dewatering system.
- C. Provide sand and gravel filter around the well screen. Wrapping geotextile fabric directly around the well screen shall not be allowed.
- D. When deep wells, well points, or vacuum well points are used, provide pumping units capable of maintaining high vacuum and handling large volumes of air and water at the same time.
- E. Provide auxiliary dewatering equipment in the event of breakdown. Equipment shall consist of pumps and hoses and be stored on site. Provide at least one (1) pump for every five (5) pumps used.

- F. Provide and maintain erosion and sedimentation control devices as indicated or specified and in accordance with the dewatering plan.
- G. Provide temporary pipes, hoses, flumes, or channels for the transport of discharge water to the discharge location.
- H. Provide cement grout having a water cement ratio of 1 to 1 by volume.

### 3.01 INSTALLATION

- A. Execution of earth excavation, installing earth retention systems, and dewatering shall not commence until the related submittals have been reviewed by the Construction Manager with all Construction Manager's comments satisfactorily addressed and the geotechnical instrumentation has been installed.
- B. Provide and maintain dewatering system in accordance with the dewatering plan.
- C. Carry out dewatering program in such a manner as to prevent undermining or disturbing foundations of existing structures or of work ongoing or previously completed.
- D. Do not excavate until the dewatering system is operational.
- E. Unless otherwise specified, continue dewatering uninterrupted until all structures, pipes, and appurtenances below groundwater level have been completed such that they will not be floated or otherwise damaged by an increase in groundwater elevation.
- F. Discontinue open pumping from sumps and ditches when such pumping results in boils, loss of fines, softening of the ground, or instability of the slopes. Modify dewatering plan and submit revised plan to the Construction Manager for acceptance.
- G. Where subgrade materials are disturbed or become unstable due to dewatering operations, remove and replace the materials in accordance with the Contract Sections.
- H. Dewatering Discharge:
  - 1. Install and monitor recharge systems in accordance with the submitted dewatering plan.
  - 2. Install sand and gravel filters in conjunction with well points and deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
  - 3. Transport pumped or drained water to discharge location without interference to other work, damage to pavement, other surfaces, or property.
  - 4. Provide separately controllable pumping lines.

5. The Construction Manager reserves the right to sample discharge water at any time.
6. Immediately notify the Construction Manager if suspected contaminated groundwater is encountered. Do not pump water found to be contaminated with oil or other hazardous material to the discharge locations.

I. Monitoring Devices and Records:

1. Install, maintain, monitor, and take readings from the observation wells and geotechnical instruments in accordance with the dewatering plan.
2. Install settlement markers on structures within the zone of influence for dewatering a distance equal to twice the depth of the excavation, from the closest edge of the excavation. Conduct and report settlement surveys to 1/8-inch.
3. For linear excavations such as trenches, the zone of influence for dewatering shall be 30 feet.
4. For large rectangular, square, or circular mass excavations, the zone of influence shall be defined by the actual cone of watering influence corresponding to a 10 percent increase in effective vertical stress.

J. Install and maintain erosion/sedimentation control devices at the point of discharge as indicated or specified and in accordance with the dewatering plan.

K. Removal:

1. Do not remove dewatering system without written acceptance from the Construction Manager.
2. Backfill and compact sumps or ditches with screened gravel or crushed stone wrapped with geotextile fabric in accordance with Section 312300.
3. All dewatering wells shall be abandoned upon completion of the work and completely backfilled with cement grout.

3.02 CLOSEOUT ACTIVITIES

A. Provide in accordance with Section 017700.

END OF SECTION 312319

## SECTION 312333 - TRENCHING AND BACKFILL

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide trenching and backfill as indicated and in compliance with Contract Documents.
- B. Section includes:
  - 1. Trench excavation width and safety.
  - 2. Backfill materials and placement.
  - 3. Utility identification using marking tape and trace wire.
  - 4. Soil and aggregate materials.
  - 5. Compaction and testing.

#### 1.02 REFERENCES

- A. American Association of State and Highway Transportation Officials (AASHTO) Publications:
  - 1. M147: Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses.
- B. American Public Works Association (APWA):
  - 1. Public Works Management Practices Manual; latest edition.
- C. ASTM International (ASTM):
  - 1. C33: Specification for Concrete Aggregates.
  - 2. C150: Standard Specification for Portland Cement.
  - 3. C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
  - 4. D75: Standard Practice for Sampling Aggregates.

5. D421: Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants.
6. D422: Test Method for Particle-Size Analysis of Soils.
7. D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup>).
8. D1556: Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
9. D1557: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft<sup>3</sup>).
10. D2167: Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
11. D2321: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
12. D2419: Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
13. D2434: Standard Test Method for Permeability of Granular Soils (Constant Head).
14. D2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
15. D2488: Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).
16. D2940/D2940M: Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.
17. D4318: Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
18. D4832: Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
19. D6938: Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

D. New Jersey Department of Transportation (NJDOT) :

1. NJDOT Specifications: Standard Specifications for Road and Bridge Construction, 2007 edition.

E. Occupational Safety and Health Administration (OSHA) Standards and Regulations:

1. 29 CFR 1926, Subpart P: Safety and Health Regulations for Construction, Excavations.

1.03 MEASUREMENT AND PAYMENT

1. No separate payment shall be made for Trenching and Backfill. Payment shall include in the unit price or lump sum price for the payment item requiring Trenching and Backfill, in accordance with Section 012901.

1.04 CLASSIFICATION OF EXCAVATION

- A. Excavation is not classified, except where rock excavation is authorized outside specified or indicated limits of excavation.

1.05 DEFINITIONS

- A. Percent Compaction or Compaction Density: The field dry density of compacted material, expressed as a percentage of the maximum dry density.
- B. Field Dry Density or Field Density: In-place density as determined by ASTM D1556 (Sand Cone Method), ASTM D2167 (Rubber Balloon Method), or ASTM D6938 (Nuclear Method).
- C. Maximum Dry Density: Laboratory density as determined by ASTM D1557 (Modified Proctor) and occurring at the optimum moisture content of the soil being tested.
- D. Pipe Embedment: Comprised of the following or combination thereof:
1. Foundation: Required only when the native trench bottom does not provide a firm working platform or the necessary uniform and stable support for the install pipe.
  2. Bedding: Placed directly underneath the pipe and brings the trench bottom to grade. Provides a firm, stable, and uniform support of the pipe.
  3. Haunching: From bottom of pipe to spring-line.
  4. Initial Backfill: From top of bedding or foundation to 6 inches above top of pipe, unless noted otherwise.
  5. Final Backfill: Above the initial backfill to the original or finish grade.



6. Backfill: Includes initial and final backfill.

#### 1.06 SUBMITTALS

- A. Submit the following in accordance with Section 013300.

1. Qualifications of Independent Testing Laboratory, four (4) weeks prior to earthwork.
2. Temporary excavation and shoring drawings for worker protection in accordance with the General Conditions.
3. Gradation analysis.
4. Dewatering plan including disposition of groundwater.
5. Manufacturer's catalog data and a sample of filter fabric with manufacturer's installation instructions and details.
6. Materials Sources: Name of source, location, date of sample, sieve analysis, and laboratory compaction characteristics.
7. Test and Evaluation Reports:
  - a. Field density testing reports: Provide results from field density testing of prepared subgrade and compacted fill.
  - b. Grain-size analysis.
  - c. Laboratory compaction characteristics of soils.
  - d. Water content.
8. Geotextile:
  - a. At least two (2) weeks prior to shipment, submit manufacturer's certificate of compliance and physical property data sheet indicating that requirements for materials and manufacture are in conformance as specified.
  - b. For informational purposes only, submit manufacturer's printed installation instructions.
9. Compaction method and removal sequence of shoring.

#### 1.07 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.

- B. Provide sample backfill materials in accordance with ASTM D75.
- C. NJDEP may an independent testing laboratory to test the backfill material and compaction of the backfill. Contractor to provide free and safe access to the testing technician.
  - 1.
- D. Protect excavations by shoring, bracing, sheet piling, underpinning or other methods required to prevent cave-in of loose soil. Protection shall be in accordance with OSHA 29 CFR 1926, Subpart P.

#### 1.08 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Provide geotextile fabric in rolls wrapped with protective covering to protect geotextile fabric from mud, dirt, dust, and debris. Label each roll of geotextile fabric with number or symbol to identify production run.
- C. Protect geotextile fabric from sunlight during transportation and storage. Do not leave geotextile fabric exposed to sunlight for more than two (2) weeks during installation operations.

### PART 2 - PRODUCTS

#### 2.01 BACKFILL MATERIALS

- A. Suitable Material: Material from on-site excavation and/or permitted off-site sources that meets all of the specified requirements for its intended use and is not unsuitable. Wet subgrade material which meets other requirements for suitable material is suitable.
- B. Unsuitable Material: Material that fails to meet requirements for suitable materials or contains any of the following:
  - 1. Organic clay, organic silt, or peat; as defined in ASTM D2487.
  - 2. Vegetation, wood, roots, leaves, and organic, degradable material.
  - 3. Stones or rock fragments over 6 inches in any dimension.
  - 4. Porous biodegradable matter, excavated pavement, construction debris, rubbish, or refuse.
  - 5. Ice, snow, frost, or frozen soil particles.

- C. Bedding: Granular Fill, Open Graded. ASTM C33, coarse aggregate, No. 57; depth of 1/8 of diameter, 6 inches minimum.
- D. Initial Backfill: ASTM D2321, Class I Granular Fill, Open Graded.
- E. Final Backfill: Suitable, unclassified material excavated from trench or other approved source; free of rocks with dimensions greater than 1/2 the compacted lift; and rocks provide less than 50 percent of the final backfill volume.
- F. Granular Fill:
  - 1. Densely Graded: Bank-Run Gravel with the following properties.
    - a. Natural deposit, unprocessed except when needed to remove deleterious materials and stones larger than maximum size allowed.
    - b. Soil particles: ASTM C33, physical property requirements.
    - c. Material source: Submit to Construction Manager for acceptance.
    - d. Gradation: Table 312333-1.

Table 312333-1	
Sieve Designation (Square Mesh)	Percentage Passing (By Weight)
6 inches	100
2 inches	80-100
No. 4	20-65
No. 50	10-25
No. 200	0-12

- 2. Open Graded: Screened Gravel or Crushed Stone: ASTM C33, Coarse Aggregate, No. 57. Soil particles shall conform to the physical property requirements of ASTM C33.
- G. Sand:
  - 1. Granular material free from clay balls, organic matter, and other deleterious substances and conforming to the following gradations in Table 312333-2:

<b>Table 312333-2</b>	
Sieve Size	Percent Passing by Weight
3/8 inch	100
No. 4	75 to 100
No. 30	12 to 50
No. 100	5 to 20
No. 200	0 to 10

2. Sand shall have a coefficient of permeability greater than  $(1.4 \times 10^{-2} \text{ cm/s})$  measured in accordance with ASTM D2434.

H. Select Borrow:

1. Well-graded, coarse-grained soil; classified in accordance with ASTM D2487 as GW, GW-GM, GW-GC, SW, SW-SM, or SW-SC.
2. Soil particles: ASTM C33, physical property requirements.
3. Gradation: Table 312333-3.

<b>Table 312333-3</b>	
Sieve Designation (Square Mesh)	Percentage Passing (By Weight)
3 inches	100
1-1/2 inches	70-100
3/4 inches	50-85
No. 4	30-60
No. 50	10-25
No. 200	0-5

- I. Base Aggregate for Pavement: ASTM D2487, USCS Classification of SM, SP, SW, GM, GP, or GW; no more than 15 percent fines (passing No. 200 sieve) and a uniformity coefficient greater than 2.

2.02 EQUIPMENT

- A. Compaction equipment shall be capable of consistently achieving the specified compaction requirements.

## 2.03 UTILITY IDENTIFICATION

- A. Trace Wire: Continuous, single-strand copper wire, insulated, maximum 12 AWG. Clear plastic covering, imprinted with inscription describing specific utility in large letters.
- B. Marking Tape: Use type specifically manufactured for marking and locating underground utilities. Acid- and alkali-resistant polyethylene film, 6 inches wide with minimum thickness of 0.004-inch, minimum strength of 1,750 psi lengthwise and 1,500 psi crosswise. Provide tape manufactured with foil core at least 0.35-mil thick to enable detection by metal detection when tape is buried up to 3 feet deep. Tape shall bear continuous printed inscription describing specific utility. Tape color shall follow APWA Color Codes. Tape color shall be as follows:
  - 1. Electric conduits, duct banks, and cable: Red.
  - 2. Potable water systems: Blue.
  - 3. Non-potable water (NPW) systems: Purple.
  - 4. Gas, oil, dangerous materials: Yellow.
  - 5. Telephone, CCTW, fire communications: Orange.
  - 6. Sanitary sewer systems: Green.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that dewatering support systems are in place before commencing with excavation.
- B. Verify that excavation safety and support systems meeting the requirements of OSHA 29 CFR 1926, Subpart P are in place before commencing with excavation.
  - 1. Minimum slopes for laying back excavations or materials are contained in OSHA 29 CFR 1926, Subpart P; Appendices A and B.
  - 2. Minimum requirements for shoring and bracing are contained in OSHA 29 CFR 1926, Subpart P; Appendix C.
- C. Verify that fill materials submittals have been accepted by Construction Manager before commencing with work requiring the use of these materials.

- D. Verify that erosion and sediment control measures are in place and functioning properly.
- E. Immediately notify the Construction Manager if unexpected subsurface facilities or suspected hazardous materials are encountered during excavation. Discontinue affected work in area until notified to resume work.

### 3.02 PREPARATION

- A. Underpin adjacent structures that could be damaged by excavation work.
- B. Cut pavement with saw or pneumatic tools to prevent damage to remaining pavement. Dispose of large pieces of demolished pavement before proceeding with excavation.

### 3.03 PROTECTION OF IN-PLACE CONDITIONS

- A. Support and protect from damage – existing pipes, poles, wires, fences, curbs, property line markers, and other features or structures which must be preserved in place to avoid being temporarily or permanently relocated.
- B. Excavation Near Existing Structures:
  - 1. Discontinue digging by machinery when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of hand tools. Include such manual excavation in work to be done when incidental to normal excavation and under items involving normal excavation.
  - 2. Excavate test pits near, or at intersection with, existing utilities or underground structures to determine the exact location of existing features.
- C. Excavation Near Private Property:
  - 1. Record existing condition of features on adjacent property by means of dated photographs or cameras.
  - 2. Enclose uncut tree trunks adjacent to work in wooden boxes of such height necessary to protect tree from injury due to piled material, equipment, or operations. Operate excavating machinery and cranes so as to prevent injury to overhanging branches and limbs.
  - 3. Protect cultivated hedges, shrubs, and plants which would otherwise be damaged by the work.
  - 4. Where protection of vegetation is not possible, dig up, temporarily transplant, and maintain. After active construction operations in the area have ceased, transplant

vegetation to the original positions and provide water and nursery care until growth is re-established.

5. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces. Provide protection on pavement or tracks if construction traffic is unavoidable.

### 3.04 RESTORATION

- A. Restore private property and structures promptly. Begin restoration work within 24 hours of when damage occurred.
- B. Existing surfaces, features, or utilities that are to remain but are damaged during construction shall be repaired or replaced to at least the condition in which they were found immediately before work began, unless noted otherwise.
- C. Damaged Trees to Remain: Cut all damaged branches, limbs, and roots smoothly and neatly without splitting or crushing. Neatly trim, cut the injured portions and cover with an application of grafting wax or tree healing paint. Replace damaged trees which subsequently die or continue to show lack of growth due to damage, until one (1) year after substantial completion.
- D. Cultivated Vegetation: Includes, but is not limited to: hedges, shrubs, and plants. Vegetation that is damaged shall be replaced with equal kind and of at least the quality before work began.

### 3.05 TRENCH EXCAVATION

- A. Provide dewatering system to allow for working conditions in dry, stable soil. Properly dispose of water to avoid damage to property and in accordance with laws and regulations. Lower groundwater table prior to excavation and keep a minimum of 24 inches below lowest excavation subgrade until structure has sufficient strength to withstand soil and water pressures.
- B. Sheet and brace trenches, excavations, and adjacent structures to comply with laws and regulations and to provide protection of life, property, and the Work. Where close sheeting is necessary, drive to prevent adjacent soil from entering excavation. Remove close sheeting only when removal would not damage property or the Work. Sheeting left in place shall be cut off 18 inches below ground surface.
- C. Preserve material below and beyond the lines of excavations.
- D. Locate stockpiled excavated material at least 3 feet from edge of excavations to prevent cave-ins or bank slides.

3.06 AUTHORIZED OVER-EXCAVATION

- A. Remove rock or soil for a depth of 6 inches and backfill with bedding material.

3.07 UNAUTHORIZED EXCAVATION

- A. Contractor is responsible for backfilling unauthorized excavations with bedding material at no additional cost to the Owner.

3.08 BACKFILL:

- A. Fill to lines and grades necessary to provide finish grades.
- B. Use a placement method that does not disturb or damage other work or existing features.
- C. Maintain fill materials within 3 percent of optimum moisture, to attain required compaction density.
- D. Place and compact material in equal continuous layers.
- E. Maximum compacted depth is 6 inches for aggregate materials and 8 inches for soil materials, unless noted otherwise.

3.09 COMPACTION

- A. Compact to density specified and indicated for various types of material. Control moisture content of material being placed as specified, or if not specified - at a level slightly lower than optimum.
- B. Compaction Density: Provide trench backfill densities according to Table 312333-3. The values listed are minimum percentages, unless noted otherwise.



<b>Table 312333-3</b>	
<b>Area</b>	<b>Percentage of Maximum Dry Density as defined by ASTM D698 (Standard Proctor)</b>
Trench Backfill (under pavement, slabs, sidewalks)	95
Trench Backfill (under structures or within 25 feet of structures)	95
Trench Backfill (in open or grassed areas)	85

### 3.10 UTILITY IDENTIFICATION

- A. Install marking tape over all site utilities, 12 inches below finish grade.
- B. Install trace wire at top center; pull wire taut to remove any slack.
- C. Extend trace wire to utility boxes, manholes and junctions to allow for connection to subsurface location equipment.

### 3.11 FIELD QUALITY CONTROL

- A. Compaction shall be deemed to comply with the specifications when no more than one (1) test of any three (3) consecutive tests falls below the specified relative compaction. The one test shall be no more than 3 percentage points below the specified compaction. The Contractor shall pay the costs for any retesting or additional testing of work not conforming to the Specifications.
- B. Where compaction tests indicate a failure to meet the specified compaction, the Contractor will take additional tests every 50 feet in each direction until the extent of the failing area is identified. Rework the entire failed area until the specified compaction has been achieved.
- C. Perform particle size distribution and gradation analyses using ASTM D422 and following standard practices in ASTM D421. Perform one (1) test for every source and submit results to C for acceptance. Repeat the moisture density test for every 5,000 cubic yards of material used.
- D. Perform field density testing in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- E. Evaluate field density test results in relation to maximum dry density as determined by testing material in accordance with ASTM D1557 (Modified Proctor).

- F. Perform tests in accordance with ASTM D4318 to determine Liquid Limit, Plastic Limit and Plasticity Index and submit test results to CM for acceptance. Minimum of one (1) test per 5,000 cubic yards of soil for use as fill material and whenever classification of material is in doubt as determined by the Construction Manager.
- G. Location of field density tests shall be mutually acceptable to testing laboratory and the Construction Manager.
- H. Frequency of field density tests as noted by Tables 312333-4 and 3123 3-5:

<b>Table 312333-4</b>	
<b>Area</b>	<b>Frequency</b>
<b>Trench (Structural Areas)</b>	<b>1 per lift for each 250 linear feet of trench</b>
<b>Trench (Non-Structural Areas)</b>	<b>1 per lift for each 500 linear feet of trench</b>
Regardless of the minimum testing frequency specified, field density tests shall be performed by the Contractor in sufficient number for the Contractor's quality control purposes to ensure that specified density is obtained.	

<b>Table 312333-5</b>	
<b>Area</b>	<b>Frequency</b>
<b>Trench (Structural Areas)</b>	<b>1 per lift for every 1,000 linear feet of trench</b>
<b>Trench (Non-Structural Areas)</b>	<b>1 per alternate lift for every 1,000 linear feet of trench</b>
Regardless of the minimum testing frequency specified, field density tests shall be performed by the Contractor in sufficient number for the Contractor's quality control purposes to ensure that specified density is obtained.	

### 3.12 ADJUSTING

- A. Shrinkage:
  - 1. Backfill to a height above finished grade which will allow for the shrinkage or consolidation of material. Initially, provide at all points, an excess of at least one percent of total height of backfill measured from stripped surface to top of finished surface.
  - 2. Supply specified materials and build up low places, without additional cost if embankment or backfilling settles so as to be below the indicated level for proposed finished surface at any time before final acceptance of the Work.

3.13 PROTECTION

- A. Formulate excavation, backfilling, and filling schedule and procedures to eliminate possibility of undermining or disturbing foundations of partially and completed structures, pipelines and embankments or existing structures and pipelines.

3.14 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 312333

## SECTION 315000 - EXCAVATION SUPPORT SYSTEMS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide excavation support systems as indicated and in compliance with Contract Documents.
- B. Design, furnish, and install excavation support systems to maintain lateral support, prevent loss of ground, limit soil movements to acceptable limits and protect from damage existing and proposed improvements including pipelines, utilities, structures, roadways, railroads and other facilities.
- C. The requirement of specified excavation support systems in areas indicated on the drawings does not relieve the Contractor from the responsibility of furnishing and installing proper temporary excavation support systems in other areas.
- D. Common types of excavation support system include, but are not limited to: singular or multiple stages comprised of cantilevered or internally braced soldier piles and lagging, steel sheetpile wall, timber sheetpile wall, trench box, or combinations thereof. Trench box temporary excavation support system is only acceptable for pipe or utility trench excavations approved by the Construction Manager. Temporary unsupported open cut excavation with stable sloping sides is allowed where applicable.
- E. Extraction of steel sheetpile wall, timber sheetpile wall, or soldier piles are not permitted unless otherwise indicated, specified, or approved by the Construction Manager.
- F. Wherever the word "sheeting" is used in this section or on the Contract Drawings, it shall be in reference to any type of excavation support system specified except trench box.
- G. Construction of the excavation support systems shall not disturb the existing structures or the completed proposed structures. Damage to such structures shall be repaired at Contractor's expense.
- H. Adjacent structures are those that are bear upon soils above the proposed excavation depth and within a distance equal to twice the total depth of the excavation away from the closest edge of the excavation. Monitor and protect adjacent structures as specified and indicated.

- I. Bear the entire cost and responsibility of correcting any failure, damages, subsidence, upheaval or cave-ins as a result of improper installation, maintenance or design of the excavation support systems. Pay for all claims, costs and damages that arise as a result of the Work performed at Contractor's expense.

## 1.02 REFERENCES

### A. American Concrete Institute (ACI):

1. 304: Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

### B. ASTM International (ASTM):

1. A36: Standard Specification for Structural Steel.
2. A572: Standard Specification for High-Strength Low Alloy Columbium-Vanadium Structural Steel.
3. A615: Standard Specifications for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

### C. American Wood-Preserves Association (AWPA) Standards.

1. P23-10: Standard for Chromated Copper Arsenate Type C (CCA-C).
2. P50-10: Standard for Fire Retardant FR-2 (FR-2).

### D. American Welding Society (AWS)

1. D1.1: Structural Welding Code.

### E. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29: Subpart P - Excavations, Trenching and Shoring.

## 1.03 SUBMITTALS

### A. Submit the following in accordance with Section 013300.

1. Submit the following qualifications four (4) weeks prior to the construction:
  - a. Qualifications of Contractor's excavation support system designer as specified in Paragraph 1.05.G.
  - b. Qualifications of Contractor's excavation support system installer as specified in Paragraph 1.05.H.

- c. Qualifications of Contractor's excavation support system installation supervisor as specified in Paragraph 1.05.J.
  - d. Qualifications of vacuum excavation subcontractor as specified in Paragraph 1.05.F, if DMPs for utilities are utilized.
- 2. Submit an excavation support plan stamped and signed by a Registered Professional Engineer in the State of New Jersey at least two (2) weeks prior to start of the construction. Do not submit design calculations. The review will be only for the information of the Construction Manager and third parties for an overall understanding of the project relating to access, maintenance of existing facilities, and proper utilization of the site. The Contractor remains responsible for the adequacy and safety of the means, methods, and sequencing of construction. The plan shall include the following items as a minimum:
  - a. Proposed excavation support system(s), details, location, layout, depths, extent of different types of support relative to existing features and the permanent structures to be constructed, and methods and sequence of installation and removal.
  - b. Certificate of Design: Refer to Section 013300.
  - c. A list of all design assumptions, including safety factors used for the excavation support system(s) and all lateral pressures used for each system.
  - d. Requirements of dewatering during the construction.
  - e. Minimum lateral distance from the edge of the excavation support system for use for vehicles, construction equipment, and stockpiled construction and excavated materials.
  - f. List of equipment used for installing the excavation support systems.
  - g. Monitoring schedule, installation procedures and location plans for vibration/noise monitoring, geotechnical instrumentation (deformation monitoring points and inclinometers) and observation wells/piezometers to monitor ground, excavation support system, adjacent structures and groundwater fluctuation during the entire construction period.
- 3. Submit a Construction Contingency Plan specifying the methods and procedures to maintain excavation support system stability if the allowable movement of the adjacent ground and adjacent structures is exceeded.
- 4. Monitoring data within one (1) day of data collection from vibration and noise recording equipment, observation wells, deformation monitoring points and offset lines. Data shall include:

- a. Horizontal and vertical movements of geotechnical instruments and groundwater readings.
  - b. New movements since the initial readings of the geotechnical instruments.
  - c. Weekly summary in tabular and graphic form at the end of each week.
  - d. A schematic plan of excavation and/or relevant construction activities at the time of monitoring.
5. For excavation support systems left in place, submit the following as-built information prior to backfilling and covering the excavation support systems:
  - a. Survey locations of the excavation support systems, including coordinates of the ends and points of change in direction.
  - b. Type of the excavation support system.
  - c. Elevations of top and bottom of the excavation support systems left in place.

#### 1.04 QUALITY ASSURANCE

- A. Provide in accordance with Section 014300.
- B. Conform to the requirements of the OSHA Standards and Interpretations: "Part 1926 Subpart P - Excavation, Trenching, and Shoring".
- C. Construction operations to conform to noise regulations provided in the Noise Control Plan and this Section.
- D. Retain the services of an independent vibration consulting firm meeting the requirements as specified in Section 023214.
- E. The peak particle velocity for pile driving, or other vibration-inducing operations, shall meet the requirements as specified in Section 023214.
- F. If utilizing deformation monitoring points (DMPs) for utilities, vacuum excavation shall be performed by subcontractor having five (5) years of experience in non-destructive vacuum excavation methods for utilities.
- G. Prepare design, including calculations and drawings, under the direction of a Professional Engineer registered in the State of New Jersey and having the following qualifications:
  1. Not less than 10 years' experience in the design of specific excavation support systems to be used.

2. Completed not less than five (5) successful excavation support system projects of equal type, size, and complexity within the last five (5) years.

H. Excavation Support System Installer's Qualifications:

1. Not less than three (3) year' experience in the installation of similar types and equal complexity as the proposed system.
2. Completed not less than three (3) successful excavation support systems of similar type and equal complexity as the proposed system.

I. Install all excavation support systems under the supervision of a supervisor having the following qualifications:

1. Not less than five (5) years' experience in installation of systems of similar type and equal complexity as the proposed system.
2. Completed at least five (5) successful excavation support systems of similar type and equal complexity as the proposed system.

J. If the Contractor uses a subcontractor to perform this work, subcontractor must be pre-approved by DPMC prior to performing any activities.

K. All welding shall be performed in accordance with AWS D1.1.

#### 1.05 DESIGN CRITERIA

A. Design of excavation support systems shall meet the following minimum requirements:

1. Support systems shall be designed for earth pressures, hydrostatic pressure, equipment, temporary stockpiles, construction loads, roadways, railroads, and other surcharge loads.
2. Design a bracing system to provide sufficient reaction to maintain stability.
3. Limit movement of ground adjacent to the excavation support system to be within the allowable ground deformation as specified.
4. Design the embedment depth below bottom of excavation to minimize lateral and vertical earth movements and provide bottom stability. Toe of braced temporary excavation support systems shall not be less than 5 feet below the bottom of the excavation.
5. Design excavation support systems to withstand an additional 2 feet of excavation below proposed bottom of excavation without redesign except for the addition of lagging and/or bracing.



6. Maximum width of pipe trench excavation shall be as indicated on the drawings.
7. Do not cast permanent structure walls directly against excavation support walls.
8. The design location of the excavation support wall shall be determined such that the installed wall and bracing system components are all located outside the limits of the permanent structure. Construction tolerances (e.g. wall verticality) shall be considered in determining the plan location.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with Section 016610 and as specified.
- B. Store sheeting and bracing materials to prevent sagging which would produce permanent deformation. Keep concentrated loads which occur during stacking or lifting below the level which would produce permanent deformation of the material.

#### 1.07 PROJECT CONDITIONS

- A. Subsurface Conditions: Refer to Section 023219.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Structural Steel: All soldier piles, wales, rakers, struts, wedges, plates, waterstop, and accessory steel shapes shall conform to ASTM A36.
- B. Steel Sheet Piling: ASTM A572, continuous interlocking type and shall be hot-rolled sheet pile.
- C. Timber Lagging Left in Place: Pressured treated per AWPA standards.
- D. Raker Ties: ASTM A615 Grade 60.
- E. Concrete: Refer to Section 033000.
- F. Tamping tools adapted for backfilling voids after removal of the excavation support system.
- G. Provide specific trench box sizes for each pipe and utility excavation with structural capacity of retaining soil types as described in OSHA's 29 CFR Part 1926 Subpart P.

## 2.02 EQUIPMENT

- A. A vibratory hammer shall be utilized for driving the sheet piling providing that such operations do not exceed vibration/noise requirements of the specifications. Impact hammer shall be utilized when vibratory hammer is unable to drive sheet piling to required depth and/or unable to meet vibration requirements. Impact hammer shall also meet noise requirement.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Installation of the excavation support systems shall not commence until the related earth excavation and dewatering submittals have been reviewed by the Construction Manager with all Construction Manager's comments satisfactorily addressed.
- B. Install excavation support systems in accordance with the excavation support plan.
- C. Do not drive sheeting within 100 feet of concrete less than seven (7) days old.
- D. Carry out program of excavation support in such a manner as to prevent undermining or disturbing foundations of existing structures of Work ongoing or previously completed.
- E. Bottom of the trench box excavation support system shall be above the pipe invert prior to installing the pipe.
- F. Install and read geotechnical instrumentation in accordance with the excavation support plan. Notify the Construction Manager immediately if any geotechnical instrumentation is damaged. Repair or replace damaged geotechnical instrumentation at the sole option of the Construction Manager and at Contractor's expense.
- G. Continuously monitor movements of the ground adjacent to excavation support systems and adjacent structures. In events of the measured movements approaching or exceeding the allowable movements, take immediate steps to arrest further movement by revising procedures such as providing supplementary bracing, filling voids behind the trench box, supporting utilities, or other measures (Construction Contingency Plan).
- H. Notify utility owners if existing utilities interfere with the excavation support system. Modify the existing utility with the utility owner's permission or have the utility owner make the modifications at Contractor's expense.

### 3.02 GROUND DEFORMATION ADJACENT TO EXCAVATION SUPPORT SYSTEMS

- A. Allowable Vertical (heave/settlement) and Lateral Movements: 2 inches maximum for the trench box excavation support system, and 1 inch maximum for other types of excavation support systems at any location behind the excavation support system.
- B. Monitoring personnel shall use a procedure for reading and recording geotechnical instrumentation data which compares the current reading to the last reading during data collection to eliminate spurious readings.
- C. Plot the observed ground deformation readings versus time. Annotate the plots with construction loading and excavation events having an impact on the readings. Evaluate plots by means of secondary rate-of-change plots to provide early warning of accelerating ground movements.
- D. Notify the Construction Manager when the allowable ground deformation is exceeded.
- E. Implement Construction Contingency Plan under direction of the temporary excavation support system designer and the Construction Manager.

### 3.03 REMOVAL OF EXCAVATION SUPPORT SYSTEMS

- A. Sheeting shall be left in place unless otherwise indicated.
- B. When indicated, remove the excavation support system without endangering the constructed or adjacent structures, utilities, or property. Immediately backfill all voids left or caused by withdrawal of excavation support systems with bank-run gravel, screened gravel or select borrow by tamping with tools specifically adapted for that purpose.
- C. The excavation support system left-in-place shall be cut-off a minimum of 2 feet below the bottom of the next higher foundation level or a minimum of 5 feet below finished grade.
- D. Conduct survey of the locations and final cut-off elevations of the excavation support systems left in place.

### 3.04 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 017700.

END OF SECTION 315000

## SECTION 321200 - FLEXIBLE PAVING

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide flexible paving as indicated and in compliance with Contract Documents.

1. Scope includes:

- a. Aggregate base course.
- b. Asphalt concrete pavement.

#### 1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):

- 1. M147: Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses.
- 2. M226: Standard Specification for Viscosity-Graded Asphalt Cement.
- 3. M320: Standard Specification for Performance-Graded Asphalt Binder.
- 4. T89: Standard Method of Test for Determining the Liquid Limit of Soils.
- 5. T90: Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
- 6. T99: Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
- 7. T104: Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

- B. ASTM International (ASTM):

- 1. C125: Standard Terminology Relating to Concrete and Concrete Aggregates.
- 2. D242: Standard Specification for Mineral Filler For Bituminous Paving Mixtures.
- 3. D946: Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction

4. D977: Standard Specification for Emulsified Asphalt.
5. D2027: Standard Specification for Cutback Asphalt (Medium-Curing Type).
6. D3381/D3381M: Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
7. D6373: Standard Specification for Performance Graded Asphalt Binder.

C. New Jersey State Department of Transportation (DOT):

1. NJDOT Specifications: New Jersey Department of Transportation, Road and Bridge Specifications, 2007.

1.03 DEFINITIONS

- A. Gravel: Coarse aggregate resulting from natural disintegration and abrasion of rock or processing of weakly bound conglomerate.
- B. Crushed Gravel: The product resulting from the artificial crushing of gravel with substantially all fragments having at least one face resulting from fracture.
- C. Crushed Stone: The product resulting from the artificial crushing of rocks, boulders, or large cobblestones, substantially all faces of which have resulted from the crushing operation.

1.04 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.
  1. Sustainable Design Submittals.
- B. Test Results:
  1. Base course testing results.
- C. Submit haul route, procedures, and schedule of operation times.

1.05 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Codes and Standards: Comply with the latest edition of State highway or transportation department standard specifications and with local governing regulations.

#### 1.06 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Transport bituminous mixtures in covered trucks whenever:
  - 1. Rainy weather, or
  - 2. Air temperature is less than 60 degrees F.
- C. Adjust weight, type, capacity, haul routes, and method of operation of hauling vehicles so that:
  - 1. No damage results to existing streets, subgrade or base course, and
  - 2. Noise and air pollution levels are not noticeably increased along selected haul route.
- D. Haul routes through residential areas shall be avoided.
- E. Submit haul route, procedures for transport, and schedule of operation times to Construction Manager for acceptance.

#### 1.07 PROJECT CONDITIONS

- A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 degrees F, and when temperature has not been below 35 degrees F for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
- B. Place asphalt concrete surface course when atmospheric temperature is above 40 degrees F, and when base is dry. Place binder course when air temperature is above 30 degrees F and rising.

#### 1.08 MEASUREMENT AND PAYMENT

- A. Payment shall be in accordance with Section 012901.

### PART 2 - PRODUCTS

#### 2.01 AGGREGATE MATERIALS

- A. According to AASHTO M147, unless noted otherwise.
- B. Aggregate, including blended filler, shall have:

1. Liquid limit (LL) of not more than 25 as determined by AASHTO T89.
2. Plasticity index (PI) of not more than 6 as determined by AASHTO T90.
- C. At least 45 percent, by count, of number of particles of aggregate retained on No. 4 sieve shall have at least one (1) fractured face.
- D. Remove oversized material by screening or crushing to required sizes.
- E. Soundness: AASHTO T104, 5 cycles: No greater than 18 percent weight loss.
- F. Filler for Blending:
  1. Use filler for meeting gradation requirements or for satisfactory binding of material. Uniformly blend with base course material at screening plant.
  2. Obtain material from sources accepted by Construction Manager.
  3. Material shall be free of agglomerations or lumps and contain no more than 15 percent of material retained on No. 4 sieve.

## 2.02 AGGREGATE BASE COURSE

- A. Base Course: NJDOT DGABC.

## 2.03 PAVEMENT MATERIALS

- A. Binder Course: NJDOT 19M64.
- B. Surface Course: NJDOT 12.5M65.

# PART 3 - EXECUTION

## 3.01 EXAMINATION

- A. Check subgrade as to soundness, outline, and contour.

## 3.02 SUBGRADE PREPARATION

- A. Scrape down subgrade bumps and irregularities to obtain smooth, even surface.
- B. Proof roll per Section 312300.
- C. Remove and replace soft or spongy areas per Section 312300.

### 3.03 PAVEMENT PREPARATION:

- A. Remove loose material from compacted base course immediately before applying herbicide treatment or prime coat.
- B. If base course becomes rutted, loose, or uneven due delays in placing subsequent courses, then proof roll prepared surface to check for unstable areas. Provide additional compaction or remove unstable areas, backfill and compact. Do not begin paving work until deficient areas have been re-graded and corrected and are ready to receive paving.
- C. Prime Coat:
  - 1. Apply at rate of 0.20 to 0.50 gallons per square yard, over compacted subgrade.
  - 2. Apply material to penetrate and seal, but not flood, surface.
  - 3. Cure and dry as long as necessary to attain penetration and evaporation of volatile.
- D. Tack Coat:
  - 1. Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement.
  - 2. Distribute at rate of 0.05 to 0.15 gallons per square yard of surface.
  - 3. Allow to dry until at proper condition to receive paving.
  - 4. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

### 3.04 BASE COURSE INSTALLATION

- A. Place materials when surface is dry and atmospheric temperature is above 40 degrees F.
- B. Construct in two (2) or more layers of approximate equal lifts; maximum compacted lift is 6 inches.
- C. Layers placed upon loose sand subgrade, prone to displacement while compacting, shall be placed in a single compacted lift of 8 inches.
- D. Deposit material on foundation or previously placed layer to minimize segregation and facilitate spreading to uniform layer.
- E. If blending of materials is done on roadway, inter-mix aggregate and blending material by blade graders, discs, harrows or other equipment to produce uniform distribution or



gradation throughout finished mixture. Avoid excessive manipulation or mixing which will cause segregation between coarse and fine materials.

- F. Place and spread each layer to thickness, width, and contour.
- G. Compact each layer before proceeding to subsequent layers. Compact to 95 percent of maximum dry density, unless noted otherwise. Refer to Section 312300 for required compaction and testing requirements.
- H. Prior to and during compaction shape material and maintain to dimensions and contour. Keep surface of each layer true and smooth.

### 3.05 PLACING MIX

- A. Place asphalt concrete mixture on prepared surface, spread, and strike-off. Spread mixture at minimum temperature of 225 degrees F. Place inaccessible and small areas by hand. Place course to required grade, cross section, and compacted thickness.
- B. Place in strips not less than 10 feet wide, unless otherwise directed by Construction Manager.
- C. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.
- D. Grade Control: Establish and maintain required lines and elevations to within 1/4 inches.
- E. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

### 3.06 ROLLING

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- B. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.
- C. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

- D. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.
- E. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.

### 3.07 FIELD QUALITY CONTROL

#### A. Base Course Testing:

- 1. Optimum Moisture Content and Maximum Density: Comply with AASHTO T99, Method C, with replacement of fraction of aggregate retained on 3/4 inch sieve. Replace with No. 4 to 3/4 inch material.

#### B. Pavement Testing:

- 1. General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving.
- 2. Thickness Tolerances: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:
  - a. Base Course Thickness: Less than 1/4-inches, plus or minus.
  - b. Surface Course Thickness: Less than 1/4-inches, plus or minus.
- 3. Surface Smoothness Tolerances: Test finished surface of each asphalt concrete course for smoothness, using 10-foot straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding following tolerances for smoothness.
  - a. Binder Course: 1/4-inches.
  - b. Surface Course: 1/8-inches.
  - c. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template, 1/4 inches.
  - d. Profile and Section: Variation from true shall not exceed +/- 3/8-inches.

### 3.08 PROTECTION

#### A. After final rolling:

1. Do not permit vehicular traffic on pavement until it has cooled and hardened.
2. Protect paving from traffic until mixture has cooled enough not to become marked.

3.09 CLOSEOUT ACTIVITIES:

- A. Provide in accordance with Section 017700.

END OF SECTION 321200

## SECTION 321300 - RIGID PAVING

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

A. Section includes:

1. Provide rigid paving as indicated and in compliance with Contract Documents.

#### 1.02 REFERENCES

A. American Concrete Institute (ACI):

1. 305R: Hot Weather Concreting.
2. 306R: Cold Weather Concreting.
3. 330.1: Specification for Unreinforced Concrete Parking Lots.

B. ASTM International (ASTM)

1. C33/C33M: Standard Specification for Concrete Aggregates.
2. C138/C138M: Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
3. C150/C150M: Standard Specification for Portland Cement.
4. C173/C173M: Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
5. C231/C231M: Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
6. C260: Standard Specification for Air-Entraining Admixtures for Concrete.
7. C309: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
8. C494/C494M: Standard Specification for Chemical Admixtures for Concrete.
9. C1315: Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

10. C1602/C1602M: Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
11. D1751: Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
12. D6690: Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

- C. New Jersey Department of Transportation, Standard Specifications for Highway and Structure Construction, current edition.

#### 1.03 MEASUREMENT AND PAYMENT

- A. Measurement and payment provisions and sharing of costs provisions described in the NJDOT specifications are not applicable to this Project. Payment shall be in accordance with Section 012901.

#### 1.04 DEFINITIONS

- A. Cold Weather: Refer to ACI 306R. A period when for more than three (3) successive days, the average daily outdoor temperature drops below 40 degrees F. The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight. When temperatures above 50 degrees F occur during more than half of any 24-hour duration, the period shall no longer be regarded as cold weather.
- B. Hot Weather: Refer to ACI 305R. Any combination of the following conditions that tend to impair the quality of freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration, or otherwise resulting in detrimental results.
1. High ambient temperature.
  2. High concrete temperature.
  3. Low relative humidity.
  4. Wind velocity.
  5. Solar radiation.

#### 1.05 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.

1. Concrete: Aggregate, cement, and admixtures product data.
2. Joint material product data.
3. Compound product data.
4. Concrete Test Results

#### 1.06 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Sustainability Standards Certifications.
- C. Work shall conform to all requirements of ACI 330.1 published by the American Concrete Institute, Fannington Hills, Michigan, except as modified by these Contract Documents.

#### 1.07 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.

#### 1.08 MEASUREMENT AND PAYMENT

- A. Payment shall be in accordance with Section 012901.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Aggregate Base: Minimum 4 inches thick, unless noted otherwise.
  1. NJDOT Dense Graded Aggregate Base Course (DGABC).

#### 2.02 CONCRETE FORMWORK

- A. Forms: Section 031000.
  1. Forms shall be made of steel or wood or other material capable of supporting concrete and mechanical concrete placing equipment that is sufficiently rigid to maintain the specified tolerances.
  2. Forms shall be clean and free of dirt, rust, and hardened concrete.

## 2.03 CONCRETE

- A. Concrete: Section 033000, Class A, with 0.55 maximum water-cement ratio for curb and gutter.
  - 1. Cement: Portland cement, ASTM C150/C150M Type II, with tricalcium aluminate content not to exceed 8 percent.
  - 2. Strength: Minimum compressive strength of 4,000 psi at 28 days.
  - 3. Aggregate: ASTM C33 physical properties; nominal maximum size, 1 inch.
  - 4. Admixtures:
    - a. Air Entrainment: ASTM C260 to provide air content (at delivery) between 6.5 to 8 percent as measured by ASTM C138, ASTM C173, or ASTM C231.
- B. Water: Within the limits of ASTM C1602/C1602M.
- C. Thickness: 5 inches as indicated in the Contract Documents.

## 2.04 CONCRETE REINFORCEMENT

- A. Reinforcing Steel: Section 032100.

## 2.05 CONCRETE FINISHES

- A. Float and normal broom finish.

## 2.06 JOINTS

- A. Expansion Joint Filler: NJDOT Roadway and Bridge Design Specifications.
- B. Pre-formed Expansion Joint Filler: Bituminous type, ASTM D1751.
- C. Joint Sealer: Hot poured elastic type, ASTM D6690, Type II.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Do not place pavement on frozen subgrade.

### 3.02 PREPARATION

- A. Excavate and shape subgrade to line, grade, and cross section.
- B. Remove all soft subgrade material encountered while compacting and backfill with aggregate base.
- C. Repeat fine grading and compaction of subgrade areas which have been subjected to vehicular construction traffic and equipment.
- D. Moisten aggregate base immediately before placing concrete to minimize absorption of water from fresh concrete.
- E. Provide concrete surfaces that are clean and dry - free of oil, dirt or foreign materials immediately before application of compounds or painting.

### 3.03 COMPACTION

- A. Moisture: Maintain moisture content that is 3 percent of optimum moisture to attain required compaction density.
- B. Subgrade: Compact top 12 inches to 95 percent of maximum dry density, unless noted otherwise.
- C. Aggregate Base: Compact to 95 percent of maximum dry density, unless noted otherwise.

### 3.04 FORMWORK

- A. Set, align, and brace forms so that the pavement will meet the tolerances specified.
- B. Apply form release agent to inside face of forms before placing concrete.
- C. The edge of previously placed concrete may be used as a form. Do not apply form release agent to previously placed concrete, unless prevention of bond between the new and the old concrete is desired.

### 3.05 PLACING CONCRETE

- A. Place concrete on uniform subgrade.
- B. Consolidate and strike off to proper elevation.
- C. Place concrete continuously to prevent formation of “cold joints”.
- D. Where placing operations stop, install bulkhead to form straight joint.



- E. Texture pavement surface with broom.
- F. Follow recommendations in ACI 305R when concreting during hot weather.
- G. Follow recommendations in ACI 306R when concreting during cold weather.

### 3.06 JOINTS

- A. Joint Spacing: Maximum allowable is 30 times the pavement thickness.
- B. Make contraction joints by sawing, tooling, or installing insert with no exceptions noted to depth of 1-1/4 inches.
- C. Cut saw joints as soon as possible without raveling concrete edges.
- D. Install full depth expansion joints using 1/2-inch thick joint material around castings and where pavement abuts structures.

### 3.07 REPAIR/RESTORATION

- A. Repair damaged work by replacing with new pavement to the nearest construction isolation joint.

### 3.08 FINISHING

- A. Float: Use magnesium or aluminum hand floats or power floats with slip on float shoes after concrete has stiffened to point where 1/4-inch maximum indentation can be imparted by normal foot pressure. Do not use combination blades for floating.
- B. Float finish shall result in uniform smooth granular texture.
- C. After floating, check slab tolerances with 10-foot straightedge. Fill low spots with fresh concrete.
- D. Do not sprinkle with dry cement or add water.
- E. Broom Finish:
  - 1. Normal Broom Finish: Use fine, soft-bristled broom to produce a non-skid surface.
  - 2. Texture parallel to travel direction of pavement.

### 3.09 TOLERANCES

- A. Construct pavement to comply with the following tolerances:

1. Elevation: 3/4 inch.
  2. Thickness: +3/8 inch, -1/4-inch.
  3. Surface: In any direction, the gap below a 10-foot unlevelled straightedge resting on highspots shall not exceed.
- B. Joint reinforcement: Tie bars-alignment of tie bar end relative to line perpendicular to edge of pavement: 1/2-inch per foot of tie bars.
- C. Dowels:
1. Lateral alignment and spacing: 1 inch.
  2. Vertical alignment: 1/4-inch.
  3. Alignment of dowel bar end relative to line perpendicular to edge of pavement: 1/4-inch per foot of dowel.
- D. Joint spacing:
1. Contraction joint depth (slab thickness): +1/4-inch, -0 inch.
  2. Joint width: +1/8-inch, -0 inch.
- 3.10 FIELD QUALITY CONTROL
- A. Refer to Section 312300 for compaction and testing requirements.
  - B. Submit compaction test results to Construction Manager for review.
  - C. Concrete Testing: Section 033000. Maintain records of placed concrete including: record date, location of pour, quantity, air temperature, and test samples taken. Submit test results to Construction Manager for acceptance.
- 3.11 PAINTING AND STRIPING
- A. Refer to Section 321700 for additional requirements.
  - B. Paint pavement markings and striping after concrete has cured for at least 14 days.
  - C. Protect markings from traffic until completely dry to prevent tracking.
- 3.12 PROTECTION
- A. Protect concrete from damage and replace if damage occurs.

- B. Protect pavement from traffic for a minimum of three (3) weeks of ambient temperatures above 40 degrees F.
- C. Do not open the pavement to vehicular traffic until the in-place compressive strength is at least 3000 psi or until the pavement is accepted by the Construction Manager for opening to traffic.
- D. Anti-Spall Compound:
  - 1. Apply compound no sooner than 28 days after placement of concrete.
  - 2. Spray two coats, allowing for first coat to completely dry.
  - 3. Minimum spray rates shall be: 40 square yards per gallon (first application) and 60 square yards per gallon (second application).

### 3.13 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 321300

## SECTION 321600 - CONCRETE CURBS, GUTTERS, AND SIDEWALKS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide concrete curbs and sidewalks as indicated and in compliance with Contract Documents.

#### 1.02 REFERENCES

- A. ASTM International (ASTM):
  - 1. A82/A82M: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - 2. A185/A185M: Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
  - 3. A497/A497M: Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
  - 4. C33/C33M: Standard Specification for Concrete Aggregates.
  - 5. C1602/C1602M: Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
  - 6. D1190: Standard Specification for Concrete Joint Sealer, Hot-Applied Elastic Type (Withdrawn).
  - 7. D6690: Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
- B. New Jersey Department of Transportation (NJDOT) Standard Specifications for Road and Bridge Construction, current edition.

#### 1.03 MEASURE AND PAYMENT

- A. Measurement and payment provisions and sharing of costs provisions described in the New Jersey DOT specifications are not applicable to this Project. Payment shall be in accordance with Section 012901.
- B. Payment at the Contract price for this item shall be full compensation for all labor, equipment, and material to do the Work.

1.04 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.

1.05 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Water: Potable water or within the limits of ASTM C1602/C1602M.
- B. Aggregate Base: Minimum 4 inches thick, unless noted otherwise.
  - 1. Aggregate: ASTM C33 physical properties and within limits of gradation No. 67.

2.02 CONCRETE FORMWORK

- A. Forms: Section 031000.
  - 1. Forms shall be made of steel or wood or other material capable of supporting concrete and mechanical concrete placing equipment that is sufficiently rigid to maintain the specified tolerances.
  - 2. Forms shall be clean and free of dirt, rust, and hardened concrete.

2.03 CONCRETE

- A. Section 033000, Class B, with 0.55 maximum water-cement ratio for curb and gutter.

2.04 CONCRETE REINFORCEMENT

- A. Reinforcing Steel: Section 032100.

2.05 SIDEWALKS

- A. Concrete: Pedestrian Areas: 4 inches thick; Driveways: 6 inches thick; unless noted otherwise.
- B. Reinforcement: ASTM A185/A185M. WWR 6X6 – W2.0XW2.0 (Grade 60), unless otherwise noted.

## 2.06 CONCRETE FINISHES

- A. Sidewalks: Float and normal broom finish.
- B. Curbs and Gutters: Float and normal broom finish.

## 2.07 EXPANSION JOINT FILLER

- A. Preformed, Bituminous type, ASTM D1751.
  - 1. Curb: 1/2 inch thick.
  - 2. Sidewalk: 1/4 inch thick.
- B. Joint Sealer: Hot poured elastic type, ASTM D6690, Type II.
- B. Curing Compound: Section 033000.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Excavate and shape subgrade to line, grade, and cross section.
- B. Remove all soft subgrade material encountered while compacting and backfill with aggregate base.
- C. Moisten aggregate base immediately before placing concrete to minimize absorption of water from fresh concrete.
- D. Provide concrete surfaces that are clean and dry - free of oil, dirt or foreign materials immediately before application of compounds or painting.

### 3.02 COMPACTION

- A. Refer to Section 312300 for additional compaction requirements.
- B. Subgrade: Compact top 12 inches to 90 percent of maximum dry density, unless noted otherwise.
- C. Aggregate Base: Compact to 90 percent of maximum dry density, unless noted otherwise.

### 3.03 CURB CONSTRUCTION

- A. According to NJDOT Specifications, Section 607.

### 3.04 SIDEWALK CONSTRUCTION

- A. According to NJDOT Specifications, Section 606.

### 3.05 FINISHING

- A. Float (for sidewalks and flatwork):

1. Use magnesium or aluminum hand floats or power floats with slip on float shoes after concrete has stiffened to point where 1/4-inch maximum indentation can be imparted by normal foot pressure. Do not use combination blades for floating.
2. Float finish shall result in uniform smooth granular texture.
3. After floating, check slab tolerances with 10-foot straightedge. Fill low spots with fresh concrete.
4. Do not sprinkle with dry cement or add water.

- B. Broom Finish:

1. Normal Broom Finish: Use fine, soft-bristled broom to produce a non-skid surface.
2. Sidewalks: Texture perpendicular to direction of travel with trowel and radius edge using 1/4-inch radius.
3. Curbs and Gutters: Texture parallel to travel direction of pavement.

### 3.06 TOLERANCES

- A. Subgrade: Smooth and free from irregularities at the specified relative compaction. The subgrade shall be considered to extend over the full width of the base course.

1. Elevation: 1/2-inch, plus or minus from the indicated grade and cross-section.

- B. Forms: Check constructed forms are within tolerance by using a 10-foot straightedge along the top of forms. Allowable tolerance is:

1. Grade: 1/8-inch over 10 feet (0.1 percent), plus or minus.
2. Alignment: 1/8-inch, plus or minus.

### 3.07 FIELD QUALITY CONTROL

- A. Refer to Section 312300 for compaction and testing requirements.

- B. Submit compaction test results to Construction Manager for review.
- C. Concrete Testing: Section 033000. Maintain records of placed concrete including: record date, location of pour, quantity, air temperature, and test samples taken. Submit test results to Construction Manager for acceptance.

3.08 PROTECTION

- A. Protect concrete from damage and replace if damage occurs.

3.09 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 321600



## SECTION 331000 - WATER UTILITIES

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Replace water utilities as indicated and in compliance with Contract Documents.
- B. Section includes:
  - 1. Replacement of water line pipe and fittings.
  - 2. Replacement of water line valves, fire hydrants, accessories, and appurtenances.

#### 1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. HS 20-44: Specification for Highway Bridges, 16th Edition.
- B. American Society of Mechanical Engineers (ASME):
  - 1. B16.1: Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
  - 2. B16.18: Cast Copper Alloy Solder Joint Pressure Fittings.
  - 3. B16.22: Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
  - 4. B18.2.1: Square and Hex Bolts and Screws (Inch Series).
  - 5. B18.2.2: Square and Hex Nuts (Inch Series).
- C. ASTM International (ASTM):
  - 1. A126: Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
  - 2. A307: Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
  - 3. B88: Standard Specification for Seamless Copper Water Tube.
  - 4. C890: Standard Specification for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.

5. C913: Standard Specification for Precast Concrete Water and Wastewater Structures.
  6. D1784: Standard Specification for Rigid Poly (Vinyl Chloride) Compounds (PVC) and Chlorinated Poly (Vinyl Chloride) Compounds.
  7. D1785: Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
  8. D2441: Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
  9. D2466: Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
  10. D2467: Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
  11. D2564: Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
  12. D2657: Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings
  13. D3139: Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.
  14. F437: Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80
  15. F439: Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
  16. F441/F441M: Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.
  17. F493: Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings; 2004.
  18. F1290: Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings
- D. American Welding Society (AWS):
1. A5.8/A5.8M: Specification for Filler Metals for Brazing and Braze Welding.
- E. American Water Works Association (AWWA):

1. C104/A21.4: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
2. C105/A21.5: Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. C110/A21.10: Ductile Iron and gray Iron Fittings, 3 Inch Through 48 Inch for Water and Other Liquids.
4. C111/A21.11: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. C115/A21.15: Flanged Ductile Iron Pipe with Threaded Flanges.
6. C116/A21.16: Protective Fusion Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron and Gray Iron fittings for Water Supply Service.
7. C150/A21.50: Thickness Design of Ductile Iron Pipe.
8. C151/A21.51: Ductile-Iron Pipe, Centrifugally Cast, for Water.
9. C153/A21.53: Ductile Iron Compact Fittings, 3 inch through 24 Inch and 54 Inch Through 64 Inch for Water Service.
10. C500: Metal-Seated Gate Valves for Water Supply Service.
11. C502: Dry-Barrel Fire Hydrant.
12. C504: Rubber Seated Butterfly Valves.
13. C508: Swing-Check Valves for Waterworks Service, 2 In. Through 24 In. NPS.
14. C509: Resilient-Seated Gate Valves for Water Supply Service.
15. C510: Double Check Valve Backflow Prevention Assembly.
16. C511: Reduced - Pressure Principle Backflow Prevention Assembly.
17. C512: Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service.
18. C515: Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Services.
19. C550: Protective Interior Coatings for Valves and Hydrants.
20. C600: Installation of Ductile-Iron Water Mains and Their Appurtenances.
21. C700: Cold Water Meters - Displacement Type, Bronze Main Case.

- 22. C701: Cold Water Meters - Turbine Type, for Customer Service.
- 23. C702: Cold Water Meters - Compound Type.
- 24. C800: Underground Service Line Valves and Fittings.
- 25. C900: Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In., for Water Distribution.
- 26. C901: Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. Through 3 In., for Water Service.
- 27. C905: Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14 Inch through 36 Inch.
- 28. M23: PVC Pipe - Design and Installation.

#### 1.03 DEFINITIONS

- A. Appurtenances: Additional piping items as required to provide a complete piping system suitable to convey water as specified and intended. These items may or may not be specified, but are necessary to complete the piping system.

#### 1.04 SUBMITTALS

- A. Submit the following in accordance with Section 013300.
  - 1. Pipe materials.
  - 2. Pipe fittings.
  - 3. Pipe couplings.
  - 4. Pipe thrust restraint.
  - 5. Valves.
  - 6. Fire Hydrants.
  - 7. Accessories.
  - 8. Appurtenances.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

- C. Instructions: Provide manufacturer's installation instructions for pipe hydrants and valves.
- D. Field Test Reports: Provide results for hydrostatic and bacteriological tests.
- E. Project Record Documents: Provide actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

#### 1.05 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Perform Work in accordance with the standards of the impacted water utility(s).
- C. Valves: Manufacturer's name, UL/FM and pressure rating marked on valve body.
- D. Materials used for private fire lines shall be UL listed and approved by Factory Mutual.
- E. NSF Approval: Material used in the manufacture of PVC pipe and fittings shall be approved by the National Sanitation Foundation (NSF) for conveying potable water. Pipe and fittings shall bear the NSF label.

#### 1.06 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Deliver and store valves in shipping containers with labeling in place.

#### 1.07 WARRANTY

- A. Provide standard product warranties for piping materials and as required by the impacted water utility(s).

#### 1.08 MEASUREMENT AND PAYMENT

- A. Payment shall be in accordance with Section 012901.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. Water Pipe: As required by impacted water utility.
- B. Valves: As required by impacted water utility.

C. Fire Hydrants: As required by impacted water utility.

D. Accessories: As required by impacted water utility.

## 2.02 WATER PIPE

A. Ductile Iron Pipe: As required by impacted water utility.

## 2.03 VALVES

B. Furnish and install all valves and appurtenances as required by impacted water utility.

## 2.04 FIRE HYDRANTS

A. All fire hydrants and appurtenances shall be as required by impacted water utility.

## 2.05 BEDDING AND COVER MATERIALS

A. As specified in Section 312333.

# PART 3 - EXECUTION

## 3.01 EXAMINATION

A. Verify existing conditions.

B. Verify building service connections and municipal utility water main sizes, locations and inverts are as indicated.

## 3.02 PREPARATION

A. Remove scale and dirt, on inside and outside, before assembly.

B. Prepare pipe connections to appurtenances with flanges or unions.

C. Excavate pipe trench in accordance with Section 312333 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

## 3.03 WATER PIPE INSTALLATION

A. Maintain separation of water main from sewer as follows:

1. Parallel Installation

- a. Under normal conditions water mains shall be laid at least 10 feet horizontally from a sewer or sewer manhole. The distance shall be measured edge-to-edge.
- b. Under unusual conditions when local conditions prevent a horizontal separation of 10 feet the water main may be laid closer to a sewer or sewer manhole provided that:
  - (1) The bottom (invert) of the water main shall be at least 18 inches above the top (crown) of the sewer;
  - (2) Where this vertical separation cannot be obtained, the sewer shall be constructed of AWWA approved water pipe, pressure tested in place without leakage prior to backfilling; and
  - (3) The sewer manhole shall be of watertight construction and tested in place.

## 2. Crossing

- a. Under normal conditions water lines crossing sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer whenever possible.
- b. Under unusual conditions when local conditions prevent a vertical separation described, the following construction shall be used:
  - (1) Sewers passing over or under water mains shall be constructed of AWWA approved water pipe, pressure tested in place without leakage prior to backfilling;
  - (2) Water lines passing under sewers shall, in addition, be protected by providing:
    - (a) A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line;
    - (b) Adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the waterline; and
    - (c) That the length of the water line be centered at the point of the crossing so that joints shall equidistant and as far as possible from the sewer.

- (3) No water pipes shall pass through or come in contact with any part of a sewer manhole.
  - B. Install pipes and structures to within tolerance of 1/2-inch of indicated elevations.
  - C. Install ductile iron piping and fittings to AWWA C600.
  - D. Install PVC piping according to AWWA M23.
  - E. Install joint restraint per manufacturer's instructions. Submit instructions to Construction Manager for review.
  - F. Form and place concrete for thrust blocks at each elbow or change of direction of pipe main as indicated.
  - G. Establish elevations of buried piping to ensure not less than 3 feet of cover. Establish elevations of buried piping to ensure not less than 4 feet of cover underneath traffic areas.
  - H. Install trace wire continuous over top of pipe buried 6 inches below finish grade, above pipe line; coordinate with Section 312333. Extend wire into valve boxes and adjacent to hydrants for connection to location equipment.
  - I. Backfill trench in accordance with Section 312333.
- 3.04 VALVES AND HYDRANTS INSTALLATION
- A. Set valves on solid bearing.
  - B. Center and plumb valve box over valve. Set box cover flush with finished grade.
  - C. Set hydrants plumb and locate pumper nozzle perpendicular to roadway.
  - D. Provide drainage pit 36 inches square by 24 inches deep filled with No. 57 aggregate for fire hydrants. Encase elbow of fire hydrant in gravel to 6 inches above drain opening. Wrap drainage pit and gravel with filter fabric. Do not connect drain opening to sewer.
  - E. Paint fire hydrants in accordance with AWWA; also comply with the standards of the impacted water utility.
  - F. Install tapping sleeves and tapping valves in accordance with manufacturer's recommendations.
  - G. Install valves and hydrants according to applicable AWWA Standards.



3.05 SERVICE CONNECTIONS

- A. Provide water service including corporation stop, copper pipe, curb stop, meter setter, and water meter with by-pass valves and back flow preventer.

3.06 REPAIR/RESTORATION

- A. Repair any existing utilities/structures or features damaged during installation of water utilities to Construction Manager's satisfaction, and at no cost to the DEP.

3.07 FIELD TESTING

- A. Hydrostatically test newly laid pipeline and valved section thereof in accordance with AWWA C600.
- B. Bacteriological testing shall be in accordance with New Jersey DEP requirements. One (1) series of test shall be performed for every 2,000 feet of line. Each series shall be two (2) samples taken at least 24 hours apart and analyzed by a certified lab. The results must indicate no coliform contamination before being used. If coliform is detected, the disinfection and testing procedure shall be repeated until no coliform is detected.

3.08 FIELD PAINTING/COATINGS

- A. Repair any shop painting/coatings damaged during storage or installation to Construction Manager's satisfaction.

3.09 ADJUSTING

- A. Coordinate with Construction Manager for any field adjustments. The Construction Manager reserves the right to reject any field adjustments.

3.10 PROTECTION

- A. Protect installed water utilities from damage throughout storage, installation, testing, and final approval.

3.11 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 331000

## SECTION 333000 - SANITARY SEWERAGE UTILITIES

### PART 1 - GENERAL

#### 1.01 SUMMARY

1. Work covered under this Section shall include sanitary or combined sewer pipe and/or structure relocation or modification resulting from the Contract Work.

#### 1.02 DESCRIPTION

- A. Provide gravity sanitary sewers and sanitary force mains to municipal sewers or other discharge system as indicated and in compliance with Contract Documents.
- B. Section includes: Precast concrete manholes, and cast-iron frames and covers.

#### 1.03 REFERENCES

- A. American Railway Engineering and Maintenance-of-Way Association (AREMA):
  1. Manual for Railway Engineering.
- B. American Welding Society (AWS):
  1. D1.1: Structural Steel Welding Code- Steel.
- C. American Society of Mechanical Engineers (ASME).
  1. B1.20.1: Pipe Threads – General Purpose – Inch.
  2. B16.1: Gray Iron Pipe Flanges and Flanged Fittings.
  3. B16.5: Pipe Flanges and Flanged Fittings.
- D. ASTM International (ASTM):
  1. A53/A53M: Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
  2. A74: Standard Specification for Cast Iron Soil Pipe and Fittings.
  3. A139: Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
  4. A746: Standard Specification for Ductile Iron Gravity Sewer Pipe.

5. C14/14M: Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
6. C76/76M: Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
7. C443/443M: Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
8. C478: Precast Reinforced Concrete Manhole Sections.
9. C564: Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
10. C858: Underground Precast Concrete Utility Structures.
11. C923: Resilient Connectors Between Reinforced Concrete Manhole Structures.
12. C924/C924M: Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method; American Society For Testing And Materials.
13. D638: Standard Test Method for Tensile Properties of Plastics.
14. D648: Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
15. D790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
16. D1785: Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
17. D2241: Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
18. D2321: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
19. D2583: Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
20. D2729: Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
21. D2751: Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.

22. D3034: Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
  23. D3139: Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.
  24. D3212: Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
  25. F477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- E. American Water Works Association (AWWA):
1. C104/A21.4: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
  2. C110/A21.10: Ductile Iron and Gray Iron Fittings, 3 Inch Through 48 Inch for Water and Other Liquids.
  3. C111/A21.11: American National Standard for Rubber Gasket Joints For Cast Iron and Ductile Iron Pressure Pipe and Fittings.
  4. C151/A21.51: Ductile-Iron Pipe, Centrifugally Cast, for Water.
  5. C153/A21.53: Ductile Iron Compact Fittings, 3 inch through 24 Inch and 54 Inch Through 64 Inch for Water Service.
  6. C500: Metal-Seated Gate Valves for Water Supply Service.
  7. C508: Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS.
  8. C509: Resilient-Seated Gate Valves for Water Supply Service.
  9. C600: Installation of Ductile-Iron Water Mains and Their Appurtenances.
  10. C901: Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.
- F. Manufacturer's Standardization Society (MSS):
1. SP-80: Bronze Gate, Globe, Angle and Check Valves.
- G. Occupational Safety and Health Administration (OSHA) Standards and Regulations:
1. 29 CFR 1926, Subpart P: Safety and Health Regulations for Construction, Excavations.

H. UNI-BELL (UNI):

1. B3: Recommended Practice for Installation of Polyvinyl Chloride (PVC) Pressure Pipe (Nominal Diameters 4-36 Inch).
2. B6: Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe; UNI-Bell PVC Pipe Association.

1.04 DEFINITIONS

- A. Appurtenances: Additional piping items to provide a complete piping system suitable to convey wastewater as specified and intended. These items may or may not be specified, but are necessary to complete the piping system.
- B. Standard Specifications: “Standard Specifications for Sewer and Water Construction in NJDOT Standard Specification form Bridge and Road Construction.

1.05 SUBMITTALS

- A. Submit the following in accordance with Section 013300.
  1. Pipe materials.
  2. Precast manholes.
  3. Manhole frame and covers.
  4. Pipe fittings.
  5. Pipe couplings.
  6. Pipe thrust restraint.
  7. Valves.
  8. Accessories.
  9. Appurtenances.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Instructions: Provide manufacturer's installation instructions for pipes.
- D. Field Test Reports: Provide results for all testing performed as indicated in Paragraph 3.06 Field Testing.

- E. Project Record Documents: Provide marked-up set of drawings showing actual locations of piping, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

#### 1.06 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Perform Work in accordance with NJDOT Standard Specification for Road and Bridge and Road Construction.
- C. Valves: Manufacturer's name and pressure rating marked on valve body.

#### 1.07 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Deliver and store valves in shipping containers with labeling in place.

#### 1.08 WARRANTY

- A. Provide standard product warranties for all sanitary sewerage utility materials.

#### 1.09 MEASUREMENT AND PAYMENT

- A. Payment shall be in accordance with Section 012901.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. Mechanical Joint Restraint:
  - 1. Ebba Iron Megalug.
  - 2. Ford Meter Company, Inc.
  - 3. Griffin Pipe.
  - 4. Approved equal.

#### 2.02 GRAVITY SANITARY SEWER PIPE

- A. Reinforced Concrete Pipe: ASTM C76/76M, Class III, as indicated. Joint Device: ASTM C443/443M, rubber compression gasket joint.

- B. Polyvinyl Chloride (PVC) Pipe: ASTM D3034, SDR 35, Poly(vinyl chloride) (PVC) material; inside nominal diameter as indicated, integral bell elastomeric gasketed joint.

#### 2.03 PRECAST CONCRETE MANHOLES

- A. Provide precast base sections that extend above pipe top and form portion of barrel. Barrel sections constructed of manhole risers topped with tapered sections or flat tops as indicated. Conform manhole sections to ASTM C478; resilient connectors to ASTM C923.
- B. Joints: O-Ring rubber-gasket joints conforming to ASTM C443, confined as indicated.
- C. Pipe Connections: Pipe connections, if necessary, shall be made in conformance with the requirement of the North Hudson Sewerage Authority.
- D. Precast Inverts: Conform to invert channels specified in Part 3 of this Section.
- E. Mortar and Grout: Conform to applicable NJDOT Standard Specification form Bridge and Road Construction.

#### 2.04 MANHOLE FRAME AND COVERS

- A. Provide cast-iron frames and covers as required by the structure and ASTM A48, Class 30S, in conformance with North Hudson Sewerage Authority standards.
- B. Provide frames and covers suitable for AASHTO HS 20-44 live load. Combined weight of 355 pounds minimum, 225-pound minimum frame, and 130-pound minimum cover weight.
- C. Provide factory-coated with asphalt varnish.
- D. Provide frames with 24-inch nominal diameter clear openings.
- E. Provide removable, interchangeable covers to seat in frames without rocking.
- F. Identify covers with cast marking as directed by Construction Manager “SANITARY SEWER” and include the name and location of manufacturer on frame and cover castings.
- G. Provide castings free of blowholes, splits, cracks, blisters, and other imperfections affecting strength or serviceability.
- H. Provide External or Internal Seals as required by Construction Manager.

## 2.05 BEDDING AND COVER MATERIALS

- A. As specified in Section 312333.

## 2.06 THRUST RESTRAINT

- A. Mechanical Joint Restraint: Wedge action restrained joint retainer gland devices. Mechanical joint restraint incorporated into the design of the follower gland.
- B. Thrust Blocks: Dimensions as indicated. Concrete type for thrust restraints as specified in Section 033000.
- C. Pipe Clamps and Tie Rods: ANSI/NFPA 24.
- D. Push-On Restrained Joint Pipe: Provide joint restraint and conforming joint to AWWA C111/21.11, fabricated to be easily disassembled. Provide assembly and disassembly kits.

## 2.07 ACCESSORIES

- A. Flexible Couplings: Sleeve type elastomeric polyvinyl chloride held firmly to pipe ends by screw-tightened bands. Bands and screws Type 304 stainless steel.

## 2.08 APPURTENANCES

- A. Provide all necessary appurtenances for a full and complete piping system suitable for operation, and in conformance with Contract Documents.

## 2.09 SHOP PAINTING/COATINGS

- A. Unless otherwise specified or indicated, provide standard manufacturer paint and coatings for all piping and valves to prevent corrosion for the life of the component.

## 2.10 SHOP TESTING

- A. Test all pipes and valves per manufacturer requirements, and as required by pertinent Standards.

# PART 3 - EXECUTION

## 3.01 EXAMINATION

- A. Verify that excavation base is ready to receive Work and excavations, dimensions, and elevations are as indicated for sanitary sewer pipe. Verify excavation for manholes to proper depth and proper placement of bedding material.



### 3.02 PREPARATION

- A. Sanitary sewer pipe: Hand trim excavations to required elevations. Correct over excavation with bedding material. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.
- B. Manholes: Coordinate placement of inlet and outlet pipe sleeves. Seal exterior surface of sanitary sewer manholes with minimum 14-mil-thick coal tar coating.

### 3.03 SANITARY SEWER PIPE INSTALLATION

- A. Maintain separation of sanitary sewers pipe and water mains in accordance with DEP standards.
- B. Install pipe, fittings, and accessories in accordance with ASTM C12 manufacturer's instructions. Seal joints watertight.
- C. Lay pipe to slope indicated; with maximum variation from true slope of 1/8-inch in 10 feet. Lay pipe upgrade, with spigot ends pointing in direction of flow. Lay pipe to form a close concentric joint with adjoining section and to prevent sudden offsets in flow line.
- D. Install bedding to depths and dimensions as indicated on plans or as directed by the Construction Manager.
- E. Backfill each section of pipe as it is laid, as specified in Section 312300 and as indicated at least up to centerline, before next joint is made. Do not completely conceal or bury pipe prior to being tested for water tightness and prior to being accepted by the Construction Manager. Do not displace or damage pipe when compacting.
- F. Clear the interior of the pipe of dirt and superfluous materials as the work progresses. Keep a suitable swab or drag in the pipe and pull it forward past each joint immediately after the jointing has been completed.
- G. Keep trenches and other excavations free of water until final inspection. Do not lay pipe or construct masonry work in water. Do not allow water to rise over the work until concrete or mortar has had ample time to set.
- H. Close open ends of pipe and fittings in a manner acceptable to the Construction Manager when the Work is not in progress so that trench water, earth, and other substances will not enter the pipe or fittings.
- I. Handle pipe and fittings to avoid damage. Carefully inspect pipe and fittings for defects before lowering into the trench.

- J. Where necessary deflect pipelines to avoid obstructions or where long-radius curves are indicated. Do not exceed the maximum deflection recommended by pipe manufacturer. Provide short sections of pipe as necessary to maintain required line.
- K. Provide compatible pipe connections to each valve and to equipment. Provide unions on pipelines with welded soldered or threaded joints to allow removal of each valve and equipment without disturbing connecting pipelines. Connect different types of pipe and accessories with flexible couplings or pipe and accessories with flexible couplings or accepted transition fittings. Provide insulation fittings where ferrous pipe connects to nonferrous metallic pipe.
- L. Verify invert of each existing manhole prior to commencing work. Connect to each existing manhole where indicated or directed. Prevent debris from entering the pipelines. The work includes all necessary concrete work, cutting and shaping of invert.
- M. Repair linings, coatings and coverings damaged during construction with accepted materials equal to and compatible with original lining, coating or covering. Repair damaged galvanizing with zinc-rich paint.
- N. Connect to municipal sewer system as indicated.
- O. Construction of New Manholes Over Existing Sanitary Pipelines: Expose existing pipeline and field-verify its location and invert. Construct each manhole using cast-in-place concrete base slab and precast doghouse manhole section. After invert is shaped, cut top of existing pipe and remove and form channel on bottom inside manhole.

#### 3.04 PRECAST CONCRETE MANHOLE INSTALLATION

- A. Maintain separation of sanitary sewer precast concrete manholes and water mains as indicated in Section 331000.
- B. Place precast manhole sections plumb and level, adjust to correct elevation. Provide bedding material as indicated.
- C. After manhole assembly, plug lift-holes with non-shrink grout.
- D. Cut and fit for pipe connections.
- E. Invert Channels:
  - 1. Built up with concrete, grout, or brick and mortar covered by not less than 2 inches of mortar.
  - 2. Smooth and semicircular, conforming to inside of adjacent sewer section.

3. Changes in direction of flow made with a smooth curve radius as large as manhole size will permit.
4. Slope floor of manhole outside channels, smooth and not less than 1 inch per foot nor more than 2 inches per foot.

F. Set manhole frames and covers level to correct elevations.

### 3.05 REPAIR/RESTORATION

- A. Repair any existing utilities/structures, or features damaged during installation of sanitary sewerage utilities to Construction Manager's satisfaction, and at no cost to the DEP.

### 3.06 FIELD TESTING

A. General:

1. Request inspection by Construction Manager prior to and immediately after placing bedding.

B. Cleaning and Testing:

1. Test for Displacement of Buried Sanitary Sewers: After trench has been backfilled and compacted, after cover over pipeline has been brought to finished grade, and after debris and silt has been removed, pipelines will be tested by the Construction Manager, as follows: Light will be flashed between manholes, or, if manholes have not yet been constructed, between locations of manholes, by means of flashlight or by reflecting sunlight with mirror. Correct poor alignment, displaced pipe, and other defects indicated by the Construction Manager.
2. Test for Deflection of PVC Sanitary Sewers
3. Measure pipelines for vertical ring deflection within 15 days after completion of backfill. Limit maximum ring deflection of pipeline under load to 5 percent of vertical internal pipe diameter. Relay or replace pipe exceeding this deflection and retest.
4. Use deflectometer that produces continuous record of pipe deflection or pull mandrel, sphere, or pin-type go/no-go device through the pipeline. Make diameter of the go/no-go device 95 percent of undeflected inside diameter of pipe.
5. Cleaning: Flush out and clean sanitary force mains of foreign matter before placing systems into operation. Use flushing velocity of 10 feet per second, minimum. Take care to prevent scale and other objectionable matter from entering piping. Properly dispose of water used for flushing.

6. Force Main Pressure Test: To prevent movement of pipe, backfill between joints to provide 2-foot minimum cover. Expose only area immediately at pipe joints. Test force main hydrostatically for two (2) hours at 1.5 times the design working pressure. Measure leakage in accordance with, and not exceeding, the allowable leakage specified in AWWA C600 or UNI B3.
7. Testing of Sanitary Sewers: At such times as Construction Manager may direct, prove watertightness of buried sanitary sewer or portions thereof by one of the following tests. Conduct tests under supervision of the Construction Manager. Furnish materials, labor, and equipment required for tests and repair system until test results are satisfactory.
8. Infiltration: When, in opinion of the Construction Manager, trench or excavation is sufficiently saturated by groundwater or rain, tests may be made on basis of infiltration. Infiltration tests will only be allowed when hydrostatic head outside pipe is minimum of 4 feet above crown of pipe for entire length of pipe being tested. Measure flow of water at nearest downgrade manhole. Make three (3) series of measurements at intervals of not less than one (1) hour, and average results. Using this average, calculate infiltration rate for 24-hour period. Infiltration rate: Not greater than 100 gallons per inch of pipe diameter per mile per day in any section of system including manholes.
9. Exfiltration: When conditions are not suitable for infiltration test, subject pipe to hydrostatic head of at least 4 feet above pipe crown. Fill line until appropriate water level is obtained at selected upstream manhole. Observe rate of drop at this manhole for one (1) hour. Leakage rate: Not to exceed maximum rate allowed for infiltration.
10. Air Test: At Contractor's option, low-pressure air test may be used instead of exfiltration test for vitrified clay, PVC, and concrete pipelines 12 inches and smaller. Perform tests in accordance with ASTM C828 for vitrified clay pipelines, UNI B6 for PVC pipelines, and ASTM C924/924M for concrete and ductile iron pipelines.
11. Vacuum test: For precast concrete manholes 25 feet deep and less, a vacuum test may be used instead of exfiltration test. Conduct tests prior to backfilling and include joint between manhole cover and frame. Plug and brace pipe openings. Draw vacuum of 10 inches of mercury. Minimum time to drop to 9 inches of mercury as shown in Table 333000-1:

<b>Table 333000-1</b>			
	<b>Manhole Diameter in Inches</b>		
Depth in Feet	48	60	72
Up to 10	60 sec.	75 sec.	90 sec.
10.01-15	75 sec.	90 sec.	105 sec.
15.01-25	90 sec.	105 sec.	120 sec.

12. If manhole fails the test, make necessary repairs and repeat the vacuum test and repairs until manhole passes test. Submit test results.

3.07 FIELD PAINTING/COATINGS

- A. Repair any shop painting/coatings damaged during storage or installation to Construction Manager's satisfaction.

3.08 ADJUSTING

- A. Coordinate with Construction Manager for any field adjustments. The Construction Manager reserves the right to reject any field adjustments.

3.09 PROTECTION

- A. Protect sanitary sewerage utilities from damage throughout storage, installation, testing, and final acceptance.

3.10 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 333000

## SECTION 333915 - MANHOLES AND STRUCTURES

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Provide manholes and structures as indicated and in compliance with Contract Documents.

#### 1.02 REFERENCES

- A. American Concrete Institute (ACI):

- 1. 318: Building Code Requirements for Structural Concrete.
- 2. 530: Building Code Requirements and Specifications for Masonry Structures.

- B. American Welding Society (AWS):

- 1. D1.1: Structural Steel Welding Code- Steel.

- C. ASTM International (ASTM):

- 1. A48/A48M: Standard Specification for Gray Iron Castings.
- 2. A123/A123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- 3. A536: Standard Specification for Ductile Iron Castings.
- 4. A615/A615M: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- 5. C139: Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.
- 6. C140: Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
- 7. C478/C478M: Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
- 8. C881: Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

9. C913: Standard Specification for Precast Concrete Water and Wastewater Structures.
10. C923/C923M: Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
11. D41: Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
12. D449: Standard Specification for Asphalt Used in Dampproofing and Waterproofing.
13. D4101: Standard Classification System and Basis for Specification for Polypropylene Injection and Extrusion Materials.

D. Code of Federal Regulations (CFR):

1. 29 CFR 1926: Safety and Health Regulations for Construction.

1.03 RELATED SECTIONS

- A. Section 012901 - Measurement and Payment.
- B. Section 013300 - Submittals.
- C. Section 014300 - Quality Requirements.
- D. Section 016610 - Delivery, Storage and Handling.
- E. Section 017700 - Contract Closeout.
- F. Section 031000 - Concrete Formwork.
- G. Section 032100 - Reinforcement Bars.
- H. Section 033000 - Cast-in-Place Concrete.
- I. Section 312300 - Excavation and Fill.

1.04 DESIGN REQUIREMENTS

- A. Equivalent Strength: Based on structural design of reinforced concrete as outlined in ACI 318.
- B. Design of Lifting Devices for Precast Components: In accordance with ASTM C913.

- C. Design of Joints for Precast Components: In accordance with ASTM C913; provide watertight structures.
- D. Ensure that castings, grates, extension rings, extension frames, and covers for inlets and manholes are capable of withstanding HS-25 loading when tested as a complete, assembled unit.
- E. Design and install manhole and structure to withstand hydrostatic uplift caused by a groundwater elevation at grade level or equal to the top of the manhole and structure, which ever produces the most severe condition. Use only the weight of the manhole and structure and hold-down slab to resist hydrostatic uplift with a minimum safety factor of 1.15. Do not include side friction of soils on walls.

#### 1.05 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.
  - 1. Shop Drawings: Indicate manhole and structure locations, elevations, pipe/conduit sizes and elevations of penetrations.
  - 2. Product Data: Submit cover and frame construction, features, configuration, dimensions, and type.
  - 3. One copy of results of tests and certification reports with each shipment of materials.
  - 4. Reinforcing Steel: Certificate of compliance with specifications.
  - 5. Concrete: Certificate of compliance with specifications.
  - 6. Aggregates: Certificate of compliance with specifications.
  - 7. CLSM: Certificate of compliance with specifications.

#### 1.06 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Perform work in accordance with Municipalities (City of Hoboken, City of Jersey City, and Township of Weehawken) and/or North Hudson Sewer Authority (NHSA) standards, depending on the jurisdiction.
- C. If manufacturer's test data is inadequate or unavailable, the Construction Manager reserves right to require cores drilled for compressive strength tests.
- D. Maintain one (1) copy of each document on-site.



- E. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three (3) years' documented experience.
- F. Inspection by Construction Manager:
  - 1. At site of work after delivery.
  - 2. Reject precast concrete manhole or structure at any time if it fails to meet specified requirements, even if accepted at plant.
  - 3. Immediately mark rejected precast concrete manholes and structures and remove them from the site.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.
- B. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast manholes and structures.
- C. Store precast concrete manholes and structures to prevent damage to the DEP's property or other public or private property. Repair property damaged from materials storage.
- D. Mark each precast manhole and structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Contract Drawings to indicate its intended use.

#### 1.08 PROJECT/SITE CONDITIONS

- A. Maintain materials and surrounding air temperatures to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

#### 1.09 MEASUREMENT AND PAYMENT

- A. Payment will be in accordance with Section 012901.

### PART 2 - PRODUCTS

#### 2.01 MANHOLES AND STRUCTURES

- A. Manhole and structure sections: Reinforced precast concrete in accordance with ASTM C478/C478M with gaskets in accordance with ASTM C923/C923M.
- B. Manhole and structure sections: Reinforced precast concrete in accordance with ASTM C913/C913M with gaskets in accordance with ASTM C923/C923M.

- C. Manhole and structure sections: Reinforced cast-in-place concrete as specified in Section 033000.
- D. Base Pad: Reinforced precast concrete in accordance with ASTM C478/C478M, level top surface, with 6" thick layer of coarse aggregate, No. 57.
- E. Base Pad: Reinforced precast concrete in accordance with ASTM C913/C913M, level top surface, with 6" thick layer of coarse aggregate, No. 57.
- F. Base Pad: Reinforced cast-in-place concrete as specified in Section 033000, level top surface.
- G. Manufacture concrete block according to ASTM C139. Use cement as specified in Section 033000 and aggregates conforming to the requirements for concrete aggregates as specified in Section 033000. Sample and test concrete block according to ASTM C140. Manufacture blocks to be either rectangular in shape or curved with the inside and outside surfaces curved to the required radii, whichever is appropriate for the shape of the structure. Ensure that the length is between 12 and 18 inches, the height is between 5 and 8 inches, and the width is at least 6 inches. For the reduction of cross-sectional area of the cones or tops of manholes, the Contractor may use blocks of special shapes and heights. The Contractor may also use blocks of special shapes and heights in the top courses of all structures so that the head castings is set at the required elevation on a mortar bed not more than 1/2-inch thick without cutting the blocks. Ensure that all blocks have an interlocking-type joint at the ends and are sound and free from cracks or other defects.
- H. Paint the outside surface with two (2) coats of asphalt cement waterproofing according to the manufacturer's recommendations. For use below ground level, use an asphalt waterproofing conforming to ASTM D449, Type I. Use a primer conforming to ASTM D41.

## 2.02 FRAMES AND COVERS

- A. Manufacturers:
  - 1. Campbell Foundry Co.
  - 2. Neenah Foundry Co.
  - 3. Approved Equal.
- B. Frames and covers: ASTM A48/A48M, Class 30B or Class 35B gray iron or ASTM A536, Grade 65-45-12 or Grade 80-55-06 ductile iron construction, machined flat bearing surface, removable watertight lockable lid, with cover molded with identifying name and logo in accordance with the jurisdiction of the structure. Sandblast or clean the castings to remove sand and scale.

- C. In areas noted on drawings, water-tight, locking frames and covers shall be installed. Casting shall be equipped with ¼” neoprene gasket or other approved seal. Locking device shall be “camlock” style or approved equal capable of securing lid against uplift pressure of up to 8 psi. Casting shall be secured to the structure in such fashion as to resist an uplift pressure of up to 8 psi.
- D. Extension frames and rings: Use carbon steel extension frames and rings for inlets and manholes. Perform welding of fabricated steel shapes and structures according to AWS D1.1. Do not punch, drill, ream, weld, or cut extension frames and rings in the field.

## 2.03 COMPONENTS

- A. Ladder rungs: For ladder rungs, use steel reinforced copolymer polypropylene. Use a 1/2-inch diameter reinforcement steel bar conforming to ASTM A615, Grade 60, and a polypropylene coating conforming to classification PP0344B33534Z02 according to ASTM D4101. For precast structures, copolymer polypropylene plastic ladder rungs may be used.
- B. Epoxy bedding compound: Use a 2-part, non-sag gel, rapid-setting epoxy adhesive conforming to ASTM C881, Type 4, Grade 3, Class B or C. Use the epoxy in an ambient temperature range of 40 to 100 degrees F.
- C. Mortar: Mix one (1) part cement to two (2) parts fine aggregate. Add water to form the proper consistency. Do not temper mortar or use mortar after it has begun to set.
- D. Strap Anchors: Bent steel shape, 3/8” inch thick, galvanized.

## 2.04 CONFIGURATION

- A. Manhole Shaft Construction: Concentric with concentric or eccentric cone top section; lipped male/female dry joints; sleeved to receive pipe sections.
- B. Manhole Shape: Cylindrical.
- C. Manhole Clear Inside Dimensions: 48-inch minimum diameter or as indicated on Contract Drawings.
- D. Minimum Design Depth: 18-inches or as indicated on Contract Drawings.
- E. Manhole Clear Cover Opening: 30-inch diameter or as indicated on Contract Drawings.
- F. Pipe Entry: Furnish openings as indicated on Contract Drawings.
- G. Steps: 16 inches wide, 12 inches on center vertically, set into manhole and structure wall as indicated on Contract Drawings.

## 2.05 BEDDING AND COVER MATERIALS

- A. Bedding: Coarse aggregate, No. 57 as specified in Section 312300.
- B. Backfill: Suitable material as specified in Section 312300 that is free from rock larger than 2 inches in diameter, frozen earth and foreign matter.
- C. Backfill: CLSM as specified in 312300.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify existing conditions before starting Work.
- B. Verify items provided by other sections of Work are properly sized and located.
- C. Verify built-in items are in proper location, and ready for roughing into Work.
- D. Verify correct size of manhole and structure excavation.

### 3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.
- B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
- C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

### 3.03 INSTALLATION

- A. Excavation and Backfill:
  - 1. Sawcut asphalt and concrete and excavate for manholes and structures in accordance with Contract Sections, in location and to depth shown on Contract Drawings. Provide clearance around sidewalls of structure for construction operations.
  - 2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes and structures in dry trench. Do not allow standing water in excavations.

3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.
  4. Obtain Construction Manager approval before finishing excavating. If the Construction Manager determines that the bottom of the excavation is unstable, undercut, backfill, and compact as directed by the Construction Manager.
  5. Maintain excavations in accordance with 29 CFR 1926.
  6. Backfill excavations for manholes and structures in accordance with Section 312300 and as shown on Contract Drawings.
- B. Place base pad and ensure top surface is level. For precast concrete bases, install on a 6-inch layer of coarse aggregate, No. 57.
  - C. Place manhole and structure sections plumb and level, trim to correct elevations, anchor to base pad, fill lifting holes with mortar.
  - D. Install manholes and structures supported at proper grade and alignment.
  - E. For cast-in-place concrete manholes and structures, place manhole and structures cylinder plumb and level, to correct dimensions and elevations.
  - F. Cut and fit for conduit and sleeves.
  - G. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel.
  - H. Set cover frames and covers level without tipping, to correct elevations.
  - I. Coordinate with other sections of Work to provide correct size, shape, and location.
- 3.04 MASONRY MANHOLE AND STRUCTURE INSTALLATION
- A. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness not to exceed 3/8 inch wide.
  - B. Lay masonry units in running bond. Course one unit and one mortar joint to equal 8 inches.
  - C. Form flush mortar joints.
  - D. Lay masonry units in full bed of mortar, with full head joints, uniformly jointed with other Work.
  - E. Install joint reinforcement 16 inches on center.

- F. Additionally, place joint reinforcement in first and second horizontal joints above base pad and below cover frame opening.
- G. As work progresses, build in fabricated metal items.
- H. Coat the outside wall with at least a 1/2-inch thick layer of mortar and trowel smooth.
- I. Cut and fit for conduit and sleeves. Ensure that the connection between manhole or structure and pipe or conduit is leak-free.
- J. When the ambient temperature is below 40 degrees F, ensure that the mortar temperature is between 50 and 100 degrees F.
- K. Cover the masonry and maintain its temperature above 32 degrees F for 24 hours. Ensure that mortar attains a strength of 2500 pounds per square inch before opening to traffic.
- L. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel.
- M. Coordinate with other sections of Work to provide correct size, shape, and location.

### 3.05 PRECAST CONCRETE MANHOLE AND STRUCTURE INSTALLATION

- A. Lift precast components at lifting points designated by manufacturer.
- B. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remain clean.
- C. Set precast structures bearing firmly and fully on 6-inch layer of coarse aggregate, No. 57, compacted in accordance with provisions of Section 312300.
- D. Assemble multi-section structures by lowering each section into excavation. Lower, set level, and firmly position base section before placing additional sections.
- E. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.
- F. Joint sealing materials may be installed on site or at manufacturer's plant.
- G. Verify manholes and structures installed satisfy required alignment and grade.
- H. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.
- I. Cut pipe to finish flush with interior of structure.

- J. Shape inverts through manhole and structures.

### 3.06 CAST-IN-PLACE CONCRETE MANHOLE AND STRUCTURE INSTALLATION

- A. Erect and brace forms against movement in accordance with Section 031000.
- B. Install reinforcing steel as indicated on Contract Drawings and in accordance with Section 032100.
- C. Place and cure concrete in accordance with Section 033000.

### 3.07 FRAME AND COVER INSTALLATION

- A. Set frames using epoxy bedding compound. Install radially laid concrete brick with 1/4-inch thick vertical joints at inside perimeter. Lay concrete brick in full bed of mortar and completely fill joints. Where more than one course of concrete brick is required, stagger vertical joints.
- B. Set frame and cover 2 inches above finished grade for manholes and structures with covers located within unpaved areas to allow area to be graded away from cover beginning 1 inch below top surface of frame.
- C. Set cover frames and covers level without tipping, to correct elevations before finishing adjoining work with the same final elevation. If the cover or grate is loose or wobbles, grind to obtain a tight fit.

### 3.08 FIELD QUALITY CONTROL

- A. Section 014300: Field inspecting, testing, adjusting, and balancing.
- B. Test cast-in-place concrete in accordance with Section 033000.
- C. Vertical Adjustment of Existing Manholes and structures:
  - 1. Where required, adjust top elevation of existing manholes and structures to finished grades shown on Contract Drawings.
  - 2. Reset existing frames, grates and covers, carefully removed, cleaned of mortar fragments, to required elevation in accordance with requirements specified for installation of castings.
  - 3. Remove concrete without damaging existing vertical reinforcing bars when removal of existing concrete wall is required. Clean vertical bars of concrete and bend into new concrete top slab or splice to required vertical reinforcement, as indicated Contract Drawings.

4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete in accordance with Section 033000.

3.09 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

3.10 SCHEDULES

- A. Storm Sewer Manholes: Precast concrete sections, galvanized steel steps, not less than 48 inches inside dimension, to depth indicated on Contract Drawings.

END OF SECTION 333915



## SECTION 334000 - STORM DRAINAGE UTILITIES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This Section specifies storm drainage systems from 5 feet outside the building and excludes interceptors, storm separators, or subdrainage.

#### 1.02 DESCRIPTION

- A. Provide storm drainage utilities as indicated and in compliance with Contract Documents.
- B. Section includes:
  - 1. Storm drainage piping, fittings, and accessories.
  - 2. Storm drainage catch basins, inlets, manholes, or other structures.

#### 1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. M198: Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
  - 2. M294: Standard Specification for Corrugated Polyethylene Pipe.
- B. ASTM International (ASTM):
  - 1. A48/A48M: Standard Specification for Gray Iron Castings.
  - 2. A74: Standard Specification for Cast Iron Soil Pipe and Fittings.
  - 3. A123/A123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 4. A536: Standard Specification for Ductile Iron Castings.
  - 5. A716: Standard Specification for Ductile Iron Culvert Pipe.
  - 6. C32: Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).

7. C76: Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
8. C139: Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.
9. C150: Standard Specification for Portland Cement.
10. C207: Standard Specification for Hydrated Lime for Masonry Purposes.
11. C361: Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.
12. C425: Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
13. C443: Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
14. C478: Standard Specification for Precast Reinforced Concrete Manhole Sections.
15. C564: Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
16. C700: Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.
17. C890: Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.
18. C923: Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
19. C990: Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
20. D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))
21. D1785: Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
22. D2680: Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping
23. D2729: Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

24. D2751: Standard Specification for Acrylonitrile-Butadiene- Styrene (ABS) Sewer Pipe and Fittings.
25. D3034: Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
26. D3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

#### 1.04 DEFINITIONS

- A. Catch Basin or Catch basin: A special type of inlet structure designed to retain sediment and debris transported by stormwater into the storm drainage system.

#### 1.05 SUBMITTALS

- A. Submit the following in accordance with Section 013300.
  1. Shop Drawings:
    - a. Precast Concrete Structures: Indicate locations, dimensions, configuration, thicknesses, elevations, sizes, and penetration elevations.
  2. Product Data:
    - a. Pipe: Material, pipe accessories, and manufacturer's installation instructions.
  3. Certificates: Manufacturer's certificate stating that product meets or exceeds specified requirements.
  4. Project Record Documents: Provide record drawings of actual pipe run locations, connections, structures, and invert elevations.
  5. Testing Results.

#### 1.06 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.

#### 1.07 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016610.

#### 1.08 MEASUREMENT AND PAYMENT

- A. Payment shall be in accordance with Section 012901.

## PART 2 - PRODUCTS

### 2.01 PIPE MATERIALS

- A. Ductile Iron Culvert Pipe: ASTM A716; nominal inside diameter as indicated.
- B. Reinforced Concrete Pipe (RCP):
  - 1. Pipe: ASTM C76, minimum Class III, unless noted otherwise; nominal inside diameter as indicated.
  - 2. End Joints: Tongue and groove.
  - 3. Joint Device:
    - a. Water Tight: ASTM C443, rubber compression gasket.
- C. Plastic Pipe (ABS):
  - 1. Pipe: ASTM D2751, SDR 35, Acrylonitrile-Butadiene-Styrene (ABS) material; nominal inside diameter as indicated.
  - 2. End Joints: Bell and spigot.
  - 3. Joint Device: Solvent sealed joint.
- D. Plastic Pipe (PVC):
  - 1. Pipe: ASTM D2729, Polyvinyl Chloride (PVC) material; nominal inside diameter as indicated.
  - 2. End Joints: Bell and spigot.
  - 3. Joint Device: Solvent sealed joint.
- E. Plastic Pipe (PVC):
  - 1. Pipe: ASTM D1785, Schedule 80, PVC material; nominal inside diameter as indicated.
  - 2. End Joints: Bell and spigot.
  - 3. Joint Device: Solvent sealed joint.
- F. Plastic Pipe (HDPE): AASHTO M294, Type S; high density polyethylene (HDPE) material; smooth interior and annular-corrugated exterior; bell shall be an integral part of the pipe and shall be water tight. Pipe gaskets shall be manufacturer installed.

## 2.02 CATCHBASINS

- A. Precast or cast-in-place drainage structure.
- B. No sump shall be provided, unless noted otherwise.

## 2.03 PRECAST STRUCTURES

- A. Manhole Sections: Reinforced precast concrete in accordance with ASTM C478/C478M), with resilient connectors complying with ASTM C923/C923M.
- B. Pipe Connections: Grout pipe at manhole to form a watertight connection. Storm drains 42 inches and smaller, ASTM C923. Storm drains larger than 42 inches, grout 4 feet spool piece into place on manhole. Connect pipe to spool piece using flexible connection.
- C. Joints: ASTM C443/C443M, watertight.

## 2.04 CAST-IN-PLACE STRUCTURES

- A. Materials:
  - 1. Concrete: Section 033000, minimum compressive strength of 4,000 psi.
  - 2. Portland Cement: ASTM C150, Type II.
  - 3. Hydrated Lime: ASTM C207, Type S.
  - 4. Sand: ASTM C33, Fine Aggregate, except all passes No. 8 sieve.
  - 5. Water: Potable, not detrimental to concrete.
  - 6. Brick: ASTM C32, Grade MS, maximum 8 percent absorption computed from average of five (5) cycles.
  - 7. Precast Concrete Masonry Units: ASTM C139, precast machine-made solid segments with the following:
    - a. Use Type II cement except as otherwise permitted.
    - b. Width of units as indicated.
    - c. Inside and outside surfaces of units curved to necessary radius; interior surfaces of structures cylindrical, except top batter courses to reduce inside section of structure uniformly to required size and shape at top.
    - d. Only full-length units required to lay any one (1) course.

- e. Accept units on basis of material tests and inspection of completed product.

B. Components:

1. Bases: Cast-in-place concrete, one-piece, precast segmental plates, as indicated.
2. Walls: Precast Concrete Masonry Units.
3. Top of Cone: Brickwork for adjusting frame to meet finished surface shall not exceed 6 inches.
4. Frames and Grates: As indicated and specified.

C. Mixes:

1. Concrete: Section 033000.
2. Mortar for Brickwork: Mix Portland cement, hydrated lime and sand. Volume of sand not to exceed three (3) times sum of volumes of cement and lime. Proportion cement and lime as directed. Cement to lime proportions may vary between one (1) part cement to 1/4-part lime for dense hard burned brick, and one (1) part cement to 3/4-part lime for softer brick. Mix mortar in proportion of one (1) part cement to 1/2-part lime to 4-1/2 parts sand. Use sufficient water to form a workable mixture.
3. Mortar for Masonry Units: Mix one (1) part Portland cement and two (2) parts of sand by volume with sufficient water to form a workable mixture.

2.05 MIXES

- A. Mortar for Plugging Lift Holes: Mix Portland cement and sand, one (1) part cement to 1/2-part sand with sufficient water to make mortar damp without "balling".

2.06 COMPONENTS

- A. Frame and Cover: ASTM A48 A48M /, Class 30B cast iron construction or ASTM A536, Grade 60-40-18 ductile iron construction. Machined flat bearing surface, removable lid; rated for ASTM C890, A-16 AASHTO HS20-44 loading, unless noted otherwise. Castings shall be as follows:
  1. Free from scale, lumps, blisters, and sand-holes.
  2. Machine contact surfaces to prevent rocking.
  3. Thoroughly clean and hammer inspect.
- B. Manhole Steps: ASTM C478.

## PART 3 - EXECUTION

### 3.01 TRENCHING

- A. See Section 312333 for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to indicated elevations.

### 3.02 CATCHBASINS AND CLEANOUTS:

- A. Form bottom of excavation, clean and smooth and to correct elevation.
- B. Provide bedding in accordance with Section 312333 as indicated.
- C. Place structure plumb and level on prepared bedding.
- D. Orient structure for pipe connections.
- E. Form and place cast-in-place concrete base pad.
- F. Level the top surface of base pad and sleeve concrete shaft sections to receive storm drainage pipe sections.
- G. Establish elevations and pipe inverts as indicated.
- H. Establish top elevation and mount frame and cover.
- I. Mount frame level in grout, secured to top cone section.

### 3.03 PRECAST STRUCTURES

- A. Provide bedding according to Section 312333 as indicated.
- B. Place manhole sections plumb and level on prepared bedding. Orient manhole to allow for connection with pipe. Trim to correct elevation.

### 3.04 CAST-IN-PLACE STRUCTURES

- A. Brickwork and Masonry Units:
  - 1. Use clean units.
  - 2. Bricks:
    - a. Moisten bricks to prevent absorption of water from mortar. Limit moisture to prevent bricks from becoming slippery during placement.

- b. Lay each brick in full bed and joint of mortar without requiring subsequent grouting, flushing or filling; bond thoroughly.
    - 3. Concrete Masonry Units:
      - a. Do not moisten concrete masonry units.
      - b. Lay each masonry unit in full bed of mortar; bond thoroughly. Fill vertical keyways, completely, with mortar.
  - B. Plastering and Curing Brick Masonry
    - 1. Plaster outside faces with mortar 1/4- to 3/8-inch thick.
    - 2. Moisten brick masonry before application of mortar, if required.
    - 3. Spread and trowel plaster carefully.
    - 4. Check for bond and soundness after hardening, by tapping.
    - 5. Remove and replace unbonded and unsound plaster.
    - 6. Protect from too rapid drying by use of moist burlap or other accepted means.
    - 7. Protect from weather and frost.
  - C. Setting Frames, Grates, and Curb Inlets:
    - 1. Set inlets and frames with tops conforming accurately to finished ground or pavement surface as indicated and directed.
    - 2. Set circular frames concentric with top of masonry.
    - 3. Set frames in full bed of mortar to fill and make watertight completely the space between top of masonry and bottom flange of the frame.
    - 4. Place a thick ring of mortar extending to the outer edge of masonry, around bottom flange. Finish mortar smoothly and give a slight slope to shed water away from the frame.
    - 5. Place grates in the frames after completing all other work at the structure.
- 3.05 FIELD QUALITY CONTROL
- A. Remove work that does pass tests; replace and retest until successful installation is achieved.



1. Construction Manager will test pipe for displacement after trench has been backfilled and compacted, and after pipe has been cleaned of silt and debris.
2. Construction Manager will visually inspect pipe. Pipes that do not present a uniform bore due to displacement and misalignment shall be replaced.

B. Deflection Test:

1. Test pipes for vertical ring deflection within 15 days after completion of backfill at least four (4) months after installation but not later than 30 days before estimated substantial completion.
2. Maximum allowable ring deflection is 5 percent of vertical internal pipe diameter.
3. Replace pipe exceeding this allowable deflection.
4. Make deflection tests with deflectometer which produces a continuous record of pipe deflection by pulling mandrel, sphere, or pin-type go/no-go device through pipe. Make the diameter of go/no-go device to be 95 percent of the undeflected inside pipe diameter.

3.06 PROTECTION

- A. Protect pipe and bedding from damage or displacement until backfilling operation is completed.

3.07 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 334000

## SECTION 334215 - STORM WATER TREATMENT DEVICES

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Furnish and install storm water treatment devices as indicated and in compliance with Contract Documents.

#### 1.02 REFERENCES

- A. American Concrete Institute (ACI):

1. 318: Building Code Requirements for Structural Concrete.
2. 530: Building Code Requirements for Masonry Structures & Commentary.

- B. ASTM International (ASTM):

1. A48/A48M: Standard Specification for Gray Iron Castings.
2. A123/A123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. A615/A615M: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
4. C55: Standard Specification for Concrete Brick.
5. C478/C478M: Standard Specification for Precast Reinforced Concrete Manhole Sections  
C857/C858: Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
6. C913: Standard Specification for Precast Concrete Water and Wastewater Structures.
7. C923/C923M: Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

#### 1.03 DESIGN REQUIREMENTS

- A. Equivalent Strength: Based on structural design of reinforced concrete as outlined in ACI 318.
- B. Design of Lifting Devices for Precast Components: In accordance with ASTM C913.

- C. Design of Joints for Precast Components: In accordance with ASTM C913; maximum leakage of 0.025 gallons per hour per foot of joint at 3 feet of head.
- D. Design and install device to withstand hydrostatic uplift caused by a groundwater elevation at grade level or equal to the top of the device, which ever produces the most severe condition. Use only the weight of the manhole and structure and hold-down slab to resist hydrostatic uplift with a minimum safety factor of 1.15. Do not include side friction of soils on walls.

#### 1.04 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.
  - 1. Shop Drawings: Indicate structure locations, elevations, conduit sizes, and elevations of penetrations.
  - 2. Product Data: Submit cover and frame construction, features, configuration, dimensions, and Type.
  - 3. One (1) copy of results of tests and certification reports with each shipment of materials.
  - 4. If manufacturer's test data is inadequate or unavailable, Construction Manager reserves right to require cores drilled for compressive strength tests.
  - 5. Reinforcing Steel: Certificate of compliance with Specifications.
  - 6. Cement: Certificate of compliance with Specifications.
  - 7. Aggregates: Certificate of compliance with Specifications.

#### 1.05 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Perform work in accordance with City of Hoboken and North Hudson Sewer Authority standards.
- C. Maintain one (1) copy of each document on-site.
- D. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three (3) years' documented experience.
- E. Inspection by Construction Manager:
  - 1. At site of Work after delivery.

2. Reject precast concrete manholes and structures at any time if it fails to meet specified requirements, even if accepted at plant.
3. Immediately remove rejected precast concrete manholes and structures from site.

1.06 DELIVERY STORAGE AND HANDLING:

- A. Comply with the requirements specified in Section 016610.
- B. Comply with precast concrete manufacturer's instructions for unloading, storing, and moving precast manholes and structures.
- C. Store precast concrete devices to prevent damage to public or private property. Repair property damaged from materials storage.
- D. Mark each precast device by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Contract Drawings to indicate its intended use.

1.07 PROJECT/SITE CONDITIONS:

- A. Maintain materials and surrounding air temperatures to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 - PRODUCTS

2.01 TREATMENT DEVICES

- A. Sections: Reinforced precast concrete in accordance with ASTM C857/C8588M with gaskets in accordance with ASTM C923/C923M.
- B. Manufacturers:
  1. Contech Engineered Solutions, LLC. CDS units, various models,
  2. Hydro International, Inc. Downstream Defender, various models,
  3. Oldcastle Stormwater Solutions. Dual Vortex Separator, various models,
  4. Jensen Stormwater Systems. Jensen Deflective Separator (JDS), various models,
  5. or Approved equal.

2.02 BEDDING AND COVER MATERIALS

- A. Bedding: Fill Type as specified in Section 312300.

- B. Cover: Fill as specified in Section 312300.
- C. Soil Backfill from Above Pipe to Finish Grade: Soil Type, as specified in Section 312300. Subsoil with no rocks over 6 inches in diameter, frozen earth or foreign matter.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Verification of existing conditions before starting Work.
- B. Verify items provided by other sections of Work are properly sized and located.
- C. Verify built-in items are in proper location, and ready for roughing into Work.
- D. Verify correct size of device excavation.

#### 3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other Sections.
- B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
- C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

#### 3.03 INSTALLATION

- A. Excavation and Backfill:
  - 1. Excavate for device in accordance with Section 312300 in location and to depth shown. Provide clearance around sidewalls of structure for construction operations.
  - 2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes and structures in dry trench.
  - 3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.

#### 3.04 STORM WATER TREATMENT DEVICE INSTALLATION

- A. Lift precast components at lifting points designated by manufacturer.

- B. When lowering device into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.
- C. Set precast structures bearing firmly and fully on crushed stone bedding, compacted in accordance with provisions of Section 312300 or on other support system shown on Contract Drawings.
- D. Assemble multi-section structures by lowering each section into excavation. Lower, set level, and firmly position base section before placing additional sections.
- E. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.
- F. Joint sealing materials may be installed on site or at manufacturer's plant.
- G. Verify devices installed satisfy required alignment and grade.
- H. Remove knockouts or cut structure as necessary to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.
- I. Cut pipe to finish flush with interior of structure.

### 3.05 FRAME AND COVER INSTALLATION

- A. Set frames using mortar and masonry. Install radially laid concrete brick with 1/4-inch thick vertical joints at inside perimeter. Lay concrete brick in full bed of mortar and completely fill joints. Where more than one (1) course of concrete brick is required, stagger vertical joints.
- B. Set frame and cover 2 inches above finished grade for manholes and structures with covers located within unpaved areas to allow area to be graded away from cover beginning 1 inch below top surface of frame.

### 3.06 FIELD QUALITY CONTROL

- A. Section 014300: Field inspecting, testing, adjusting, and balancing.
- B. Test cast-in-place concrete in accordance with Section 033000.

### 3.07 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 334215

## SECTION 335000 - GAS UTILITIES

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Section includes installing gas mains, valves, vents, service lines, and gas valve boxes, and resetting gas valve boxes.
- B. Only a pre-qualified contractor approved by the Utility may construct or relocate gas mains and appurtenances. Pre-qualified contractors include:
  - 1. J.F. CREAMER & SON, INC.  
1701 East Linden Avenue  
Linden, New Jersey 07036  
Telephone (908) 986-5717  
Ted Paliwoda  
Cell (201) 481-7018  
Tpaliwoda@JFCson.com
  - 2. HENKELS & MCCOY, INC.  
512 Elbow Lane  
P.O. Box 218  
Burlington, New Jersey 08016  
Telephone (609) 387-9000  
Bob Cacamese  
Cell (215) 450-2703  
Bcacamese@henkels.com
  - 3. KEMSCO CONSTRUCTION, INC.  
139 Harper Street  
P.O. Box 10019  
Newark, New Jersey 07101  
Telephone (973) 733-2255  
Ralph Serpe  
Cell (973) 418-7851  
Kemscoinc@aol.com
  - 4. LANTIER CONSTRUCTION CO.  
145 Dey Grove Road  
Monroe Twp., New Jersey 08831  
William Phillips  
Cell (732) 674-7981  
Billphillips798@comcast.net

5. MILLER PIPELINE CORP.  
378 Whitehead Avenue  
South River, New Jersey 08882  
Telephone (732) 238-2151  
Steve Kasmin  
Steve.Kasmin@Millerpipeline.com
6. NAPP-GRECCO COMPANY  
1500 McCarter Highway  
Newark, New Jersey 07104  
Telephone (973) 482-3500  
Joseph Napp  
Cell (973) 445-3003  
Jnapp@Napp-grecco.com
7. FERREIRA CONSTRUCTION CO., INC.  
31 Tannery Road  
Branchburg, New Jersey 08876  
Telephone (908) 534-8655  
Tino Garcia  
Cell (908) 413-2067  
tinog@ferreiraconstruction.com
8. SKODA CONTRACTING  
174 Gold Mine Road  
Flanders, New Jersey 07836  
Mark Daly  
Telephone (800) 507-9601  
Mdaly@Skodacontracting.com
9. WATERS & BUGBEE, INC.  
75 South Gold Drive  
Hamilton, New Jersey 08691  
Telephone (609) 584-1100  
Jeff Waters, President  
Jwaters@Watersandbugbee.com
10. DANELLA COMPANIES  
2290 Butler Pike  
Plymouth Meeting, Pennsylvania 19462  
Telephone (610) 397-1139  
Bob Brust  
Cell (610) 476-1407  
Bbrust@danella.com



11. SOUTH STATE, INC.  
202 Reeves Road  
Bridgeton, New Jersey 08302  
www.southstateinc.com  
Barry Widrick  
bwidrick@southstateinc.com  
Telephone (856) 451-5300 ext. 136
12. JOSEPH M. SANZARI, INC.  
90 West Franklin Street  
Hackensack, New Jersey 07601  
Telephone (201) 342-6895  
Psarlo@sanzaricompanies.com
13. U.S. PIPELINE  
11767 Katy Freeway, Suite 100  
Houston, Texas 77079  
Telephone (713) 300-2277  
Lowell Brien  
Lbrien@uspipeline.com
14. UTILITY LINE SERVICES  
1302 Conshohocken, Pennsylvania 19428  
Telephone (610) 239-0900  
Bob Nye  
bnye@ulscorp.com
15. NOCAR CONTRACTORS  
74 Kossuth Street  
Newark, New Jersey 07105  
Telephone (551) 206-5628  
Nuno Nogueira  
Cell (551) 206-5628  
nuno@nocarnj.com
16. CROWN PIPELINE  
3345 Delsea Drive  
P.O. Box 39  
Franklinville, New Jersey 08322  
Telephone (856) 694-1327  
John BonFantino  
JBonFantino@crownpipeline.com

## 1.02 REFERENCES

### A. American Petroleum Institute (API):

1. Standard 1104: Welding of Pipelines and Related Facilities.

### B. ASTM International (ASTM):

1. A36: Standard Specification for Carbon Structural Steel.
2. A252: Standard Specification for Welded and Seamless Steel Pipe Piles.
3. A123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
4. A780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
5. C1107: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

### C. Public Service Electric and Gas Company (PSE&G):

1. Construction and Maintenance of Gas Facilities and Related Work, Gas Distribution General Specification No. 2016-D-100.
2. Gas Distribution Standards.

### D. Code of Federal Regulations (CFR):

1. 49 CFR 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards.

## 1.03 DEFINITIONS

- A. appurtenances: Additional piping items to provide a complete piping system suitable to convey gas as specified and intended. These items may or may not be specified, but are necessary to complete the piping system.
- B. Utility: The company, agency, or other entity that provides services.
- C. utility: The facilities or systems owned by Utilities.

## 1.04 SUBMITTALS

- A. Submit the following in accordance with Section 013300.

1. Nonshrink grout.
2. CLSM.
3. Structural steel.
4. Bolts and bolting material.
5. Certificate of compliance for steel pipe sleeves.
6. Temporary protection for excavations.
7. All temporary works.

B. Field Test Reports: Provide results for all testing performed.

#### 1.05 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 014300.
- B. Perform work in accordance with PSE&G's Construction and Maintenance of Gas Facilities and Related Work, and PSE&G's Gas Distribution Standards.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 016100 and Section 016610.
- B. Pick up pipe and appurtenances provided by the Utility from the location directed by the Utility. The Utility may, at its discretion, deliver certain materials. Coordinate pickup and delivery with the Utility.
- C. Support pipe every 10 feet during storage and transport.
- D. Store pipe in such a way that foreign material does not enter the pipe.
- E. Return and deliver excess pipe and appurtenances provided by the Utility to the location directed by the Utility within 30 days of completion.
- F. Obtain all material receipts from the Utility and provide a copy to the Construction Manager.

### PART 2 - MATERIALS

#### 2.01 PIPING

- A. The Utility will provide piping and appurtenances.

2.02 VALVES

- A. The Utility will provide valves and valve boxes.

2.03 CONCRETE

- A. Comply with the requirements specified in Section 033000 for cast-in-place concrete.

2.04 CASING

- A. For casing, use ASTM A252 steel pipe with 3/8-inch minimum wall thickness and galvanize according to ASTM A123.

2.05 STEEL PLATE

- A. The Utility will provide ½-inch steel plate to be placed over pipe with substandard cover.
- B. For temporary protection of open excavations, use steel plates conforming to ASTM A36.

2.06 BEDDING

- A. Comply with the requirements specified in Section 312300 for granular bedding.

2.07 SAND

- A. Comply with the requirements specified in Section 312300 for sand.

B. COARSE AGGREGATE

- C. Use coarse aggregate, No. 57 that complies with the requirements specified in Section 312300.

2.08 GROUT

- A. Nonshrink Grout: Use non-shrink grout of a plastic consistency that conforms to ASTM C1107. Ensure that the grout has a working time of at least 30 minutes from the time the water is added. Match the color of the hardened grout, where visible, to the color of the adjacent hardened concrete. Include 1-day strength tests as part of the performance requirements of ASTM C1107. Ensure that the grout contains no more than 0.05 percent chlorides or 5.0 percent sulfates by weight. Use Sikagrout 212 by Sika Corporation, CG-86 N.E. Construction Grade Grout by W.R. Meadows, Inc. or Euclid NS Grout by Euclid Chemical Co., or approved equal.

2.09 CLSM

- A. Comply with the requirements specified in Section 312300 for CLSM.

PART 3 - EXECUTION

3.01 CONSTRUCTION

- A. Provide the Construction Manager and the Utility with a detailed schedule of the work. Notify the Utility in writing at least 15 days before beginning construction of gas facilities. Do not perform work on gas facilities that will result in service interruptions from October 15 to April 15, without approval of the Utility. The Utility may extend this period based on weather conditions and system demand requirements. Perform the work to minimize adverse impact to the Utility's operations.
- B. Perform work in a manner that is acceptable to the Utility, and in coordination with the Construction Manager. Provide the Utility with access to the work. Perform all work related to the gas utility in the presence of the Utility's representative.
- C. Determine the location of surface and subsurface structures and utilities within the work site. Notify the Construction Manager when excavation is required within 10 feet of any existing utility, and submit a plan to the Construction Manager for approval, detailing the proposed methods of excavating around the existing utilities, and the proposed methods of protecting and supporting the existing utilities. Protect and support utility facilities encountered. Notify the Construction Manager and the Utility three (3) days before crossing any existing utilities, so that the Utility may send a representative to the work site at the time of excavation or construction.
- D. Remove and dispose of abandoned pipe, services, valves, boxes, thrust blocks, and appurtenances, unless otherwise directed by the Construction Manager or Utility. Cap or plug pipe that is to be abandoned in a manner that is acceptable to the Utility.
- E. Comply with the requirements specified in Section 312300. Dewater in accordance with the requirements specified in Section 312319. If it is not possible to maintain the trench free of water as determined by the Construction Manager, lower the water to a level approved by the Construction Manager, excavate an additional 6 inches of the material below the bottom of the pipe, and backfill the undercut with compacted coarse aggregate, No. 57. Comply with the requirements specified in Section 021600. Comply with the requirements specified in Section 315000. Do not use excavated pavement, including base and subbase material, as backfill. CLSM may be used as alternate backfill if approved by the Utility. Do not use CLSM to replace pavement or base course that form the pavement structure.

- F. Excavate trenches only for distances to be installed and backfilled during the same day. If approved by the Construction Manager and the Utility, temporary protection may be used instead of backfilling trenches. Submit shop drawings for temporary protection.
- G. Identify areas where pipe will have less than 3 feet of cover. Provide the Construction Manager with a report of the identified areas in order to obtain the Utility's approval. Use a laser system to control the alignment and grade of the pipe. Place compacted granular bedding. Install pipe so that it is solidly supported by the bedding over its full length except where recesses have been made at joint locations. Ensure that interior of the pipe is kept clean and free of all intrusion by bedding, soil, or other foreign material. Install elbows and associated fittings. Cut standard elbows of 45 or 90 degrees to match the elbow as required by field conditions. Install insulating joints, valves, valve risers, valve boxes, miscellaneous fittings, insulated locating wire, pipeline markers, and test stations. Maintain a 1-foot minimum clearance between utilities and structures. Coordinate the installation of gas main with other work, and prevent conflicts and interference with existing facilities and proposed construction.

### 3.02 WELDING STEEL PIPE

- A. At least 15 days before installing gas mains, submit to the Construction Manager and to the Utility a copy of the welders' Performance Qualification Record showing the welder has been tested and approved by the Utility. Perform welding according API Standard 1104.
- B. Welding plans and testing protocol are to be reviewed and approved by the affected Utility. Perform welding in a manner that is acceptable to the Utility.
- C. Inspect and clean all pipe and fittings prior to welding. Air scour and wire brush the interior of all steel pipe and fittings the same day they are installed.
- D. Do not tack ground clamps or other devices to the pipe. Repair arc burn damage to the pipe when the depth of the defect is less than 8 percent of the nominal wall thickness by grinding smooth. When the depth of the arc burn physical defect is greater than 8 percent of the nominal wall thickness, remove the defect and the adjacent first weld. Do not perform welding repairs on gouges, scratches, arc burns or other defects of the pipe. The Contractor may make field repairs of gouges and grooves in the parent metal of the pipe by grinding. Do not grind more than 8 percent of the nominal wall thickness of the pipe. Remove dents that contain stress concentrations, such as scratches, gouges, grooves, or arc burns by cutting out the damaged portion of the pipe.
- E. Provide an examination of welds by radiographic (X-ray) inspection by a qualified inspection company approved by the Utility. Deliver the X-ray films and one (1) copy of the radiographic inspection report to the Construction Manager and to the Utility. Apply or repair pipe coating so that pipe coating passes a holiday detector test. Seal field welds and fittings with Raychem Unisleeve or with a double layer of cold applied,

4-inch-wide, corrosion protective tape as directed by the Utility inspector. Install cathodic protection, including pipe coating, anodes and rectifiers, insulating joints, and test stations. Install the anodes at the lower elevation of the pipe (in or below the water table where possible) and offset the anodes as far as practical from the pipe. Do not place the anodes where other metallic structures such as conduit, cable or pipe is between the main and the anode. Provide temporary blocking to exposed end of gas mains to be abandoned in place using combination beam and column method. Do not backfill around the anodes with bedding. Use excavated material for backfill around the anodes.

### 3.03 FUSING PLASTIC PIPE

- A. At least 15 days before installing plastic gas mains, submit to the Construction Manager and the Utility the names and training qualifications of personnel intended to perform fusing for approval. Ensure that personnel fusing and inspecting butt fusion joints are certified according to 49 CFR 192. Before fusing plastic pipe, obtain the approval of the Utility for the heat fusion equipment. Fabricate steel to plastic transition fittings using an electric arc welder. Inspect and clean all pipe and fittings prior to welding.

### 3.04 THRUST RESTRAINTS AND BELL JOINT ENCAPSULATION

- A. Install thrust restraints and bell joint encapsulation devices as directed by the Utility before excavating other areas around the main. The number of thrust restraints and bell joint encapsulations is dependent upon field conditions and the location of the tie-in and live gas excavations.

### 3.05 HOT TAP PREPARATION

- A. When hot taps are performed by the Utility, in the presence of the Utility's representative, weld a spherical tee, 3-way tee, line stop fitting or other fitting on the existing steel main, or install a split sleeve collar, line stop fitting or other fitting on the existing cast iron main.

### 3.06 BACKFILL

- A. Symmetrically backfill on each side of the pipe using sand in lifts not exceeding 6 inches thick, loose measurement. When the height of 1 foot above the pipe is achieved, place caution tape. Backfill the remainder of the trench with suitable excavated material that is free from rock larger than 2 inches in diameter in lifts not exceeding 6 inches thick, loose measurement. For plastic mains with less than 2 feet of cover, enclose with steel pipe or protect with a steel plate. If the pipe is in an area not subject to vehicular traffic, steel plate is not required. Comply with the requirements specified in Section 312300.
- B. Backfill and restore the pavement structure and match the surrounding condition before opening roads to traffic. For trenches not in sidewalk or roadways, do not leave

trenches open overnight unless protected with caution fence and approved by the Construction Manager.

### 3.07 LINE STOP AND TIE-IN ASSISTANCE

- A. Excavate pits as required to provide access to the Utility for line stops, flow stops, bypass insertions, bagging and venting, hot tops, thrust restraints, purging, and tie-ins. Protect using temporary fencing or steel plates as directed. Maintain the excavation until the Utility has completed its work. Construct a concrete support pad under the pipe at locations requiring a line stop before the arrival of the Utility's line stop crew. Assist the Utility in handling the pipe by providing sufficient labor and equipment.

### 3.08 TIE-IN AND GAS OUT

- A. Perform cutouts and tie-ins at both ends of the pipe simultaneously. The Utility will purge and cut the pipeline. Once started, continue the work of tie-ins until completed. Keep tie-in excavations open or plated as required until the Utility has completed its work. As necessary, modify standard tie-in pieces to fit connection requirements.

### 3.09 AIR-PRESSURE TEST

- A. Perform an air-pressure test on new pipeline including tie-in pieces under the direction and supervision of the Utility. Perform the test according to the pressures and durations directed by the Utility. Provide all equipment necessary for the test. Locate and repair leaks in a manner that is approved by the Utility. Pig steel gas mains using a scraper barrel pig or a poly pig when testing plastic mains. Ensure that the pig is in a like new condition that is acceptable to the Utility. If using caps or expansion joints, anchor the pipe in a manner that is acceptable to the Utility to prevent any movement during the test. Retest after making repairs.

### 3.10 SERVICE CONNECTION

- A. Perform work associated with the transfer of service including the excavation of 1 tie-in hole for direct burial and transfer installations and 2 tie-in holes for insert installations. Submit to the Construction Manager and the Utility the names and training qualifications of personnel intended to install fused or mechanical connections for approval.
- B. Turn off the gas at the service tee using pressure control equipment before cutting the existing service pipe. Disconnect the service pipe inside the building before the meter. Support the meter to avoid stressing the building piping. Install services either by inserting plastic tubing in the existing service or by directly burying plastic tubing or pipe.
- C. Installing Services with Direct Burial of Plastic Pipe: Install the direct burial plastic service including location wire from the main to the building, fuse the pipe, and assist



the Utility to tie the connection into the gas main. Backfill above the pipe with sand in lifts not exceeding 6 inches thick, loose measurement. When the height of backfill reaches 2 feet above the service connection, backfill the remainder of the trench with suitable excavated material that is free from rock larger than 2 inches in diameter in lifts not exceeding 6 inches thick, loose measurement. Comply with the requirements specified in Section 312300. Install a curb shut-off valve and install a meter shut-off valve at the head of the service. Seal the hole in the foundation wall and surround the service pipe with cement or grout. Electrofuse or weld the self-tapping tee to the main and connect it to the service using Electrofuse or mechanical fittings.

- D. Installing Services by Plastic Tubing Insertion: Excavate and remove any curb shut-off, offset, swing or service drip that may impede the insertion of the plastic pipe. Ream the existing service from the building to the main. After reaming, air-blow the existing service from the building to the main. Insert the plastic tubing from the main to the building. Install a curb shut-off valve and install meter shut-off valve at the head of the service. Leave the meter shut off valve open with the plug installed. Electrofuse or weld the self-tapping tee to the new main and connect it to the new plastic service using Electrofuse or mechanical fittings.
- E. Pressure test the service as required and soap test all fuses and mechanical connections. Perform pressure and soap tests in the presence of the Utility inspector. Release the pressure, tap a self-tapping tee, and gas out service through the hose from the meter shut off to the outside of the building until a gas reading of greater than 95 percent is obtained using a combustible gas indicator. Install a tee cap and soap test the cap.

### 3.11 CASING

- A. Where indicated on the drawings, install split casing to protect existing gas pipe to remain. Bevel welding surfaces. Weld joints in a minimum of two (2) passes. Weld the entire circumference and length of casing. Weld according to AWS D1.1. Grout the interstitial spacing after welding joints. Repair hot dipped galvanized coating according to ASTM A780.

### 3.12 RESET GAS VALVE BOXES

- A. Adjust the height of the existing valve box so that it is set flush with the proposed grade without disturbing the existing valve.

### 3.13 AS-BUILT

- A. Within five (5) days of completion of each pipe run, submit to the Construction Manager and to the Utility as-built drawings in a CADD format acceptable to the Utility. Include as-built locations of piping, valves, connections, thrust restraints, invert elevations, and depth of cover. Identify and describe unexpected variations in subsoil conditions or discovery of uncharted utilities.

3.14 PROTECTION

- A. Protect gas utilities from damage throughout storage, installation, testing, and final acceptance.

3.15 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 017700.

END OF SECTION 335000

## SECTION 337000 - ELECTRIC UTILITIES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This Section includes materials, installation, and testing of ducts, handholes, pull boxes, manholes, vaults, and related materials for electric utilities. The Utility will perform all cable work.
- B. Perform work according to PSE&G's General Specification. Only a pre-qualified contractor approved by the Utility may perform work on the utility. Pre-qualified contractors include:

J FLETCHER CREAMER & SONS. INC.

101 East Broadway  
Hackensack, New Jersey 07601  
Jorge Pires  
Telephone 201-954-7366  
Ted Palowada  
Telephone 201-481-7018  
[tpaliwoda@jfcson.com](mailto:tpaliwoda@jfcson.com)

HENKELS & MCCOY INC.

Elbow Lane  
PO Box 218  
Burlington, New Jersey 08016  
Telephone 609-387-9000  
Ray Hill or Jim Rudolph  
[jrudolph@henkels.com](mailto:jrudolph@henkels.com)

KEMSCO CONSTRUCTION INC.

PO Box 10019  
139 Harper Street  
Newark, New Jersey 07101  
Ralph Serpe  
Telephone 973-733-2255  
Tony Perichio  
Telephone 973-418-7895  
[kemscoinc@aol.com](mailto:kemscoinc@aol.com)

FERREIRA CONSTRUCTION

31 Tannery Road

Branchburg, New Jersey 08876  
Telephone 908 534 8655 x 274  
Brian Delpome  
[BDelpome@ferreiraconstruction.com](mailto:BDelpome@ferreiraconstruction.com)

ROMAN E & G CORP.  
14 Ogden Street  
Newark, New Jersey 07104  
Joe Bellott  
Telephone 973-766-5369  
Michael Lamorgese  
Telephone 973-482-2501  
[romaneandg@optimum.net](mailto:romaneandg@optimum.net)

DANELLA CONSTRUCTION CORPORATION  
2290 Butler Pike  
Plymouth Meeting, Pennsylvania 19462  
Richard Neas  
Telephone 610-397-1193

BOND BROTHERS, INC.  
145 Spring Street  
Everett, Massachusetts 02149  
Telephone 617-387-3400  
Sean McAullife  
Telephone 860-349-8880 Work  
Telephone 617-212-6858 Cell  
[smcauliffe@bondbrothers.com](mailto:smcauliffe@bondbrothers.com)

## 1.02 REFERENCES

- A. PSE&G General Specification No. 2016-5065 for Trench, Manhole, and Conduit Installation, or current edition.
- B. ASTM International (ASTM):
  - 1. A36: Standard Specification for Carbon Structural Steel.
  - 2. A123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 3. A252: Standard Specification for Welded and Seamless Steel Pipe Piles.
  - 4. A780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

5. C881: Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
  6. C1107: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
  7. D41: Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
  8. D449: Standard Specification for Asphalt Used in Dampproofing and Waterproofing.
- C. American Welding Society (AWS):
1. D1.1: Structural Welding Code - Steel.

#### 1.03 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.
1. Nonshrink grout.
  2. Epoxy grout.
  3. Interstitial grout.
  4. Pull rope.
  5. Epoxy bedding compound.
  6. CLSM.
  7. Aggregates and bedding.
  8. Warning tape.
  9. Certificate of compliance for casing pipe.
  10. Temporary protection for excavations.
  11. All temporary works.

#### 1.04 DEFINITIONS

- A. Utility: The company, agency, or other entity that provides electric service.
- B. utility: The facilities or systems owned by Utility.

- C. Vault: An enclosure above or below ground that is large enough for personnel to enter and is used for the purpose of installing, operating, or maintaining equipment or cabling.
- D. Manhole: A subsurface enclosure that is large enough for personnel to enter and that is used for the purpose of installing, operating, and maintaining equipment.
- E. Pull Box: A subsurface enclosure that has a bottom and is used with underground lines, into which personnel can reach but not enter, for the purpose of installing, operating, or maintaining equipment, cabling, or both.
- F. Handhole: An access opening, provided in equipment or a below-the-surface enclosure without a bottom used with underground lines, into which personnel can reach but not enter, for the purpose of installing, operating, or maintaining equipment, cabling, or both.
- G. Duct: The general term for an electrical conduit or raceway, either metallic or nonmetallic, for use underground.
- H. Duct Bank: A group of two (2) or more ducts in a continuous run between two (2) points.
- I. PSE&G's General Specification: PSE&G General Specification No. 2016-5065 for Trench, Manhole, and Conduit Installation, or current edition.

#### 1.05 QUALITY CONTROL

- A. Follow the accepted standards of ANSI, NEMA, IEEE, ASME, NBFU, ASHRAE, and ASTM for materials not provided by the Utility.
- B. Follow the accepted standards of ANSI, NEMA, IEEE, ASME, NBFU, ASHRAE, and ASTM for construction operation not specified in the Contract.
- C. Comply with the requirements specified in Section 014300.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

Coordinate pick up or delivery of materials. Deliver ducts to site and store with ends capped. Store ducts with supports to prevent bending, warping, and deforming.

## PART 2 - MATERIALS

### 2.01 CONCRETE MATERIALS

- A. Comply with Section 031000 for forming of concrete, Section 032100 for reinforcement for cast-in-place concrete, Section 033000 for cast-in-place concrete, and Section 031500 for joints and accessories.

### 2.02 HANDHOLES AND PULL BOXES

- A. Precast: The Utility will provide precast handholes and pull boxes.
- B. Cast-in-Place: Comply with Section 033000, Class A. Paint the outside surface with two (2) coats of asphalt cement waterproofing according to the manufacturer's recommendations. Use asphalt waterproofing conforming to ASTM D449, Type I. Use a primer conforming to ASTM D41.

### 2.03 CONCRETE MANHOLES AND VAULTS

- A. Precast: The Utility will provide precast concrete manholes and vaults.
- B. Cast-in-Place: Comply with Section 033000, Class A. Paint the outside surface with two (2) coats of asphalt cement waterproofing according to the manufacturer's recommendations. Use asphalt waterproofing conforming to ASTM D449, Type I. Use a primer conforming to ASTM D41.

### 2.04 CONCRETE ENCASEMENT

- A. Comply with Section 033000, Class C.

### 2.05 CONDUIT

- A. The Utility will provide conduit and appurtenances, including spacers and sealant. The Utility will provide risers and vertical bends for risers. Use only prefabricated bends.

### 2.06 PULL ROPE

- A. Use polypropylene rope, minimum 1/2-inch diameter except in 2-inch street light conduit, use 3/16-inch rope.

### 2.07 CASING

- A. For casing, use ASTM A252 steel pipe with 3/8-inch minimum wall thickness and galvanize according to ASTM A123.

2.08 STEEL PLATE

- A. The Utility will provide ½-inch steel plate to be placed over ducts with substandard cover.
- B. For temporary protection of open excavations, use steel plates conforming to ASTM A36.

2.09 COARSE AGGREGATE

- A. Use coarse aggregate, No. 57 that complies with Section 312300.

2.10 MORTAR

- A. Mix one (1) part cement to two (2) parts fine aggregate. Add water to form the proper consistency. Do not temper mortar or use mortar after it has begun to set.

2.11 GROUT

- A. Nonshrink Grout: Use non-shrink grout of a plastic consistency that conforms to ASTM C1107. Ensure that the grout has a working time of at least 30 minutes from the time the water is added. Match the color of the hardened grout, where visible, to the color of the adjacent hardened concrete. Include 1-day strength tests as part of the performance requirements of ASTM C1107. Ensure that the grout contains no more than 0.05 percent chlorides or 5.0 percent sulfates by weight. Use Sikagrout 212 by Sika Corporation, CG-86 N.E. Construction Grade Grout by W.R. Meadows, Inc. or Euclid NS Grout by Euclid Chemical Co., or approved equal.
- B. Epoxy Grout: Use epoxy grout that conforms to the requirements of ASTM C881, Type 1, Grade 3, Class B or C. Use Dural 452 or HS Gel by Euclid Chemical Co., HTE 50, HIT-RE 100, HIT-RE500v3, HIT-RE 10 by Hilti North America, Sikadur Anchorfix 3001, Sikadur Anchorfix 500, or Sikadur Anchorfix-2 by Sika Corporation, or approved equal.

2.12 EPOXY BONDING COMPOUND

- A. Comply with Section 033000.

2.13 CLSM

- A. Comply with Section 312300 for CLSM.

2.14 BEDDING

- A. Comply with Section 312300 for granular bedding.



## 2.15 EPOXY BEDDING COMPOUND

- A. Use a 2-part, non-sag gel, rapid-setting epoxy adhesive conforming to ASTM C881, Type 4, Grade 3, Class B or C. Use the epoxy in an ambient temperature range of 40 to 100° F.

## 2.16 WARNING TAPE

- A. A 6-inch-wide magnetically detectable warning tape with red protective polyethylene jacket resistant to alkalis, acids, and other destructive elements continuously imprinted "CAUTION--ELECTRICAL CONDUIT BELOW" unless otherwise directed by the Utility.

## 2.17 CASTINGS

- A. The Utility will provide frames and covers.

# PART 3 - EXECUTION

## 3.01 EXCAVATION AND BACKFILL

- A. Provide the Construction Manager and the Utility with a detailed schedule of the work. Notify the Utility in writing at least 15 days before beginning construction of utility facilities. Do not perform work on electric facilities that will result in service interruptions from May 1 to October 1 or when the temperature is in excess of 85 degrees, without approval of the Utility. The Utility may extend this period based on weather conditions and system demand requirements. Perform the work to minimize adverse impact to the Utility's operations.
- B. Perform work in a manner that is acceptable to the Utility, and in coordination with the Construction Manager. Provide the Utility with access to the work. Perform all work related to the utility in the presence of the Utility's representative.
- C. Determine the location of surface and subsurface structures and utilities within the work site. Notify the Construction Manager when excavation is required within 10 feet of any existing utility and submit a plan to the Construction Manager for approval, detailing the proposed methods of excavating around the existing utilities, and the proposed methods of protecting and supporting the existing utilities. Protect and support utility facilities encountered. Notify the Construction Manager and the Utility three (3) days before crossing any existing utilities, so that the Utility may send a representative to the work site at the time of excavation or construction.
- D. Remove and dispose of abandoned ducts, services, cable, boxes, manholes, vaults and appurtenances in direct conflict with the work or as directed by the Utility unless

otherwise directed by the Construction Manager or Utility. Cap or plug ducts that are to be abandoned in a manner that is acceptable to the Utility.

- E. Comply with the requirements specified in Section 312300. Dewater in accordance with the requirements specified in Section 312319. If it is not possible to maintain the trench free of water as determined by the Construction Manager, lower the water to a level approved by the Construction Manager, excavate an additional 6 inches of the material below the bottom of the pipe, and backfill the undercut with compacted coarse aggregate, No. 57. Comply with the requirements specified in Section 021600. Comply with the requirements specified in Section 315000. Do not use excavated pavement, including base and subbase material, as backfill. CLSM may be used as alternate backfill as specified in Section 312300 with the approval of the Utility and the Construction Manager. Restore disturbed areas to original conditions, the conditions specified in the contract, or as directed by the Construction Manager.
- F. Backfill and restore the pavement structure and match the surrounding condition before opening roads to traffic. For trenches not in sidewalk or roadways, do not leave trenches open overnight unless protected with caution fence and approved by the Construction Manager.
- G. Trenches may be backfilled immediately after placing concrete encasement, provided the concrete is covered with heavy paper. Backfill according to PSE&G's General Specification.

### 3.02 DUCT LAYOUT

- A. Limit the maximum change of direction in horizontal plane to a minimum radius of 12'-6".
- B. Where other utility systems are encountered or are being installed, maintain a 12-inch minimum separation between utility and other system. Maintain a 12-inch minimum separation between utility and structures.
- C. Do not place ducts over valves or couplings in other piping systems. Do not construct conduit directly over or under and parallel to other facilities or structures.
- D. Slope: Pitch ducts to drain toward vaults, manholes, handholes, and pull boxes and away from buildings and equipment. Minimum slope shall be 4 inches in 100 feet. Ducts may slope from a high point in the run to drain in both directions.
- E. Minimum Cover: 30-inch minimum cover over top of concrete for concrete-encased ducts. At locations with less than 30-inch cover, install a ½-inch steel plate for protection. Do not construct ducts with less than 12-inch cover. Do not install conduits with more than 42 inches of cover unless approved by the Utility in writing.

### 3.03 DUCT INSTALLATION

- A. Use Utility-provided conduit spacers to provide 1 1/2-inch minimum separation between conduits. Locate spacers not less than 4 feet center-to-center along entire length of ducts. Secure ducts and spacers with polypropylene banding to prevent movement during concrete placement.
- B. Place duct couplings side-by-side horizontally but staggered at least 6 inches vertically.
- C. Make joints in accordance with the Utility's and manufacturer's recommendations.
- D. Construct conduit with a minimum of bends.
- E. Excavate trenches only for distances to be installed and backfilled during the same day. If approved by the Construction Manager and the Utility, temporary protection may be used instead of backfilling trenches. Submit shop drawings for temporary protection.
- F. Install risers as directed by the Utility.

### 3.04 CONCRETE ENCASEMENT OF CONDUITS

- A. Encase duct in Class B concrete. Make duct encasement monolithic. Use hand-held vibrators or as directed by the Utility to consolidate concrete around conduits.
- B. Maintain 1 1/2-inch minimum separation between conduits and 3-inch minimum concrete encasement around ducts. Do not exceed the indicated outside dimensions of the duct by more than 1 inch vertically or 4 inches horizontally.
- C. Pour each encasement envelope between manholes or other terminations in one continuous operation. Where more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch reinforcing rod dowels extending 18 inches into the concrete on each side of the joint near the corners of the envelope.

### 3.05 IDENTIFICATION

- A. Bury warning tape approximately 12 inches above all conduit banks.
- B. Align tapes and protective plates within 3 inches of the centerline of the conduit bank.

### 3.06 HANDHOLES AND PULL BOXES

- A. Install cast-in-place concrete handholes and pull boxes unless otherwise directed by the Utility.
- B. Provide a 6-inch gravel base for open-bottom handholes.

### 3.07 MANHOLES AND VAULTS

- A. Do not enter manholes or vaults without first verifying the adequacy of the oxygen supply and the absence of gas.
- B. Comply with PSE&G's General Specification for the excavation limits for manholes. Provide a base of 6 inches of compacted coarse aggregate, No. 57 for leveling.
- C. The precast supplier will deliver precast manholes and vaults. The supplier will install precast manholes and vaults up to 6'×17'-6" and 3-way manholes. Ensure access to the site. Use a crane to install precast manholes and vaults larger than 6'×17'-6", 4-way manholes and 7'×19' transformer manholes. If the lower section is not installed level to the Utility's satisfaction, remove it, level the coarse aggregate base and reinstall. Notify the Utility at least 48 hours in advance of the anticipated installation date. Do not schedule installation until receiving notification from the Utility that the manhole or vault is prepared for delivery.
- D. Install cast-in-place manholes and vaults and cast-in-place bottoms per Sections 033000 and 333915.
- E. Backfill according to PSE&G's General Specification and Section 312300.

### 3.08 CASTINGS

- A. Set casting in mortar beds or anchor castings to the masonry before finishing adjoining work with the same final elevation. Ensure that mortar attains a strength of 2500 pounds per square inch before opening to traffic. Set the manhole cover or inlet grate on the casting. If the manhole cover or inlet grate is loose or wobbles, grind to obtain a tight fit.

### 3.09 STREET LIGHTING

- A. Use cast-in-place concrete for foundations. Mandrel and rope conduit from the foundation to the manhole. Furnish and erect protective barricades with flashers until poles are erected by the Utility.

### 3.10 CASING

- A. Where indicated on the drawings, install split casing to protect existing conduit. Bevel welding surfaces. Weld joints in a minimum of two (2) passes. Weld the entire circumference and length of casing. Weld according to AWS D1.1. Grout the interstitial spacing after welding joints. Repair hot dipped galvanized coating according to ASTM A780.

### 3.11 ACCEPTANCE TEST

- A. Pull a bristle brush of a diameter approximately 1/4 inch greater than the duct inside diameter through each duct to remove debris. If directed by the Utility or the Construction Manager, clean existing vacant ducts.
- B. Pull a mandrel of a diameter approximately 1/4 inch less than the duct inside diameter and at least 12 inches long, through each duct. If required, rod existing vacant ducts.
- C. Install pull rope in each conduit. Install measuring tape in lieu of pull rope in single duct installations and in one (1) duct of a multiple duct bank.
- D. Repair or replace any portion of the duct through which the mandrel and brush will not pass at the Contractor's expense.

END OF SECTION 337000

## SECTION 338000 TELEPHONE UTILITIES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This Section includes materials, installation, and testing of ducts, handholes, pull boxes, manholes, and related materials for communication utilities. The Utility will perform all cable work. The Utility will not order cable until the work specified herein is complete and the Utility receives as-built drawings.
- B. Perform work as specified herein, and according to the Verizon Conduit Plans, which Verizon will provide, and the Verizon Conduit Specifications.
- C. Notify the Utility representative in writing at least 72 hours before beginning Verizon work to arrange a conduit inspector. Notify the Utility representative in writing no later than Wednesday of the previous week for scheduled night work. Perform all work related to the Utility in the presence of the Utility inspector.
- D. Only a pre-qualified contractor approved by the Utility may perform work on the utility. Pre-qualified contractors include:

CASPER COLOSIMO & SON, INC.  
5170 Campbells Run Road  
Pittsburgh, Pennsylvania 15205  
Leon Casilli  
Telephone: 412-787-1266  
[leonc@caspercol.com](mailto:leonc@caspercol.com)

DYCOM INDUSTRIES, INC.  
11770 U.S. Highway 1, Suite 101  
Palm Beach Gardens, Florida 33408  
Tim Estes  
Telephone: 561-627-7171  
[timestes@dycominc.com](mailto:timestes@dycominc.com)

LAMBERTS CABLE SPLICING CO. LLC  
2521 South Wesleyan Boulevard  
Rocky Mountain, North Carolina 27803  
Tommy Lambert  
Telephone: 252-442-9777 x 223  
[tlambert@lambertcable.com](mailto:tlambert@lambertcable.com)

COMMUNICATIONS CONSTRUCTION GROUP, LLC  
1060 Andrew Drive, Suite 130  
West Chester, Pennsylvania 19380  
John Dowd  
Telephone: 800-822-3345  
[jdowd@ccgcatv.com](mailto:jdowd@ccgcatv.com)

PARKSIDE UTILITY CONSTRUCTION, LLC  
219 Ruth Road  
Harleysville, Pennsylvania 19438  
William D. Rowe III  
Telephone: 215-513-9500 x 302  
[bill.rowe@parksideutil.com](mailto:bill.rowe@parksideutil.com)

FISHEL COMPANY/TEAM FISHEL  
1366 Dublin Road  
Columbus, Ohio 43215  
Randy Blair  
Telephone: 800-829-4530  
[orblair@teamfishel.com](mailto:orblair@teamfishel.com)

GENERAL ASPHALT PAVING COMPANY, INC.  
9301 Krewstown Road  
Philadelphia, Pennsylvania 19115  
Austin Meehan  
Telephone: 215-677-2626  
[aameehan@johnmeehanandson.com](mailto:aameehan@johnmeehanandson.com)

HENKELS & MCCOY, INC.  
P.O. Box 1742  
York, Pennsylvania 17406  
John Donmoyer  
Telephone: 717-266-5641  
[jdonmoyer@henkels.com](mailto:jdonmoyer@henkels.com)

J. FLETCHER CREAMER & SON, INC.  
101 East Broadway  
Hackensack, New Jersey 07601  
Dan Urban  
Telephone: 908-986-5729  
[urban@jfcson.com](mailto:urban@jfcson.com)

KLINE CONSTRUCTION COMPANY, INC.  
240 Waveland Avenue  
Absecon Highlands, New Jersey 08205  
Kathie Kline  
Telephone: 609-652-3000  
[kmkline@klineconstruction.net](mailto:kmkline@klineconstruction.net)

MASTEC NORTH AMERICA, INC.  
110 Repetto Avenue  
Egg Harbor Township, New Jersey 08234  
Rob Lamey  
Telephone: 609-645-2409  
[rob.lamey@mastec.com](mailto:rob.lamey@mastec.com)

NX UTILITIES LLC  
2587 Industry Lane  
West Norriton, Pennsylvania 19403  
Scott Lochhead  
Telephone: 561-829-7127  
[slochhead@nxutilities.com](mailto:slochhead@nxutilities.com)

UTILITY LINE SERVICES, INC.  
1302 Conshohocken Road  
Conshohocken, Pennsylvania 19428  
Austin Meehan  
Telephone: 610-239-0900 x 100  
[ameehan@ulscorp.com](mailto:ameehan@ulscorp.com)

WECO CONSTRUCTION, INC.  
3031 Ocean Heights Avenue  
Egg Harbor Township, New Jersey 08234  
Donna Delaney  
Telephone: 609-927-6661  
[dld@arhenry.com](mailto:dld@arhenry.com)

## 1.02 REFERENCES

- A. General Notes, Verizon Conduit Specifications.
- B. Verizon Conduit Plans.
- C. Bell System Practices, AT&T Company Standards.
- D. ASTM International (ASTM):



1. A36: Standard Specification for Carbon Structural Steel.
  2. A123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  3. A252: Standard Specification for Welded and Seamless Steel Pipe Piles.
  4. A780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
  5. C881: Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
  6. C1107: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
  7. D1785: Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- E. American Welding Society (AWS):
1. D1.1: Structural Welding Code - Steel.
- F. National Electrical Manufacturers Association (NEMA):
1. TC-10: PVC Plastic Communications Duct and Fittings for Underground Installation.
- G. Bellcore CA08546
- H. Bell System Practices, Section 922-520-100, Issue 7.

### 1.03 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.
1. Manholes.
  2. Racks.
  3. Ladders.
  4. Concrete for encasement.
  5. Granular encasement.
  6. Conduit, risers and appurtenances.

7. Nonshrink grout.
8. Pull rope.
9. Measuring tape.
10. Epoxy bonding compound.
11. Epoxy bedding compound.
12. Aggregates.
13. Warning tape.
14. Certificate of compliance for casing pipe.
15. Temporary protection for excavations.
16. All temporary works.

#### 1.04 DEFINITIONS

- A. Utility: The company, agency, or other entity that provides service.
- B. utility: The facilities or systems owned by Utility.
- C. manhole: A subsurface enclosure that is large enough for personnel to enter and that is used for the purpose of installing, operating, and maintaining equipment.
- D. pull box: A subsurface enclosure that has a bottom and is used with underground lines, into which personnel can reach but not enter, for the purpose of installing, operating, or maintaining equipment, cabling, or both.
- E. handhole: An access opening, provided in equipment or a below-the-surface enclosure without a bottom used with underground lines, into which personnel can reach but not enter, for the purpose of installing, operating, or maintaining equipment, cabling, or both.
- F. duct: The general term for a conduit for use underground.
- G. duct bank: A group of two or more ducts in a continuous run between two points.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store ducts with ends capped. Store ducts with supports to prevent bending, warping, and deforming.

## PART 2 - MATERIALS

### 2.01 GENERAL

- A. If not specified herein, use materials according to Verizon Conduit Specifications, Bell System Practices, AT&T Standards. Submit material shop drawings to the Utility for approval.

### 2.02 CONCRETE MATERIALS

- A. Comply with Section 033000 for cast-in-place concrete.

### 2.03 MANHOLES

- A. Use reinforced precast concrete manholes constructed according to Verizon Specifications and supplied by A.C. Miller (Telephone: 610-948-4600) or Old Castle (Telephone: 888-965-3227). Use manholes that are provided with bonding ribbons. Use the manhole size shown on the Verizon Conduit Plans. The supplier will deliver manholes with a boom truck that can be used for installation. Comply with Section 333915.

### 2.04 HANDHOLES AND PULL BOXES

- A. The Utility will provide handholes and pull boxes.

### 2.05 RACKS

- A. Use galvanized steel channel-type racks with 47 holes and an overall length of 70 ¼ inches and with mount-through hook holes. Channel dimensions 1 ½" × 9/16" × 3/16"; rack weight 7.25 pounds each. Use part number 400836268 as manufactured by Hubbell Power Systems Inc.

### 2.06 LADDERS

- A. Use part number 1-3600-(length)S as manufactured by Inwesco Incorporated where the ladder length is 1'-6" longer than the manhole interior height based on a 2-foot chimney and excluding the hook. For longer chimneys, adjust the ladder length accordingly. One ladder per manhole.

### 2.07 ENCASEMENT

- A. For concrete encasement, comply with Section 033000, but ensure that the 28-day compressive strength is 1,500 pounds per square inch.
- B. For granular encasement, use sand or granular bedding that complies with Section 312300.

## 2.08 CONDUIT

- A. Use 4-inch diameter Telephone Duct, Type C and fittings conforming to NEMA Standard TC-10 and Bellcore CA08546, or 4-inch diameter Schedule 40 PVC pipe conforming to ASTM D1785. Provide vertical bends conforming to ASTM D1785, Schedule 40. Provide white conduit and fittings.
- B. Ensure that split duct is split plastic duct typically used to make Verizon repairs and is approved by the Utility. Use split duct with tongue and groove joints. Use plastic reinforcing strips for split duct.
- C. Use plastic internal joining couplings.
- D. Use pole straps for risers as manufactured by Highland Valley Supply, Inc. or approved equal.

## 2.09 CASING

- A. For casing, use ASTM A252 steel pipe with 3/8-inch minimum wall thickness and galvanize according to ASTM A123.

## 2.10 STEEL PLATE

- A. For temporary protection of open excavations, use steel plates conforming to ASTM A36.

## 2.11 COARSE AGGREGATE

- A. Use coarse aggregate, No. 57 that complies with Section 312300.

## 2.12 MORTAR

- A. Mix one (1) part cement to two (2) parts fine aggregate. Add water to form the proper consistency. Do not temper mortar or use mortar after it has begun to set.

## 2.13 GROUT

- A. Nonshrink Grout: Use non-shrink grout of a plastic consistency that conforms to ASTM C1107. Ensure that the grout has a working time of at least 30 minutes from the time the water is added. Match the color of the hardened grout, where visible, to the color of the adjacent hardened concrete. Include 1-day strength tests as part of the performance requirements of ASTM C1107. Ensure that the grout contains no more than 0.05 percent chlorides or 5.0 percent sulfates by weight. Use Sikagrout 212 by Sika Corporation, CG-86 N.E. Construction Grade Grout by W.R. Meadows, Inc. or Euclid NS Grout by Euclid Chemical Co., or approved equal.

2.14 EPOXY BONDING COMPOUND

- A. Comply with Section 033000.

2.15 CLSM

- A. Comply with Section 312300 for CLSM.

2.16 BEDDING

- A. Comply with Section 312300 for granular bedding.

2.17 EPOXY BEDDING COMPOUND

- A. Use a 2-part, non-sag gel, rapid-setting epoxy adhesive conforming to ASTM C881, Type 4, Grade 3, Class B or C. Use the epoxy in an ambient temperature range of 40 to 100 degrees F.

2.18 WARNING TAPE

- A. A 6-inch-wide magnetically detectable warning tape with orange protective polyethylene jacket resistant to alkalis, acids, and other destructive elements continuously imprinted "CAUTION--COMMUNICATIONS CONDUIT BELOW" unless otherwise directed by the Utility.

2.19 CASTINGS

- A. The Utility will provide frames and covers.

PART 3 - EXECUTION

3.01 EXCAVATION AND BACKFILL

- A. Perform a "Z" pattern test pit at the proposed manhole location before installing ducts or manholes. If conflicts are identified, notify the Utility and Construction Manager immediately to assess the impacts and revise the Verizon Conduit Plans as necessary. Comply with Section 023219.
- B. Provide the Construction Manager and the Utility with a detailed schedule of the work. Notify the Utility in writing at least 15 days before beginning construction of utility facilities. Perform the work to minimize adverse impact to the Utility's operations.
- C. Perform work in a manner that is acceptable to the Utility, and in coordination with the Construction Manager. Provide the Utility with access to the work. Perform all work related to the utility in the presence of the Utility's representative.

- D. Determine the location of surface and subsurface structures and utilities within the work site. Notify the Construction Manager when excavation is required within 10 feet of any existing utility, and submit a plan to the Construction Manager for approval, detailing the proposed methods of excavating around the existing utilities, and the proposed methods of protecting and supporting the existing utilities. Protect and support utility facilities encountered. Notify the Construction Manager and the Utility three (3) days before crossing any existing utilities, so that the Utility may send a representative to the work site at the time of excavation or construction.
- E. Remove and dispose of abandoned ducts, boxes, and appurtenances in direct conflict with the work or as directed by the Utility unless otherwise directed by the Construction Manager or Utility. Cap or plug ducts that are to be abandoned in a manner that is acceptable to the Utility.
- F. Comply with Section 312300. Dewater in accordance with Section 312319. If it is not possible to maintain the trench free of water as determined by the Construction Manager, lower the water to a level approved by the Construction Manager, excavate an additional 6 inches of the material below the bottom of the pipe, and backfill the undercut with compacted coarse aggregate, No. 57. Comply with Section 021600. Comply with Section 315000. Encase ducts as specified herein. Above the encasement, backfill with suitable material that is free from rock larger than 2 inches in diameter in lifts not exceeding 6 inches thick, loose measurement, and compact as specified in Section 312300. Do not use excavated pavement, including base and subbase material, as backfill. CLSM may be used as alternate backfill as specified in Section 312300 if approved by the Construction Manager and the Utility.
- G. Backfill and restore the pavement structure and match the surrounding condition before opening roads to traffic. For trenches not in sidewalk or roadways, do not leave trenches open overnight unless protected with caution fence and approved by the Construction Manager.

### 3.02 DUCT LAYOUT

- A. Follow the Verizon Conduit Plans, issued through Verizon, to build the conduit system. Do not deviate from the Verizon Conduit Plans without written approval by the Utility.
- B. Use 11 ¼, 22 ½, 45 and 90-degree bends to make offsets and changes in direction. Use a minimum radius of 3 feet. Ensure that the sum of all bends manhole to manhole, manhole to building, or manhole to pole does not exceed 270 degrees.
- C. Where other utility systems are encountered or are being installed, maintain a 12-inch minimum separation between utility and other system. Maintain a 12-inch minimum separation between utility and structures.

- D. Do not place utility over valves or couplings in other piping systems. Do not construct conduit directly over or under and parallel to other facilities or structures.
- E. Minimum Cover: 36-inch minimum cover over the top ducts in the formation.

### 3.03 DUCT INSTALLATION

- A. Provide additional conduit or connections necessary to bypass obstructions, other utilities, and existing and proposed drainage facilities. Adjust the depth of the conduit bank to pass obstructions, other utilities, and existing and proposed drainage facilities.
- B. Use conduit spacers to provide 1 1/2-inch minimum separation between conduits. Locate spacers not less than 8 feet center-to-center along entire length of ducts. Secure ducts and spacers with polypropylene banding to prevent movement during concrete placement.
- C. Where existing cable is to remain, use split duct.
- D. Place duct couplings side-by-side horizontally but staggered at least 6 inches vertically.
- E. Glue the male end of each joint.
- F. Excavate trenches only for distances to be installed and backfilled during the same day. If approved by the Construction Manager, temporary protection may be used instead of backfilling trenches. Submit shop drawings for temporary protection.
- G. Install risers as directed by the Utility.

### 3.04 CONDUIT ENCASEMENT

- A. Encase all bends in concrete. Make duct encasement monolithic. Consolidate concrete around conduits as directed by the Utility.
- B. Encase each conduit in sand or granular bedding material. Provide at least 12 inches of sand or granular bedding material over the top row of ducts.
- C. Maintain 1 1/2-inch minimum separation between conduits and 3-inch minimum concrete encasement around ducts. Do not exceed the indicated outside dimensions of the duct by more than 1 inch vertically or 4 inches horizontally.

### 3.05 IDENTIFICATION

- A. Bury warning tape approximately 12 inches above all conduit banks.
- B. Align tape and protective plates within 3 inches of the centerline of the conduit bank.

### 3.06 HANDHOLES AND PULL BOXES

- A. Install cast-in-place concrete handholes and pull boxes unless as directed by the Utility.
- B. Provide a 6-inch gravel base for open-bottom handholes.

### 3.07 MANHOLES

- A. Do not enter manholes without first verifying the adequacy of the oxygen supply and the absence of gas.
- B. Do not construct manholes over other Utility's facilities.
- C. Provide a base of 6 inches of compacted coarse aggregate, No. 57 for leveling.
- D. Ensure that the minimum cover over the roof is 2 feet. Ensure that the maximum cover is 3 feet. Do not deviate from the cover requirements without written approval by the Verizon Conduit Engineer.
- E. Dimensions shown on the Verizon Conduit Plans are inside dimensions. Outside dimensions are approximately 1 foot greater than the inside dimensions.
- F. Fit manholes with racks and ladders according to manufacturer's recommendations and Bell System Practices, Section 622-520-100, Issue 7.
- G. Install manholes according to Section 333915. Secure bonding ribbons to a bonding and grounding ring.
- H. Use barrel blocks to construct chimneys; mortar inside and out.
- I. Construct 2 chimneys for each 12'L×6'W structure and one (1) chimney for each 8-foot L × 4-foot W structure.

### 3.08 CASTINGS

- A. Set casting in mortar beds or anchor castings to the masonry before finishing adjoining work with the same final elevation. Ensure that mortar attains a strength of 2500 pounds per square inch before opening to traffic. Set the manhole cover or inlet grate on the casting. If the manhole cover or inlet grate is loose or wobbles, grind to obtain a tight fit.

### 3.09 CASING

- A. Where indicated on the drawings, install split casing to protect existing conduit. Bevel welding surfaces. Weld joints in a minimum of two (2) passes. Weld the entire circumference and length of casing. Weld according to AWS D1.1. Grout the



interstitial spacing after welding joints. Repair hot dipped galvanized coating according to ASTM A780.

### 3.10 ACCEPTANCE TEST

- A. Slug all ducts with a 4-inch slug.
- B. Rod each duct with a pull rope from manhole to manhole, manhole to building, and manhole to utility pole. Extend each rope a minimum of 15 feet into the manhole and coil neatly. Rod one duct of each duct bank with a toneable measuring tape. In duct banks, install the toneable measuring tape in the middle duct of the duct bank. Include the measurement on the as-built plan.
- C. Perform slugging, measuring tape and rope installation in the presence of the Utility.
- D. Repair or replace any portion of the duct through which the slug does not pass at the Contractor's expense.

### 3.11 AS-BUILT

- A. Within five (5) days of completion of each duct bank, submit to the Construction Manager and the Utility three (3) color copies of as-built plans on the Verizon Conduit Plan. Include the following:
  - 1. As-built locations of Verizon manholes and ducts (in red).
  - 2. Wall to wall measurements (in red) of all ducts installed. Confirm measurements with the toneable measuring tape.
  - 3. A cross section of the duct bank formation between structures.
- B. Submit as-built plans to:

Verizon

Centralized Engineering Services – Conduit Design

Attn: Krzysztof (Chris) Ogrodnik

657 Florida Grove Road

Hopelawn, New Jersey 08861

Telephone: 732-874-6189

END OF SECTION 338000

## SECTION 338101 - COMMUNICATIONS UTILITIES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This Section includes materials, installation, and testing of ducts, structures and related materials for communications utilities. The Utility will perform all cable work.

#### 1.02 REFERENCES

- A. ASTM International (ASTM):

- 1. A36: Standard Specification for Carbon Structural Steel.
- 2. A123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- 3. A252: Standard Specification for Welded and Seamless Steel Pipe Piles.
- 4. A780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- 5. C1107: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- 6. D1784: Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
- 7. D2564: Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.

- B. American Welding Society (AWS):

- 1. D1.1: Structural Welding Code - Steel.

- C. Underwriters Laboratories (UL):

- 1. 651: Standard for Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings.

- D. National Electrical Manufacturers Association (NEMA):

- 1. TC 2: Electrical Polyvinyl Chloride (PVC) Conduit.

2. TC 3: Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.

#### 1.03 SUBMITTALS

- A. Submit the following shop drawings in accordance with Section 013300.

1. Nonshrink grout.
2. Pull rope.
3. Epoxy bedding compound.
4. CLSM.
5. Aggregates and bedding.
6. Warning tape.
7. Certificate of compliance for casing pipe.
8. Certification of compliance for conduit and fittings.
9. Conduit cement.
10. Temporary protection for excavations.
11. All temporary works.

#### 1.04 DEFINITIONS

- A. Utility: The company, agency, or other entity that provides service.
- B. utility: The facilities or systems owned by Utility.
- C. duct: The general term for a conduit, either metallic or nonmetallic, for use underground.
- D. duct bank: A group of two (2) or more ducts in a continuous run between two (2) points.

#### 1.05 QUALITY CONTROL

- A. Follow the accepted standards of ANSI, NEMA, IEEE, ASME, NBFU, ASHRAE, and ASTM for construction operations not specified in the Contract.
- B. Comply with the requirements specified in Section 014300.

## 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store ducts with ends capped. Store ducts with supports to prevent bending, warping, and deforming.

## PART 2 - MATERIALS

### 2.01 CONCRETE MATERIALS

- A. Comply with Section 033000 for cast-in-place concrete.

### 2.02 UTILITY STRUCTURES

- A. The Utility will provide utility structures (manholes, junction boxes, pull boxes, vaults, splice boxes, etc.).

### 2.03 CONDUIT

- A. Use 4-inch PVC conduit made from virgin polyvinyl resins conforming to ASTM D1784, Class 12454-B. Ensure that the conduit exceeds all the property requirements including impact strength, chemical resistance, and flammability as listed in UL 651 and NEMA TC 2. Use rigid nonmetallic conduit that is Type II, Schedule 40 suitable for direct burial underground in grass and/or berm areas and Schedule 80 under roadways. Use fittings that are made from high-impact PVC, are the socket type, and are joined to the conduit using PVC solvent cement. Ensure that fittings, including couplings, conform to NEMA TC 3. Use solvent cement to join PVC conduit that is a heavy-bodied cement complying with ASTM D2564 and apply with a natural bristle or nylon brush. Use risers and sweeps that meet the same requirements.
- B. The Utility will provide conduit for services.

### 2.04 PULL ROPE

- A. Use polypropylene rope, minimum 1/2-inch diameter.

### 2.05 CASING

- A. For casing, use ASTM A252 steel pipe with 3/8-inch minimum wall thickness and galvanize according to ASTM A123.

### 2.06 STEEL PLATE

- A. For temporary protection of open excavations, use steel plates conforming to ASTM A36.

2.07 COARSE AGGREGATE

- A. Use coarse aggregate, No. 57 that complies with Section 312300.

2.08 MORTAR

- A. Mix one (1) part cement to two (2) parts fine aggregate. Add water to form the proper consistency. Do not temper mortar or use mortar after it has begun to set.

2.09 GROUT

- A. Nonshrink Grout: Use non-shrink grout of a plastic consistency that conforms to ASTM C1107. Ensure that the grout has a working time of at least 30 minutes from the time the water is added. Match the color of the hardened grout, where visible, to the color of the adjacent hardened concrete. Include 1-day strength tests as part of the performance requirements of ASTM C1107. Ensure that the grout contains no more than 0.05 percent chlorides or 5.0 percent sulfates by weight. Use Sikagrout 212 by Sika Corporation, CG-86 N.E. Construction Grade Grout by W.R. Meadows, Inc., Euclid NS Grout by Euclid Chemical Co., or approved equal.

2.10 CLSM

- A. Comply with Section 312300 for CLSM.

2.11 SAND

- A. Use sand that complies with Section 312300.

2.12 BEDDING

- A. Comply with Section 312300 for granular bedding.

2.13 WARNING TAPE

- A. A 6-inch-wide magnetically detectable warning tape with orange protective polyethylene jacket resistant to alkalis, acids, and other destructive elements continuously imprinted "CAUTION—COMMUNICATIONS CONDUIT BELOW" or "CAUTION—FIBER OPTIC CABLE BELOW", as applicable unless otherwise directed by the Utility.

2.14 CASTINGS

- A. The Utility will provide frames and covers.

## PART 3 - EXECUTION

### 3.01 EXCAVATION AND BACKFILL

- A. Determine the location of surface and subsurface structures and utilities within the work site. Notify the Construction Manager when excavation is required within 10 feet of any existing utility and submit a plan to the Construction Manager for approval, detailing the proposed methods of excavating around the existing utilities, and the proposed methods of protecting and supporting the existing utilities. Protect and support utility facilities encountered. Notify the Construction Manager and the Utility three (3) days before crossing any existing utilities, so that the Utility may send a representative to the work site at the time of excavation or construction.
- B. Comply with the requirements specified in Section 312300. Dewater in accordance with the requirements specified in Section 312319. If it is not possible to maintain the trench free of water as determined by the Construction Manager, lower the water to a level approved by the Construction Manager, excavate an additional 6 inches of the material below the bottom of the pipe, and backfill the undercut with compacted sand. Ensure that trenches are kept free of standing water during the installation. Install conduit on a 6-inch layer of compacted granular bedding material. Comply with the requirements specified in Section 021600. Comply with the requirements specified in Section 315000. Do not use excavated pavement, including base and subbase material, as backfill.
- C. Ensure that conduit is centered in the trench and is held firmly in place while the trench is backfilled. Fill the trench sides around the conduit with granular bedding material to the top of the conduit. If more than one (1) conduit is in the trench, then also center fill. Place additional granular bedding material over the conduit to a depth of 6 inches and compact as specified in Section 312300. Above this depth, backfill with suitable material that is free from rock larger than 2 inches in diameter in lifts not exceeding 6 inches thick, loose measurement, and compact as specified in Section 312300. CLSM may be used as alternate backfill as specified in Section 312300 with the approval of the Utility and the Construction Manager. Restore disturbed areas to original conditions, the conditions specified in the Contract, or as directed by the Construction Manager.
- D. Backfill and restore the pavement structure and match the surrounding condition before opening roads to traffic. The Contractor may use temporary protection instead of backfilling trenches in the roadway and sidewalk. If using temporary protection, submit working drawings for approval. For trenches not in sidewalk or roadways, do not leave trenches open overnight unless protected with caution fence and approved by the Construction Manager.

### 3.02 DUCT LAYOUT

- A. Make 11 1/4, 22 1/2, 45, and 90-degree bends to accomplish offsets or turns.

- B. For risers, use a 45-degree sweep at the base of the pole.
- C. Construct bends with a minimum radius of 3 feet.
- D. Construct conduit with a minimum of bends. Do not install more than two (2) 90-degree bends between utility structures.
- E. Where other utility systems are encountered or are being installed, maintain a 12-inch minimum separation between utility and other system. Maintain a 12-inch minimum separation between utility and structures.
- F. Do not place ducts over valves or couplings in other piping systems. Do not construct conduit directly over or under and parallel to other facilities or structures.
- G. Provide additional conduit or connections necessary to bypass obstructions, other utilities, and existing and proposed drainage facilities. Adjust the depth of the conduit bank to pass obstructions, other utilities, and existing and proposed drainage facilities.

### 3.03 DUCT INSTALLATION

- A. Provide the Construction Manager and the Utility with a detailed schedule of the Work. Notify the Utility in writing at least 15 days before beginning construction of ducts. Perform the Work to minimize adverse impact to the Utility's operations.
- B. Perform work in a manner that is acceptable to the Utility, and in coordination with the Construction Manager. Provide the Utility with access to the Work. Perform all work related to the utility in the presence of the Utility's representative.
- C. Do not use disc grinders to cut conduit. Cut conduit square and true and ensure the ends butt together over their full circumference.
- D. Construct conduit with at least 10-foot sections. The Contractor may use a shorter section to complete a conduit run into a structure. At the end of the workday, cap all conduit that does not terminate in a structure.
- E. Make connections according to the manufacturer's directions using manufacturer-recommended solvents. If connecting nonmetallic conduit to metallic conduit or other existing conduit, use a manufacturer's recommended adapter.
- F. Ensure that conduit used for fiber optic cables meets the minimum bend and radius requirements of the Utility.
- G. The Contractor may cut off damaged ends of conduit, and use the remainder of the undamaged conduit, provided at least a 9-foot length remains. The Construction Manager will not allow other repairs to conduit or fittings. Remove broken, chipped, cracked, or impaired conduit and fittings.

- H. If installing conduit in existing utility structures, cut additional holes in the structure to admit the conduit.
- I. Grout around conduit installed in utility structures.
- J. If unable to install conduit with sufficient grade to provide drainage, install T-drains consisting of standard pipe tee and nipple for conduit at the lowest point of the conduit run.
- K. Install pull rope marked in 1-foot increments for the length of the conduit. Cap and seal the conduit leaving the tape inside.
- L. Place duct couplings side-by-side horizontally but staggered at least 6 inches vertically.
- M. Excavate trenches only for distances to be installed and backfilled during the same day. If approved by the Construction Manager and the Utility, temporary protection may be used instead of backfilling trenches. Submit shop drawings for temporary protection.
- N. Install risers as directed by the Utility.
- O. Install conduit with 3 feet of cover.
- P. Ensure a watertight system.
- Q. Remove and dispose of abandoned ducts, boxes, and appurtenances in direct conflict with the work or as directed by the Utility unless otherwise directed by the Construction Manager or Utility. Cap or plug ducts that are to be abandoned in a manner that is acceptable to the Utility.

### 3.04 IDENTIFICATION

- A. Bury warning tape approximately 18 inches below finish grade.
- B. Align tapes and protective plates within 3 inches of the centerline of the conduit bank.

### 3.05 UTILITY STRUCTURES

- A. Install utility structures as directed by the Utility and as specified in Section 333915.
- B. Provide a base of 6 inches of coarse aggregate No. 57 for all utility structures.
- C. Do not enter utility structures without first verifying the adequacy of the oxygen supply and the absence of gas.
- D. Backfill as specified in Section 312300.



### 3.06 CASTINGS

- A. Set casting in mortar beds or anchor castings to the masonry before finishing adjoining work with the same final elevation. Ensure that mortar attains a strength of 2500 pounds per square inch before opening to traffic. Set the cover on the casting. If the cover is loose or wobbles, grind to obtain a tight fit.

### 3.07 CASING

- A. Where indicated on the Contract Drawings, install split casing to protect existing conduit. Bevel welding surfaces. Weld joints in a minimum of two (2) passes. Weld the entire circumference and length of casing. Weld according to AWS D1.1. Grout the interstitial spacing after welding joints. Repair hot dipped galvanized coating according to ASTM A780.

### 3.08 ACCEPTANCE TEST

- A. Clean conduit runs, including existing conduit to be used. Pull a bristle brush of a diameter approximately 1/4 inch greater than the duct inside diameter through each duct to remove debris.
- B. After cleaning, test each conduit by pulling through a metal ball with a diameter at least 85 percent of the nominal inside diameter of the conduit, to ensure that the conduit is free of obstruction or foreign material.
- C. Install pull rope in each conduit. Install toneable measuring tape in one (1) duct. In duct banks, install the toneable measuring tape in the middle duct of the duct bank.
- D. Repair or replace any portion of the duct through which the mandrel and brush will not pass at the Contractor's expense.

### 3.09 AS-BUILT

- A. Within five (5) days of completion of each duct bank, submit to the Construction Manager and the Utility three (3) color copies of scaled as-built plans. Include the following:
  - 1. Annotations for the locations of items of construction related to each Utility.
  - 2. Show stationing and distance references to the curb line.
  - 3. Depth of conduit at a minimum of 100-foot increments along the line.

END OF SECTION 338101

## SECTION 340113 - OPERATION AND MAINTENANCE OF ROADWAYS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This Section specifies requirements for furnishing and installing a multiple component, wet reflective traffic marking system in reasonably close conformance to the dimensions and lines shown on the Contract Drawings. The wet reflective thermoplastic pavement striping material shall be applied to the road surface in a molten state by mechanical means with surface application of wet reflective bonded core elements and glass beads.

#### 1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. AASHTO M 247: Specification for Glass Beads Used in Pavement Markings.
  - 2. AASHTO T 250: Standard Method of Test for Thermoplastic Traffic Line Material.
- B. American Society for Testing and Materials (ASTM) International:
  - 1. ASTM D 36: Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus).
  - 2. ASTM D 92: Test Method for Flash and Fire Points by Cleveland Open Cup Tester.
  - 3. ASTM D 153: Test Method for Specific Gravity of Pigments.
  - 4. ASTM D 256: Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
  - 5. ASTM D 570: Test Method for Water Absorption of Plastics.
  - 6. ASTM D 1155: Test Method for Roundness of Glass Spheres.
  - 7. ASTM D 1213: Test Method for Crushing Resistance of Glass Spheres.
  - 8. ASTM D 1214: Test Method for Sieve Analysis of Glass Spheres.
  - 9. ASTM D 2240: Test Method for Rubber Property – Durometer Hardness.

10. ASTM D 4960: Test Method for Evaluation of Color for Thermoplastic Traffic Marking Materials.
11. ASTM D 6628: Specification for Color of Pavement Marking Materials.
12. ASTM E 1349: Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional Geometry.
13. ASTM E 1710: Test Measurement for Measurement of Retro reflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer.
14. ASTM E 2176: Test Method for Measuring the Coefficient of Retroreflected Luminance of Pavement Markings in a Standard Condition of Continuous Wetting (RL-Rain).
15. ASTM E 2177: Test Method for Measuring the Coefficient of Retro reflected Luminance (RL) of Pavement Markings in a Standard Condition of Wetness.
16. ASTM E 2832: Test Method for Measuring the Coefficient of Retro reflected Luminance of Pavement Markings in a Standard Condition of Continuous Wetting (RL-2).
17. ASTM G 154: Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Non-Metallic Materials.

C. Federal Highway Administration (FHWA):

1. FP-03 Standard Specifications for the Construction of Roads and Bridges on Federal Highway Projects.
2. MUTCD Manual on Uniform Traffic Control Devices for Streets and Highways.

D. Federal Standards:

1. FED. STD 595B Colors used in Government Procurements.
2. FED. STD 595C Colors used in Government Procurements.

1.03 WARRANTY

- A. The completed marking installation shall be warranted to the DEP against peeling, chipping, flaking, delamination and shoving for a period of one year from the date of issuance of the Certificate of Final Completion. The warranty shall run to the DEP's benefit and shall grant the DEP a direct right of action. The manufacturer shall warrant that the materials provided to the applicator are free from manufacturing defects and

conform to the standards listed here within. The applicator shall warrant that the workmanship has been completed complying to the installation methods here within.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. The thermoplastic material shall be packaged in suitable containers to which it will not adhere during shipment or storage. Each container shall be sealed at the point of manufacture and plainly marked with the color, basic resin type, wet reflective elements and glass bead types included in the mix, manufacturer's name, batch number and date of manufacture, and a statement stating the contents meet the requirements of this Section. Each batch manufactured shall have its own separate number. The label shall warn the user that the material shall not be heated in excess of 440 degrees F.
- B. The wet reflective elements and glass spheres for drop-on application shall be shipped in strong moisture resistant bags. Each bag shall be marked with the name and address of the manufacturer, the name and weight of the material, a statement confirming that the contents meet the requirements of this Section, date of manufacture, and batch number.
- C. Primer shall be shipped in pails, drums or other strong substantial containers. Each container shall be plainly marked with the brand name of the product, name and address of the manufacturer, date of manufacture, quantity of material, date of expiration or shelf life, and appropriate hazard warnings. Primers shall be shipped to the construction site with instructions for use affixed to each container.

#### 1.05 SUBMITTALS

- A. Submit the following in accordance with the requirements of General Conditions Article 4.7:
  - 1. Product Data: Detailed catalog cuts and manufacturer's specifications of thermoplastic materials, reflective glass spheres and primer.
  - 2. Manufacturer Test Reports: Test data demonstrating conformance to the requirements of this Section.
  - 3. Manuals, Warranties/Guarantees: Warranty labels.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. The thermoplastic material shall be applied by methods as shown on the Contract Drawings and be immediately followed by application of wet reflective bonded core elements and glass beads. Upon cooling to normal pavement temperatures, the resulting

traffic marking shall produce a pavement marking of specified thickness and of the width and dimensions shown on the Contract Drawings that is retroreflective in dry and continuous wet conditions and capable of resisting deformation by traffic.

## 2.02 MATERIALS

- A. The thermoplastic material shall be homogeneously composed of pigment, binder, glass beads and wet reflective bonded core elements and shall be free of skins, dirt and foreign debris.
- B. The binder shall be based on maleic modified rosin ester resin and high boiling point plasticizer. The binder shall be a minimum of 50 percent maleic modified rosin ester.
- C. The pigment beads and binder shall be well dispersed in the resin.
- D. The reflective media shall be made up of wet reflective bonded core elements and glass beads and shall conform to the following requirements:
  - 1. Glass Beads: Index of refraction of 1.5 when tested by immersion method at 77 degrees F. The glass beads shall have a minimum of 70 percent rounds as measured in accordance with ASTM D 1155. The surface of the glass beads shall be free of pits and scratches. The glass beads retained on the # 40 U.S. Mesh sieve (425 microns) shall have minimum crush strength of 30 pounds in accordance with ASTM D 1213.
  - 2. Glass Beads (Pre-mix): Conforming to AASHTO M 247 (Type I) and FP-03 (Type III) and shall not require surface treatment.
  - 3. Glass Beads (Surface-drop): Glass spheres in the size range of Type III shall be surface treated with an adhesion coating. Bead size distribution shall conform to the requirements specified in Table 1 herein.
  - 4. Gradation of the Second Surface Drop of Glass Bead
  - 5. The gradation of the second drop shall meet or be within the limits shown in Table 1 herein.

Table 1. Gradation of the Second Surface Drop of Glass Bead

Common Bead Types with Liquid Pavement Markings Bead Gradations – Mass Percent Passing (ASTM D1214)			
US Mesh	Micron	AASHTO M247 Type I	FP-03 718.19 Type III
12	1700	-	100
14	1410	-	95-100
16	1180	100	80-95

18	1000	-	10-40
20	850	95-100	0-5
25	710	-	0-2
30	600	75-95	-
40	425	-	-

- E. Wet Reflective Bonded Core Elements (Pre-mix and First Surface-drop): Bonded core reflective elements shall contain either clear or yellow tinted microcrystalline ceramic beads bonded to the core. “Dry-performing” microcrystalline ceramic beads bonded to the core shall have a minimum index of refraction of 1.70 when tested using the liquid oil immersion method specified herein. “Wet performing” microcrystalline ceramic beads bonded to the core shall have a minimum index of refraction of 2.30 when tested using the liquid oil immersion method indicated herein.
1. Bead Testing Procedure: Refractive index of beads by liquid oil immersion (Becke Method). Obtain from the bead Manufacturer an independent testing lab report for the glass beads meeting the latest AASHTO M 247.
    - a. The size and quality of the beads shall be such that the performance requirements for the retroreflective pliant polymer (actual thermoplastic) are met.
    - b. Element size distribution shall conform to the requirements specified in Table 2 below:

Table 2: Element Size

Element Gradations Mass Percent Passing (ASTM D1214)		
U.S. Mesh	Micron	“S” Series Elements
12	1700	85-100
14	1410	70-96
16	1180	50-90
18	1000	5-60
20	850	0-25
30	600	0-7

- c. Surface Treatment: The bonded core elements shall be surface treated to optimize embedment and adhesion to the high build waterborne binder.
- F. Primer for use on both bituminous and Portland cement concretes shall be of the type recommended by the manufacturer of the thermoplastic material and shall dry tack-free in under five (5) minutes.

## 2.03 THERMOPLASTIC MATERIALS – GENERAL

- A. Use thermoplastic material with the following characteristics:
1. Does not deteriorate upon contact with pavement materials, petroleum droppings from traffic, and chemicals such as sodium chloride or calcium chloride that are used to prevent formation of ice on roadways or streets.
  2. Does not scorch or discolor if kept at the manufacturer's recommended application temperature for any length of time or deteriorate if kept at the manufacturers recommended application temperature or at minimum 400 degrees F, for four (4) hours.
  3. Has a temperature versus viscosity characteristic that remains constant from batch to batch through three to four (3-4) re-heat cycles.
- B. Thermoplastic material shall be supplied in either granular or block form.

## 2.04 THERMOPLASTIC COMPOSITION

- A. Composition: Pigment, glass beads, wet reflective bonded core elements and binder shall be uniformly dispersed in the resin. The thermoplastic material shall comply with requirements specified in Table 3 herein.

Table 3 - Composition

Wet Reflective Thermoplastic with Bonded Core Elements		
Component	Weight Percent	
	White	Yellow
Binder	20% minimum	20% minimum
Type I Glass Spheres	20% minimum	20% minimum
Type III Glass Spheres	15% minimum	15% minimum
Bonded Core Elements (color matched component)	5% minimum	None
Bonded Core Elements (color matched component)	None	5% minimum
TI02, Type II Rutile	10% minimum	As needed
Pigment Yellow 83 (Lead-Free)	None	See Note 1
Calcium Carbonate and Intert Filler (200 mesh sieve)	30% Minimum	See Note 1

Note 1- The amount of yellow pigment, calcium carbonate and inert fillers shall be at the option of the manufacturer, providing all other requirements of this Section are met.

- B. The thermoplastic material shall be produced without the use of lead chromate or arsenic.
- C. The thermoplastic material shall contain glass beads as specified in Paragraph 2.02.D.
- D. The thermoplastic material shall contain wet reflective bonded core elements (microcrystalline ceramic beads) as specified in Paragraph 2.02.E.

- E. The thermoplastic material shall be formulated and manufactured from materials specifically compounded for traffic markings.
- F. The pavement marking shall be homogenous with even distribution of pigments, beads and wet reflective bonded core elements throughout the plastic matrix.
- G. The pavement marking shall be uniform throughout the plastic matrix.
- H. The pavement marking shall resist delamination caused by cold weather.

## 2.05 PHYSICAL CHARACTERISTICS OF THERMOPLASTIC

- A. Storage Life: The thermoplastic material shall melt uniformly with no evidence of skins or un-melted particles for a period of one year from the date of manufacture.
- B. Yellowness Index: The thermoplastic material shall comply with ASTM D 4960 and shall meet yellowness index measurements in accordance with ASTM E 1349 using a 2-degree observer and D 65 illuminant. The yellowness index for the white thermoplastic shall not exceed 15.
- C. Set to Bear Traffic: When applied at a temperature range of 412.5 degrees F plus or minus 12.5 degrees F and a thickness of 60 mils to 185 mils (1/16 inches to 3/16 inches) the thermoplastic material shall set to bear traffic in not more than 2 minutes when the air and road temperature is 50 plus or minus 3 degrees F and not more than ten minutes when the air and road temperature is 90 plus or minus 3 degrees F.
- D. Cracking Resistance at Low Temperature: After heating the thermoplastic for 240 plus or minus 5 minutes at 425 plus or minus 3 degrees F and then applying to concrete blocks, and cooling to 15 plus or minus 3.6 degrees F the material shall show no cracks in accordance with AASHTO T 250 Section 12.
- E. Impact Resistance: After heating the thermoplastic for 240 plus or minus five (5) minutes at 425 plus or minus 3 degrees F and making test specimens and testing in accordance with ASTM D 256, Method A (un-notched), the impact resistance shall be a minimum of 8.8 inch-lbs (1.0 Joules) in accordance with AASHTO T 250 Section 14.
- F. Softening Point: After heating the thermoplastic for 240 plus or minus five (5) minutes at 425 plus or minus 3 degrees F and testing in accordance with ASTM D 36, the materials shall have a softening point of 215 plus or minus 15 degrees F.
- G. Flowability: After heating the thermoplastic for 240 plus or minus 5 minutes at 425 plus or minus 3 degrees F and testing for flowability, the white thermoplastic shall have a maximum residue of 18 percent and the yellow thermoplastic shall have a maximum residue of 21 percent in accordance with AASHTO T 250 Section 11.



- H. Flowability with Extended Heating: After heating the thermoplastic for eight (8) hours plus or minus 0.5 hours at 425 plus or minus 3 degrees F, with stirring the last six (6) hours, and testing for flowability, the thermoplastic shall have a maximum residue of 28 percent in accordance with AASHTO T 250 Section 17.
- I. Flash Point: When tested in accordance with ASTM D 92, the thermoplastic shall have a flash point not less than 475 degrees F.
- J. Indentation Resistance: The thermoplastic material shall comply with ASTM D 2240 Shore Durometer, A2. Durometer and panel at 110 degrees F with a 4.4-pound load applied. Measurement shall be taken after 15 seconds. The thermoplastic shall have a minimum value of 40 and a maximum value of 75. Ensure that the intermix is thoroughly mixed and uniform in the test samples to avoid erratic measurement values.
  - 1. During measurement of wet reflective thermoplastic containing large elements or glass beads, the durometer probe may impact a large bead or large element during the test resulting in a much higher than expected result. If the value is unreasonably high, retest in another location on the sample at no additional cost to the NJDEP.

## 2.06 CHARACTERISTICS OF FINISHED PAVEMENT MARKING

- A. Retroreflectance: Initial retroreflectance shall be as specified in Table 4 herein.

Table 4: Retroreflectance		
Average Initial Retroreflectivity*		
Average values over many applications		
(mcd (ft-2) (fc-1))		
	White	Yellow
Dry (ASTM E1710)	500	405
Wet recovery (ASTM E2177)	500	405
Wet Continuous (ASTM E2176)	180	150

\*Note : Average initial retroreflectivity values represent average performance for smooth pavement surfaces. Actual test results may vary due to differences in pavement type and surface roughness. Increased element drop rate may be necessary to compensate for increased surface area characteristics of rough pavement surfaces.

- B. The initial retroreflectance of a single installation shall be the average value determined in accordance with the measurement and sampling procedures specified in ASTM E

1710, using a 98.4 foot retroreflector. RL shall be expressed in units of millicandelas per square foot per foot-candle ( $\text{mcd}(\text{ft}^{-2})(\text{fc}^{-1})$ ).

- C. Measure initial retroreflective performance of pavement marking no sooner than four (4) days after application.
- D. Wet retroreflectance values measured under a “condition of continuous wetting” (simulated rain) shall be in accordance with ASTM E2832, and to reduce variability between measurements, the test method shall be performed in a controlled laboratory environment while the marking is positioned with a 3 to 5 degree lateral slope. Measurements shall be reported as the average of the minimum of three locations. The Contractor shall apply samples of the completed finished product to flat panels during application and deliver to the lab for testing.
- E. On the Road Track-Free Time
  - 1. When applied at a temperature range of 412.5 plus or minus 12.5 degrees F and a thickness of 60 mils to 185 mils (1/16 inches to 3/16 inches) the material shall set to bear traffic in not more than 2 minutes when the air and road temperature is 50 plus or minus 3 degrees F and not more than 10 minutes when the air and road temperature is 90 plus or minus 3 degrees F.
  - 2. Track Free shall be considered as the condition where no visual deposition of the traffic marking to the pavement surface is observed when viewed from a distance of 50 feet, after a free-rolling traveling vehicle’s tires have passed over the line.
- F. Color After Application: The color of the applied white and yellow pavement markings (with elements and beads) shall conform to the daytime and nighttime color requirements in ASTM D 6628.
  - 1. White Reflectance: Daylight reflectance (Cap Y) measured at 45 and 0 degrees shall be 35 percent minimum.
  - 2. White Color: The color shall reasonably match FED. STD. 595B, color 17886 and shall be within the following chromaticity limits “color box” defined by plotting the following four (4) (x,y) pairs on a C.I.E. 1931 chromaticity diagram:
    - (x1,y1) = (0.355, 0.355)
    - (x2,y2) = (0.305, 0.305)
    - (x3,y3) = (0.285, 0.325)
    - (x4,y4) = (0.335, 0.375)
  - 3. Yellow Reflectance: Daylight reflectance (Cap Y) measured at 45 and 0 degrees shall be 25 percent minimum.

4. Yellow Color: The color shall reasonably match FED. STD. 595B, color 13538 and shall be within the following chromaticity limits “color box” defined by plotting the following four (4) (x,y) pairs on a C.I.E. 1931 chromaticity diagram:  
 $(x_1, y_1) = (0.560, 0.440)$   
 $(x_2, y_2) = (0.490, 0.510)$   
 $(x_3, y_3) = (0.420, 0.440)$   
 $(x_4, y_4) = (0.460, 0.400)$
- G. The thermoplastic material shall resist smearing or spreading under normal traffic conditions below 120 degrees F.
- H. The finished pavement marking shall maintain its original dimensions and placement.
- I. The finished pavement marking shall be free from tack below 120 degrees F and shall not be slippery when wet.

### PART 3 - EXECUTION

#### 3.01 APPLICATION EQUIPMENT

- A. Equipment shall be capable of providing uniform heating of thermoplastic materials to temperatures exceeding 390 degrees F.
- B. Equipment shall be capable of mixing and agitating the molten thermoplastic to provide a homogenous mixture and prevent settling of intermixed beads and wet reflective bonded core elements.
- C. Equipment shall be capable of maintaining the thermoplastic material in a plastic state in all mixing and conveying parts, including the line dispensing device until applied.
- D. Equipment shall be capable of producing varying widths and thickness of thermoplastic pavement markings.
- E. The equipment shall be a mobile, truck mounted and self-contained pavement marking machine or a walk behind hand cart applicator with an accompanying mobile pre-meter.
- F. Mobile truck mounted applicators shall be capable of traveling at a uniform, predetermined speed over variable road grades to produce uniform application of thermoplastic material, following straight lines and making normal curves in a true arc. The equipment shall be capable of air-blasting the pavement, applying the thermoplastic material and immediately dropping the wet reflective bonded core elements and then glass beads in a single pass at speeds up to 8 mph.
- G. Hand cart applicators shall be capable of uniform application of pavement marking material at walking speeds, following straight lines and making tight turns symbols and

legends. Mobile equipment shall be available to air blast the areas immediately prior to hand cart application of thermoplastic. The hand cart shall be capable of applying the thermoplastic material and immediately dropping the wet reflective bonded core elements and then glass beads in a single pass at walking speeds.

- H. The equipment shall be capable of application of wet reflective bonded core elements and then glass beads to the surface of the pavement marking by double drop application. The element dispenser for the first drop, wet reflective bonded core elements, shall be attached to the pavement marking machine in such a manner that the elements are dispensed closely behind the thermoplastic application device (ribbon gun, screed and spray gun). The glass bead dispenser for the second drop shall be attached to the pavement marking machine in such a manner that the beads are dispensed immediately after the first drop (wet reflective bonded core elements).
- I. The applicator for the wet reflective bonded core elements and glass beads shall be equipped with an automatic cut-off control that is synchronized with the cut-off of the thermoplastic material.
  - 1. The applicator for the wet reflective bonded core elements and glass beads shall be capable of delivering a uniform drop rate at variable thermoplastic application speeds.
  - 2. The wet reflective bonded core elements and glass spheres shall be applied such that they appear uniform on the entire pavement marking.
  - 3. The bonded core elements and glass beads shall be applied such that they are embedded 50 percent to 60 percent for adhesion to the thermoplastic marking.
  - 4. The melt kettle shall be equipped with an automatic temperature control device and thermometer to thermostatically control the temperature and prevent overheating of the thermoplastic material. It shall be equipped with sufficient agitation to prevent settling of the beads and elements.
  - 5. The applicator shall meet the requirements of the National Fire Protection Association and the State of New Jersey for work performed in New Jersey.

### 3.02 INSTALLATION

#### A. General

- 1. Apply pavement markings at the locations and in accordance with the patterns and dimensions shown on the Contract Drawings and the FHWA's "MUTCD".
- 2. Before commencing any pavement marking Work, submit a schedule of operations to the Construction Manager for approval.

3. When pavement markings are applied under traffic conditions, provide all necessary qualified personnel, flags, markers and signs to maintain and protect traffic and to protect marking operations and the applied markings until thoroughly set.
4. Apply pavement markings in the general direction of traffic. Applications against the direction of traffic flow will not be permitted.
5. Remove all tracking marks, spilled thermoplastic and thermoplastic applied in unauthorized areas, to the satisfaction of the Construction Manager.
6. When necessary, establish marking alignment points at 25-foot intervals throughout the length of the marking area, or as otherwise approved by the Construction Manager.
7. Apply thermoplastic pavement markings to dry pavement surfaces. At the time of installation, the pavement surface temperature shall be a minimum of 55 degrees F, the ambient temperature shall be a minimum of 49 degrees F and rising, and the relative humidity shall be less than 85 percent.

B. Surface Cleaning and Preparation of Pavement

1. Clean the pavement surfaces to be marked to the satisfaction of the Construction Manager immediately prior to priming and marking application. Remove existing markings that show obvious signs of degradation or loss of adhesion. Perform surface cleaning and preparation only in the area of the thermoplastic markings' application.
2. At the time of application of the thermoplastic material, ensure that all pavement surfaces are dry, free of moisture, free of oil, dirt, dust, grease and similar foreign materials and that the primer is tack-free. All curing compounds used on newly placed Portland cement concrete surfaces shall be removed.
3. On newly placed concrete pavements, cleaning operations shall not begin until sufficient cure time has elapsed after the placement of concrete. Newly placed concrete pavements shall be cleaned by either sandblasting or water blasting. When water blasting is performed, pavement markings shall be applied no sooner than 24 hours after the blasting has been completed. The extent of the blasting Work shall be to clean and prepare the concrete surface such that:
  - a. There is no visible evidence of curing compound on the peaks of the textured concrete surface.
  - b. There are no heavy puddled deposits of curing compound in the valleys of the textured concrete surface.

- c. All remaining curing compound is intact; all loose and flaking material is removed.
  - d. The peaks of the textured pavement surface are rounded in profile and free of sharp edges and irregularities.
4. Restrictions - If the pavement surface contains heavy tines or very large aggregate used in open grade friction course or stone matrix asphalt mixes perform additional surface preparation prior to application of thermoplastic pavement markings at no additional cost to the DEP.

C. Application

- 1. Apply a primer to all pavement surfaces (new and existing) to be marked. Apply primer to bituminous concrete and Portland cement concrete pavements, as applicable, at the rates and in accordance with the recommendations of the manufacturer of the thermoplastic material. The primer shall dry tack-free in less than five (5) minutes.
- 2. Thickness: Thermoplastic material shall typically be applied to the pavement surface by the extrusion method (when shown on the Contract Drawings, pavement marking re-capping may be applied by utilizing the spray method). Place thermoplastic markings in accordance with the following requirements:
  - a. The installation method utilized shall be capable of installing lines between 3 to 8 inches in width and of generally uniform cross Section.
  - b. The standard line thickness shall be not less than 125 mils (1/8 inch) or more than 185 mils (3/16 inch).
  - c. The standard re-capping line thickness shall be a minimum thickness of 60 mils (1/16 inch).
- 3. Reflective Media Application: The specified reflective media shall be dropped at rates to achieve the following coating weights per Tables 5 and 6 herein.

Table 5. Element Application Rates

Units	Wet Reflective Bonded Core Elements
Pounds per 4-inch linear foot	0.022
Pounds per 100 sq. ft.	6.6

Table 6. Glass Bead Application Rates

Units	Type III Bead
Pounds per 4-inch linear foot	0.026
Pounds per 100 sq. ft.	7.8

4. Adhesion: Ensure that the thermoplastic marking is well adhered to the road surface, and that the glass spheres and wet reflective bonded core elements are well adhered to the binder with 50 percent to 60 percent embedment.
5. Retroreflectivity: Ensure that the reflectorized thermoplastic pavement marking meets the performance criteria in Table 4 herein.
6. Upon cooling to ambient pavement temperature, the resultant marking shall be an adherent reflectorized strip of a thickness not less than 1/16 inch nor more than 3/16 inch, and of the width and dimensions shown on the Contract Drawings, capable of resisting deformation by traffic. The exposed marking surface shall be smooth, with no pockmarks, blisters or other surface blemishes evidencing improper application, improper temperature or equipment malfunction. The pavement markings shall show a smooth alignment with continuous uniformity of the required dimensions and widths.

### 3.03 INSPECTION AND TESTING

- A. At any time throughout the duration of the Contract, the Contractor shall provide unrestricted access to his application equipment for inspection by the Construction Manager, or a manufacturer's materials representative.
- B. During the application of the thermoplastic marking, the Construction Manager may request the following tests to verify application to the parameters required in this Section:
  1. Thickness: At appropriate locations along the site installation location, the Construction Manager may obtain a sample of the molten thermoplastic and place it onto a test panel of aluminum for the purposes of checking proper film thickness. The Contractor shall apply the thermoplastic without bonded core elements or glass spheres onto the test panel. Upon hardening, the thickness will be verified by the Construction Manager to meet the requirements of the Contract Drawings. The Contractor shall provide to the Construction Manager the application speed of the equipment during the time of the sample.
  2. Reflective Media: When required by the Construction Manager, the Contractor shall demonstrate to the Construction Manager the proper calibration of wet reflective bonded core elements and glass beads and compare it to manufacturer's requirements. The demonstration may be conducted by one of the following two methods.
    - a. Pressurized Delivery Systems: The calibration shall be conducted with a graduated cylinder or other similar device. Wet reflective bonded core

elements or glass beads shall be collected from the reflective element and glass bead guns for a timed period. The volume of the reflective elements and glass beads shall be measured and compared with the manufacturer's requirements.

- b. Non-pressurized Delivery Systems: The calibration shall be conducted with catch pans of known geometry, sufficiently wide to capture the width of the drop. The pans shall be positioned in the marking application path on the pavement surface. Then, separately for each glass spheres and wet reflective bonded core elements, with the thermoplastic applicator off, the applicator shall be passed over the catch pan at the appropriate speed and drop rate. The catch shall then be weighed and the drop area shall be calculated from the length of the pan and the width of the drop.  $\text{Drop rate} = \text{drop capture weight} / ((\text{drop width}) \times (\text{drop length}))$ .
  3. Application Panel: The Contractor shall furnish to the Construction Manager at least one representative sample coated onto an aluminum panel or equivalent. This panel will serve as a record of the Work output and application conditions and settings.
- C. At any time throughout the duration of the Contract, the Construction Manager may request the following tests to verify application to the parameters required in this Section.
1. Specific Gravity: Test thermoplastic according to ASTM D 153. The thermoplastic sample shall have a specific gravity of a minimum of no less than 1.9 or a maximum of no more than 2.3.
  2. Water Absorption: Test thermoplastic according to ASTM D 570. The thermoplastic sample shall have a maximum of 0.5 percent water absorption.
  3. Ultra Violet Light and Condensate Exposure: Make samples of thermoplastic and test according to ASTM G 154. After 300 hours exposure the thermoplastic samples shall meet the requirements specified in Paragraph 2.06.F.

END OF SECTION 340113



## SECTION 344116 - TRAFFIC CONTROL EQUIPMENT

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This Section specifies requirements for the following:
  - 1. Plywood sign panels for use in temporary pedestrian, bicycle, and vehicular guide, warning and regulatory roadway signs. Sign type usage is shown on the Contract Drawings.
  - 2. Wood sign posts and footings for sign panel side-of-road installations.

#### 1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. LTS-5-I2: Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals.
  - 2. MASH: Manual for Assessing Safety Hardware.
  - 3. AASHTO M 133: Specification for Preservatives and Pressure Treatment Processes for Timber.
  - 4. AASHTO M 168: Specification for Wood Products.
- B. American National Standards Institute (ANSI) / American Society of Mechanical Engineers (ASME):
  - 1. ANSI/ASME B18.2.1: Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series).
  - 2. ANSI/ASME B18.2.2: Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series).
  - 3. ANSI/ASME B1.13: Metric Screw Threads: M Profile.
- C. American Society for Testing and Materials (ASTM International):
  - 1. ASTM A 153: Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
  - 2. ASTM A 325: Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

3. ASTM A 490: Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.
4. ASTM B 209: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. ASTM B 211: Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
6. ASTM B 221: Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
7. ASTM D 245: Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber.
8. ASTM D 2555: Practice for Establishing Clear Wood Strength Values.
9. ASTM D 4956: Specification for Retroreflective Sheeting for Traffic Control.

D. American Traffic Safety Services Association (ATSSA):

1. Guidelines: Quality Guidelines for Temporary Traffic Control Devices and Features.

E. American Wood Protection Association (AWPA):

1. AWP U1: Use Category System: User Specification for Treated Wood.

F. Federal Highway Administration (FHWA):

1. MUTCD: Manual on Uniform Traffic Control Devices for Streets and Highways.
2. SHS: Standard Highway Signs Including Pavement Markings and Standard Alphabets.

G. US Department of Commerce (DOC) and National Institute of Standards and Technology (NIST):

1. Voluntary Product: Structural Plywood.
2. Standard PS 1.

### 1.03 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Design of signs and sign structure shall provide sufficient strength to withstand the wind loading generated by a basic wind speed of 120 miles per hour as per AASHTO LTS-5-I2.

- B. Sign supports and framing shall be designed to meet the required wind loading. Posts shall be designed for direct embedment in the soil by excavation and backfill, or by driving with hand or mechanical equipment.

#### 1.04 QUALITY ASSURANCE

- A. Each plywood sheet shall be grade marked and certified in accordance with NIST PS 1.
- B. Temporary signs will be evaluated by the Construction Manager for acceptability in accordance with ATSSA's Quality Guidelines for Temporary Traffic Control Devices and Features.
- C. Temporary sign supports shall conform to the requirements of the FHWA's MUTCD and AASHTO's MASH.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. All sign components and materials shall be transported and handled in a manner that shall cause no permanent deformation, injury or damage. Store sign components and materials above ground.
- B. When not in service, temporary signs and portable temporary sign supports shall be stored in such a manner and location that they do not interfere with or present a hazard to vehicular, bicycle or pedestrian traffic. No signs or supports shall be stored on the traveled way or sidewalk during non-working hours. Portable temporary sign supports stored on the roadside within the roadside recovery area, or any area that may be traversable by an errant vehicle, shall be laid flat such that no part of the support is more than 4 inches above the ground. No sign supports shall be leaned against or overhang the traffic side of traffic barriers. The faces of stored signs shall not be visible to traffic in any direction, regardless of the orientation of the sign.

#### 1.06 SUBMITTALS

- A. Shop Drawings: Submit shop drawings in accordance with General Conditions Article 4.7.
  - 1. Detailed sign face layout for all sign panels showing letter height, width, colors, spacing between letters, words, symbols and lines, border width, symbols details, and overall dimensions of the sign panels.
    - a. Shop drawings of sign panel and posts showing the sizes of the members and their connection details. Also show the total length of the posts for each sign and show an elevation view of each of the signs as erected with vertical clearance below the lowest sign panel to adjacent roadway and other relevant dimensions.

- B. Catalog Cuts: Catalog cuts of all materials used for sign faces.
- C. Calculations: Prior to fabrication, submit computation for the design of sign panels and supports, as required in Paragraph 1.03 Design and Performance Requirements, signed by a Professional Engineer licensed in the State of New Jersey.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Plywood Sign Panels
  - 1. Plywood sign panels shall be flat and shall not be bowed or warped and shall conform to NIST PS 1.
  - 2. Plywood panels for temporary signs shall be exterior-type plywood with a medium density overlay, 5-ply and A-C grade or better.
  - 3. Thickness of plywood sign panels and plywood battens shall be not less than 1/2 inch. Backs and edges of temporary plywood sign panels shall be painted white.
- B. Retroreflective Sheeting
  - 1. Retroreflective sheeting shall be colored, flexible, weather resistant and shall have a smooth outer surface. If the retroreflective sheeting contains spherical lens elements, the lens elements shall be embedded within a transparent plastic, to produce a smooth, flat outer surface. All sheeting shall be of uniform appearance, free from ragged edges, cracks, scales, blisters or other defects.
  - 2. Prepare the surface of the sign panels for the application of the retroreflective sheeting in strict accordance with the recommendations of the manufacturer of the retroreflective sheeting.
  - 3. Retroreflective sheeting shall be one of the following ASTM D 4956 types, as shown on the Contract Drawings:
    - a. ASTM Type I: A medium-intensity reflective sheeting also known as engineer grade. Use for pedestrian signs, except where high reflectivity is required, as shown on the Contract Drawings.
    - b. ASTM Type III: A high-intensity reflective sheeting also known as high intensity. Use for pedestrian signs, temporary delineators and other work zone devices with the exception of vehicular and bicycle construction signs.

- c. ASTM Type IX: A very-high-intensity retroreflective sheeting having highest retroreflective characteristics at short road distances. Use for bicycle and pedestrian signs, temporary vehicle construction signs, delineators, construction zone devices and vertical panels.
  - d. ASTM Type XI: A full cube prismatic retroreflective sheeting with highest level of retroreflective characteristics. Use for permanent vehicular, pedestrian and bicycle signs.
4. Comply with sign design standards in the FHWA's MUTCD, including standards for retroreflectivity, illumination and color.

C. Wood Sign Posts

- 1. Signs posts shall be constructed and installed in accordance with the FHWA's MUTCD and AASHTO's LTS-5-I2.
- 2. Wood sign posts shall be dry, No. 1 grade, S4S, Douglas Fir, Southern or Ponderosa Pine, Hemlock, Spruce or Western Larch conforming to the applicable requirements of AASHTO M 168. The posts shall be straight and true, free of splits, knots and warps or of steel or aluminum components.
- 3. All wooden posts shall be treated in accordance with the applicable requirements of AASHTO M 133 and AWWA U1.
- 4. Posts shall be surfaced four sides, have a uniform cross-section, and shall be sized not less than 4 inches by 4 inches. The post shall be graded for the following stress grades in accordance with the grading rules developed from ASTM D 245 for the selected stress grades. Using the clear wood properties of ASTM D 2555, the bending stress of the post shall be not less than 1200 psi.
- 5. All 4 by 6-inch posts shall have two (2) 1-1/2 inch diameter breakaway holes drilled through the center of the post parallel to the sign face 4 inches and 18 inches above grade and filled with flexible sealant. All 6 by 8-inch posts shall have two (2) 3-inch diameter breakaway holes drilled through the center of the post parallel to the sign face 4 inches and 18 inches above grade and filled with flexible sealant.

D. Stiffeners, Brackets and Miscellaneous Hardware

- 1. Horizontal and vertical sign panel stiffeners (Z bars) and panel brackets shall be fabricated of aluminum Alloy 6061-T6 conforming to ASTM B 221.
- 2. Other miscellaneous aluminum hardware including bolts, nuts, washers, screws, rivets, pull-type lockbolts and serrated or knob stem blind rivets shall be fabricated to meet the requirements of ASTM B 209 and ASTM B 211 for Alloy

2024-T4 with No. 205 Alumilite Finish. Ensure that bolt heads and nuts are American National Standard, Regular Series, hexagonal, semi-finished, conforming to ANSI/ASME B18.2.1 and B18.2.2, and that threads are American National Standard, Coarse Series, Class 2 Fit, conforming to ANSI/ASME B1.13. Finish bolts with an anodic coating thickness of not less than 0.0002 inches and chromate seal. Use washers conforming to ASTM B 209, Alloy 2024-T3.

3. High strength steel bolts, nuts and washers used in steel-to-steel connections shall conform to ASTM A 325 or ASTM A 490. High-strength bolts, nuts and washers shall be galvanized in accordance with ASTM A 153. Steel bolts, nuts and washers used in contact with aluminum shall be coated with cadmium or a cadmium/tin combination. All cadmium and cadmium/tin coatings shall be given a chromate treatment in or with an aqueous solution of salts, acids or both to produce a protective chromate coating.

E. Footings

1. Soil bearing plates shall be attached at the bottom of the post as required in Paragraph 1.03 Design and Performance Requirements, or as otherwise shown on the Contract Drawings.
2. Breakaway posts, if required, shall be as shown on the Contract Drawings. Breakaway posts and footings shall be designed in accordance with the requirements of Paragraph 1.03 Design and Performance Requirements, as described in Paragraph 2.01.C.4, or as otherwise shown on the Contract Drawings.
3. Concrete footings, if required by Paragraph 1.03 Design and Performance Requirements, shall conform to Paragraph 2.01.F Concrete.
4. Portable sign supports.

F. Concrete

1. All concrete footings for sign construction, as required by Paragraph 1.03 Design and Performance Requirements, shall conform to the requirements of Division 3 Section on concrete.

2.02 CONSTRUCTION FEATURES

- A. Sign face text, symbol and border layouts shall be as shown on the Contract Drawings and shall conform to the requirements of the FHWA's MUTCD.
- B. Sign characters shall be as shown on the Contract Drawings, or if not shown, shall be in accordance with the FHWA's SHS, and shall include letters, numerals, symbols and borders.

- C. Sign corner and border radii shall be as shown in the FHWA's SHS. If not shown in the SHS, sign corner and border radii shall be approximately one-eighth of the height of the sign but shall not exceed 12 inches. Sign borders shall be as shown in the FHWA's SHS. If not shown in the SHS, sign borders shall be of the same type character as the legend and shall be approximately the same width as the stroke width of the major lettering on the sign.

## 2.03 FABRICATION

- A. Holes shall be drilled; cut edges shall be smooth and true, and free from burrs or ragged breaks. All fabrication except for cutting the lower ends of embedded posts shall be done in the shop. The plywood panels shall be clean, dry, and free from oils, dust, grit or any other contaminants that would adversely affect the adhesion of the retroreflective sheeting.
- B. In preparing sign panels for retroreflective sheeting, the entire Grade A surface to be covered shall be wiped down with a tack cloth to remove all saw dust and sanding residue.
- C. All panel and batten surfaces to be glued shall be slightly roughened and then glued with waterproof adhesive prior to assembly.
- D. After panel preparation, the edges and back or rear surface of all sign panels and battens shall be painted with two (2) coats of approved white exterior paint.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Erect and remove signs as shown on the Contract Drawings, or as ordered by the Construction Manager, and in such a manner that the traveling public is informed and protected at all times.
- B. Side-of-road ground mounted signs shall normally be erected so that the sign face is truly vertical to the profile line, and so the intersection angle measured between the sign face and the centerline of the travel lane which the sign serves is 93 degrees. Where lanes divide or curve, sign faces shall be oriented to be most effective both day and night, and to avoid the possibility of specular reflection.
- C. Wood sign posts for side-of-road mounting shall be embedded in the soil to the depth in accordance with the design requirements in Paragraph 1.03 Design and Performance Requirements. The hole for the embedment shall be excavated using a manual post-hole digger or appropriately sized power-driven auger. After the hole has been excavated, align the post to the sign face direction, hold vertical in the hole, and tamp suitable excavated material in the annular space. Holes resulting from sign post

removals shall be filled with suitable material to restore the areas to their original states as directed by the Construction Manager.

- D. Securely fasten all signs to their supports with bolts, nuts and washers of aluminum (2024-T4 alloy) or hot-dip galvanized steel in accordance with Paragraph 2.01.D Stiffeners, Brackets, and Miscellaneous Hardware and in accordance with the design requirements in Paragraph 1.03 Design and Performance Requirements.
- E. Use plywood battens and aluminum panel stiffeners as required by Paragraph 1.03 Design and Performance Requirements and in conformance with the applicable requirements of Paragraph 2.01 Materials.
- F. Horizontal and vertical sign clearances shall be as shown on the Contract Drawings.
- G. Other non-wood post mounting of plywood signs, such as overhead sign installations, shall be as shown on the Contract Drawings and as specified in 1.03 Design and Performance Requirements and Paragraph 1.04 Quality Assurance.
- H. Concrete footings, if required by 1.03 Design and Performance Requirements, shall be placed in accordance with the requirements of Division 3 Section on concrete, and shall not extend more than 4 inches above grade.

### 3.02 FIELD QUALITY CONTROL

#### A. Field Inspections

- 1. Immediately prior to erection, all material will be inspected by the Construction Manager for damage that is attributable to improper transportation, handling, or storage procedures.
- 2. The Construction Manager will conduct an inspection of each completely erected sign in the daylight and at night for proper location, line and grade of signs, vertical post alignment, condition, appearance, reflectorization, and visibility.
- 3. As the Work progresses, the location, position and condition of all signs shall be monitored by Contractor in accordance with the requirements of Section 011433.

END OF SECTION 344116



## SECTION 347113 - VEHICLE TRAFFIC BARRIERS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This Section specifies requirements for temporary traffic barriers.
- B. Coordinate the Work of this Section with the requirements of "Maintenance of Traffic and Work Area Protection" of Division 1 - General Provisions.
- C. Materials and constructions of this Section constitute temporary facilities that are and shall remain the property of the Contractor unless otherwise shown on the Contract Drawings.

#### 1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM A 36 Structural Steel.
  - 2. ASTM A 123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 3. ASTM A 307 Carbon Steel Externally Threaded Standard Fasteners.
  - 4. ASTM D 1751 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- B. West Coast Lumber Inspection Bureau (WCLIB):
  - 1. Standard Grading Rules.

#### 1.03 SUBMITTALS

- A. Submit shop drawings of concrete barriers, including details of vertical joint connections, and details of proposed method of relocating concrete barriers in accordance with the requirements of General Conditions Article 4.7

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Provide new materials or, if acceptable to the Construction Manager, undamaged previously used materials in serviceable condition conforming to requirements specified in this Section. Provide materials suitable for the use intended.

B. Precast Concrete Barriers

1. White Portland cement proportioned to produce 3000 psi reinforced concrete.
2. Joint fillers shall conform to ASTM D 1751.

C. Timber Barriers and Curbs

1. Lumber:  
Douglas Fir or Hem-Fir, WCLIB Standard Grade, dressed on four (4) sides (S4S).
2. Penetrating Sealer:  
Transparent colorless wood sealer which is effective in retarding transmission of moisture at cross-grain cuts and which shall not interfere with paint finish.
3. Paint Finish:  
Exterior alkyd resin reflectorized paint in colors shown on the Contract Drawings.

D. Connector, Anchors, Accessories: Fabricated ASTM A 36 shapes, plates and bars welded into assemblies required, with ASTM A 307 steel bolts, lag bolts and other fasteners as required. Finish each assembly and fastener with ASTM A 123 hot-dip zinc coating.

E. Concrete Barrier Flags: Aluminum, 6 x 6 inch, with weather-resistant reflective silver sheet suitable for daylight and night hours.

F. Concrete Barrier Lights: High intensity flashers.

G. Timber Barrier Markers: Light-retroreflective markers as shown on the Contract Drawings.

2.02 CONSTRUCTION FEATURES

A. Fabricate exposed traffic approach end of barriers with a gradual taper with no blunt ends, arranged to redirect the path of a vehicle parallel to the line of normal traffic flow.

B. Fabricate concrete barriers with a cross section of a portable, concrete safety shape barrier as shown on the Contract Drawings.

1. Fabricate in lengths of 20 feet or less with the rectangular footing cut out at regular intervals to ensure storm water runoff.
2. Furnish connections at vertical joints that will develop the full strength of the barrier system and ensure that the individual elements are aligned to provide a smooth, continuous barrier face.

3. Provide barrier lights as shown on the Contract Drawings.
- C. Fabricate timber barriers and curbs of type and size shown on the Contract Drawings. Paint as shown on the Contract Drawings, or if not shown, paint white with rails of alternating orange and white stripes that slope down toward the side on which traffic is to pass. All paint shall be reflectorized.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Provide and place temporary traffic control devices.

### 3.02 INSTALLATION

- A. Install barriers and curbs at locations shown on the Contract Drawings.
- B. Provide bituminous pavement shimming and leveling as required to ensure smooth, continuously aligned barriers and curbs.
- C. Provide 1/2-inch-wide joints between ends of barriers and curbs. At concrete barriers, fill joint with premolded bituminous joint filler.
- D. Secure barriers against lateral displacement by use of drift pins or anchor bolts drilled into roadway surface.
- E. Connect, and continuously operate, concrete barrier lights.

### 3.03 ADJUSTMENTS

- A. Maintain, clean, relocate and replace barriers and curbs as required to protect motorists, pedestrians and workers throughout the Work of this Contract.
- B. Remove barriers away from DEP property, when the need has ended, when replaced by approved use of permanent construction, or when directed by the Construction Manager.
- C. Complete, or if necessary, restore permanent construction. Replace construction that cannot be satisfactorily repaired. Remove temporary paving that is not intended for or acceptable for integration into permanent paving.

END OF SECTION 347113