NEW JERSEY TRANSIT CORPORATION

NOTICE TO CONTRACTORS

BAY HEAD YARD SUBSTATION REPLACEMENT
INVITATION FOR BID NO. 17-026X

Notice is hereby given that this is an electronic bid submission. Electronic bids will be received by NJ TRANSIT via the Internet until 2:00 pm, Thursday, September 20, 2018, for the Bay Head Yard Substation Replacement.

Bids for the project will be downloaded from the Bid Express website on the scheduled Bid Due Date (subject to change by Addenda) at 2:00 pm, Thursday, September 20, 2018, and publicly opened and read immediately thereafter at NJ TRANSIT's offices located at One Penn Plaza East, 6th Floor, Bid Room, Newark, New Jersey 07105. The Bidder must upload its bid prior to the hour named so that it is included in the project download. This is the only way to submit a bid for this project; paper bids will not be accepted. Late bids cannot be accepted.

The proposed Bay Head Yard Substation facilities shall be constructed by the Contractor on the site of the existing substations.

The Work for this Project consists of the construction of a new substation building on the site of the existing general service substation, which will be demolished; while the wayside power substation remains in service to maintain continuous operation of the yard.

When the new substation is complete and operational, the electrical loads will be sequentially shifted from the wayside power substation to the new substation. Once all loads are successfully transferred over to the new substation, the wayside power substation will be decommissioned and demolished. A second new building to house a new standby generator will be built where the wayside power substation was located. Once the new standby generator system is completely operational, an existing generator in the compressor building will be removed from service.

In order to obtain all pertinent Bid Documents, interested firms must register with BID EXPRESS at https://www.bidx.com. Contractors that are currently registered with BID EXPRESS to bid NJDOT or any other public construction project do not require further registration, only an additional digital ID. To subscribe, follow instructions on the website. Fees apply to downloading documents and plans and bidding access. The fee schedule is available on the website. All fees are directly payable to Bid Express.

All firms must be prequalified by NJ TRANSIT prior to submitting a bid. Contractors must be prequalified for Building Construction – Rail (BR) in a classification of GC – General Contractor and for an amount of work that is equal to or greater than their bid amount. NJ TRANSIT suggests a minimum rating amount of "P", $15,000,001 to $20,000,000. Prequalification questionnaires are available for download from the Bid Express website www.bidx.com.

Contractors who are not currently prequalified as required above or whose prequalification has expired **should** submit completed prequalification forms to NJ TRANSIT's Bid Desk no later than seven (7) calendar days after the scheduled Pre-Bid Meeting date. In the sole discretion of NJ TRANSIT, late submissions **may not** be considered for this solicitation.

A pre-bid conference has been scheduled for 10:00 a.m. on Tuesday, August 21, 2018. The pre-bid conference will be held at NJ TRANSIT headquarters located at One Penn Plaza East, Newark, NJ 07105.

A site visit has been scheduled for 11:00 a.m., Wednesday, August 22, 2018. The site visit will be held at the Bay Head Train Station, Bay Head, NJ. Contractors are advised that a NJ TRANSIT escort is necessary while present on non-public areas of NJ TRANSIT property. Contractors must bring and wear their own safety apparatus including hard hats, reflective vests and hard toed shoes/boots in order to go on the site visit. Unauthorized/unescorted entry onto the railroad right-of-way is strictly prohibited. Bidders are advised that attendance at both the pre-bid conference and site visit is strongly recommended.

Contractors and subcontractors are also required to comply with the State of New Jersey, Division of Revenue Business Registration Certificate requirements (N.J.S.A. 52:32-44). Contractors or Subcontractors shall not engage in the performance of any work, unless the Contractor or Subcontractor is registered with the New Jersey Department of Labor and Workforce Development, as required. In addition, Source Disclosure Requirements (N.J.S.A. 52:34-13.2) apply to this project.

Bidders must comply with the requirements of N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27, regarding Equal Employment Opportunity Laws and Regulations. Disadvantaged Business Enterprises, in accordance with the Department of Transportation (DOT) Regulations 49 CFR, Part 26, shall have the maximum opportunity to participate in the performance of this contract. A race neutral DBE goal has been set for this project.

In accordance with N.J.S.A. 27:25-11(b) (3) and N.J.A.C. 16:72-2.2 bidders are notified that a bid bond in the amount of 10% of the bid price is required with their bids.

This project is subject to the requirements of the Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq. and the Business Registration Certificate Requirement, N.J.S.A. 52:32-44.

The Star-Ledger, Newark

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Notice Content

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Notice Content

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Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Acting Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

August 22, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 1

To Whom it May Concern:

The following constitutes Addendum No.1 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. Enclosed for Bidders information is a Pre-Bid Data Sheet summarizing information discussed at the Pre-Bid Conference is included as Attachment A.

2. The Attendance Sheet from the Pre-Bid Conference held August 21, 2018 is included as Attachment B.

3. The website for the New Jersey Unified Certification Program is https://njucp.dbesystem.com

This concludes Addendum No. 1. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Attachment A

Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement

INVITATION FOR BID (IFB) NO. 17-026X
BAY HEAD YARD SUBSTATION REPLACEMENT
PRE-BID CONFERENCE AGENDA

Tuesday, August 21, 2018, 11:00 an

Agenda

I. Introduction	Maggie Sotolongo, Principal Contract Specialist
II. Proposal Process	Maggie Sotolongo, Principal Contract Specialist
III. DBE Goal and Requirements	Jacquelin Rush-Gilbert, Office of Business Development
IV. Project Overview	Premala Raj, Project Manager
V. Questions and Answer Session	

I. Introduction

Attendance Sheet

Project Dates:	Pre-Bid Conference	August 21, 2018, 10:00 am
	Site Visit	August 22, 2018, 11:00 am
	Prequalification's Due:	August 28, 2018 (COB)
	Questions Due:	August 28, 2018 (COB)
	Bid Opening:	September 20, 2018, 2:00 pm

II. Proposal Requirements and Process

Obtaining Bid Documents:

This Project is being bid by use of an electronic bidding process. Electronic bidding information is available on NJ TRANSIT's electronic bidding website: www.bidx.com Registration and a subscription fee are required to access the Bid Documents. The Bidder shall download the bidding software. The Bidder shall not alter or in any way change the software.

The Bidder shall address questions or problems with downloading or using electronic files, not requirements of the Contract, to:

NJ TRANSIT Bid Express Administrator
E-Mail: e-bidding@njtransit.com

Or

Bid Express Customer Support
Tel: (352) 381-4888
Fax: (352) 381-4444
E-Mail: customer.support@bidx.com

Obtaining a

Digital ID: Contractors need to apply for a Digital ID at least seven (7) business days prior to a letting if they want to submit a bid through Bid Express.

Communications: Communications regarding this Invitation for Bid are to be conducted through NJ TRANSIT's Procurement Department. All other contacts are considered improper and are prohibited. Violation of this prohibition may cause for removal of a bidder from consideration for award of this contract.

Bidders are also advised that any discussions held regarding this project are considered informal and are not binding. The only means for modifying the Invitation for Bid is through a formal written Addendum. Therefore, any inquiries or requests for clarification must be submitted in writing. Inquiries and requests for clarification may be faxed to Maggie Sotolongo (973) 232-1892 or e-mailed **msotolongo@njtransit.com.** Any response NJ TRANSIT elects to make will be made by a written Addendum to the Bid and issued to all plan holders.

Prequalification: Classification: "BR" (Building Construction – Railroad Environment) as a "GC" (General Contractor).

Suggested Minimum Rating: "P", $15,000,001 to $20,000,000.

Bidders must be prequalified with NJ TRANSIT prior to submitting a bid. Bids received from contractors that are not prequalified or are prequalified with a rating insufficient to support its bid will be rejected. Prequalification questionnaires are available for download from the Bid Express website www.bidx.com. Completed prequalification forms MUST be submitted to by August 28, 2018 (COB).

Late submissions of prequalification questionnaires or submission of incomplete requests for prequalification may result in contractors not being prequalified to bid. Once processed, the prequalification classifications are valid for thirty-six (36) months.

Prequalification questionnaires are available through the Bid Express website.

Questions regarding prequalification status should be addressed to the Procurement Department.

Inquiries and Requests for Clarification: All inquiries and requests for clarifications regarding the contract documents shall be submitted by e-mail to the Contract Specialist identified in the Special Provisions. Such requests shall state the Bid number and name of Project. Any response that NJ TRANSIT may choose to make will be by a written addendum to the Bid. NJ TRANSIT will not be bound by any informal explanation, clarification, or interpretation, oral or written, by whomsoever made, that is not

incorporated into an addendum to the Bid. All such Addenda will be posted on the electronic bidding website prior to the opening of Bids.

It is the obligation of the Bidder to check the website for addenda. Certain Addenda will contain Amendments. The Bidder shall ensure that the Schedule of Bid Items to be bid contains all applicable Amendments. NJ TRANSIT has the right to reject bids that do not contain all applicable Amendments to the Schedule of Bids Items to be bid.

All inquiries and requests for clarifications can be e-mailed to **msotolongo@njtransit.com** or faxed to (973) 232-1892 and are due by August 28, 2018 (COB).

Receipt of Bids: Bidders who have been prequalified will be authorized to submit a bid.

The bids for this project are due on or before 2:00 pm, Tuesday, September 20, 2018. Bids are to be submitted electronically via Bid Express to NJ TRANSIT. Late bids will not be accepted.

Bids shall be accompanied by Bid Security in the form of a Bid Bond, Cashier's Check, Certified Check or irrevocable Letter of Credit. Cash is not considered an acceptable form of security.

The amount of the Bid Security shall equal to ten percent (10%) of the total bid amount. A Bid shall be rejected as non-responsive if it is not accompanied by satisfactory Bid Security.

Please Note: Your Bid Security can be obtained electronically via Bid Express or you may submit a hard copy from your bonding company. However, the hard copy of your bid security must be submitted prior to the Bid Opening.

When submitting a hard copy Bid Security, please send to NJ TRANSIT's Bid Desk, One Penn Plaza East, Sixth Floor, Newark, NJ 07105. Bid Security must be received by **2:00 pm, Thursday, September 20, 2018.**

Please make sure to include the following information on the front of your envelope:

17-026X
BAY HEAD YARD SUBSTATION REPLACEMENT
Bid Bond

Award: Award of Contract, if any, will be to that bidder who is deemed to be the lowest responsive and responsible bidder.

Bid Validity: One hundred eighty (180) days following the date of the bid opening.

Time of Completion: 1,100 calendar days from the effective date of the Notice-to-Proceed.

Liquidated Damages: $3,600.00 per day each calendar day of delay in completing the work.

Bonding Requirements: A Performance and Payment Bond is required for this project and shall be equal to 100% of the Contract price to secure fulfillment of the Contractor's obligations specified in the Contract.

Insurance Requirements: The successful bidder is required to submit evidence of insurance coverage of the types in the amounts specified in the General and Special Provisions.

III. DBE Goal and Requirements

DBE Goal: A race neutral DBE goal has been set for this project. Bidders are to seek DBE participation under the State DBE Program.

DBE Requirements: As an aid in meeting its commitment to the Disadvantaged Business Enterprise (DBE) Program, NJ TRANSIT has assigned a race neutral DBE goal on the gross sum amount of the bid or contract for DBE subcontracting participation. All NJ Unified Certification Program (NJUCP) certified DBE firms, including suppliers, are eligible to participate in this contract.

NJ TRANSIT's DBE Program is accorded the same priority as all compliance with all other legal obligations required by the USDOT.

Contractors shall comply with the DBE Program requirements in the award and administration of NJ TRANSIT contracts. Failure by the Contractor to carry out these requirements shall constitute breach of contract, which may result in the termination of the contract or other such remedy, as NJ TRANSIT deems appropriate.

The Contractor shall refer to the DBE Requirements for Federally Funded Construction Contracts and Subcontracts included in the IFB for the requirements concerning the DBE obligations and mandatory submissions for this contract. In accordance with those requirements, the Contractor shall identify all DBE and Non-DBE subcontractors and suppliers proposed to participate in or solicited for this contract, and complete and submit the mandatory required forms (A, A1, A2, and B) with their bid or within five (5) calendar days of the bid opening date. Contractors are strongly encouraged to submit these forms with the bid to prevent delay of award. These mandatory required forms shall be completed entirely with no blank fields.

Failure to submit any and all mandatory DBE documentation within five (5) calendar days of the bid opening date shall result in a rejection of a Bid as non-responsible.

IV. Project Overview

V. Question and Answer Session

Attachment B

Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Steven Biserta	George Harms Construction	[redacted]	
Folaji Fadeyibi	ABB		
Jeff Glisson	PKF-Mark III, Inc.		
RAFAEL ASUOULAYEV	DOBCO		
GEORGE PRISYACH	GARG ENGINEERING		
ALBERT ALGAZI	ENTECH ENG		
PREMALA RAJ	NJ TRANSIT		
Jackie Rush-Gilbert	NJ Transit OBD		
Maggie Sotolongo	NJ TRANSIT		

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	~~DBE~~
Michael Cuccia	Toscano Clements Taylor	[redacted]	WBE
Zoe Baldwin	Utility & Transportation Contractors Association		
DAN CARRATU	GSA OPTIMUM		
STEVE ZAPOTICZNY	GANNETT FLEMING		
Lea Zglobicki	Nagi Corp		SWMBE
LUTHER ROBERTSON	KEEP IT KLEAN JANITORIAL		YES
Sandy Drysdale	DM Radio Service Corp DBE/SBE/WBE		yes
GEORGE TRISTAN	GARG ENGINEERING		YES

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Ziad Zahreddine	Schiavone Construction	[redacted]	

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
JOHN VERA	CVI GENERAL	[redacted]	
Sandy Drysdale	DM Radio Service		

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Abu Siddique	Omnium Eng	[redacted]	✓
Chintan Shett	Omnium Eng		✓

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
SOBHAN B NALLAMOTHU	TOMAR CONSTRUCTION	[redacted]	

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Eric B Jeter	ACT Abatement	[redacted]	✓
Keith Barfoot	Mass Electric		

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Michael Wierzbicki	Railroad Construction Co,	[redacted]	
Dale Baker	Hampton Clarke		
John Roche	Northeast Remsco Constr.		
Andy Dadesman	Northeast Roof Maintenance		
William Spencer	Integrated Geotechnical Sols.		✓
Ben Freidel	Mass. Electric Const. Co.		

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
GIORGI KHARDZISHVILI	DESI	[redacted]	X

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Nick DeRoberts	Anselmi & DeCicco, Inc. Maplewood, NJ	[redacted]	GC
Juan Carlos Lopez	Andes Consulting Engineering MBE, DBE, SBE		✓
John Barrick	Barrick Electric Co Inc		X
B. V. Rao	EG&R Engineering PC (MBE/SBE/DBE)		✓
Melisa Compusano	NJT - OBD		

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Stacey Loughran	EChem Consultants LLC	[redacted]	Yes

NJ TRANST IFB NO. 17-026X
BAY HEAD SUBSTATION

PRE-BID CONFERENCE ATTENDANCE SHEET

August 21, 2018

Printed Name of Attendee	Company Name	Email	DBE
Mike D'Egidio	Matrix NAC	[redacted]	
Don Sapienza	Matrix NAC		
TERRY McGOLGAN	VANALT ELEC. CONSTR.		
PETER EGAN	HALL CONSTRUCTION CO INC		
Bill McClure	Kiewit Infrastructure Co.		
Clint Hall	Hall Building Corp.		
Adonis Abreu	NJ Transit		
Leonnette McCoy	NJ TRANSIT - OBD		

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

August 29, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 2

To Whom it May Concern:

The following constitutes Addendum No.2 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. Instruction for DBE Requirements is included as Attachment A.
2. NJ TRANSIT Office of Civil Rights Letter is included as Attachment B.
3. Responses to questions will be submitted in a separate Addendum at a later date.
4. No further questions will be accepted. The deadline to submit questions was August 28, 2018.

This concludes Addendum No. 2. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Attachment A

Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement

Role of Office of Business Development (OBD) on the Project

- Monitor DBE compliance and enforce DBE Requirements
- Provide technical guidance and direction to Bidders and subs.

NJ TRANSIT's Commitment to DBE Program

- Remove any barriers to DBE participation on NJ TRANSIT contracts.
- Support DBE firms in building their technical skills and capacity.
- Foster partnerships between DBEs and prime contractors.

NJ TRANSIT assesses the degree to which DBEs still experience disadvantage by placing lowered numerical goals on contracts, and occasionally choosing not to assign a numerical goal to a contract at all, even though those contracts have significant DBE subcontracting opportunities. The amount of DBE participation received on these "race neutral" contracts is factored into the decision to assign numerical goals, and the amount of those goals, on future NJ TRANSIT contracts.

Please be advised the following forms are **still** required when DBE participation occurs on a race neutral contract:

Instruction for Mandatory Required DBE Forms

- To search for DBE firms –visit www.njucp.dbesystem.com
- Firms pending DBE certification status must be certified by the time contract awards for credit towards meeting the goal. "Pending DBE" shall not count as credit on the Form A.
- REQUIRED FORMS Pre-Award – Forms A, A1, A2, B, DBE Certificate/ Certification Letter, information pertaining to all of your required forms is in the bid package under DBE REQUIREMENTS FOR RACE-NEUTRAL GOAL PROGRAM FOR FEDERAL PROCUREMENT ACTIVITIES
- Forms must be filled out completely and submitted with your bid package or within five (5) days of bid due date. We strongly urge you to submit with the bid.
- Incomplete forms will delay OBD review and award determination.

FORM A – First Tier DBE UTILIZATION:

- Must be completed entirely, with no blank fields. Note that N/A is not an acceptable response. Use 0% and none where applicable.
- List all DBE firms that will work on the project. Upon execution of the contract, you are expected to enter into, sign, and submit fully executed subcontractor agreements with these firms to OBD.
- As noted on the bottom portion of the Form, this is a formal agreement with the DBEs listed – you are committed to entering into a contract with the DBEs. Listing a DBE on this form means that you are satisfied with all references; you have completed price negotiations, and agree to all terms (price, scope of work, etc.).
- DBEs listed on the Form A and submitted to NJT cannot be removed or replaced for any reason during the life of the contract without written request to OBD and receipt of written approval from OBD. Adding a DBE firm also requires the same process.

FORM A – First Tier DBE UTILIZATION: (continued)

- Bidder must provide a detailed description of the scope of services for each DBE firm listed; one or two word descriptions are not acceptable.
- Bidder must verify if DBE is a manufacturer (100% credit), dealer (60% credit) or broker (percentage of credit based on fees charged by broker) on Form A so that OBD can determine the appropriate DBE credit.
- The Dollar Value of the Subcontractor Work Awarded and Percentage of Subcontract Work must be identified for each DBE listed.
- Authorized Signature – should be person identified within your firm that is ultimately accountable for all information submitted on this form. Prime Contractor's DBE Liaison Officer – should be a knowledgeable person within your firm for all matters related to DBE. If this person changes, OBD must be notified as soon as possible.

FORM A1 – BIDDER SOLICITATION & CONTRACTOR INFORMATION

- Must be completed entirely, with no blank fields.
- List every firm that you solicited to work on the project, whether they accepted or declined to participate on the project. This would, at a minimum, include all firms listed on the Form A and Form A2.
- Firms that you have truly solicited should be reflected on this form. True solicitation means that you had a formal exchange as it pertains to the project, which includes review of project specifications, price negotiations, etc.

FORM A2 – NON-DBE SUBCONTRACTOR LIST

- Federal Transit Administration (FTA) requires the tracking of all federal dollars to be subcontracted to NON-DBE firms as well.
- Bidder is to list all of the NON-DBE firms working on the contract, including all vendors/suppliers, etc.
- Bidder must provide detailed description of the scope of services; one or two word descriptions are not acceptable.

FORM B – INTENT TO PERFORM AS DBE SUBCONTRACTOR

- Bidder is strictly prohibited from pre-filling any portion of this Form. It must be sent to the DBE firm as a blank form.
- Must be completed, signed, and dated by DBE firm only.
- The DBE is to provide a detailed description of the work to be performed, their subcontract value, and contract start and completion dates.

- DBE firms must be certified to perform the work as indicated on forms, in order to receive credit towards meeting the goal.
- DBE firm must indicate percentage of work being subcontracted to a secondary DBE firm and/or NON-DBE firm.
- By this time, you should have provided the DBE firm with a copy of the scope of services and price negotiations should have taken place. OBD conducts a Fraud and Compliance review to verify the information that was submitted.
- It is your responsibility, as the Bidder, to thoroughly review the form, with emphasis on NAICS codes, business descriptions, and the percentages to be subcontracted to another firm as it relates to receiving credit towards your DBE goal commitment.
- NJUCP website print-out is not acceptable, cannot be submitted in-lieu of DBE Certificate or Certification Letter.

Please contact the OBD contract administrator assigned to this contract for assistance on all DBE related issues.

Attachment B

Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

A LETTER FROM NJ TRANSIT'S OFFICE OF CIVIL RIGHTS TO THE PRIME CONTRACTING COMMUNITY ON "RACE NEUTRAL" DBE PARTICIPATION

NJ TRANSIT takes its commitment to its Disadvantaged Business Enterprise (DBE) program seriously. Beyond being a requirement of US Department of Transportation (USDOT) funding, providing opportunities to and leveling the playing field for small and historically disadvantaged businesses, is part of NJ TRANSIT's corporate responsibility as a recipient of taxpayer funds and driver of economic opportunity in the region. A key focus of NJ TRANSIT's DBE Program is to foster partnership between businesses that have faced disadvantage historically, and larger, more established businesses in the region. Through partnerships with New Jersey Chambers of Commerce, and business entities like the Utility and Transportation Contractors Association (UTCA), along with the use of numerical (also known as "race-conscious") DBE goals on contracts, NJ TRANSIT aims to create frequent opportunities for prime contractors and DBEs in the region to network, work together, and build strong business relationships. These business relationships develop the technical skills and capacity of DBEs, as well as trust and good faith between the larger prime, and smaller, historically disadvantaged members of New Jersey's business community. These factors work together to diminish the impact of historical disadvantage on the current contracting climate.

NJ TRANSIT assesses the degree to which DBEs still experience disadvantage by placing lowered numerical goals on contracts, and occasionally choosing not to assign a numerical goal to a contract at all, even though those contracts have significant DBE subcontracting opportunities. When a contract does not have a numerical/race conscious DBE goal, that contract is deemed "race neutral", and all DBE participation that occurs on that contract is considered "race neutral participation." Similarly, DBE participation that exceeds a numerical/race conscious DBE goal on a contract is also considered race neutral participation. Strong race neutral participation is the critical indicator of a level playing field for DBEs, in NJ TRANSIT's contracting opportunities.

NJ TRANSIT reviews race neutral DBE participation on all bids for race conscious and race neutral contracts, to measure the degree to which the prime community supports DBE participation naturally. If bids reflect significant race neutral DBE participation, it suggests that NJ TRANSIT's efforts to foster partnership between DBEs and the greater contracting community are working, and numerical goals may be less necessary to drive DBE participation on NJ TRANSIT contracts than they were historically. This would provide a basis for NJ TRANSIT to assign lower numerical goals on contracts, and create more race neutral contracts in the future.

Conversely, a lack of significant race neutral participation, especially on contracts with substantial DBE subcontracting opportunity, is an indicator NJ TRANSIT has more work to do fostering relationships between the prime contracting and DBE communities. This would suggest that numerical goals continue to be necessary to ensure maximization of DBE participation on federally funded NJ TRANSIT contracts.

NJ TRANSIT's Executive Management team, including the Chief of Procurement; the Assistant Executive Director of Capital Projects and Programs; and I as the Chief Civil Rights and DBE Liaison Officer, have all aligned on using race neutral contracts in the manner described above, and agreed on how the results will be used to affect DBE goal setting on contracts. NJ TRANSIT's Executive Director has offered his full support to this effort. NJ TRANSIT urges you to take all opportunities to demonstrate your support of the DBE program seriously, to begin soliciting and building your teams as soon as possible, and to consider utilizing DBEs on contracts whenever there are subcontracting opportunities.

NJ TRANSIT Office of Civil Rights' Office of Business Development (OBD) administers NJ TRANSIT's DBE program, and is accountable for leading the organization's efforts to level the playing field for DBE contractors in New Jersey. OBD is a partner and resource for DBEs and prime contractors looking to increase their DBE participation. Reach out to OBD if you need technical guidance and support on how to make a good faith effort to retain ready, willing and able DBEs. OBD contact information and additional detailed guidance is provided in the Procurment pre-bid notes, and the DBE requirements, on all USDOT funded NJ TRANSIT contracts.

Thank you for your partnership in the effort to advance race neutral DBE participation on NJ TRANSIT contracts, and create a level playing field for historically disadvantaged businesses in New Jersey.

Regards,

Leotis Sanders
Chief Civil Rights and Diversity (DBE Liaison) Officer
New Jersey Transit

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

September 17, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 3

To Whom it May Concern:

The following constitutes Addendum No.3 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, September 27, 2018.
2. Responses to questions will be submitted in a separate Addendum at a later date.

This concludes Addendum No. 3. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

September 20, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 4

To Whom it May Concern:

The following constitutes Addendum No.4 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, October 11, 2018.
2. Responses to questions will be submitted in a separate Addendum at a later date.

This concludes Addendum No. 4. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

October 4, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 5

To Whom it May Concern:

The following constitutes Addendum No.5 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, November 1, 2018.
2. Responses to questions will be submitted in a separate Addendum at a later date.

This concludes Addendum No. 5. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

October 16, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 6

To Whom it May Concern:

The following constitutes Addendum No.5 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, November 15, 2018.
2. Responses to questions will be submitted in a separate Addendum at a later date.

This concludes Addendum No. 6. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

November 2, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 7

To Whom it May Concern:

The following constitutes Addendum No.7 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. Responses to questions have been included.
2. An additional addendum will be distributed at a later date.

This concludes Addendum No. 7. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

1. **Bid form does not list an allowance line item for "Supplemental Construction Costs"; please confirm no allowance for this scope will be included in the bid.**

   Supplemental Construction Costs line item has been added to the Bid Form.

2. **Special Provisions Article 5 – Bid Validity (E.6) states NJ Transit reserves the right to issue a Notice of Award to the successful Bidder for a period of one hundred eighty (180) days; please confirm that the successful Bidder is required to hold open their bid for 6 months and that no escalation in price is allowed.**

   All bid prices must remain valid, with no escalation, for a period of one hundred eighty (180) days.

3. **Special Provisions SP-10 No Damage For Delay states "The Contractor shall receive no additional compensation for canceled work"; on numerous other NJ Transit bids a line item for "Track Time Allowance" has been included to compensate the Contractor for lost costs associated with cancelled work. Please consider adding this line item since this project is located within an active rail yard/tracks and most likely work will have to be cancelled and rescheduled.**

   Track outages and scheduling shall be arranged with the Construction Manager. A separate bid item for "Track Time Allowance" will not be provided. Please refer to the General Provisions and Special Provisions for further information.

4. **Please define any limitations, hours and durations for track fouling, track outages and catenary outages.**

   Please refer to the Special Provisions for information on "Use of Premises." All tracks adjacent to the worksite are considered active at all times. Specific hours and durations of outages for work planned by the contractor are determined on a site-by-site basis and the Contractor shall develop a Site Specific Work Plan for approval and coordinate with the Construction Manager on the use of the premises.

5. **Bid Line Item 0080 is for a Full Time Health and Safety Monitor; please confirm this person is required to be on-site full time for the duration of the contract and is a separate person and is in addition to the full time project superintendent.**

   Please refer to Specification 02010 3.1 for requirements on the Health and Safety Monitor.

6. **Specification Section 02840 – Asbestos Abatement lists approximate quantity as "TBD"; please provide quantities, locations and any reports for the Asbestos Abatement scope of work.**

   Please refer to the June 2015 Hazardous Materials Assessment Report for additional information.

7. **Specification Section 02860 – Lead Paint Management does not define the scope and quantities of Lead Paint to be abated; please provide quantities, locations and any reports for the Lead Paint scope of work.**

   Please refer to the June 2015 Hazardous Materials Assessment Report for additional information.

8. **Specification Section 02880 – Universal Waste does not list abatement quantities; please provide quantities, locations and any reports for the Universal Waste scope of work.**

   There are no quantities for these items

9. **Reference Specification Section 02461 – Steel Pipe Piles:**
   a. **Part 4 Compensation states Dynamic Pile Testing costs are to be included in the price per linear foot of bid line item 0180 – Pile Installation; this scope is a separate and independent fixed cost that should not be included in the LF Pile Installation line item; please add a separate Bid Line item to cover this cost.**
   b. **Pile Installation Mobilization is also a separate and independent fixed cost that should not be included in the LF Pile Installation line item; please add a separate Bid Line item to cover this cost.**

   The revised Bid Form has broken out the piles by VLF, with separate LS bid items for any tests and for piling mobilization.

10. **Specification Section 02481 – Vibration and Movement Monitoring Part 4.1 Payment states the associated costs are to be included in the price per linear foot of bid line item 0180 – Pile Installation; this scope is a separate and independent fixed cost that should not be included in the LF Pile Installation line item; please add a separate Bid Line item to cover this cost.**

    The revised Bid Form has broken out the piles by VLF, with separate LS bid items for any tests and for piling mobilization.

11. Specification Section 03200 – Concrete Reinforcement paragraph 1.01.A states "All concrete reinforcement steel will be galvanized, unless specifically stated on the Contract Drawings"; Drawing S-001 notes all reinforcing steel shall be Epoxy Coated. Please confirm Epoxy Coated is to be provided.

All concrete reinforcement steel will be galvanized. Please refer to the addendum drawing S-001.

12. Specification Section 02010 – Environmental Requirements Paragraph 1.6.A and 1.6.B references Environmental and Hazardous Material Reports prepared by Gannett Fleming dated February 13, 2015 and June 2015; please provide copies of these reports.

Please refer to the June 2015 Hazardous Materials Assessment Report and February 2015 Limited Site Investigation Report for additional information.

13. Please provide any Geotechnical reports for the project.

Please refer to the March 2016 Bay Head Geotechnical Report.

14. I would like to submit Heatlok XT as an approved equal at the NJ Transit Bay Head Rail Substation replacement project. Heatlok XT meets all of the requirements found in your spec and is a comparable product to the BASF Spraytight that is your basis of design. I have included the ESR and TDS for Heatlok XT for your review in the approval process.

This product is acceptable, however, the product cannot be exposed and must be covered with a finish material. The Contractor shall provide a 5/8" thick mildew & impact resistant gypsum wall board to cover the spray foam. An addendum drawing will be issued.

Please see attached documents for further detail.

15. Please provide the DBE subcontracting goals for this project. The Instructions to Bidders C.3 on page 4 directs you to Special Provisions for this Contract, but Special Provisions (SP-3) directs you back to the Instructions to Bidders. Neither provides the actual percentage.

As per the Special Provisions SP-3, NJ TRANSIT has assigned a race neutral DBE goal on the gross sum amount of the bid for this project.

16. **Please provide the two (2) referenced environmental site assessment reports prepared by Gannett Fleming dated February 13, 2015 and June 2015 as described in Spec Section 02010 – Environmental Requirements (paragraphs 1.6 A & B); Spec Section 02111 – Management of Excavated Soils (paragraph 1.1 B); and Spec Section 02114 – Offsite Disposal of Excavated Soils (paragraph 1.2 I).**

    Please refer to the June 2015 Hazardous Materials Assessment Report and February 2015 Limited Site Investigation Report for additional information.

17. **The soil boring locations (Borings BS-1 thru BS-11) on Drawing C-010 – Civil Demolition Plan indicate that a subsurface geotechnical investigation was performed. We request that the resulting report with soil boring logs be provided in order that we can properly assess the soil and groundwater conditions to develop pricing for excavations and pile driving.**

    Please refer to the March 2016 Bay Head Geotechnical Report.

18. **General Note 24 on Drawing C-002 directs the contractor to see NJDEP Permits 1502-008.4 CAF160001 and 1502-02—008.4 FWW160001 regarding the presence of freshwater wetlands. Please provide the permits.**

    Permits are included as an attachment to the addendum.

19. **Please provide the anticipated dates for Contract Award and issuance of Notice to Proceed.**

    NJ TRANSIT does not have a date for Contract Award or issuance of Notice to Proceed. It is anticipated that the Contract will be awarded in 2019.

20. **Please provide the conditions which constitutes fouling of tracks and for which NJT flagmen will be required. Also who is responsible for the payment of NJT flagmen if they are required? If the contractor is responsible, please provide the applicable rates and work shift time frames.**

    NJ TRANSIT will provide flagmen. Fouling of tracks is covered in the Rail Safety and Training Guidelines and all workers at NJ TRANSIT sites shall be safety trained.

21. **Please provide the allowed hours of work time frames for the contractor to perform work as it relates to the operations of the rail yard including specific track outages.**

    The tracks are active all hours of the day and night. NJ TRANSIT may allow track outages during rush hours as determined by the Contractor with the Construction Manager. Refer to the Special Provisions for use of the premises and provide details in the SSWP for NJ TRANSIT review.

22. Reference is made to Appendix "D" Governing Rules for Working Within the Railway Right of Way, Page 13 of 23 includes instructions for work with in Conrail Right of Way, please confirm if work of this contract will be performed around or near Conrail tracks or Right of Way? We find not call out of tracks other than N/F: New Jersey Transit Rail Operations.

There is no work within the Conrail Right of Way.

23. If applicable, please provide the allowed hours of work time frames for the contractor to perform work as it relates to the operations of the CONRAIL yard and specific track outages.

There is no work within the Conrail Right of Way.

24. Civil Site Plan & Sheet Index C-011 references Drawings A-002 & A-003, which are not included in the plan set, please provide.

There are no drawings A-002 or A-003, please refer to revised C-011 for revised callout.

25. Foundation Sections S-502 contains a detail for Typ. Pipe Pile to Grade Beam, which shows the pile to receive a spiral rebar cage to a depth of 5'-0". Drawings S-520 & S-541 both contain Typ. Pipe Pile details which show the rebar cage going to a depth of 20'-0". Please confirm the pile cap locations shall receive a 20'-0" cage and the grade beam locations shall receive a 5'-0" cage.

Yes. The pile cap locations shall receive a 20'-0" cage and the grade beam locations shall receive a 5'-0" cage as shown in the drawings.

26. Note #3 on Grade Beam Plan S-101 & Emergency Generator Foundation Plan S-111 states "The concrete slab is 6" thick framed slab reinforced with #5 @ 6" O.C. top and bottom each way." However, the details on Foundation Sections S-501 show the slab-on-grade with only one layer of #5 reinforcement each way, not top & bottom. Please advise which layout is correct.

The concrete slab is 6" thick framed slab reinforced with #5@6" O.C. each way. Please refer to addendum drawings S-101 & S-111 for the revised note #3.

27. Ground Level Plan A-101 has a note around column line C/5.5 which states "Engineered Flood Vent Type 1". The section through this vent (2/A-302) labels it as a Type 2 Flood Vent. Please confirm this should be a Type 1 Flood Vent.

Confirmed this should be a Type 1 Vent.

28. **Per the Room Finish Schedule on Drawing A-502, Substation Crawl Space S001 is to receive a spray foam insulation ceiling finish. Building Sections of this area (A-301 & A-302) show the spray foam insulation in S001 to terminate around Column Line 6, with no insulation required under the deck of the Transformer Area S104. Please confirm transformer area side does not receive spray foam insulation.**

Confirmed area directly beneath the transformer area S104 does not require spray foam insulation, refer to 1/A301 for clarification where spray foam terminates.

29. **The detail, "Asphalt Pavement – Curb Detail" on Drawing C-500 does not list the materials for the 4" and 6" layer, please provide.**

See revised C-500 for materials.

30. **The Asphalt Pavement – Curb Detail on Drawing C-500 identifies the 1'-0" strip along the new curb as the only area to receive new asphalt pavement, however, the bid quantity line item lists 34 Tons of Flexible Pavements. Please advise all the areas to be paved under this Bid Line Item.**

Revised Bid Form quantity has an updated quantity of 22 tons for Flexible Pavements.

31. **Drawing SE-010 shows the location of open cut excavation across the tracks and drawing C-011 Note 3 states work associated with track repair and reinstallation will be performed by NJ Transit, further, Note 4 states that only 2 tracks may be crossed at a time; please advise how long the 2 tracks can remain out of service.**

Contractor shall coordinate the duration of track outages with the Construction Manager. The tracks are used for consist storage and light maintenance activities. Rail Operations has indicated that given the high volume of cars stored and serviced, outages must be coordinated and scheduled in advance with the Construction Manager. Tracks shall be returned to service at the end of the scheduled outage. Refer to the Special Provisions for use of the premises and provide details in the SSWP for NJ TRANSIT review.

32. **Drawing C-011 directs the contractors to "See NJDEP Permits 1502-02-0008.4 CAF160001 and 1502-02-0008.4 FWW16001 for additional information", please provide copies of these permits.**

Permits are included as an attachment to the addendum.

33. On Drawing E-709 the Luminaire Schedule list two site lighting fixtures (F1 & F2) which are mounted on a 8' post. I am not seeing these fixtures on any other drawing. There is a detail on drawing E-500 (detail 1/500) which shows the fixture (?) but where are they on the drawings.

a) Fixtures are located on the Wayside Power Platform and shown on Drawing E-107.
b) Detail 1 on Drawing E-500 refers to Type W5 Lighting Fixture. Change to "Type F1 or F2 Lighting Fixture"
c) Drawing E-709 refers to 8 Ft Post in the Mounting Column. Provide 12 ft pole as shown on Drawing E-500, Detail 1.

34. Note 4 on Dwg. C-102 indicates that the 'Proposed Conduit Crossing of Tracks shall be done during times approved by NJ Transit.' Please provide those allowable times.

The tracks are active all hours of the day and night. The Contractor shall coordinate track outages and work hours for track crossings with the Construction Manager. Outages will be accommodated with advance planning and approvals. Note that the Borough of Bay Head may not permit any construction activities on the weekend. Also refer to the Special Provisions for use of the premises and provide details in the SSWP for NJ TRANSIT review.

35. Note 4 on Dwg. C-102 indicates that the proposed conduit crossings of tracks 'May only cross two tracks at a time.' Since equipment necessary to install these crossings along two tracks will be set on either or both sides of the two tracks, are we permitted to foul the tracks on either or both sides of these tracks.

The tracks are active all hours of the day and night. Fouling of tracks in service is not allowed, unless coordinated by flagmen. All work near tracks will require flagmen.

36. If work is not completed during the allowable times, can the excavations for these ductbanks be left open overnight and backfilled after the ductbank has been concrete encased?

Tracks must be fully returned to service at the end of each outage.

37. Note 1 on Dwg. C-011 indicates that the 'Ductbank shall have a minimum of 30" cover (Typ.).' However, the Typical Ductbank Construction Detail 4 on Dwg. E-301 shows 5'-0" as cover. Please confirm the minimum cover required.

30" is the absolute minimum cover required, E-301 is showing the cover that will be needed for certain duct banks. E-300 and E-301 should be used for duct bank covers.

38. The Typical Ductbank Construction Detail 4 on Dwg. E-301 shows clean fill to be used to backfill the ductbank up to finished grade. Please confirm that this is acceptable, particularly under tracks.

See C-500A for restoration details for the asphalt pavement and existing tracks.

39. Note 3 on Dwg. C-011 indicates that track repair and reinstallation is to be performed by NJ Transit. Will NJ Transit be removing track in the areas of the Ductbank crossings to allow for this ductbank installation and reinstalling it after the ductbank trench has been backfilled.

Yes, NJT will be removing and reinstalling the existing tracks

40. Note 7 on Dwg. C-011 indicates that 'the loop track to be out of service for Construction.' Is this to be out of service for the for the duration of the construction or limited times. If limited times, please advise.

This note has been revised in the Drawing C-011.

<u>Regarding the new O/H 34.5KV O/H line</u>

41. Keyed note 1 on Dwg. E-010 indicates that a new pole line is to be provided under separate contract titled "Bay Head Yard Transmission Line". Please provide specifics as to projected timing and duration of this work. Will any coordination necessary between the Substation Contract and this separate Contract or will this coordination be handled by NJ Transit. Will any work areas be limited if this work is to be done concurrently with the work to be performed under the Substation Contract.

The new utility line will be added to the General Contract via a separate addendum. Notes on drawings referring to this work will be modified in a future addendum to reflect that the new line is in this contract.

42. Article 1.18.2 of Special Provision SP-8 states that 'A new, redundant utility feed will also be brought to the site by NJ Transit.' Please identify where this utility feed is and how it relates to the schedule and coordination of the Substation Contract.

The new utility line will be added to the General Contract via a separate addendum. Notes on drawings referring to this work will be modified in a future addendum to reflect that the new line is in this contract.

43. Please reference the note on Drawing C-101 addressing the rolling gate. When looking at Drawing C-500 for the detail, there is only a detail of a swing gate. Could you please provide the required dimensions for the rolling gate.

See C-500A for detail.

44. Please provide final site restoration details pertaining to civil drawings C-100 thru C-102

See C-500A for detail.

45. Please clarify the dimensions of the grade beam details on drawings S-101 & S-501. Specifically clarify what dimensions "b" and "d" refer to.

Dimensions "b" refer to width and "d" refers to depth. Please refer to the addendum drawings S-101 & S-111.

46. Please provide grading details and elevations on drawings C-100 thru C-102.

Please refer to Architectural drawings for building elevations.

47. Please reference sheet E-301. Could you provide additional duct bank details; including (but not limited to) conduit clearance, outer duct bank clearance, and bedding details.

Refer to Detail 4, Typical Ductbank Construction Details:

1. "Minimum 3-inch concrete encasement". This means concrete envelope from outside edge of conduit on top, bottom and sides.
2. Detail shows conduit spacers. Provide conduit spacers with minimum 2-inch separation between conduits (edge to edge).
3. Detail 4 refers to Civil Drawings for compacted granular fill. Bedding will be 6-inches of AASHTO #57.
4. Clean fill over the duct bank shall be 95% Modified Proctor Density

48. Section 02481: Vibration and Movement Monitoring As it relates to vibration level specification, will NJ Transit define and provide equipment vibration thresholds in the structures to be monitored? These may be more stringent than the thresholds placed on the structures.

The scope is to monitor movements during demolition and construction activities and report to the Construction Manager if limits specified in the Specification Section 02481 are exceeded.

49. Per Specification 02481, Section 3.2.B.2 – 'The Vibration and Movement Monitoring Plan / SSWP will provide the predicted construction vibrations, movement, estimated damage threshold particle velocities, and any other structures or site features…that should be vibration/movement monitored.' Will NJ Transit provide the necessary geotechnical information for these predicted vibrations/movements or has a geotechnical engineering report already addressed these predicted vibrations/movements?

Please refer to the March 2016 Bay Head Geotechnical Report for soil information.

50. In section 16600 on page 4 numeral F.1 it is stated that the SEL-2440 I/O inputs shall be capable of 125 Vdc/Vac. However, the drawing E-607 sheet 127 of 152 depicts the inputs directly connected to a 24 Vdc power supply. Please, clarify whether the I/O should be for 125 V or 24 Vdc.

Input voltage ratings to match the wetting voltage. For field contacts with a 24-volt power supply, inputs to be rated for 24 volts as shown on Drawing E-607.

51. In section 16600 on page 3 part 2.01 numeral A.2 it is stated that the digital clock is SEL2407-1. However, the drawing E-607 sheet 127 of 152 depicts an SEL-2488 digital clock. Please, clarify whether the digital clock is SEL-2488 or SEL-2407-1.

Provide SEL-2488 Network Clock with matching 9524B antenna.

52. In section 16600 on page 5 part 2.01 numeral K 4 the HMI screen specifications are in Appendix A. It appears Appendix A only includes an IO list and not screen details as described in section 16600. Will HMI screen development be part of the project or only the supply of equipment capable of HMI use? IF HMI development will be required will an addendum with missing information be provided?

HMI screen development is part of the work of this contract. Section 16600.2.01.K.4 should refer to "APPENDIX B". *Appendix B, Touch Screen HMI Layout and Functional Design Specification* will be provided.

53. Is there an existing SKM/ETAP/Aspen model available which the responsible party can make edits to, or is it expected a new model will be created from scratch? If a new model is to be created, will all necessary information required to create the model be provided by others (i.e. data sheets, nameplate information, and manufacturer or field test reports)?

There is no existing model. The Contractor is responsible to create the model and obtain all necessary data. Given that the Contractor will procure all of the new electrical equipment, the data being requested will be part of their submittals and certified shop drawings. For the limited equipment that is existing to remain, the Contractor is responsible to field survey and collect data need to complete the studies.

54. Per the schedule of bid items, Item 0220 'Flexible Pavements' lists a quantity of 34 Tons, however, spec section 02741 – Paragraph 4.1 states that the payment for Flexible Pavement "...shall be made per square yard." Please clarify unit payment type.

Payment shall be made per ton, see revised specification section.

55. Please clarify the measurement and payment of concrete and reinforcing steel for the steel pipe piles; is payment included in Bid Item C02-005-002.0 – Pile Installation or is measurement and payment included in Bid Items C03-001-002.2 – Concrete Reinforcement and C03-001-003.2 – Cast-In-Place Concrete respectively?

Payment for reinforcing is to be included in the pipe piles with the item Pile Installation. All other reinforcing in division 3

56. There are a number of sections and details which call out the placement of Compacted Structural Fill of unspecified thickness under the 6" Crushed Stone Layer for the various project structures (Dwgs S-501, 502, 503, 511, 550; A-312, 313, 314). Please provide the parameters when the placement of this material is required. Does the location of the work relative to the existing wetlands foreshadow the encountering of an unknown quantity of unsuitable subgrade material which will have to be excavated and replaced? Please clarify who will make this determination for the placement of Compacted Structural Fill and how will the Compacted Structure Fill be measured and paid for along with both the associated Excavation and Disposal of existing subgrade soil?

Please see the addendum structural drawings regarding the subgrade for the structures. Also, refer to the civil drawings and specifications.

57. Dwg. A-101 – Architectural Substation Building Ground Level Plan and Dwg. A-102 - Architectural Substation Building First Floor Plan indicate the placement of Gravel in the XFMR Crawl Space and Stair 01 Areas along with Gravel Ballast in the Transformer Area respectively. Dwg. A-401 – Architectural Stair Plans & Sections also indicates Stair 01 as having an Impervious Surface/Gravel Infill. Please provide material specifications for Gravel, Gravel Ballast and Impervious Surface/Gravel Infill and also provide the required layer thickness of the various materials.

Gravel Surface Treatment Detail on C-500 is to be used for these areas.

58. We respectfully request that the bid date for this project be extended four (4) weeks to October 18, 2018. We are actively soliciting qualified vendors/subcontractors to provide pricing for this project and are awaiting clarification of the DBE percentage goals associated with this work. Without the clarification of established goals, it is difficult to assure proper coverage in the current time frame. Finally, there are many RFIs which have been submitted and not yet addressed. This additional time will provide the NJTA a more complete and responsive bid.

NJ TRANSIT will take into consideration a bid extension, which will be determined at a later date.

59. Please confirm that all reinforcing steel shall be epoxy coated per Reinforcing Steel Note 2 on Dwg. S-001.

All concrete reinforcement steel will be galvanized. Please refer to the addendum drawing S-001.

60. Specification Section 02112 – Staging and Stockpiling of Excavated Soils; Part 1, 1.1A states that excavated soil shall be staged and stockpiled at an area designated by NJT. Please provide the designated project area that NJT wants the contractor to use so we can understand the logistics and properly develop pricing in our bid.

Soil stockpiling is to be in the area adjacent to the proposed substation building as approved by the CM.

61. How is the work related to the Enhancement and Restoration of Wetlands shown on Dwgs. C-103, C-104 and C-501 paid for? Provide specifications for this work.

See Specification Sections 02056 and 02930, payment to be included under 'Plantings', see revised Bid Form.

62. Could you please provide section details for the conduits located in the center of drawing E-013, similar to those shown on drawing E-300. The cables in question include C-040, P-017, and P-022.

Conduit sizes and quantity are shown on cable schedules E-704 and E-707. Construct duct bank per Detail 4 on Drawing E-301. Note that additional information is being provide regarding duct bank construction shown in Detail 4 in response to Question #5 from 8/27/18.

63. The door schedule on Drawing A-601 lists the Head Detail for Door S03 as 9/A601. This appears to be an incorrect reference, please clarify.

Yes this is an incorrect reference; head detail for door S03 shall be detail 1/A-601

64. Please confirm that all excavations across tracks are to be open-cut excavation.

Yes, excavations across tracks are to be open-cut 2 tracks at a time.

65. Specification Section 02111 "Management of Excavated Soils" Part 1, 1.1 Description, Letter B states that the environmental report summarizing the due diligence investigative results, prepared by Gannett Fleming and dated February 13, 2015, is attached for reference to these specifications. This report was not included in the available bid documents. Please provide a copy of referenced environmental report.

Please refer to the June 2015 Hazardous Materials Assessment Report for additional information.

66. Please provide the anticipated award date and anticipated notice to proceed date.

NJ TRANSIT does not have a date for Contract Award or issuance of Notice to Proceed. It is anticipated that the Contract will be awarded in 2019.

67. Please confirm that there is no Project Labor Agreement associated with this project.

As described in the General Provisions 11.1 New Jersey Prevailing Wage Act, "the Contractor and each Subcontractor shall comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq., and this Act is hereby made a part of this Contract. All workers shall be paid not less than the prevailing wage rate as designated by the Commissioner of Labor and Industry or the Commissioner's duly authorized deputy or representative. Please refer to the General Provisions for further detail.

68. Please confirm that the contractor is not responsible for any permits fees including the building permit's fees.

NJ TRANSIT pays for the building permit fees.

69. Please confirm that the retainage is 10%.

As described in the General Provisions 12.5, "in making partial payments for work, there will be retained by NJ TRANSIT five percent of the estimated amount until completion and final acceptance of all work covered by the Contract and issuance of a Final Certificate of Payment."

70. Please confirm that the Architect and Design Professionals will provide the contractor with all the CAD files and backgrounds at no cost to the contractor.

NJ TRANSIT will provide ACAD files to the Contractor.

71. Please confirm that all field testing and inspections will be performed and paid by the owner.

NJ TRANSIT will conduct site inspections; testing of equipment and materials to be provided by the contractor as defined in the respective specification sections.

72. Please advise who is the authority having jurisdiction that will perform code compliance review and inspections.

NJ Department of Community Affairs

73. Please confirm that the authority having jurisdiction on the project have already reviewed plans and issuing permits is expected to happen within 15 days of receiving a Notice to Proceed.

NJ TRANSIT has secured the plan review permits.

74. For bonding purposes, please provide the estimated budget for the project.

NJ TRANSIT does not disclose the budget for its projects.

75. Please confirm that the owner is tax exempt and a tax exempt certificate will be provided to the contractor upon award so no sales taxes should be counted during the bid.

NJ TRANSIT will provide the successful Contractor with a tax exempt certificate.

76. Please confirm that the contractor doesn't have to perform certain percentages of the scope of work by its own forces and if this is not the case, please advise what percentages are required by the contractor to perform.

As described in the General Provisions 1.9 Assigning and Subcontracting Contract, "the Contractor shall perform with its own organization and with the assistance of workmen under its immediate superintendence, work amounting to not less than twenty (20) percent of the Contract Price, exclusive of Bid Items for Insurance, Performance/Payment Bonds, Mobilization and Allowances."

77. Please confirm that NO site contaminants are existing on any of the site soils or ground water.

Please refer to the June 2015 Hazardous Materials Assessment Report for additional information.

78. Please clarify the allowable work hours for all work under this contract.

The Bay Head yard and tracks are active all hours of the day and night. The Contractor shall coordinate work hours, including track outages and crossings with the Construction Manager. Outages will be accommodated with advance planning and approvals. Note that the Borough of Bay Head may not permit any construction activities on the weekend. Also, refer to the Special Provisions for use of the premises, coordinate with the Construction Manager and provide details in the SSWP for NJ TRANSIT review.

79. Please clarify who is responsible for payment of Flaggers or Railroad Protective Personnel under this contract?

NJ TRANSIT will provide flagmen and Railroad personnel as required.

80. Please clarify what constitutes Railroad Protective Personnel and provide hourly costs associated with same for estimating purposes should this cost be the responsibility of the Contractor.

NJ TRANSIT will provide flagmen and Railroad personnel as required.

81. Page 2 of 23 of the Appendix D Governing Rules for Working Within the Railroad Right of Way - EBS MFC 2/13/2017 indicates that the contractor is responsible to provide for transportation of Flaggers and Railroad protective personnel to and from the nearest NJTRO train station. Please clarify where this station is in proximity to the substation yard so we can estimate costs associated with this transportation.

The nearest station is the Bay Head Train Station.

82. Please provide a copy of the current collective bargaining agreement in place for payment of flagging personnel as stated in the 5th paragraph on Page 2 of 23 of the Appendix D Governing Rules for Working Within the Railroad Right of Way - EBS MFC 2/13/2017

Refer to the General Provisions, Appendix D Governing Rules for Working within the Railroad Right of Way for details about payment for the flagging personnel.

83. Page 2 and 3 of 23 of the Appendix D Governing Rules for Working Within the Railroad Right of Way - EBS MFC 2/13/2017 states that "In general, a recommendation is made that final payment to Contractors , not be made until NJTRO has been reimbursed for all costs associated with providing inspectors and or engineers to insure adherence to plans and specifications and to further insure use of approved construction methods" We as the contractor need to include these costs in our bid and as presented it is not possible to determine an accurate accounting of these costs. We cannot determine from the plans and documents when NJTRO may require these personnel on site. Will the Owner consider providing an allowance for payment of these costs to assure a more accurate and balanced bid?

NJ TRANSIT will provide flagmen and railroad personnel as required at no cost to the General Contractor.

84. Please reference Drawing C-002 Note 21 in where testing for all excess excavated material is required. Please confirm if the testing will be covered by the testing allowance. If not please provide frequency of testing requirements.

Costs for testing of soil prior to being exported off site will be included within the Contaminated Soil Disposal – ID27 unit cost. Any additional soil testing at the request of the NJT will be covered under the testing allowance.

85. Please reference Sheet 5 in where there are Existing Overhead electrical lines designated for removal. Please confirm if the Overhead lines are to be removed by the Contractors Electrical Subcontractor or will NJ Transit or JCPL perform this work.

This work is to be coordinated with JCP&L and removed by Contractor.

86. Please reference Sheet 5 in where the Layover and General Services Substation are designated for removal and demolition. Please provide as builts of all building features and details including but not limited to Foundation details and depths, foundation piles, etc.

Available existing and/or As-Built drawings are provided with this Addendum.

87. Please reference Sheet 6 Note 4, in where the Note states that Conduit Crossing the Tracks will be allowed two tracks at a time at "times" approved by NJ Transit. Please confirm the duration of the outage and if it is nights, Saturdays or Sundays.

The tracks are active all hours of the day and night. The Contractor shall coordinate track outages and work hours for track crossings with the Construction Manager. Outages will be accommodated with advance planning and approvals. Note that the Borough of Bay Head may not permit any construction activities on the weekend and during the night. Also, please refer to

the Special Provisions for use of the premises and provide details in the SSWP for NJ TRANSIT review.

88. **Please reference Drawing S130 in where Details for the Pad Mount Transformer #2 is depicted. The Transformer Framing is supported by Steel Columns with a Base Plate. However there are no foundation details depicted for this structure. Please provide foundation details to which the columns are to be set.**

Foundation details/plan shown on drawings S-100 & S-101. Please match the Grid lines with foundation Drawings S-100 & S101.

89. **Please reference Drawing S520 & S541 in where the Typical Pile Detail is depicted. The "Steel Pile Cap" (i.e. Sleeve) detail indicates a 5/16" Shop Weld on the inside of the Sleeve. This detail is not practical nor constructible as a shop weld. Please confirm this weld can be a field weld.**

This can be a field weld. Please see the addendum drawings.

90. **Please reference Drawing E-030 Note 1 in where the Note states the Substation Building is to be demolished "by others" in this contract. Please confirm the fencing and building is to be demolished under this contract and it is the Contractors option to self-perform this work or have a Subcontractor perform this work.**

Change Key Note 1 to read "Existing Substation Building and Fencing to be Demolished as part of the Work of this Contract". It is not this intent to direct the contractor as to the means to accomplish this.

91. **Please reference Drawing E-031 in where the generator and the Day Tank are designated for removal. Please confirm how many gallons of diesel fuel are left in the tank that require removal and disposal**

The fuel tank has a capacity of 1,000 gallons and is assumed to be full.

92. **Please reference Drawing C010 and C101 in where the Existing Monitoring Well is to be abandoned in accordance with NJAC 7:9-9.1 ET and the New Well is to be installed in accordance with the abandoned well construction log. Please provide NJAC 7:9-9.1 ET and the Construction Log. We were unable to locate this information.**

The abandoned well will be sealed by others and is not in the contract; notes on the drawings are modified to reflect this. The new well, if required, will be installed by others and is not in this contract.

93. Please reference Drawing C101 in where on the left side of the Site Plan there is a note that references the reader to A101-A105 for the Transformer Platform details. However A101 through A105 do not provide any details of the Transformer Platform. Furthermore the drawings do not include Drawings A104 or A105. Please provide Architectural Transformer Platform details if necessary. Please also provide Drawing A104 and A105 if they exist.

See revised C-101, callout has been revised to see S-130.

94. Please reference Drawing A102 in where on the North Elevation between Column Line 1 and 1.A there is a Building Section cut through the wall references the reader to 3/A312. However Section 3/A312 on Drawing A312 indicates a Concrete Slab on Grade for this space and Drawing A101 calls for this area to be stone surfacing. Please confirm if the section or the plan is correct and if the room receives a slab on grade or stone surfacing.

Area shall be gravel as per Drawing A-101

95. Please reference Drawing A102 in where on the left side of the building plan there is an elevation annotation that references the reader to Drawing A602 Elevation 15. However there is no elevation Detail 15 on A602. Please clarify the annotation of or provide the detail.

Elevation annotation referring to drawing 15/A602 shall be ignored, this is a dead end reference.

96. Please reference E032 in where there is a annotation for the designation of removal of an Existing Diesel Fuel Storage Tank. Please confirm the size of the tank and how much fuel remains in the tank and if the fuel is to be removed and disposed by the Contractor. Furthermore please confirm if Foundation and other Appurtenances (bollards, access stairs, etc.) of the tank also need to removed. If so please provide as builts of all as well as restoration details of the area.

The fuel tank has a capacity of 1,000 gallons and is assumed to be full. Yes, plan to remove foundation and appurtenances.

97. Please reference Drawing C101 in where several Boring location annotations are depicted. We have been unable to locate the Boring Log report in the contract documents. Please provide the documents.

Please refer to the March 2016 Bay Head Geotechnical Report.

98. Please reference Specification 2860 and 2880 Lead Paint and Universal Waste respectively. Please provide a report indicating the location and quantities of the Lead and Universal Waste.

Please refer to the June 2015 Hazardous Materials Assessment Report for additional information on 02860. There are no quantities for 02880.

99. Please reference specification 2111, Section 1.1, B. in where a reference is made to an Environmental Report prepared by Gannet Fleming dated Feb. 13, 2015. Please provide the report.

Please refer to the February 2015 Limited Site Investigation Report for additional information.

100. Please clarify the following conflicting statements. Specification Section 02113 ONSITE REUSE OF EXCAVATED SOILS AS CONSTRUCTION FILL states under Article 4.1 PAYMENT that work covered by this Section shall be compensated for in the "Backfilling" Cubic Yard bid Item however is noted in Article 4.2 MEASUREMENT that the work in this section will not be measured for payment.

Measurement is cubic yard.

101. The quantity of pile installation posted on Bidx is significantly higher than our estimate after carefully reviewing the drawings. Please confirm the bid quantity listed in the documents.

Please see revised Bid Form with quantity of 4354 VLF.

102. We only note (1) proposed Fire Hydrant to be installed west of the proposed Substation Bldg., however, the Bid Quantity for Item 190 'Fire Hydrant Assembly' is (2). Please clarify and adjust the Bid Quantity, if necessary.

There is 1 fire hydrant, see revised Bid Form.

103. Please confirm where the proposed Wetland Restoration work shown on Dwg. C-103 is to be reimbursed? No Bid Item and Specification exists for this work. Please advise and provide as may applicable.

Wetland Restoration to be paid for under lump sum item 'Landscaping' see revised Bid Form and specification sections 02056 and 02930.

104. Please confirm where the proposed Bollards are to be reimbursed?

Bollards are to be paid under lump sum item 'Site and Street Furnishings' see revised Bid Form and C-500.

105. Regarding Item 220 'Flexible Pavements' in Tons and Item 230 'Rigid Pavements' in SY, please clarify where each Item applies to in the proposed scope of work of this project. Also, the Asphalt Pavement – Curb Detail on Dwg. C-500 shows (2) courses, 4" and 6", between the surface course and subbase. Please identify what these courses are to be.

Flexible pavement is for the asphalt pavement as shown on C-500 detail Asphalt Pavement – Curb Detail and rigid pavement is for the concrete; missing information has been provided on revised C-500.

106. We have attached for your reference, Spec Section 05120, Paragraph 1.05A, Structural Steel Fabricator. We have been asked by one of our Fabricators if this paragraph can be amended to allow an AISC Certified Standard For Steel Building Structures Fabricator. This certainly would allow more participation in the bid process for this work by more Fabricators.

Please follow the attached Structural Steel specification.

107. It's been brought to our attention by several Structural Steel Fabrication Shops that have reviewed the Structural Steel Specification Section 05120 for the Bay Head Substation Project and have presented the concern with the Quality Assurance Article 1.05,A,1 that states that 'All structural steel must be fabricated at a fabrication shop having a Category III certification in accordance with AREMA Manual Chapter 15,section 3.1.1'.

Many, if not all of the Steel Fabrication Shops, have AISC Certification but do not have AREMA Certification. Since this project does not involve steel railway structures, please advise if AISC Certification and AISC Standards would be acceptable.

Please follow the specification.

108. We have attached a copy of Spec Page 02010-3 which refers to an Environmental Report prepared by Gannett Fleming, dated February 13, 2015. We do not see this Document on the site for this bid. Please provide this Report to the Bidders and allow sufficient time to review this data.

Please refer to the February 2015 Limited Site Investigation Report for additional information.

109. The Allowance in the Bid Documents for the Permit Fees is $122,026.00 which is the same as the Allowance for Laboratory Testing. It would seem this is a typographical error. Please address this issue.

Not a typo, amount is the same for both.

110. There are two (2) drawings (Sheets 10 & 11) pertaining to the Wetlands Mitigation. We do not find a Pay Item for this work, nor a Specification. Please address this issue.

Wetland Restoration to be paid for under lump sum item 'Landscaping' see revised Bid Form and specification sections 02056 and 02930.

111. We have attached Spec Page 02840-1 from the Asbestos Abatement Spec for your reference. There is no quantity indicated and we feel you should create an Allowance Amount for this work.

Bid Form included an allowance under pay item 'Asbestos Abatement'

In addition there should be an Allowance Item also created for the Lead Abatement referred to in Spec Section 02860.

Please refer to the June 2015 Hazardous Materials Assessment Report for additional information on 02840 and 02860.

112. There is a Bid Item – CAST STONE, with a quantity of 1 LS. We do not find a Specification for this work. Please provide this Specification.

Please refer to 5/A-231, 8/A-501, 12/A-602, and Specification Section 03450.

113. The Allowances for your various Bid Items are odd amounts, and some do not appear to be realistic amounts. Please address this issue.

Allowances are correct, though NJ TRANSIT has made some slight modifications in the Revised Bid Form.

114. There is no Pay Item for the Wetland Mitigation work shown on Drawings C-103 and C-104.

Wetland Restoration to be paid for under lump sum item 'Plantings' see revised Bid Form and specification sections 02056 and 02930.

115. There is no Pay Item for the Stone Layer under the Transformers at the Substation Building shown on Drawings A-101 and A-102.

Stone will be paid under Bid Item, "Backfill"

116. There is no Pay Item for the 6" Stone Layer under the Slabs on Grade.

Stone will be paid under Bid Item, "Backfill"

117. There is no Pay Item for the 6" of DGAB under the Flexible Pavement Item 22.

Payment to be included within the Flexible Pavement unit price.

118. Regarding the quantity of 34 Tons for Item 22: Flexible Pavement. There is no quantity provided to restore all of the paved areas to be disturbed by Utility, Duct Bank and Building Construction that will disturb the areas of pavement on Drawings C-101 and C-102.

Please see revised Bid Form. The cost for the restoration to existing conditions is to be included with the related item unit price.

119. Item 18: Pile Installation has a Bid Quantity of 6,106 Linear Feet. This is way overstated for the 70 Piles on the drawings. Our quantity is 4,555 LF. Please address this issue.

Please see revised Bid Form.

120. Item 15: Excavation. We assume this is for General Site work and the Foundation Excavation for the various buildings. The excavation and backfill for the Utilities and Duct Banks are included with those Items. Please confirm this.

Correct, the excavation, backfill, and restoration for the utilities and duct banks are included with the related item unit price.

121. Item 16: Backfill. Same issue as above in Item 7 for the excavation.

Correct, the excavation, backfill, and restoration for the utilities and duct banks are included with the related item unit price.

122. Item 12: Contaminated Soil Disposal, ID-27. The bid quantity of 1,496 Tons closely represents what the conversion would be for the Item 15 – Excavation. How will we be paid for the ID-27 materials generated by the Utility and Duct Bank items?

Duct Bank materials are included within the Contaminated Soil, ID-27 quantity of 1,496 tons.

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

November 2, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 8

To Whom it May Concern:

The following constitutes Addendum No.8 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, December 6, 2018.

This concludes Addendum No. 8. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

November 27, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 9

To Whom it May Concern:

The following constitutes Addendum No.9 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, December 20, 2018.
2. The deadline to submit questions has been extended to Tuesday, December 4, 2018, COB.

This concludes Addendum No. 9. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
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December 12, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 10

To Whom it May Concern:

The following constitutes Addendum No.10 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, January 10, 2019.

This concludes Addendum No. 10. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

December 28, 2018

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 11

To Whom it May Concern:

The following constitutes Addendum No.11 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Tuesday, March 12, 2019.

This concludes Addendum No. 11. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

March 1, 2019

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 12

To Whom it May Concern:

The following constitutes Addendum No.12 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

1. The bid due date has been extended to 2:00 p.m., Thursday, March 28, 2019.
2. Responses to questions have been attached.
3. The deadline to submit questions has been extended to Friday, March 8, 2019, by **3:00 p.m.** No questions will be accepted after this date and time.

This concludes Addendum No. 12. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

1. **Per the civil site plans, details, specifications, and responses to questions provided in Addendum 7, the only area that flexible pavement is required to be installed and measured for payment is along the approx. 140' of new curb in front of the new substation building. Assuming both the asphalt base and surface courses are measured and paid for, the flexible pavement totals less than 6 tons. In that Spec Section 02741 requires the contractor to include incidental costs such as excavation, disposal, DGA, etc. within the unit price for flexible pavement, please clearly show the limits for the balance of bid item quantity for bidders to develop their costs. Also, please confirm that both courses of asphalt will be measured and paid for as Item 26- Flexible Pavements (i.e. 4 tons of base course +2 tons of surface course= 6 tons of Item 26- Flexible Pavement), otherwise the bid quantity should be significantly reduced.**

   Please see the revised Bid Form.

2. **Addendum 7 added an item to the proposal for static pile load tests. The bid documents do not make any reference to, or provide any information regarding, static pile load tests. Please provide the number, location, specification, and criteria for the static pile load tests, or remove the item from the proposal.**

   The Static Pile Load Test has been removed. Specification 02461 payment section has been revised.

3. **The response to Question 111 states that the bid form includes an allowance under pay item 'Asbestos Abatement', however the Asbestos Abatement item is currently a Lump Sum in the proposal. Please revise the Asbestos Abatement item and provide the allowance amount.**

   Please see the revised Bid Form.

4. **The response to Question 30 states that the revised bid form has an updated quantity of 22 tons for Flexible Pavements, however the currently quantity is 24 tons. Please revise the proposal or correct the response to Question 30.**

5. Please see the revised Bid Form.

6. **NJ Transit General Provision for Construction, Section 4.2, Use of Premises and the Special Provision modifying this section do not describe the site specific allowable track closures for the Bay Head Yard. Multiple responses to requests for information on the track closures have been provided which state "The contractor shall coordinate track outages and work hours for track crossings with the Construction Manager." The installation of the ductbanks underneath the tracks must be performed during an outage and the allowable closure information must be provided so that our proposal can accurately incorporate the required costs to allow for safe installation of the ductbanks. Please provide the allowable track closures schedule so that we can accurately prepare our bid.**

Bay Head yard is an active rail yard and it is possible to schedule outages for two (2) tracks at a time that may be left open for 2 days; however, at the discretion of the Yard Master and in coordination with the Construction Manager, outages may be extended when exact dates are known. Due to ongoing operations in the yard, NJ TRANSIT cannot commit to more than a weekend outage, but outages extending for a week have been provided. Extended track outages shall be planned ahead of time. NJ TRANSIT will assist with the removal of railroad ties and will re-track each rail and inspect the work before the trench is covered.

7. **The revised Addendum No. 8 Bid Schedule has added an item for Static Pile Load Testing (Item C02-005-001.0.1). Please note that Specification 02461 – Steel Pile Piles only includes the requirement for Dynamic Pile Testing. Please provide a specification for Static Load Testing and designate/identify the piles which are required to be Static Load Tested.**

   The revised Bid form has removed the Static Pile Load Test.

8. **Please reference Addendum No. 7 Question No. 41 & 42 in where the NJ Transit response states that Overhead Line work will be added to the project as wells notes on drawings will be modified. The recently revised drawings (See question 2 for clarification of drawing attachment) do not reflect the referenced changes. Please issue the subject changes as soon as possible in order that the work can be solicited and priced.**

   The Pole Line plans and specifications are included with this addendum.

9. **Please reference Addendum No. 7 in where several of the answers reference "addendum drawings". However when reviewing the information contained on Bidx only Files labeled as "Addendum 1 Plans" and "Addendum 1 Specs" were included. After opening these files it became apparent that the files are the specifications and drawings that are referenced in Addendum No.7. Please confirm and change the file name on Bidx.**

   The Pole Line plans and specifications are included with this addendum.

10. **Please reference Addendum No. 7 Question #86 in where the answer states that As Builts were included as part of the Addendum. We cannot locate the drawings on Bidx. Please provide the drawings.**

    The 2002 as-builts of the yard and track improvements are provided again. Drawings of the substation buildings are not available.

11. **Please reference Addendum No. 7 Question #96 in where the answer does not respond to the entire question. The question requests information on the existing appurtenances and foundation as builts as well as restoration details. Please provide the as builts and restorations details and limits.**

    The foundation and related appurtenances (bollards, stairs, etc.) are to be removed and the existing surface is to be repaired as required to match adjacent area. Drawings of the substation buildings are not available; however, the building are supported on spread footings (size and number not known) and there are no pile

supports. The 1985 substation building is set on an 18" thick concrete pad that sits on a 24' crushed stone subbase.

12. Please reference Addendum No. 7 Question #111 in where the answer states that an allowance has been added to the bid form for Asbestos Abatement. Please provide the Asbestos Abatement Allowance.

Bid Form revised to change payment to allowance.

13. Please reference Addendum No. 7 revised drawing C-101 in where there was a note added to the area around of the proposed Generator Building and within the footprint of the existing substation building that states "Restore to Existing Conditions". Inasmuch as the Exiting condition is the existing building please provide restoration details and limits including as builts of the existing building. In the alternative is the existing building slab on grade to be left in place?

Note is referencing the existing ground surface (ie concrete, asphalt) not to restore the existing building or foundation.

14. Please reference Addendum No. 7 new drawing C-500A Trench (Ductbank) Restoration Details in where there is a note that states "Cut Existing Sheet Piles as Required". Please confirm where the proposed ductbanks pass through existing sheet piles.

No existing sheet piles anticipated, see revised C-500A with note removed.

15. In that the static pile load test item is a lump sum, please confirm that only one static pile load test is required to be performed under this contract. Also, please provide specifications, criteria, and details for the static pile load test.

Static Pile Load Test has been removed. Specification 02461 payment has been revised for the testing payment. Load tests shall be performed as per drawings and specification.

16. Per Spec Section 02461, in addition to PDA's required on the test piles shown on the plans, approximately 10 percent of the production piles may (emphasis added) be monitored as selected by the Construction Manager. Please confirm that the costs to perform PDA's that may be selected by the Construction Manager beyond those identified in the plans will be paid for under Supplemental Construction Costs.

Any additional test piles not shown on plans are to be paid for under Supplemental Construction costs.

17. Addendum #7 Response to Question #10 states that a bid line item has been added for Vibration and Movement Monitoring work. The bid form does not list this item; please advise.

Please see the revised Bid Form.

18. Addendum #7 Response to Question #36 states the "Tracks must be returned to service at the end of each outage" which did not fully answer the question. Since outages for the Ductbank work will most likely take the tracks out of service for durations of up to 2 weeks at a time; can the excavation pits be left open overnight or will they need to be covered?

All open pits must be covered before the contractor leaves for the day.

19. Addendum #7 Response to Question #78 states "Note the Borough of Bay Head may not permit any construction activities on the weekend"; for bidding purposes please confirm weekend work is not allowed.

The Borough of Bay Head will not permit construction activities over the weekends during the summer season starting with Memorial Day until Labor Day. A site meeting with the Borough Engineer, may be required prior to construction. The Borough reserves the right to restrict specific construction activities.

20. Addendum #7 Response to Question #111 states an allowance bid line item has been added for Asbestos Abatement. The bid form still lists this item as Lump Sum; please advise.
Please see the revised Bid Form.

21. Structural Drawing S-120 details the framing plan for Transformer-1; please confirm the framing is only supported on 2 piles at column line 13 and no concrete grade beams are required.

Yes. The framing is only supported on 2 piles at column line 13 and no concrete grade beams are required.

22. Electrical Drawing E-902 details the Wayside Power and Control Station Console pads; please advise which bid line item the concrete pads cost should be included in.

Concrete pads are 12" thick and are included in the Concrete formwork, reinforcement and cast-in-place line items. The bid quantities have been revised accordingly.

23. Specification Section 02010 – Environmental Requirements paragraph 1.6.C. notes Ms. Susan Allen of Hatch Mott MacDonald is the assigned LSRP for this project and the Gannett Fleming Limited Site Investigation Report page viii states the "LSRP to determine whether discharge back to groundwater within the project limits is feasible under a NJDEP-approved Discharge to Groundwater Permit-by-Rule (DGW PBR) or if off-site disposal at permitted facility is required"; please advise the following:

a) Has NJ Transit obtained the NJDEP-approved Discharge to Groundwater Permit-by-Rule (DGW PBR) permit?

NJ TRANSIT has not obtained the NJDEP-approved Discharge to Groundwater Permit-by-Rule (DGW PBR) permit.

b) Has the LSRP determined whether the contractors will be able to discharge back to groundwater?

The LSRP has reviewed the contaminant constituents and determined that, given the appropriate construction dewatering treatment and permitting, the water could be discharged to groundwater. Contrary to that documented by Gannet Fleming, Mott MacDonald documents the groundwater elevation within two feet of the ground surface. The contractor shall determine if discharge to groundwater is feasible.

24. The Structure Foundation Geotechnical Engineering Report prepared by Gannett Fleming paragraph 4.4 Groundwater Conditions notes groundwater will be encountered at depths as little as 1.5ft below surface grade thus substantial quantities of groundwater will be encountered on the project. In addition the Limited Site Investigation Report notes the groundwater is petroleum-impacted. Please confirm that for bidding purposes the contractor will be allowed to discharge back to groundwater and any additional treatment, containment and off-site disposal costs are covered by allowance Bid Line Item 0110.

Gross groundwater contamination as defined in Specification 02010, shall be paid for under the allowance bid item 'Grossly Contaminated Groundwater Treatment and Disposal'.

25. The item for Static Load Testing of piles has no description of how many of these tests there are or where they are or an ASTM number.

No Static Load Testing required and has been removed from Bid Form.

26. Regarding Q/A #6 in Addendum #7, the provided June 2015 Hazardous Materials Assessment Report did not provide any additional information as to the quantities of ACM materials or PCB containing materials to be removed under this contract. In order to accurately price this work we need these quantities. Please provide the quantities.

The Hazardous Material Report provides the testing results from the tested materials, no quantities are to be provided. The Contractor will assess materials or equipment that will be removed, collect samples to confirm the presence or absence of PACM, and develop quantities for abatement, removal, and disposal. The payment has been modified from lump sum to an allowance.

27. Specification Section 02840 provided for Asbestos Abatement states that "The work shall consist of the removal and disposal of all asbestos containing materials (ACM) and presumed asbestos containing materials (PACM) encountered during demolition, including but not limited to, window caulking,

window glazing, imitation brick face, floor tiles, condensate tank insulation and asbestos cement anchors bolt sleeves as shown on the plans or the existing drawings and as directed by the Construction Manager (CM) or as specified herein" The second paragraph goes on to further state that "The portions of the project where asbestos removal will occur include, but are not limited to, The General Service Substation (Bay Head Yard). This location shall be considered to be the asbestos work area and the table provided below is a schedule of ACM to be removed." The referenced table indicates ONLY electrical Putty in this building with the approximate quantity as "TBD". On page 17 of the same specification under 4.1A - Measurement it states "Removal of previously identified asbestos containing or assumed asbestos containing materials will be measured for payment on a lump sum basis. 4.2 – Payment – provides the Pay Item as Asbestos Abatement and the Pay Unit as Lump Sum. There is a note under this item which states "No separate payment will be made for removal of the asbestos cement anchor bolt; their associated removal procedures, air monitoring, and transportation/disposal; but the costs thereof will be included in the lump sum bid price for the pay item.

a. **Please clarify what we are to include as far as "presumed asbestos containing materials (PACM) in our bid to you. None of the materials listed were tested as per the Hazardous Materials Assessment Report provided as part of Addendum #7 documents.**

The payment has been modified from lump sum to an allowance.

b. **Are we responsible for testing PACM materials under this contract?**

The Contractor is required to confirm the presence or absence of PACM on equipment or materials that will be removed as part of the demolition/construction contract. Payment to be included under the allowance for the pay item - Asbestos Abatement.

c. **Where do we bill for testing PACM if applicable?**

Payment to be included under the allowance for the pay item Asbestos Abatement.

d. **The Specification indicates The General Service Substation is the Asbestos Work area associated with this project. Are we to assume then that we are not responsible for abatement of ACM or presumed ACM materials from other structures on the site?**

There is no additional anticipated asbestos abatement required outside of the General Service Substation.

e. **Please clarify if the existing cement anchor bolts have been designated as ACM material and if we are responsible for abatement of these asbestos-cement anchor bolts under this contract. Please provide the Hazardous Material Assessment Report associated with these anchor bolts and a quantity of units to be removed in order for**

us to properly price this item. Additionally please clarify which pay item the costs associated with this scope will be paid under?

The existing cement anchor bolts were not sampled to assess the presence of absence of PACM The Contractor is required to confirm the presence or absence of PACM on equipment or materials that could contain asbestos and that will be removed as part of the demolition/construction contract. Payment to be included under the allowance for the pay item - Asbestos Abatement.

28. **The Hazardous Materials Assessment Report by Gannett Fleming, dated June 2015, provided as part of Addendum #7 and referenced throughout Addendum #7 as a source for additional information in regard to the Hazardous materials remediation scope states that Electrical and Plumbing systems historically contain components that may contain asbestos and PCB's. The same report goes on to state that these systems, along with other suspect materials were NOT sampled or tested. The report contains Tables indicating the materials that they did test and proved positive for hazardous materials. This includes only electrical putty (ACM). Please clarify the remediation scope and clarify if we are responsible for Hazardous Materials sampling and testing under this contract. Further please clarify under what Pay Item costs associated with this scope would be included for payment?**

The Contractor is required to confirm the presence or absence of PACM on equipment or materials that could contain asbestos and that will be removed as part of the demolition/construction contract. Payment to be included under the allowance for the pay item - Asbestos Abatement.

29. **This scope of work MUST be clarified for us to properly provide costs for this work. If this cannot be clarified at this time, will the Owner consider providing an Allowance for all costs associated with Asbestos Abatement, Lead Abatement and PCB containing material abatement?**

Payment to be included under the allowance for the pay item - Asbestos Abatement

SECTION 17105

OVERHEAD TRANSMISSION SYSTEM

PART 1 GENERAL

1.1 DESCRIPTION

A. This section outlines the main features of and the requirements for the Overhead Transmission System (OTS) work to be performed under this contract.

B. Requirements applicable to work on or near the NJ Transit right-of-way are specified in the General Provisions for Construction and the NJTRO General Requirements for working along the right of way.

C. The work of this project shall be performed in conformance with the Contract Drawings, General, Special and Technical Provisions for Construction of New Jersey Transit Corporation (NJ Transit), and all applicable Federal, and Jersey Central Power and Light (JCPL) regulations.

D. In accordance with the contract requirements, de-energization of the existing transmission lines will be performed by JCPL.

E. For this project, the terms “Engineer” and “Construction Manager” used in these Technical Provisions, shall be as defined in the General and/or Special Provisions.

F. It is the intent of the NJ Transit to issue this Contract for construction of aerial structures to carry electrical power cables from JCPL connections to the Substation at the end of the line as an alternate to the existing transmission feed, and to upgrade the existing line accordingly.

G. The project, in general, involves civil/site work, pole and guy anchors, cable and electrical equipment procurement and installation as illustrated on the Contract Drawings.

1.2 DIVISION OF WORK

A. Transition locations shall be pole #14 on the new line tapped from the existing JCPL R-44 transmission line along Sea Avenue, and pole E3 on the existing JCPL C-203 transmission line that is currently feeding the Bay Head Train Yard.

B. Work by Contractor shall include but not be limited to:

1. All work from the transition locations, from pole #14 to pole #1, and from pole #E3 to pole #E1, as indicated on the Contract Drawings and as specified herein.

2. At the transition locations, supply and install pole #14 and pole #E3, including pole cross arms and hardware. Supply and install fuse cutout. Coordinate fuse size with JCPL before ordering material.

3. Provide all necessary coordination with JCPL, NJ Transit, Work by Others and other contractors working on this project.

4. Coordinate the transfer of ancillary wires and equipment from existing poles to be removed, to new poles as identified on the Contract Drawings. All material and labor for the complete transfer of ancillary wires and equipment shall be by the owning facility.

5. Provide all necessary interface assistance to JCPL.

6. Integrated Testing and commissioning of the OTS. This includes all necessary testing and testing coordination with JCPL and NJ Transit.

7. Remove and salvage existing items indicated on the Contract Drawings to be removed.

C. Work by Jersey Central Power and Light (JCPL) shall include:

1. All work from the transition locations, from pole #14 to the guy pole across Sea Avenue, and from pole #E3 to the existing pole JC42-6, as indicated on the Contract Drawings and as specified herein. The work shall include wire connections from existing JCPL overhead lines.

2. JCPL to complete a load study on the respective transmission lines and confirm size and type of fuse to be installed at each transition location.

3. Supply and install new metering equipment including telephone connection, and salvage existing metering equipment to be removed.

D. Work by Others shall include:

1. Work to relocate ancillary equipment and wires that are currently supported on poles that will be removed as a part of this project. This work shall include all labor and material to perform ancillary equipment and wires relocation complete in place.

1.3 RELATED SECTIONS

A. General Provisions.

B. Section 02220 – Demolition

C. Section 02230 – Site Clearing

D. Section 02582 – Underground Ducts and Manholes.

E. Section 16050 – Common Results for Electrical Work.

F. Section 16060 – Grounding and Bonding.

G. Section 16080 – Acceptance Testing of Electrical Systems

H. Section 16130 – Conduit and Boxes.

I. Section 16285 – Surge Protective Devices.

J. Section 17124 – Medium Voltage Cables, 35kV

K. Section 17152 – Insulators

L. Section 17226 – Galvanized Steel Wire and Wire Rope

M. Section 17220 – Support Steelwork

N. Section 17313 – Fittings and Hardware

O. Section 17310 – Laminated Wood Pole

P. Section 17340 – Medium Voltage Switch

1.4 REFERENCES

Pertinent provisions of the latest editions of the following standards shall apply, except as modified herein:

A. American National Standards Institute (ANSI)

B. American Railway Engineering and Maintenance of Way Association (AREMA)

C. American Society for Testing and Materials (ASTM)

D. American Institute of Steel Construction (AISC)

E. Institute of Electrical and Electronics Engineers, Inc. (IEEE)

F. National Fire Protection Association (NFPA)

G. Underwriters' Laboratories (UL)

H. American Wood Protection Association (AWPA)

I. InterNational Electrical Testing Association (NETA)

J. Acceptance Testing Specification (ATS)

K. Code of Federal Regulations (CFR)

L. National Electrical Code (NEC)

M. National Electrical Safety Code (NESC)

N. National Electrical Manufacturers' Association (NEMA)

1.5 SUBMITTALS

A. Submit in accordance with the General Provisions.

1.6 JOB CONDITIONS

A. Unless otherwise indicated, all materials, assemblies, equipment, product design, manufacturing methods, system installation, testing, and construction workmanship shall be fully operable with no impairment resulting from the impact of the range of worst environmental and temperature values, and soil condition of the project area.

B. Coordinate work with the work of other contractors working on this project.

C. The limits and extent of the work are shown on the Contract Drawings and specified herein. Any proposed modification to the Contract Drawings must be submitted to the Engineer for approval prior to starting the work.

D. The work involves the safety and protection of persons and property along an operating railroad. Unusual skill and experience is required to perform the work safely. The Contractor shall be responsible for the safety of workmen and rail operations.

E. Remove and suitably dispose of all unwanted construction materials and trash on a daily basis as the work progresses, in accordance with the laws and regulations and to the satisfaction of the Engineer.

F. Demolition shall be in accordance with applicable requirements of Section 02220.

G. Some clearing, grubbing or grading may be required at some proposed pole locations. Fell, cut, and trim trees and shrubs in a manner that will not damage adjacent property, vegetation, and material to remain. Trim branches that would either overhang the work area or impede work with tools designed for that purpose, in a manner that will result in the trees and shrubs suffering no other damage. Coat tree wounds larger than one inch in diameter with tree wound dressing.

Grub in a manner which will result in entire stumps being removed in trees larger than three inches in diameter. With smaller trees cut flush with the ground surface.

Dust control on or near the work shall be in compliance with applicable environmental codes and regulations.

Clearing and grubbing shall follow applicable requirements of Section 02220 – Demolition and Section 02230 – Site Clearing.

1.7 PROTECTION OF EXISTING AND ADJACENT PROERTIES

A. Existing utilities and facilities shall be located prior to commencement of work.

B. All shrubbery, paved streets, walkways, driveways, fences, buildings or other items adjacent to the work area shall be fully protected against damage during each stage of the work.

In the event that work activities were to disrupt or damage any existing or adjacent facilities or properties, the Engineer shall be notified. All such work shall proceed in accordance with NJ Transit procedures.

1.8 WARRANTY

A. Comply in accordance with the General Provisions.

1.9 DELIVERY, STORAGE AND HANDLING

A. Comply in accordance with the General Provisions.

PART 2 PRODUCTS

2.1 GENERAL

A. Contractor shall be responsible for the form, fit and function of all components supplied for the Overhead Transmission System. Detailed Shop Drawings shall be prepared to identify the form and fit of the proposed components.

B. NJ Transit has standard items and assemblies that are installed within the NJ Transit right of way. Materials called out on the Contract Drawings represent the quality and type required. An equal or better is acceptable, upon approval of the Engineer. Such material shall be service proven standard assembly or component from a manufacturer and supplier who is regularly engaged in the production of transmission materials for use in 35 kV utility line applications, and shall meet the dimensional, performance and specification requirements for the proposed OTS configuration.

C. Coordinate material to be supplied with NJ Transit.

2.2 MATERIALS

A. Medium Voltage Cables, 35 kV, shall conform to the requirements of Section 17124. Conductor size shall be as shown on the Contract Drawings.

B. Bonding and Grounding conductors and materials shall conform to the requirements of Section 16060.

C. Support Devices include but is not limited to support assemblies, transition assemblies and dead end assemblies.

1. All materials used in the components of the support assemblies shall be of sufficient strength and durability to withstand the loads as shown on the Contract Drawings, with the addition of a factor of safety of 2.5.

2. The material shall be light in weight and reliable to ensure a 30 year minimum life period.

3. The assemblies shall be of a proven and tested design, which shall have been used on other similar aerial pre-assembled cable installations.

4. Malleable Iron: Fittings or components made of malleable iron shall be grade 32510 or better and shall conform to ASTM A47. All galvanized components and fittings shall be galvanized in accordance with ASTM A153.

D. Conduits shall conform to the requirements of relevant sections of Section 02582, and Section 16130.

E. Insulators shall conform to the requirements of section 17152.

F. Down Guy Assemblies shall conform to the requirements of relevant sections of Section 17215.

G. Support Steel Work shall conform to the requirements of Section 17220.

H. Galvanized Steel Wire and Wire Rope shall conform to Section 17226.

I. Laminated Wood Pole shall conform to Section 17310.

J. Down Guy Anchors shall conform to the requirements of relevant sections of Section 17310.

K. Fittings and Hardware shall conform to the requirements of section 17313.

L. Medium Voltage Switch shall conform to the requirements of section 17340.

2.3 QUALITY ASSURANCE

A. Refer to applicable sections of Section 16050, Common Results for Electrical Work.

B. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR or a member company of the International Electrical Testing Association and that is acceptable to authorities having jurisdiction.

C. Testing Agency’s Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise testing specified in section 3.5 of this Section.

D. Source Limitations: Obtain cables and accessories through one source from a single manufacturer.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70 and marked for intended use.

F. Cable shall be standard equipment of proven performance as manufactured by reputable concerns. Cable shall be designed and constructed in accordance with the best practices of the trade.

G. Cable manufacturer shall be ISO 9001:2000 certified.

H. The manufacturer of the cables shall have produced similar electrical equipment for a minimum period of 10 years. Provide an acceptable list of installations with similar cables demonstrating compliance with this Section.

I. Furnish a certification verifying that all material included in the support assemblies has been designed, manufactured, inspected and tested in accordance with the Contract Documents.

PART 3 EXECUTION

3.1 CONSTRUCTION

A. Furnish and install all Overhead Transmission System in accordance with the Contract Drawings, the Division of Work, and as specified herein.

B. Verify all dimensions and measurements shown on the Contract Drawings prior to ordering any material or starting construction

C. Furnish and install electric line poles.

D. Furnish and install down guy anchors and down guy assemblies.

E. Furnish and install cross arms, brackets and small parts steel.

F. Furnish and install cable support assemblies.

G. Furnish and install dead-end assemblies, including tensioning.

H. Furnish, string, tension and install aerial 35 kV cables.

I. Furnish and install metering structures.

J. Furnish and install disconnect switches.

K. Furnish and install fuse cutouts.

L. Furnish and install metering structures.

M. Furnish and install pole signage. Refer to the General Provisions.

N. Furnish and install bonding and grounding.

O. Furnish and install conduit risers and related underground electric cables to the substation.

P. Furnish and install related telecommunication system.

Q. Furnish and install all necessary temporary material including poles, guys, insulators, splices, fittings, terminations and miscellaneous items required to enable the overhead transmission system to be constructed and tested complete in place.

R. Coordinate work with JCPL and coordinate other ancillary work indicated.

S. Remove and salvage items to be removed to the satisfaction of the Engineer.

T. Perform compliance testing of the OTS in accordance with the approved testing program. Check fit and tightness of all components and support assemblies. Check wires and cables for kinks, rolls and damage. Check that correct assemblies are installed at their specified locations. Measure and document wire attachment heights and spacing. Measure and record spans, pole information. Perform corrective work as directed by the Engineer at no additional cost to NJ Transit.

U. Perform integrated testing and commissioning of the system, from the existing JCPL utility lines to the termination in the substation. Perform corrective work as directed by the Engineer at no additional cost to NJ Transit.

3.2 STRINGING

A. All poles shall be plumb before stringing conductors.

B. Do not commence wire stringing until down guys are installed. Do not use the rails along the electric line route as temporary anchors.

C. Carefully handle conductors. Do not drag them over sharp objects nor allow them to be stepped upon or run over by vehicles. Avoid kinking, twisting or abrading the conductors in any manner. Inspect the conductor as it is unreeled for cuts, abrasions, and other injuries and report any findings to the Engineer.

D. Install the conductors and accessories in accordance with Manufacturer's recommendation.

E. Pull the conductors over suitable rollers or stringing blocks. Properly mount on the pole or cross arm to insure proper sagging. Prevent binding while stringing.

F. The tension on any conductor during stringing shall not exceed 50 percent of the ultimate strength of the conductor at the temperature existing at the time of stringing.

G. As installation of the cables proceed, progressively retention each down guy so that the pole to which the guy or guys are attached remains vertical. The tensions of double down guy wires shall be proportionally equal.

H. Cables shall drop down at termination poles through conduit riser system as shown in the Contract Drawings. All riser conduits attached to poles shall be firmly attached to the poles, and all attachments shall be made in conformance with applicable standards and requirements. The anchoring system shall constrain the horizontal movement of the conduit.

I. Conductors damaged during stringing may be repaired by direction of the Engineer. The length of the damaged section may be repaired by smoothing of the conductor with fine sandpaper or by cutting out the damaged section and splicing. Splicing of conductor shall be approved by the Engineer.

J. Make final adjustments to the transmission system so that turnbuckles and other adjustable fasteners have at least 60 percent of their take up adjustment remaining to provide for future maintenance.

K. Ensure that electrical clearances are met. Verify electrical clearances to existing catenary and ancillary wire crossings and supports, and other supports or objects along the OTS route, after sagging operation is complete. Record clearances and submit to Engineer.

3.3 SUPPORT DEVICES INSTALLATION

A. All support devices shall be installed as shown on the Contract Drawings.

B. All connections, bolts, and nuts shall be properly tightened in accordance with the manufacturer's recommendations.

C. All items shall be inspected for fit, damaged coating or bent/kinked members. Any piece found to be defective shall be rejected and a replacement shall be installed.

D. For stability during stringing, the support devices shall be temporarily restrained to prevent collapse due to swinging. The details of the restraint shall be submitted to the Engineer for approval.

E. Cotter pins and nuts on support devices shall be located on the same side of the structure to assure uniformity along the line and ease of maintenance.

F. Assemblies fitted with pins, cotters, bolts and nuts shall be oriented where possible in such manner as to lock these components together by gravity if the pins or nuts should become detached under service conditions.

G. Allow sufficient, but not excessive slack in jumpers and other leads. Make them neat and uniform in appearance and in general run in horizontal and vertical planes with rounded turns. Support all jumpers to prevent excessive movement between supports and to clear all conflicts and maintain clearances as required by NESC.

H. Components employing a hinge or swivel shall be greased with approved grease before assembly of the rubbing surfaces.

I. With prior review and approval by the Engineer, the Contractor may elect to install hardware such as turnbuckles not called for on the assembly drawing to facilitate installation. The strength and quality of this optional hardware shall meet or exceed the strength and quality of the other hardware in the assembly. Introduction of this hardware shall in no way change the character or alter the function of the completed assembly or the performance of the transmission line system. The cost to furnish and install such hardware shall be borne by the Contractor.

J. After installation of support devices and final stringing of cables, component adjustments must be possible so that the cable alignment is within the specified design tolerances.

3.4 BONDING AND GROUNDING

A. The grounding system shall meet the requirements of the National Electrical Code and the technical and safety recommendations of ANSI and IEEE.

B. The work shall be arranged in such a manner that each part of the bonding grounding system which is laid below finished grade shall be completed, inspected and tested before backfilling is done. All precautions shall be taken to assure that no damage is done to grounding and bonding conductors or connections during backfilling, compacting and concreting operations.

C. Testing for ground resistance shall be performed in accordance with the requirements of this Section.

D. All paint, scale, rust, oxidation, or other foreign material shall be thoroughly removed from the points of contact on all metal surfaces before any ground connections are made.

E. Field testing shall be thorough, complete and performed throughout the installation. Fully document the following as a minimum:

1. Electrical resistance tests shall be made for each new pole location to verify compliance with specified resistances.

2. Measure, record and report the resistance to earth of each foundation as soon as possible after installation so that corrective measures, if

required, may be made with minimum disruption of construction. Additional ground rods and cables shall be installed on each ground system installation, up to 3 rods per arrangement, to provide the specified resistances. All required ground resistances shall be equal to or less than 25 ohms.

3. Measure, record, and report the ground resistance at each location where a grounding system is installed, and list quantity of rods and any special conditions.

F. Resistance-to-earth tests shall be witnessed by NJ Transit's Construction Manager or designated agent and the written results of these tests shall be submitted to NJ Transit's Construction Manager or designated agent for evaluation and instructions regarding any corrective action which may be deemed necessary.

G. Ground resistance tests shall be made with a James G. Biddle Company Heavy-Duty, Megger Insulation Tester, or equal, using the three-probe method described in IEEE Standard 81.

3.5 FIELD QUALITY CONTROL

A. All cable lengths shall be continuous without splices from dead end to dead end.

B. A qualified testing agency to perform the following field quality control testing:

1. Perform testing as per manufacturer's recommendations and accepted industry practice.

2. Before installation in the field, test continuity of the conductors and insulation resistance of the 35kV cables. Terminal lugs shall be installed prior to cable testing. Conform to NETA ATS standards.

3. After installing the medium voltage cables and prior to energizing the electrical circuit, test for compliance with requirements.

4. Perform each electrical test and visual and mechanical inspection stated in NETA ATS. Certify compliance with test parameters.

C. Remove malfunctioning cable and accessories, replace with new units, and retest as specified.

D. Provide equipment required to perform tests. Prior to insulation and high potential tests, disconnect instruments and equipment that might be damaged during such tests. Conduct tests in presence of the Engineer. Schedule all tests through the Engineer and provide a minimum 48 hours notice. All equipment and instruments requiring calibration shall be provided with documentation to certify that the required calibrations have been performed.

E. Refer to Section 16080 - Acceptance Testing of Electrical Systems, for applicable system tests requirements.

F. Submit test procedure for approval and perform approved tests. Do not perform tests without an Engineer approved test procedure. Schedule all tests through the Engineer.

G. Perform corrective work as directed by the Engineer at no additional cost to NJ Transit.

H. Acceptance of the system will not be made until the entire work is completed including final adjustments, and all tests have been completed to the satisfaction of the Engineer.

3.6 FINAL SUBMITTAL

A. Final Drawings - At the completion of the project, all revisions shall be incorporated into the Contract Drawings, including shop drawings.

B. Record Documents – At project close out submit all record documents to the Engineer, including final drawings, and Operation and Maintenance Manuals.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Work covered by this Section shall be measured as a lump sum unit complete in place.

4.2 PAYMENT

A. Work covered by this Section shall be compensated for in the item “Electrical Pole Line” Lump Sum bid. This includes Overhead Transmission System support structures, down guy assemblies, small parts steel on required structures, cable and messenger support and dead end assemblies, stringing, tensioning and installing 35 kV cables, pole signage, bonding and grounding, temporary material, and all other work outlined in this Section and as found in the Contract Documents.

B. The bid shall be full compensation for furnishing all labor, tools, equipment, materials and other incidentals necessary to complete the specified task.

END OF SECTION

SECTION 17124

MEDIUM VOLTAGE CABLES, 35 KV

PART 1: GENERAL

1.1 SUMMARY

A. The work of this Section includes furnishing and installation of all materials and incidentals necessary for medium voltage preassembled aerial cables, 35kV, and support devices in accordance with the Contract Documents.

B. The work of this Section includes, but is not limited to, the following activities:

1. Install (1) set of 35 kV Preassembled Aerial 250 Kcmil copper cables, from the connection at existing JCPL utility lines to a pole transition location in accordance with the Contract Drawings.

2. Install bare aerial conductors as shown on the Contract Drawings including:

a. 35 kV open conductors, 336.4 Kcmil ACSR/AW, from the pole transition location to a meter and substation at the Bay Head Yard area.

b. 3/0 ACSR/AW ground wire

3. Install support devices for the cables as shown in the Contract Drawings. Support devices include but is not limited to:

a. Messenger Support Assemblies

b. Messenger Dead End Assemblies

c. Insulator and switch Assemblies

C. The limits and extent of cable installation work to be performed are as shown on the Contract Drawings.

1.2 RELATED SECTIONS

A. Section 17124 – Medium Voltage Cables, 35 kV

B. Section 17105 – Overhead Transmission System

1.3 REFERENCE STANDARDS

A. NFPA - NEC

B. ICEA (S-93-639/NEMA WC74 Shielded Power Cable 5-46KV) (P-79-561 Guide for Selecting Aerial Cable Messengers and Lashing Wires)

C. IEEE

D. NEMA

E. ASTM

F. UL (Type MV-105 per Standard 1072)

G. CFR

H. International Electrical Testing Association (NETA) Acceptance Testing Specification (ATS) for Electrical Power Distribution Equipment and Systems

1.4 SUBMITTALS

A. Product Data: For each type of cable indicated, include terminations for cables and cable accessories.

B. Obtain test procedure for approval.

C. Schematic cable connections, wire, conduit and trough schedules, duct assignment, conduit and trough layouts, cable layout and detailed Working Drawings for approval thirty (30) days prior to start of any work.

D. Maintenance data for materials and products for inclusion in Operating and Maintenance Manual.

E. Certified flame retardancy test reports and data for tests performed not more than 12 months prior to submittal for materials which are identical to those of the furnished cable.

F. Obtain smoke density test reports and data from tests performed not more than 12 months prior to the submittal for materials that are identical to those of the furnished cable.

G. Certified test reports demonstrating that cable complies with specified requirements and those of referenced ICEA and NEMA Standards.

H. Certificates from manufacturer and the Underwriters Laboratories Inc. verifying that products conform to requirements of this Section. Include certificates with submittal of Working Drawings and with each cable shipment.

I. Obtain Testing Agency and Testing Agency’s Field Supervisor Qualifications.

J. Obtain Manufacturer’s qualifications as listed in Article 1.05.F and G of this Section.

K. Obtain wire and cable samples not less than 24-inches in length and ten copies of the notarized certified test reports of each type and size of wire and cable to be furnished for the approval of the Engineer prior to delivery.

L. Submit a complete set of assembly and component drawings of support devices showing dimensions, weights, bill of materials, catalog cuts and related product data.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR or a member company of the International Electrical Testing Association and that is acceptable to authorities having jurisdiction.

B. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise testing specified in Article 3 of this Section.

C. Source Limitations: Obtain cables and accessories through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70 and marked for intended use.

E. Cable shall be standard equipment of proven performance as manufactured by reputable concerns. Cable shall be designed and constructed in accordance with the best practices of the trade.

F. Cable manufacturer shall be ISO 9001:2000 certified.

G. The manufacturer of the cables shall have produced similar electrical equipment for a minimum period of 10 years. Provide an acceptable list of installations with similar cables demonstrating compliance with this Section.

H. Furnish a certification verifying that all material included in the support assemblies has been designed, manufactured, inspected and tested in accordance with the Contract Documents.

PART 2 - PRODUCTS

2.1 INSULATED CABLE

A. Cable Type: MV-105 three (3) conductor

B. Voltage Rating: 35 kV.

1. Insulation Thickness: 133 percent insulation level.

C. Conductor: Compact Copper, Class B strand.

D. Conductors Sizes: 250 Kcmil.

E. Conductor Insulation: Heat and moisture resistance Ethylene-Propylene Rubber (EPR), and have the following properties:

1. The heat and moisture resistance EPR insulation shall be capable of withstanding operating copper conductor temperature of 105°C continuous. The insulation shall be highly moisture resistant, shall be free-stripping and leave the surface of the conductor clean. The conductor shall be cabled with a left hand lay and laid parallel to the 30% EHS copperweld messenger, bound with a rounded-edge flat PVC coated copper binding strap.

F. ICEA S-93-639, pg. 15 Conductor Temperatures Shield: Tape shall be free from burrs and shall be applied in such a manner that electrical continuity or contiguity will not be distorted or disrupted during normal installation bending.

2.2 BARE CONDUCTOR

A. Aerial ground wire shall be 3/0 6/1 ACSR/AW in accordance with ASTM B 549.

B. Bare transmission system conductors shall be 336.4 KCM ACSR/AW 30/7 in accordance with ASTM B 549.

2.3 SUPPORT DEVICES

A. All materials used in the components of the support assemblies shall be of sufficient strength and durability to withstand the loads as shown on the Contract Drawings, with the addition of a factor of safety of 2.5.

B. The material shall be light in weight and reliable to ensure a 30 year minimum life period.

C. The assemblies shall be of a proven and tested design, which shall have been used on other similar aerial pre-assembled cable installations.

D. Malleable Iron: Fittings or components made of malleable iron shall be grade 32510 or better and shall conform to ASTM A47. All galvanized components and fittings shall be galvanized in accordance with ASTM A153.

PART 3: EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

A. The Engineer shall provide a two week advance notice when it is acceptable to deliver the material.

B. Each cable unit shall be shipped securely packaged and labeled for safe handling and shipment.

C. Cables shall be handled in accordance with manufacturer's instructions. One copy of these instructions shall be included with the cables at time of shipment.

D. All packaged components and/or assemblies shall have a strong waterproof tag securely fastened to the package showing the assembly or component name, number, or identification code.

E. Packaging and/or packing methods of all assemblies or components shall be in accordance with the best commercial practice, adequate to ensure acceptance and safe delivery.

F. NFPA 130 Wiring Requirements

1. All wiring materials shall be in accordance with NEC and NFPA 130, Sections 5.4.2 through 5.4.9, and respective loading and clearance criteria of NESC.

3.2 STRINGING

A. All poles shall be plumb before stringing conductors.

B. Carefully handle conductors. Do not drag them over sharp objects nor allow them to be stepped upon or run over by vehicles. Avoid kinking, twisting or abrading the conductors in any manner. Inspect the conductor as it is unreeled for cuts, abrasions, and other injuries and report any findings to the Engineer.

C. Install the conductors and accessories in accordance with Manufacturer's recommendation.

D. Pull the conductors over suitable rollers or stringing blocks. Properly mount on the pole or crossarm to insure proper sagging. Prevent binding while stringing.

E. The tension on any conductor during stringing shall not exceed 50 percent of the ultimate strength of the conductor at the temperature existing at the time of stringing.

F. Conductors damaged during stringing may be repaired by direction of the Engineer. The length of the damaged section may be repaired by smoothing of the conductor with fine sandpaper or by cutting out the damaged section and splicing. Splicing of conductor shall be approved by the Engineer.

G. Verify electrical clearances to foreign wire crossings or other supports or objects after sagging operation is complete. Record clearances and submit to Engineer.

3.3 FIELD QUALITY CONTROL

A. All cable lengths shall be continuous without splices.

B. A qualified testing agency to perform the following field quality control testing:

1. Perform testing as per manufacturer's recommendations and accepted industry practice.

2. Before installation in the field, test continuity of the conductors and insulation resistance of the 35kV cables. Terminal lugs shall be installed prior to cable testing. Conform to NETA ATS standards.

3. After installing the medium voltage cables and prior to energizing the electrical circuit, test for compliance with requirements.

   a. Perform resistance tests through bolted connections.
   b. Perform insulation-resistance test. Individually test each conductor with respect to ground and adjacent conductors.
   c. Perform acceptance tests on cables, including terminations and joints. In accordance with ANSI/IEEE 400, tests of new cables can be performed by means of DC Hipot (direct voltage) orTan-Delta (dissipation factor testing). The test selection method shall be provided by the testing agency and approved by the Engineer in accordance with NJ Transit standard practices.

4. Perform each electrical test and visual and mechanical inspection stated in NETA ATS. Certify compliance with test parameters.

C. Remove malfunctioning cable and accessories, replace with new units, and retest as specified.

D. Provide equipment required to perform tests. Prior to insulation and high potential tests, disconnect instruments and equipment that might be damaged during such tests. Conduct tests in presence of the Engineer. Schedule all tests through the Engineer and provide a minimum 48 hours notice. All equipment and instruments requiring calibration shall be provided with documentation to certify that the required calibrations have been performed.

E. Submit test procedure for approval and perform approved tests. Do not perform tests without Engineer approved test procedure. Schedule all tests through the Engineer.

3.4 SUPPORT DEVICES INSTALLATION

A. All support devices shall be installed as shown on the Contract Drawings.

B. All connections, bolts, and nuts shall be properly tightened in accordance with the manufacturer's recommendations.

C. All items shall be inspected for fit, damaged coating or bent/kinked members. Any piece found to be defective shall be rejected and a replacement shall be installed.

D. For stability during stringing, the support devices shall be temporarily restrained to prevent collapse due to swinging. The details of the restraint shall be submitted to the Engineer for approval.

E. Cotter pins and nuts on support devices shall be located on the same side of the structure to assure uniformity along the line and ease of maintenance.

F. Assemblies fitted with pins, cotters, bolts and nuts shall be oriented where possible in such manner as to lock these components together by gravity if the pins or nuts should become detached under service conditions.

G. Allow sufficient, but not excessive slack in jumpers and other leads. Make them neat and uniform in appearance and in general run in horizontal and vertical planes with rounded turns. Support all jumpers to prevent excessive movement between supports and to clear all conflicts and maintain clearances as required by NESC.

H. Components employing a hinge or swivel shall be greased with approved grease before assembly of the rubbing surfaces.

I. After installation of support devices and final stringing of cables, component adjustments must be possible wire heights so that the cable alignment is within the specified design tolerances.

PART 4 COMPENSATION

4.1 MEASUREMENT AND PAYMENT

A. The work of this Section shall not be measured separately for payment but will be paid for as part of the “Electrical Pole Line” Lump Sum bid.

END OF SECTION

SECTION 17152

INSULATORS

PART 1: GENERAL

1.1 DESCRIPTION

A. The work of this Section includes furnishing and installing insulators including all hardware in accordance with the contract documents.

1.2 RELATED WORK

A. Section 17124 – Medium Voltage Cables, 35 kV

B. Section 17105 – Overhead Transmission System

1.3 REFERENCE STANDARDS

C. American National Standards Institute(ANSI):

1. C29.1 Test Methods for Electrical Power Insulators, including addenda C29.1a and C29.2a.

2. C29.2 Wet Process Porcelain Insulators (Suspension Type.)

3. Z55.7 Gray finishes for Industrial Apparatus and Equipment.

D. American Society for Testing and Materials (ASTM):

1. A47 Malleable Iron Castings

2. A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware

3. C150 Portland Cement

4. C151 Autoclave Expansion of Portland Cement

5. D116 Testing of Vitrified Ceramic Materials for Electrical Applications

E. National Electrical Manufacturers Association (NEMA):

1. HV-1 High-Voltage Insulator.

1.4 SUBMITTALS

A. Comply with the General Provisions.

B. Obtain manufacturer's certification for synthetic insulators that they have passed the tests specified in ANSI C29.1 after having been immersed in diesel oil at 1400F for 240 hours. Synthetic Insulators may be used as an alternate if sufficient justification is provided and approved by NJ Transit.

C. Certified test data together with a list and explanation of deviation if any.

D. Insulators shall be virtually maintenance free. If the manufacturer or supplier recommends specific maintenance procedures and data, they shall be submitted/approved without exception, prior to the supply of all insulators.

E. Submit catalog cuts and shop drawings depicting the general arrangement and details as are necessary to provide a comprehensive description and depiction of the work to be performed. Prepare all drawings accurately to a sufficiently large scale to show all pertinent aspects of the item and its method of connection, including:

1. All working and erection dimensions
2. Arrangements and sectional views
3. Details of materials, parts, include diversions, weight and performance

1.5 QUALITY ASSURANCE

A. Comply with applicable sections of Section 16050.

B. Inspection, tests, and samples shall conform to listed Specifications and Standards, and inspection and tests reports shall be submitted to the Engineer.

PART 2: PRODUCTS

2.1 MATERIALS

A. All insulators shall include the fittings and connections for attachment to the pole, or steelwork, as shown in the Contract Documents.

B. Fittings and hardware shall comply with the provisions of Section 17313, Fittings and Hardware.

C. The insulator shall be suitable for both horizontal and vertical mounting and installation, unless otherwise specified.

2.2 PORCELAIN INSULATORS

A. NJ Transit has standard items and assemblies that are installed within the NJ Transit right of way. Insulators called out on the Contract Drawings represent the quality and type required. An equal or better is acceptable, upon approval of the Engineer. Coordinate insulators with NJ Transit.

B. The insulators shall be made of the best commercial-grade wet-process porcelain conforming to ASTM D116.

C. The entire porcelain surface of the insulators that will be exposed after assembly shall be glazed in No. 70 light gray, in accordance with ANSI Z55.1.

D. The surface shall be free of imperfections. Pieces with imperfections in the glaze repaired by re-coating and re-firing, as well as those pieces repaired by re-touching with paint, will be rejected.

E. Metal parts of the insulator shall be made of malleable iron, Grade 3501B, to conform to ASTM A47, or open-hearth of electric furnace steel. All ferrous metal parts shall be galvanized in accordance with ASTM A153. Insulator fittings shall be provided for connections as shown on the Contract Drawings.

F. Cement used for assembling porcelain to metal shall meet or exceed the requirements of ASTM C150 and C151. The hardware which is in contact with cement shall be coated with bituminous paint.

G. Insulators shall be manufactured light gray, and manufactured by Hubbell, Lapp, or an approved equal.

H. The insulator assembly shall be configured to be as short as is possible, to minimize its impact on the line arrangements.

I. Insulators shall be tested in accordance with ANSI C29.1.

J. Insulator ratings for typical 35/46 kV line voltage application:

Application	Vertical Line Post	Dead End
Standard	ANSI 51-14	ANSI 52-6
Voltage Class, kV	46	35/46
Minimum Working Load, Pounds	1235	7500
Height, Inches	20-1/16	17 1/4
Leakage Distance, Inches	34.3	39
Dry Arc Distance, Inches	14.4	17.5
Working Cantilever Load, Pounds	1235	
Ultimate Cantilever Load, Pounds	2800	
ANSI 60Hz Dry FO, kV	170	190
ANSI 60Hz Wet FO, kV	125	140
Impulse Withstand – Positive, kV	235	180
Impulse Flashover – Positive, kV	260	320

2.3 MARKINGS

A. Each insulator shall clearly and permanently bear the manufacturer's name or trademark and year of manufacturer, imprinted without affecting the appearance or the function of the item.

2.4 PRODUCTION TESTS AND FABRICATION

A. The following tests shall be performed in accordance with ANSI C29.1

1. Visual and Dimension Test:

a. The entire surface shall be smooth and free from defects.

b. If adhesives are used, the insulator shall be inspected to see that the fillet of adhesive provides a complete seal between the coating and end fitting.

c. The insulator shall be inspected to verify that both end fittings are in line after being assembled on the rod.

d. The insulator shall be in accordance with approved Shop Drawings and the Contract Drawings.

2. Routine Flashover:

a. A sampling of not less than 5 percent of each type of insulators shall be subjected to a flashover test in accordance with ANSI C29.1. Should any test specimen fail, all insulators in the production batch of that specimen are subject to rejection. Alternatively, each insulator in the batch may be tested. Any insulators that puncture will be cause to have the insulator rejected.

B. Proof Test: All insulators shall be subject to a mechanical strength proof test. The insulators shall be tested at room temperature for ten seconds to 120 percent of the designed tensile, compressive or bending load. Failure shall constitute rejection.

PART 3: EXECUTION

3.1 DELIVERY, STORAGE AND HANDLING

A. Protect insulators from damage throughout delivery, storage and handling.

B. Store materials and equipment in accordance with manufacturer's instructions.

3.2 INSTALLATION

A. Install insulators in accordance the manufacturer's instructions, and as shown on the Contract Drawings.

B. Replace all damaged insulators until final acceptance.

3.3 INSPECTION

A. The QC Inspector in accordance with the QC procedures shall inspect insulators and shall provide a report to the Engineer. The Engineer reserves the right to inspect insulators during and after installation.

PART 4 COMPENSATION

4.1 MEASUREMENT AND PAYMENT

A. The work of this Section shall not be measured separately for payment but will be paid for as part of the “Electrical Pole Line” Lump Sum bid.

END OF SECTION

SECTION 17220

SUPPORT STEELWORK

PART 1: GENERAL

1.1 DESCRIPTION

A. This Section specifies the furnishing and installation of support steelwork associated with the Electrical Service Installation as shown on the Contract Drawings and specified herein.

B. Support steelwork includes Cross Arms and other Small Parts Steelwork as shown in the Contract Drawings.

1.2 REFERENCE STANDARDS

A. ASTM

A36 Structural Steel

A123 Standard Specification for Zinc (Hot Galvanized) Coatings on Products fabricated from Rolled pressed and forged Steel Shapes, Plates, Bars and Strips

A143 Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement

A153 Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware

A325 High Strength Bolts for Structural Steel Joints, Including Suitable Nuts and Plain Hardened Washers.

A148 Steel Castings, High Strength for Structural Purposes

A449 Quenched and Tempered Steel Bolts and Studs

A563 Carbon and Alloy Steel Nuts

A992 Structural Steel – Rolled Shapes (GR.50)

F436 Hardened Steel Washers

F593 Stainless Steel Bolts, Hex Cap Screws, and Studs

B. AWS

D1.1 Structural Welding Code

1.3 QUALITY ASSURANCE

A. Fabrication of steel shall be in accordance with AISC "Manual of Steel Construction".

B. Welding shall be in accordance with AWS D1.1.

1.4 SUBMITTALS

A. The Fabricator shall submit shop drawings, calculations and bills of materials giving complete information for the fabrication of the structure and component parts of the structure or attachment.

B. The Fabricator shall include details of the location, type, sizes of bolts and welds, and for welded structures, details of the welding as specified.

C. The Fabricator shall not make changes to the approved shop drawings without written authorization from the NJ Transit's Construction Manager.

PART 2: PRODUCTS

2.1 MATERIALS

A. Rolled shapes shall conform to ASTM A992 Grade 50. All other structural steel shall conform to ASTM A36.

B. All steel shall be galvanized in accordance with ASTM A123.

C. Bolts, nuts and washers for joints and connections shall be ASTM A325 galvanized in accordance with ASTM A153.

D. Weld Filler: Weld filler metal shall conform to AWS D1.1.

E. Safeguard against steel embrittlement in conformance with ASTM A143.

F. Safeguard against warpage or distortion of steel members.

2.2 FABRICATION

A. General: Cross-arms, fittings and accessories shall be fabricated to the dimensions indicated in the Contract Drawings.

B. Fabrication shall include shearing, punching, bending and forming necessary to complete the work. Shearing and punching shall be done cleanly and accurately, and burrs removed.

C. Methods and Tolerances: Cross-arms, fittings and accessories shall be fabricated by methods and within tolerances conforming to the AISC Specifications, except as otherwise noted.

D. Holes shall be drilled or punched only. Material thicker than 3/4" shall be drilled or sub-punched and reamed.

E. Welding: All welding shall conform to the AWS Structural Welding Code, D1.1. All welders shall be certified and qualified in accordance with AWS D1.1.

F. Weld Repair: Welds found to be unacceptable shall be repaired in conformance with the provisions of AWS D1.1, Section 3, and Workmanship.

G. Connections: All connections shall be high strength bolted or welded.

2.3 GALVANIZING

A. Galvanizing shall be performed only after completion of fabrication.

B. Immediately after surface preparation all steelwork shall be hot-dip galvanized in accordance with ASTM A123

C. All bolting material shall be hot-dip galvanized in accordance with ASTM A153.

D. Weight of Zinc coating to conform to requirements specified under Weight of Coating in ASTM A123, as applicable.

E. Safeguard against steel embrittlement in accordance with ASTM A143.

F. Safeguard against warpage and distortion of steel members in accordance with ATSM A384. Notify the NJ Transit's Construction Manager of potential warpage problems which may require modification of design before proceeding with steel fabrication.

2.4 DELIVERY AND STORAGE

A. Steelwork shall be properly marked and/or tagged with member markings in agreement with the approved shop (erection) drawings.

B. Loose material, including bolts, nuts, washers, and clips shall be tagged, packaged and shipped separately to prevent loss and to assure ready identification at the job site.

C. Support steelwork shall be delivered to the specified storage site.

1. Delivery locations and dates shall be coordinated with the NJ Transit's Construction Manager.

2. Steelwork shall be properly protected from damage, deterioration and loss during loading and transit to the delivery point.

D. All Steelwork shall be stored on supports above ground and shall be protected from damage by traffic or other contractor operations.

E. Steelwork shall be stacked and stored for ease of identification and for retrieval in the order of installation.

PART 3: EXECUTION

3.1 ERECTION

A. General

1. Erection shall conform to the applicable referenced standards and specifications, unless otherwise specified.

B. Alignment and Fitting

1. Each part shall be properly aligned before completing field connections. All members in completed structures shall be located and aligned within the AISC specified tolerance limits.

2. Minor misfitting shall be corrected by moderate reaming, cutting or chipping to the extent permitted by the NJ Transit's Construction Manager. All shop errors shall be reported to the NJ Transit's Construction Manager.

C. Field Bolting

1. High strength bolted connections shall be executed in accordance with the applicable AISC specification. A hardened washer shall be installed under the element turned in tightening.

D Touch Up

1. Immediately after erection, clean any bolted connections and abraded areas of shop coating.

2. Coat areas of damaged galvanizing with a compound such as Galvolly by Metalloy Products Co., Hardhat 2185 by Rust-oleum, or ZRC by ZRC Chemical Products, or approved equal.

PART 4 COMPENSATION

4.1 MEASUREMENT AND PAYMENT

A. The work of this Section shall not be measured separately for payment but will be paid for as part of the "Electrical Pole Line" Lump Sum bid.

END OF SECTION

SECTION 17226

GALVANIZED STEEL WIRE AND WIRE ROPE

PART 1 GENERAL

1.1 DESCRIPTION

A. This Specification Section covers furnishing and installing all grades of galvanized steel wire, preforms, and wire rope for use as down guys for the Electrical Service Installation, as shown on the Contract Drawings and specified herein.

1.2 RELATED WORK

A. Section 17105 – Overhead Transmission System

B. Section 17220 – Support Steel Work

1.3 APPLICABLE STANDARDS

A. Pertinent provisions of the following listed standards shall apply to the work of this Section, except as they may be modified herein, and are hereby made a part of this Specification to the extent required:

1. American Society for Testing and Materials (ASTM): A475 Zinc-Coated Steel Wire Strand

1.4 SUBMITTALS

A. Reports for each type of wire to be used containing the physical and mechanical properties of all components described in this Section shall be submitted. The conformance of components with these Specifications and the Drawings in the form of a manufacturer's certification shall be shown. Include the following as a minimum:

1. Size.

2. Type.

3. Material.

4. Number of and diameter of individual wires.

5. Overall diameter.

6. Cross section area.

7. Weight per foot.

8. Rated breaking load.

PART 2 PRODUCTS

2.1 DESCRIPTION

A. Components: The zinc-coated stranded wire shall be manufactured and tested in accordance with ASTM A475.

B. Performance: Physical properties of the zinc-coated stranded wire shall conform to the description in Table 1 of ASTM A475.

C. Materials: The material used for stranded steel wire and preforms shall conform to ASTM A475.

D. Zinc Coating: The weight of coating for zinc-coated steel wire shall not be less than that specified in Table 4, under Class C of ASTM A475.

2.2 CERTIFICATION

A. The Supplier shall provide certification that the galvanized steel wire and wire rope have been designed, fabricated, rated and tested in compliance with the applicable provisions of the standards referenced in these Specifications.

PART 3 EXECUTION

3.1 DELIVERY AND MARKING

A. Materials shall be protected against damage in ordinary handling and shipping. Each reel shall have a strong, weatherproof tag securely fastened to it showing the physical and mechanical properties as well as the steel type designation, ASTM designation and the name and mark of the manufacturer.

3.2 INSTALLATION REQUIREMENTS

A. Galvanized steel wire and wire rope shall be cut and installed using tools and methods specified by the manufacturer.

B. Splicing of the galvanized steel wire and wire rope will not be permitted.

3.3 INSTALLATION OF DOWN GUYS

A. Down guys shall be installed before the electrical wires are strung. They shall be pulled taut, and secured in place with provisions for future adjustment as required to hold the structure in proper alignment after wires are pulled to correct tension.

B. Down guy attachments shall be installed as recommended by the manufacturer.

C. Guy guards shall be installed as shown on the Contract Drawings, or as directed by the NJ Transit's Construction Manager.

D. Make final adjustments to the down guys as required to compensate for initial stretch.

PART 4 COMPENSATION

4.1 MEASUREMENT AND PAYMENT

A. The work of this Section shall not be measured separately for payment but will be paid for as part of the "Electrical Pole Line" Lump Sum bid.

END OF SECTION

SECTION 17310

LAMINATED WOOD POLE

PART 1: GENERAL

1.1 DESCRIPTION

A. This section specifies the supply and installation of laminated wood pole system for supporting the Electrical Service Installation as shown on the Drawings and specified herein.

B. Laminated Wood Pole system includes the following assemblies as shown in the Contract Drawings:

1. Laminated Wood Pole

2. Down Guy Anchor

3. Associated Small Parts

1.2 REFERENCE STANDARDS

A. AWPA

U1-12 Treatment and Preservation of Wood

T1 Processing and Treatment

M2 Inspection of Wood Products Treated with Preservatives

M6 Brands Used on Preservative Treated Materials

B. ANSI / AITC

A190.1 Wood Products – Structural Glued Laminated Timber

05.2 Structural Glued Laminated Timber for Utility Structures

117-2004 Structural Glued Laminated Timbers of Softwood Species

110-2001 Appearance Grades for Structural Glued Laminated Timber

C. NESC

1.3 RELATED DOCUMENTS

A. Section 02010 – Environmental Requirements

B. Section 02060 – Aggregate

C. Section 02114 – Offsite Disposal of Excavated Soils

D. Section 02230 – Site Clearing

E. Section 02319 – Backfill

F. Section 16060 – Grounding and Bonding

G. Section 17105 – Overhead Transmission System

H. Section 17313 – Fittings and Hardware

1.4 SUBMITTALS

A. Submit in accordance with the General Provisions.

B. Provide required certifications for the treatment record of each pressure-treated wood pole furnished.

C. Provide product data and catalog cuts for all pole line hardware to be used, including miscellaneous hardware, pole attachments, and screw anchors.

D. Provide Product Data and Field Quality Control Report.

E. Shop Drawings:

1. Provide within forty five (45) working days of Notice To Proceed, detailed, dimensioned shop drawings and data for all laminated wood pole fabrication referenced by this Section.

2. Shop drawings shall include design and detail information, sizes, connection attachments, connections, reinforcing, anchorage, size and type of fasteners, and accessories and bill of material.

3. Bill of material shall include the number, kind, size, length, weight and assembly mark of each member including bolts, anchor bolts, and all fittings.

1.5 QUALITY ASSURANCE

A. Comply with the provisions of ANSI/AITC A190.1.

B. Laminated wood poles shall be designed utilizing NESC Grade “B” construction with a maximum 95% fiber stress usage.

C. Pole treating shall be in accordance with AWPA specification M2, and especially U1 Commodity Specification D, and T1 Section D.

D. Pole shall accept standard pole line hardware.

1.6 PRODUCT HANDLING

A. Comply with provisions of ANSI 0.5.1.

B. STORAGE:

1. Stack poles on pressure treated or decay-resistant skids of such dimensions and so arranged as to support the poles without producing noticeable distortion.

2. Stack poles in a manner that permits free circulation of air. No decayed or decaying wood is permitted to be installed.

3. Pole foundation systems and attachment hardware shall be kit packaged in solid, wooden crates clearly marked with the structure number, bill of material, supplier drilling detail and supplier installation drawing.

C. HANDLING:

1. Do not drag treated poles along the ground. Do not use pole tongs, cant hooks, and other pointed tools capable of producing indentations more than 1 inch in depth.

2. Do not apply tools to the ground line section of any pole. Ground line section is the portion between 1 foot above and 2 feet below the ground line.

PART 2: PRODUCTS

2.1 LAMINATED WOOD POLES

A. All poles shall meet the requirements of the latest American National Standard Institute; Structural Glued Laminated Timber for Utility Structures, ANSI 05.2-2006 and ANSI/ATIC A190.1, and industrial appearance grade as defined in AITC 110, except as otherwise specified herein.

B. Poles shall be Southern Yellow Pine glue laminated wood poles, and shall be manufactured in accordance with the latest revisions of: ANSI 05.2-2006;AITC 110, 111, and 200; and all applicable AWPA specifications including but not limited to M6, U1-10 and T1-10: except as modified herein.

1. All lumber for laminated wood poles shall be free of timber breaks.

2. Decay in any form is not permitted, including decay in knots in any form.

3. Moisture Content shall be per Section 4.3 of ANSI 05.2.

C. Preservative treatments shall be in accordance with the latest American Wood Preservers' Association (AWPA) Standards, except as modified herein:

Preservative treatments shall be pressurized infusion into external surfaces, and into pole interior via both groundline deep boring extending a minimum of 2'-0" above grade and 3'-0" below grade; and, via internal grooves extending the length of the poles in unglued edge joints. Perform treatment application in accordance with AWPA C1, AWPA C4, AWPA M2, AWPA U1 (Commodity Section D) and AWPA T1 (Section D), using pentachlorophenol and oil.

1. Southern Pine Poles: Perform groundline deep boring on the two constant pole faces only.

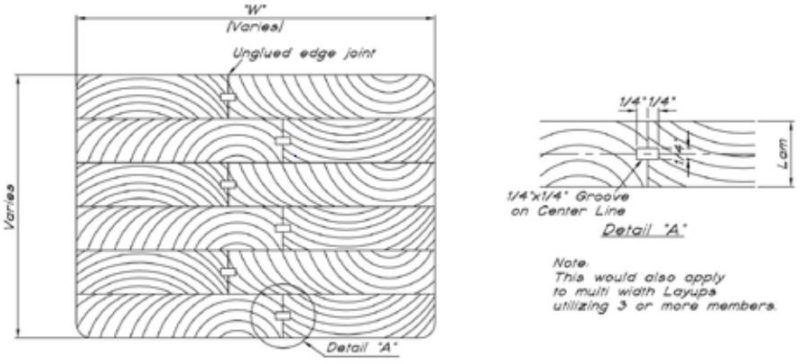
D. Adhesives shall be compatible with the selected preservative and meet the requirements of ANSI/ATIC A190.1, for use in wet conditions. Adhesives containing Urea shall not be used.

E. All laminated wood poles shall be custom engineered to suit site specific conditions and specific structural requirements including pole orientation, hardware requirements, defection limits, pole span, and foundation requirements. The manufacturer's design shall ensure that each span of corner poles acts independently.

F. Manufacturer shall provide engineering data for each pole location that shows at a minimum, the foundation size and depth, pole length and size, field rake and camber dimensions, and embedment depth, along with pole engineering analysis. Pole engineering data from the manufacturer shall be reviewed and approved prior to installation of pole.

G. The selection, preparation, assembly, and bonding of the laminations shall be in accordance with ANSI/AITC A190.1 and as specified herein.

1. Edge Joints – Unglued edge joints shall be permitted for multiple width lamination lay-ups as permitted by ANSI/AITC A190.1. The non-cut edge joint gaps shall be limited to 1/4" and occasionally to a maximum of 3/8". The cut edge joint gap shall be limited to 3/8" for a nominal width of 10" and less, 1/2" for a nominal width of 10" to 12", 5/8" for a nominal width of 12" to 14", 3/4" for a nominal width of 14", and 13/16" for nominal widths over 14". Interior edges shall be grooved in order facilitate the migration of preservative in the inner section the entire length of the pole laminated wood pole as in the sketch below. Penetration determination shall be made on 100% of the poles and shall be per AWPA U1-12 Table 6.5 Use Category 4C and T1-12 Table D9.



2. End Joints – End joints of laminations shall be pre-glued and cured before assembly of face joint into structural members. Spacing of the end joints shall be as specified in ANSI A190.1.

3. Repairs – Structural repairs as defined in ANSI/AITC A190.1 are allowed. End blocks as defined in ANSI A190.1 are prohibited.

4. Second Stage Gluing – When two or more laminated members that are over 2" in net thickness are glued together, a gap-filling adhesive shall be used in accordance with ANSI/AITC A190.1.

5. Proof-Loading – shall be approved by the Engineer and shall be performed in accordance with ANSI/AITC A190.1.

H. Pole tolerances shall be as in the table. Use of pole tolerances shall not decrease the structural capacity of the pole. The final size of the pole shall be as specified on the approved shop drawings.

Pole Tolerance	
Length	+12",-6"
Depth	± ½"
Width	±¼
Squareness	± 3/8" per foot of depth
Hole location	±1/8"

I. The camber or straightness tolerance for poles is +/- 1/2 inch for members up to 20 feet. For members over 20 feet, the tolerance is increased by +/- 1/2" per each additional 20', or fraction thereof, but should not exceed +/- 2". These tolerances are at the time of manufacture without allowance for dead load deflection and should be used for straight or slightly cambered members and not more sharply curved members.

J. Pole corners shall be eased full length to a minimum of 3/4 inch and a maximum of 1 inch. The radius may be reduced to 1/2" inch for wireless telecommunication tower applications.

K. All members shall be surfaced after gluing. All voids on the top of poles shall be filled after treatment with a void filling compound. The compound shall be sanded smooth after curing.

L. Pole shall be supplied with pre-drilled holes in accordance with the Design Drawings. Holes shall be drilled perpendicular to the starting and finishing faces of members with a uniform cross section. Drilling on specified poles and square cut roofing on all poles shall be completed prior to pole treatment, and splintering shall be kept to a minimum. Care shall be taken on the edge faces to ensure that drill holes do not penetrate along glue lines.

M. The relative humidity of the manufacturing area shall be maintained at such a level that the moisture content will not change substantially during the manufacturing process. All bonding shall be performed as soon as practical after checking moisture content.

N. Testing and Inspection shall meet the requirements of ANSI/ATIC A190.1, AITC 200 and AWPA M2. Random samples shall be taken for testing and inspections from the materials utilized in production for this order. Test reports shall be available to the Engineer upon request.

O. Poles shall have two tags displaying pertinent NJ Transit information in addition to the pole class and length in accordance with the latest ANSI 05.2-2006. One tag will be located on the butt of the pole and the other located on the face of the pole. Location of the tags shall be coordinated with the Engineer.

P. Poles shall be identified with “BP” on the face of the width (constant dimension) to identify the approximate balance point. The approximate weight of the treated pole shall also be located at this point.

Q. Upon completion of the treating process, all poles shall be as light colored as reasonably possible to obtain a light to medium brown; color chart range three (3) to seven (7). Poles shall be clean and dry, without excess surface oil.

R. The pole supplier shall furnish reasonable facilities including skids, blocks, sufficient space and personnel necessary for laying out in an orderly manner, handling and turning a reasonable number of poles at a time for inspection. Poles shall be inspected before and after treatment unless the inspection is waived by the Engineer. Acceptance of materials or waiving of the inspection shall in no way relieve the supplier of the responsibility for furnishing materials meeting the requirements of the specifications.

S. Manufacturers:

1. Laminated Wood Systems, Inc., or approved equal.

2. Laminated wood poles shall be supplied by an approved manufacturer of engineered laminated wood structures. The design plans are based on Laminated Wood Systems (LWS).

3. Substitutions: Submit requests for substitution in accordance with the General Provisions for Construction.

2.2 DOWN GUY ANCHORS

A. Down guy anchors shall be screw anchor assemblies. Screw anchors shall be of the type and size required to accept the load of the down guy assemblies as shown on the Contract Drawings and as specified herein.

B. Screw anchors shall have a manufacturer's rating of not less than loading shown on the Contract Drawings times a safety factor of 2.5.

C. All supporting steel shall be fabricated as described on the Contract Drawings and as specified in Section 17220.

D. All hardware and components shall be as shown on the Contract Drawings and as specified in Section 17313, Fittings and Hardware. Hardware and components shall be procured from the designated suppliers or approved equivalents.

2.3 BACKFILL

A. Backfill material shall aggregate, foam or concrete, conforming to applicable requirements of Sections 02319 – Backfill, and Section 02060 - Aggregate.

2.4 MISCELLANEOUS HARDWARE

A. Fittings and hardware shall comply with the provisions of Section 17313, Fittings and Hardware.

B. Washers shall be installed under bolt heads and nuts on wood surfaces as required. The diameter of holes in washers shall be the correct standard size for the bolt on which the washer is used. Eye bolts, bolt eyes, eyenuts, strain-load plates, lag screws, guy clamps, fasteners, hooks, shims, and clevises shall be used wherever required to support and to protect poles, brackets, cross arms, guy wires, and insulators

2.5 STEEL CASING

A. Steel casing – where used, shall be pipe or tubing with sufficient strength and rigidity to permit installation and removal.

2.6 METERING EQUIPMENT PLATFORM AND MOUNT

A. Metering equipment shall be mounted on a platform made of high strength, 6061-T6 aluminum alloy. Cross members of the platform shall be adjustable to equipment size and location.

B. Metering mounts of heavy duty but lightweight aluminum construction shall be supplied for installation on the platform. Units shall be predrilled for quick and easy installation. Convenient lifting eyes shall be provided with the mounts for hoisting assemblies in the field.

C. Verify dimensions prior to ordering metering equipment mount and platform.

D. Metering equipment mount and platform shall be by Aluma-Form or approved equal.

PART 3: EXECUTION

3.1 GENERAL

A. Leave poles on storage skids or blocks until installation. Poles shall be inspected before and after installation unless the inspection is waived by the Engineer. Waiving of the inspection shall in no way relieve the Contractor of the responsibility for installing materials in accordance with the requirements of the specifications.

B. Field-raked poles are pre-drilled for and are furnished with foundation reinforcement systems. The foundation systems, consisting of fabricated galvanized angles and assembly bolts, are shipped separately from the poles. Locate and assemble hardware prior to setting pole. The assemblies are application specific and require site specific verification based on loading and soil conditions.

C. The poles shall be lifted with a steel choker or gut line rather than a flat nylon strap. The choker will slightly indent the edges on the rounded corners insuring a firm hold

D. Field drilled holes in poles shall be treated with an approved preservative compound. Unused holes may be plugged with treated plugs. Drill holes a minimum of 2 inches from any edge, and a minimum of 3 inches between holes.

E. Grounding and Bonding shall be in accordance with Section 16060, Grounding and Bonding.

F. Locate all existing underground installations prior to drilling pole holes.

3.2 WOOD POLE INSTALLATION

A. Verification of structure types should also be confirmed for each specific location.

B. Wood pole installation shall consist of providing a hole of proper depth; setting of load bearing pole anchors and providing backfill and suitable grade finishing.

C. Poles shall be handled with care so as not to damage the wood or preservative treatment. Cant hooks shall be used to align and adjust poles. Poles shall not be dragged along the ground. If poles are stored after delivery, they shall be arranged with care and placed so that the poles do not come in contact with standing water or the ground.

D. Auger hole to diameter and depth as recommended by the manufacturer and install appropriate foundation system. Prepare holes large enough to provide space for the use of suitable fill all around the poles to the full depth of the holes. The grade finishing backfill shall be well banked and tamped around the pole to a height of six inches above the ground line. Any surplus excavated material shall be leveled neatly.

E. Install a foundation reinforcement system with each pole installation.

F. Wood poles shall be set with the embedment depth shown on approved manufacturer engineering drawings.

G. For tangent installation, plumb the structure along the centerline of the pole in both the transverse and longitudinal directions. For field raked pole, the field rake amount shall be site specific as determined by the pole manufacturer. A maximum field rake of 3% of the above-ground height is recommended on any installation. A field Raking Detail shall be provided by the manufacturer for each field raked pole.

H. Install pole such that the face of the pole bisects the line angle equally.

I. The back face of each pole has a straight edge which can be used for plumbing and raking the pole.

J. Backfill with compacted aggregate tamped in 6” lifts, high density foam, or concrete. Native soil shall not be used.

Backfill shall conform to applicable requirements of Sections 02319 – Backfill, and Section 02060 - Aggregate.

Place concrete backfill only in dry pole holes. Tremie placing of the concrete backfill is permitted. Concrete placed by tremie (through water) shall have one additional sack of cement per cubic yard. Hold poles backfilled with concrete plumb and motionless until concrete has set.

K. A measured quantity of backfill shall be placed in the excavation in such a manner that segregation does not occur. Vibration shall be applied if required. The wood pole is then lowered into the excavation and set to the required line and level, such that the mix is displaced into annular void to the required elevation.

L. Place vibrator, if required, against the side of the steel casing during withdrawal to prevent voids developing.

M. After pulling the conductors at design tensions, allow the poles to set for a minimum of 30 minutes to reach a point of equilibrium. Verify tensions or bring back to design loads prior to clipping. Based on 60° F tensions, the pole should deflect approximately 50% of the specified field-rake dimension at the time of installation.

N. Report any pole damage, including splinters, voids and gouges immediately to the Engineer. Poles damaged during installation may be repaired based on recommendation of the manufacturer, upon approval by the Engineer.

3.3 ASSOCIATED SMALL PARTS INSTALLATION

A. Platform and brackets for the metering equipment shall be installed per manufacturer's instructions. Coordinate installation with actual metering equipment to be installed by JCPL.

B. Install cross arms, brackets and clamps for the transmission line as shown on the Contract Drawings.

3.4 DOWN GUY ANCHOR INSTALLATION

A. Installation of screw anchor and associated assemblies shall be in accordance with the manufacturer's instructions.

B. Anchors shall be installed to sufficient depth and with sufficient torque such that each installation shall hold the associated pole plumb at installation as shown on the Contract Drawings.

C. The backfill for the anchor hole shall be thoroughly tamped with suitable soil the full length of the anchor hole.

D. Down guy assembly shall be fabricated in the field and installed in accordance with manufacturer's instructions and the Contract Drawings.

E. Down guys shall be installed before the conductors are strung. Insure proper adjustment of guys when stringing operations are being performed so that loading on structures will be balanced.

3.5 OBSTRUCTION

A. When rock or other obstructions are encountered, contact the Engineer. Rock is defined as material which cannot be drilled with a conventional earth auger or under-reaming tool, and requires use of special rock augers, core barrels, air tools, or other method of hand excavation.

3.6 CLEAN UP

A. Cleaning of concrete mixing/placing tools, equipment, and vehicles shall take place in designated areas, and the waste material from such shall be retained so as to prevent cementitious materials from reaching wetlands, watercourses, or drainage systems.

B. Excavated material shall be disposed of as specified by the Construction Manager and in compliance with Section 02114.

3.7 INSPECTION AND TESTS

A. Inspection, tests, and samples to conform to listed Specifications and Standards, and inspection and tests reports shall be submitted to the Engineer.

PART 4 COMPENSATION

4.1 MEASUREMENT AND PAYMENT

A. The work of this Section shall not be measured separately for payment but will be paid for as part of the “Electrical Pole Line” Lump Sum bid.

END OF SECTION

SECTION 17313

FITTINGS AND HARDWARE

PART 1 GENERAL

1.1 DESCRIPTION

A. This Section includes the supply and installation of fittings and hardware for the Electrical Service Installation, as shown on the Drawings and specified herein.

1.2 RELATED WORK

A. Section 17124 – Medium Voltage Cables, 35 kV

B. Section 17105 – Overhead Transmission System

1.3 REFERENCE STANDARDS

A. Applicable provisions of the following standards shall apply to the work of this section, except as modified herein and are hereby made part of these specifications to the extent required:

1. American Society for Testing and Materials (ASTM):

A47 Malleable Iron Castings

A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware

A473 Stainless and Heat-Resisting Steel Forgings

A518 Corrosion-Resistant High Silicone Cast Iron

A536 Ductile Iron Castings

A668 Steel Forgings, Carbon and Alloy, for General Industrial Use

A711 Carbon and Alloy Steel Blooms, Billets and Slabs or Forgings

B98 Copper-Silicone Alloy Wire for General Purposes

B48 Aluminum-Bronze Band Castings

B248 General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strips and Rolled Bar

B249 General Requirements for Wrought Copper and Copper-Alloy Rod, Bar and Shapes

B548 Copper Alloy Sand Castings for General Applications

1.4 SUBMITTALS

A. Comply with the General Provisions.

1.5 QUALITY ASSURANCE AND QUALITY CONTROL

A. Comply with applicable sections of Section 16050.

B. Inspection, tests, and samples shall conform to listed Specifications and Standards, and inspection and tests reports shall be submitted to the Engineer.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Comply with the requirements of the relevant Sections of these Specifications where these fittings and hardware are to be used.

PART 2 PRODUCTS

2.1 MATERIALS

A. Comply with the material requirements of the following standards for the fillings and hardware as shown on the Drawings.

1. Malleable Iron: ASTM A47, Grade 32510; galvanized, ASTM A153.

2. Forged Steel: ASTM A711 or A668; ASTM A153.

3. Cast Iron: Corrosion resistant; high-silicone cast iron, ASTM A518.

4. Ductile Iron: Grade 60, 40 1B or better; galvanized ASTM A153.

5. Copper: ASTM B248 or B249.

2.2 BOLTS AND NUTS

A. ASTM B99, C65100, Temper H01; threads shall be rolled. Nuts shall develop the full strength of the threaded section of the bolt. Bolt heads shall develop the full specified strength of the bolt, and shall not crack when struck by a sharp blow with a hammer.

B. Twist and Bend Tests:

1. Twisting and bending tests shall be made upon one sample of bolts selected by the Engineer from each lot of bolt stock formed from each

bronze billet. Twisting tests shall be made upon samples 10 inches in length between the jaws of the twisting machine. The twisting machine shall be so constructed that there is a linear motion of the tail stock with respect to the head. The twisting shall be applied not faster than ten turns per minute.

2. All samples shall be twisted to destruction. The samples under this test shall not reveal any seams, pits, slivers, or surface imperfections consistent with the best commercial practice. At the time of fracture the bolt shall be twisting with reasonable uniformity.

3. Samples of bolts must withstand at least eight twists in 10 inches before breaking. Bolts shall bend through an angle of 360 degrees about their own diameter, without a sign of cracking.

C. Tensile and Elongation Tests:

1. Tensile and Elongation Tests shall be made upon one sample of bolt stock selected by the Engineer from each billet. Bolts shall develop a tensile strength at the net section of the thread equal to that specified for the material.

2. Nuts shall be made of similar material and shall develop the full strength of the threaded section.

3. The elongation of the sample shall be determined as the permanent increase in length due to breaking of sample in tension, measured between gage marks placed originally upon the specimen 2 inches apart, when the fracture occurs in the middle third of the distance between the gage marks.

D. "Nick and Break" Test:

1. The two ends of the bolts stock formed from bronze billet which is to be made into bolts covered by this specifications shall be given a "nick and break" test to determine whether there are "pipes" in the stock. By "pipe" is meant a separation of the material within the bolt stock which may have been caused during the pouring of the billet. "Pipes" are not acceptable.

E. Special Test: When considered necessary by the Engineer, material to be used in cold working operation shall be subjected to a test. The heads thus formed shall develop the full specified strength of the rod. Heads shall not crack when struck a sharp blow with a hammer.

2.3 FASTENERS

A. Fasteners used for grounding and bonding systems shall be of high-copper alloy, Evardur, Durum, Duronze, or Engineer approved equal, or of silicone bronze. Ferrous hardware is not acceptable.

2.4 WORKMANSHIP, FINISH AND APPEARANCE

A. Fittings and hardware shall be free of adhering sand, voids, cracks, surface porosity and non-uniform dimensions.

B. Ensure the dimensional accuracy of all fittings and hardware.

C. Repairs shall be permitted only to the extent allowed by the referenced ASTM standards and as approved by the Engineer.

D. Malleable iron, ductile iron, forged steel and mild steel components in contact with the pole surface shall be painted to match the finish of the pole. For galvanized components furnished, the paint system used shall be compatible with the galvanizing.

E. Chemical analysis and tension testing is required for each lot in accordance with applicable ASTM standards.

PART 3 EXECUTION

3.1 INSTALLATION

A. Installation requirements for fittings and hardware shall be in accordance with the manufacturer's recommendations and as shown on the Contract Drawings.

3.2 COMPONENT PERFORMANCE AND USABILITY

A. All fittings and hardware used for support assemblies shall be selected and made such that they can be reused after removal.

B. All fittings and hardware shall be designed for easy interface with the other components of the electrification system.

C. All fittings and hardware shall be designed and installed to provide a homogenous support hardware and assembly arrangement.

D. Components and assemblies shall be designed such that all fastenings and adjustments are accomplished with the same dimensional standards or tools.

PART 4 COMPENSATION

4.1 MEASUREMENT AND PAYMENT

A. The work of this Section shall not be measured separately for payment but will be paid for as part of the “Electrical Pole Line” Lump Sum bid.

END OF SECTION

SECTION 17340

MEDIUM VOLTAGE DISCONNECT SWITCH

PART 1: GENERAL

1.1 DESCRIPTION

A. The work of this Section includes furnishing and installing load break switches suitable for use in a nominal 34.5 kV, three phase distribution system, including all mounting and hardware in accordance with the Contract Documents.

B. Switches shall be of uniformly high grade in conformity with industry standards and shall have special or additional features only to the extent necessary for the specific applications of this project.

1.2 RELATED WORK

A. Section 17124 – Medium Voltage Cables, 35 kV

B. Section 17105 – Overhead Transmission System

1.3 REFERENCE STANDARDS

A. All switches supplied under this specification, unless otherwise stated herein, shall conform to the applicable provisions of the latest standards of the following:

1. American National Standards Institute (ANSI)

ANSI/IEEE 386

2. Institute of Electrical and Electronics Engineers (IEEE)

IEEE C37.71, 72, 74, 60

3. National Electrical Manufacturers Association (NEMA)

1.4 SUBMITTALS

A. The supplier shall furnish one reproducible copy or ten (10) copies of the following information:

1. NEMA standard nameplate information.

2. Rating of the switch.

3. Rating of all major components.

4. Momentary and five-second current rating.

5. Make and manufacturer's designation of insulators.

6. Complete electrical and mechanical data of insulators in accordance with applicable NEMA standards.

7. Operating and Maintenance Manuals.

8. Installation manuals and procedure.

9. Design and construction features of the switch with dimensions.

10. Outline drawings of each switch, including terminal details and all drilling and dimensions necessary for attachment. Outline drawings shall show minimum clearance requirements.

11. Wiring diagrams.

12. Direction of opening for side-break switches, whether Clock-wise (CW) or Counter Clock-wise.

13. Parts included with each switch.

14. Recommended spare parts list.

15. Connector manuals.

16. Certified factory test reports.

B. For electrically operated switches the following information shall also be included:

1. Rated control voltage.

2. Operating current for motor circuit.

3. Time from the instant the switch starts to open to full opening of blade.

C. The supplier shall submit outline drawings of each switch, including terminal details and all drilling and dimensions necessary for attachment to the structure, and a wiring diagram, auxiliary switch detail, and drawing of mechanism with provision for control conduit entrance for electrically operated switches.

1.5 WARRANTY

A. The manufacturer shall warrant the material covered by this specification to be free from defects in material and workmanship under ordinary use

and service. His obligation under this warranty being limited to manufacturing, to replace any part or parts which shall be found defective within one year at a minimum after shipment to the purchaser.

1.6 QUALITY ASSURANCE

A. Comply with the applicable provisions of Section 16050.

B. Manufacturer Qualifications: The chosen manufacturer shall have at least 20 years experience in manufacturing medium voltage switchgear. The manufacturer of the switches shall be completely and solely responsible for the performance of the load break switch as well as the complete integrated assembly as rated.

C. The manufacturer shall furnish certification of ratings of the load break switch assembly upon request.

D. The switch manufacturer shall be ISO 9001:2000 and ISO 14001:2004 certified.

PART 2: PRODUCTS

2.1 MANUFACTURER

A. The Load break switch shall be as indicated herein or an approved equal and shall be approved by the Engineer.

2.2 SWITCH CONFIGURATION

A. The switches shall be suitable for application in a three phase, 60 Hz system.

B. Switches shall be load break, motor operated with provisions for manual control. Manual control interlocks shall be provided for operator safety.

C. Power shall be provided for motor control.

D. Switches shall be Single Throw with visible blades in the OFF position.

E. Switches shall be compact for installation in limited space.

2.3 SWITCH CONSTRUCTION

A. General

1. Switches shall be pole top design and made for outdoor use.

2. The operating mechanism housing shall be stainless steel with a viewing window for verification of contact position. The housing shall be painted ANSI 70 light gray using corrosion-resistant epoxy paint.

3. Manual operation shall be by vertical operating rods with reversible rotation, and shall be padlock-able. Offsets shall be made by universal joints. Vertical operating rods shall be 1-1/2 inch pipe.

4. Cables shall connect to switch through terminal connectors.

5. All switches shall be adequately designed so that ice formation will be broken and removed.

B. Mounting Frames

1. Supplier shall to provide switches complete with mounting frames suitable for vertical mounting of switches on a pole.

2. Frames shall be of bolted type and galvanized.

C. Nameplates and Ratings Labels

1. Each unit of switches shall be provided with a nameplate indicating the manufacturer's name, catalog number, model number, date of manufacture, and serial number. Nameplates shall be mounted with plated screws. Mounting nameplates with adhesive is not acceptable.

2. Each unit of switches shall be provided with a ratings label indicating the following: voltage rating; continuous rating; load break switch ratings.

2.4 STANDARD COMPONENTS

A. The following shall be included as standard:

1. Lifting provisions.

2. Corrosion-resistant nameplates and line diagram.

3. Switch operating mechanism(s) with locking mechanism provision.

4. Mounting provisions.

5. Wire termination provisions.

6. Ground provisions.

2.5 DESIGN RATINGS

A. Load Break Switch shall have the following minimum ratings:

SELECTION OF RATINGS	IEEE
Voltage Class, kV	34.5
Maximum Design Voltage, kV	38
Impulse Level (BIL) Voltage, kV	200
Continuous Current, Amperes	1200
Momentary Current, kA, ASYM	40
Fault Close 2 times 20,000 A symmetrical	

2.6 FACTORY PRODUCTION TESTS

A. Factory tests shall be conducted as per latest ANSI Standards. Factory tests shall be certified and submitted to the Engineer.

B. Each assembly shall undergo a mechanical operations check, a one minute phase-to-phase, phase-to-ground and across the open contact AC hi-pot test.

C. Circuit resistance shall be checked on all ways.

D. Each module shall undergo an X-ray inspection and a partial discharge test to ensure void-free construction.

E. The Engineer reserves the right to witness factory testing of switches. Supplier shall notify the Engineer not less than 30 days prior to making tests at the factory.

PART 3: EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

A. All load break disconnect switches shall be delivered to NJ Transit.

B. Load break switches shall be shipped preassembled at the factory. No field assembly shall be required.

C. Switches shall be handled, moved and stored in accordance with manufacturer’s recommendations.

3.2 INSTALLATION AND START-UP

A. The supplier shall provide a factory-authorized service representative for a period of one day to train NJ Transit's maintenance personnel in the procedures related to startup and shutdown, operation and adjustments, troubleshooting, servicing and preventive maintenance.

PART 4 COMPENSATION

4.1 MEASUREMENT AND PAYMENT

A. The work of this Section shall not be measured separately for payment but will be paid for as part of the “Electrical Pole Line” Lump Sum bid.

END OF SECTION

SECTION 02461
STEEL PIPE PILES

PART 1 GENERAL

1. 1 SECTION INCLUDES

A. Provide labor, supervision, materials, equipment, tools, supplies, and permits necessary for the installation of steel Pipe piles and dynamic pile testing, as shown on the Contract Drawings and as specified herein.

1. 2 RELATED WORK

A. Section 02481 - Vibration and Movement Monitoring

B. Section 05120 - Structural Steel

1. 3 PERFORMANCE REQUIREMENTS

A. Drive piles to tip elevations and design ultimate capacity as specified on the Contract Drawings.

B. Avoid damaging piles by overdriving.

C. Minimize noise through housing of the hammer or other approved methods.

1. 4 SUBMITTALS

A. Site Specific Work Plan (SSWP), no later than 45 days prior to beginning pile driving operations for approval by the Construction Manager.

B. Certified mill test reports for steel Pipe piles.

C. Certification by the hammer manufacturer of the striking energy per blow, rated speed, source of the energy, serial number and condition and operational characteristics of proposed pile hammer. A wave equation analysis (WEA) to determine the adequacy of the proposed pile driving equipment shall also be submitted to the Construction Manager for approval. The WEA shall demonstrate that the pile will not be overstressed during driving. The WEA must be signed and sealed by a Professional Engineer licensed to practice in the State of New Jersey.

D. A complete description of the hammer assembly components.

E. Shop drawings showing details of special pile driving equipment including crane size, leads, cushion blocks, templates, guides and erection details.

F. Shop drawings showing proposed installation procedure, sequence of driving piles, a list of order lengths of piles for approval by the Construction Manager. If splices cannot be avoided, submit the method of splicing and splice location for each pile.

G. A drawing showing the exact "As-Driven" location of all driven piles and identifying abandoned piles.

H. Proof of welding qualifications as defined in Section 1.6.

1. 5 PROJECT RECORD DOCUMENTS

A. Stake out the location of all piles, establish all elevations required, maintain all location stakes, and be responsible for the correct locations of all piles.

B. The Construction Manager will record and maintain the pile driving records and provide pile inspection reports at the end of driving. The Construction Manager will provide full time presence during pile driving. A copy of the pile driving records shall be submitted to the Engineer at the end of the contract.

C. Do not drive any piles except in the presence of the Construction Manager. The Contractor may keep a record independent of that made by the Construction Manager.

D. Prepare an accurate record for each pile driven. The report shall include:

1. Date of driving.
2. Pile number.
3. Type and size of pile.
4. Type, number and location of splices.
5. Length before driving.
6. Length of cut-off.
7. Elevation of top and of tip immediately after driving, to nearest 0.1 foot.
8. Elevation of top to determine amount of heave after driving adjacent piles and after re-driving, all to the nearest 0.1 inch.
9. Final elevation of tip, if re-driving is required, of entire pile group.
10. Hammer type and size.
11. Hammer speed.
12. Blows per foot of driven length and final blows per inch for last 3 inches.
13. Blows per ½ inch of re-drive.
14. The time pile driving is started, interrupted, resumed and stopped.
15. Description of any unusual circumstances affecting the driving of the particular pile.
16. Record of time, method and depth for pre-drilling holes for piles, if necessary.
17. Slope of pile.
18. Location plan showing where pile is driven.

1. 6 QUALIFICATIONS

A. Qualifications for Welding Work:

1. Qualify welding processes and welding operators in accordance with AWS D1.1.
2. Provide certification that welders to be employed have satisfactorily passed the AWS qualification tests within the 12 months prior to the Notice to Proceed (NTP) date.

a. If recertification of welders is required, retesting will be the Contractor's responsibility.

B. Inspection and Testing:

1. Quality control inspections shall be performed by the Contractor at least to the minimal extent specified, and, additionally, any other testing and

inspections necessary to control production quality shall be made. Quality assurance inspections will be performed by the Construction Manager.

a. Welded splices located between the pile top and 15 feet below the existing ground surface, or within 35 feet of the pile tip shall be tested ultrasonically in accordance with AWS requirements. Test results shall be submitted for approval.

b. Welded splices located outside of the zones listed in (a.) above shall be inspected visually in accordance with AWS requirements. Ultrasonic testing will not be required on welds located outside of these zones.

1. 7 CODES AND STANDARDS

A. Work shall conform to the following:

1. American Institute of Steel Construction (AISC).
2. American Society for Testing and Materials (ASTM).
3. American Railway Engineering and Maintenance-of-Way Association (AREMA).
4. State and Local ordinances for hours of pile driving operations and noise level requirements.

1. 8 FIELD MEASUREMENTS

A. Verify that field measurements and survey bench marks are as indicated on Drawings.

PART 2 PRODUCTS

2. 1 PILING

A. Steel Pipe Piles, 14-in diameter with 0.5 in. wall thickness: ASTM A572, Grade 50.

B. Steel Pile Tip: High-strength cast steel, ASTM A-27 65/35, heat-treated, P13006 conical point as manufactured by Associated Pile and Fitting Corp., or approved equal. All piles shall be fitted with tips.

C. Steel Pile Splice: Splicing of steel piles shall be performed by using approved full penetration butt welding of the continuous section and sufficient to fully develop the full strength of the pile.

2. 2 EQUIPMENT

A. Piles shall be driven by air, hydraulic or diesel hammers, having a rated energy capable of transferring a minimum energy to the top of the pile to achieve the required capacity as shown on the Contract Drawings. The valve mechanism and other parts of hammers shall be maintained in a condition which will ensure that the length of stroke and number of blows per minute for which the hammer is designed will be realized. Air hammers shall have air capacity which is not less than that specified by the hammer manufacturer; and compressor shall have either pressure gauges or other devices calibrated in a manner which will allow hammer energy to be determined. When the determination of the final driving resistance is being made, the hammer shall be operated at not less than 90 percent of the maximum

blows per minute for which the hammer is rated by the manufacturer. The Contractor shall maintain the air pressure recommended by the manufacturer and shall employ hose and connections of the proper sizes. Pile and hammer shall be held in alignment by leads and in a manner which will ensure that the centerline of the hammer is an extension of the centerline of the pile. All piles shall be driven through fixed templates to maintain alignment and location. Driving head shall fit the top of the pile and shall extend down the sides of the pile not less than 4 inches.

B. Leads of the pile-driving rig shall be fixed at two points; the points shall be at least half the length of the leads apart in order to maintain the pile and hammer in axial alignment of the correct plan location during the entire driving operation. The leads shall extend down to the lowest point at which the hammer must operate. Templates shall be fixed and braced to sheeting, cross bracing, previously driven piles, or other rigidly fixed structure. The template shall be made of materials and shall be of a size and shape to resist forces during driving so that the pile will not move laterally or rotate. The use of followers will not be permitted, unless otherwise directed.

C. The proposed pile-driving equipment shall be subject to the approval of the Construction Manager. Approval shall be secured before pile-driving starts. The same equipment shall be used for all production piles and test piles. Approval by the Construction Manager of the Contractor's equipment will merely signify that the Contractor may make an initial trial installation with the proposed equipment. Approval will not relieve the Contractor of his responsibility for providing and installing piles capable of supporting the design loads by whatever means necessary, including changing the equipment and procedures from those used in the initial trial.

D. Cap block cushions shall consist of multiple layers of aluminum-micarta discs, stacked in steel housing with steel top and bottom plates. Alternative arrangements, if proposed, shall be demonstrated to be equally efficient in transmitting the energy of the hammer and preventing damage to the top of the piles.

PART 3 EXECUTION

3. 1 PREPARATION FOR DRIVING

A. Furnishing Equipment for Driving Piles: Prior to delivery of the equipment to the work site, information regarding the type, striking energy per blow, rated speed, source of energy and serial number of the hammer proposed for use is to be submitted for approval.

3. 2 PILE DRIVING EQUIPMENT

A. Use rigid frame lead type driving system capable of supporting pile firmly in vertical position or to required batter.

B. Unless approved by the Construction Manager, leads shall be of sufficient length so that use of a follower will not be necessary.

C. Use an approved driving head designed to properly fit the head of the pile and to prevent damage to the top of the pile.

D. Use an approved cushion consisting of alternate plates of aluminum and micarta.

E. Do not use wood chips, small blocks, shavings or similar material to absorb energy of the hammer.

F. Equipment shall be capable of maintaining the rated speed of the hammer during the full time of pile driving.

G. Use a hammer with a rated energy capable of producing the minimum transferred energy to the top of the pile to achieve the required capacity as shown on the Contract Drawings.

3. 3 METHODS OF DRIVING

A. Piles shall be driven to an ultimate driving resistance of 250 kips/pile.

B. Accuracy of Driving: The Contractor must use steel templates for setting and locating all piles. Piles shall be driven with a variation of not more than 1/8 inch per foot from the vertical. Piles shall not be out of the required plan position by more than one (1) inch at end of driving.

C. If for any reason the piles cannot be driven in accordance with the Contract Drawings, the Contractor shall submit an alternate pile layout to the Construction Manager for approval, at no additional cost. The alternate pile layout shall be structurally equivalent to the layout specified in the Contract Drawings.

D. Splices: Unless clearance restrictions do not allow it, piles of 60 feet and less in length shall be driven without splicing. If field splicing of piles is required, the field splice shall be made with full penetration welds and shall be capable of developing the full axial, tensile and flexural strength of the section of the pile.

E. The method of splicing and splice location for each pile shall be submitted no later than 30 days prior to start of pile driving to the Construction Manager for approval.

F. Drive piles without interruption from the first hammer blow until required penetration and driving resistance has been attained.

G. Improperly Driven and Damaged Piles: Piles shall be driven within 1 inch of the plan location. Variations of more than 1/8 inch per foot from the vertical, or from the batter line when batter piles are required, may be subject to rejection by the Construction Manager. Any pile so out of line or plumb as to impair its usefulness shall be pulled and/or an additional pile driven, as required by the Construction Manager. Any pile so injured in driving or handling as to impair its structural capacity as a pile under conditions of use shall be replaced by a new pile, or the injured part shall be replaced by splicing or other remedial measures, all as directed by the Construction Manager.

H. Re-driving of Heaved Piles: Previously driven piles shall be carefully checked during the driving of adjacent piles, and if any uplift in excess of ¼ inch occurs, they shall be re-driven to the required penetration or resistance as directed by the Construction Manager.

I. Interrupted Driving: When driving is interrupted or the rate of blows retarded for any reason, a careful record shall be kept of the extent of the delay or retardation. Then, upon resuming driving, overcome friction due to stoppage and drive to required capacity and penetration.

3. 4 INSPECTION OF PILE DRIVING

A. Pile driving operations will be inspected by the Construction Manager.

3. 5 TOP CUT-OFF ELEVATION

A. Piles shall be cut off at the designated elevation. The length of pile cutoff shall be sufficient to permit the removal of all injured material.

B. Cutoffs of steel Pipe piles shall be made at right angles to the axis of the pile. The cuts shall be made in clean, straight lines.

3. 6 TEST PILES

A. Pile locations selected for test piles shall be driven as shown on the Contract Drawings and where directed. The test piles shall be driven to the tip elevation or minimum driving resistance specified on the Contract Drawings. The test piles shall be driven with the same equipment that is used for driving production piles.

3. 7 DYNAMIC PILE TESTING

A. Engage a dynamic pile testing firm that shall have a minimum of five years experience in dynamic pile testing and analysis. The dynamic pile testing firm shall perform dynamic measurements and analysis on test piles and monitor performance.

B. Data obtained from the dynamic measurements shall include:

1. Transferred energy from hammer to top of pile.

2. Predicted ultimate static capacity.

3. Maximum tensile and compressive stresses in pile.

4. Maximum impact velocity at pile top.

5. Maximum pile top acceleration.

C. Dynamically monitor all piles designated as test piles with the Pile Dynamic Analyzer. In addition, approximately 10 percent of production piles may be monitored as selected by the Construction Manager.

D. All test piles shall be driven before production pile driving commences. The approved hammer shall be used to drive the piles. The test piles shall be driven to the ultimate driving resistance criteria shown on the Contract Drawings.

E. The dynamic monitoring shall be performed using a Pile Driving Analyzer, two accelerometers, and two strain transducers attached to the pile head. The dynamic testing shall be performed using CAPWAP wave equation analysis with actual pile dynamic measurement to determine pile capacity, driving stresses, and hammer performance.

F. The dynamic pile testing firm shall prepare a written report summarizing the dynamic testing results. The report shall discuss hammer performance, driving stress level and predicted pile ultimate capacity. The report shall include refined wave equation analysis based on actual field measurements.

3. 8 UNACCEPTABLE PILES

A. The procedure for driving shall not subject the piles to excessive and undue abuse producing deformation of the steel. Manipulation of piles to force them into proper position, considered to be excessive, will not be permitted. Any pile damaged by reason of internal defects, improper driving, use of an improper hammer, or driven out of its proper location shall be corrected without additional compensation by one

of the following methods, approved by the Engineer and Construction Manager, for the pile in question:

1. The pile shall be withdrawn and replaced by a new and, if necessary, longer pile.

2. A second pile shall be driven adjacent to the defective pile. Cut off the defective pile 2 feet below existing grade.

3. The pile shall be spliced or built up as otherwise provided herein or a sufficient portion of the footing extended to properly embed the pile.

B. All piles pushed up by the driving of adjacent piles or by any other cause shall be re-driven. Any pile which cannot be driven as specified due to an obstruction shall be considered complete if adequate penetration has been achieved in the sole judgment of the Construction Manager.

3. 9 PROTECTION OF SURROUNDING ROADS, STRUCTURES AND UTILITIES

A. Damage to surrounding roads, structures or utilities caused by the installation of the piles shall be repaired to the satisfaction of the Construction Manager at no additional cost to NJ TRANSIT. Severe damage which causes a safety hazard shall be immediately repaired to the satisfaction of the Construction Manager. The operation shall be halted until a satisfactory prevention method is instituted.

B. All cranes, lifts, or other equipment that will be operated in the vicinity of aerial power transmission facilities shall be operated and electrically grounded as directed by the Construction Manager and shall comply with OSHA Safety and Health Standards, 29 CFR 1926 Subpart N and Subpart V; or as provided by the High Voltage Proximity Act. All work shall also be performed in accordance with NJ Transit's General Requirements for Working within the Right-of-Way.

PART 4 COMPENSATION

4.01 MEASUREMENT

A. Steel Piles, buildups or extensions, will be measured by the linear foot under item Pile Installation. The part cut off after driving will not be measured. Test Piles will be measured by the number of units. Furnish Pile Driving Equipment and Dynamic Pile Load Test.

4.02 PAYMENT

A. Payment for Steel Piles will be made at the price per linear foot bid for the item PILE INSTALLATION, which price shall include all costs for furnishing and installing the piles, test piles, disposal of cutoffs, and coal tar epoxy coating; all materials, labor, tools, equipment and all else necessary therefor and incidental thereto.

B. Payment for Dynamic Pile Testing will be paid by lump sum under the item DYNAMIC PILE LOAD TEST, which price shall include all work for performing the testing; all materials, labor, tools, equipment, and all else necessary therefor and incidental thereto.

C. Payment for Test Piles will be paid by the number of units under the item TEST PILE, DRIVEN, which price shall include all work for performing the testing; all materials, labor, tools, equipment, and all else necessary therefor and incidental thereto.

D. Splices and pile tips required for steel piles will not be paid for separately, but included in the unit price bid for the appropriate steel pile item.

E. Furnishing equipment for driving piles will be paid by lump sum under the item FURNISH PILE DRIVING EQUIPMENT.

F. Separate payment will not be made for pile cutoffs not used in the project. All costs therefor shall be included in the linear foot price bid for the item PILE INSTALLATION.

G. Re-driving of piles is incidental to the work.

H. Payment for mobilization of the above activities will be paid for under the lump sum price for the item FURNISH PILE DRIVING EQUIPMENT.

END OF SECTION

SECTION 02840

ASBESTOS ABATEMENT

PART 1 GENERAL

1.1 SUMMARY

A. DESCRIPTION

This work shall consist of the removal and disposal of all asbestos containing materials (ACM) and presumed asbestos containing materials (PACM) encountered during demolition, including, but not limited to, window caulking, window glazing imitation brick face, floor tiles, condensate tank insulation, and asbestos–cement anchor bolt sleeves as shown in the Plans or the existing drawings and as directed by the Construction Manager (CM), as specified herein. This work shall also include the proper disposal of asbestos wastes in accordance with Federal, States, Local rules, and regulations.

The portions of the project where asbestos removal will occur include, but are not limited to, the General Services Substation (Bay Head Yard). This location shall be considered to be the asbestos work area. The table below is a schedule of ACM to be removed.

Building Materials	ACM	Location	Approximate Quantity
Electrical Putty	ACM – 10% Chrysotile	General Services Substation	TBD

B. REFERENCES

All work shall be undertaken in accordance with applicable Federal, State and Local regulations, standards, codes, and guidelines.

The most recent edition of regulations, standards, codes and guidelines shall be in effect, and the Contractor shall have copies available at the worksite. Where conflict among the regulations, standards, codes and guidelines and these specifications exists, the more stringent requirement shall govern.

The Contractor shall be solely responsible for supervising, directing and controlling all work under this contract; for the means, methods, techniques, and procedures for asbestos removal, and the handling of asbestos-containing and contaminated materials at a permitted site; and for safety precautions and programs incident to the work.

1. Federal:

    a. Title 40 Code of Federal Regulations

        i. Part 763, Asbestos-Containing Materials in Schools Rule (AHERA).

        ii. Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP).

        iii. Parts 141 and 142, Safe Drinking Water Act.

    b. Title 29 Code of Federal Regulations:

        i. Section 1910.1001, Asbestos.

        ii. Section 1910, Subpart I, Personal Protective Equipment

        iii. Section 1910.20, Subpart C, General Health and Safety Provisions.

        iv. Section 1910.146, Permit-Required Confined Spaces.

        v. Section 1910.1200, Hazard Communication.

        vi. Section 1926, Safety and Health Regulations for Construction

    c. EPA Guidance Document:

        i. EPA 560/5-85-024; Guidance for Controlling Asbestos-Containing Materials in Buildings.

2. New Jersey:

    a. Uniform Construction Code Act. (New Jersey S.A. 52-170-119 et. seq., P.L. 1984)

    b. Asbestos Control and Licensing Act. (NJSA 34:5A-32 et. seq., P.L. 1984)

    c. Asbestos Licenses and Permits N.J.A.C. 12:120-1,2,3,5,7 and 8:60-1,2,3,4,5,7

    d. Asbestos Training Courses N.J.A.C. 8:60-2 and 6, 12:120-2 and 6 New Jersey Department of Health Asbestos Control Project

e. Solid Waste Management Act. (NJSA 13:1E-1, 13:109, et. seq., as amended)

f. Disposal Regulations N.J.A.C. 7:26 New Jersey Department of Environmental Protection, Division of Waste Management, Bureau of Field Operations

g. Control and Prohibition of Air Pollution by Toxic Substances, New Jersey Department of Environmental Protection, N.J.A.C. Title 7, Chapter 27, Subchapter 17, effective date: December 17, 1979.

h. Asbestos Subchapter of the New Jersey Safety and Health Standards for Public Employees, N.J.A.C. 12:100 et. seq.

3. American National Standards Institute (ANSI)

a. ANSI Z9.2 - American National Standard Fundamentals Governing the Design and Operation of Local Exhaust System.

b. ANSI Z88.2 - American National Standard Practice for Respiratory Protection.

4. American Society for Testing and Materials

a. ASTMC732 – (1982; R 1987) Aging Effects of Artificial Weathering on Latex Sealants

b. ASTM D 522 - (1993; Rev. A) Mandrel Bend Test of Attached Organic Coatings

c. ASTM D 1331 - (1989) Surface and Interfacial Tension of Solutions of Surface-Active Agents

d. ASTM D 2794 - (1993) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)

e. ASTM E 84 - (1994) Surface Burning Characteristics of Building Materials

f. ASTME96 - (1994) Water Vapor Transmission of Materials

g. ASTM E 1368 - Visual Inspection of Asbestos Abatement Projects

C. DEFINITIONS

1. Abatement - Procedures to control fiber release from asbestos-containing materials; which include removal, encapsulation, enclosure, repair, demolition, and renovation activities.

2. Airlock - A serial arrangement of rooms whose doors are spaced a minimum of four (4) feet apart so as to permit ingress or egress through one (1) room without interfering with the next and constructed in such a manner as to prevent or restrict the free flow of air in either direction.

3. Amended Water - Water to which a surfactant has been added.

4. Area Monitoring - Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area, which is representative of the airborne concentrations of asbestos fibers which may reach the breathing zone.

5. Asbestos - The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

6. Asbestos-Containing Material (ACM) - Material composed of asbestos of any type in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials.

7. Asbestos-Containing Waste Materials - Any material that is or suspected of being or any material contaminated with an asbestos-containing material, which is to be removed from a work area for disposal.

8. Asbestos Control Area - An area where asbestos removal operations are performed which is isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris.

9. Authorized Personnel - The Owner, the Owner's representative, Asbestos Abatement Contractor personnel, Asbestos Air Monitor personnel, emergency personnel, or a representative of any Federal, State or local regulatory agency or other personnel under contract for or having jurisdiction over the project.

10. Barrier - Any surface that seals off the work area to inhibit the movement of fibers.

11. Breathing Zone - A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.

12. Building Owner - The Owner or his authorized representative.

13. Category I Non-friable ACM - Asbestos-containing packing, gaskets, resilient floor covering and asphalt roofing products containing more than one (1) % asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light

Microscopy.

14. Category II Non-friable ACM - Any material, excluding Category I non-friable ACM, containing more than 1 % asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, Section l, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

15. Ceiling Concentration - The concentration of an airborne substance that shall not be exceeded.

16. Clean Room - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.

17. Contractor - The Asbestos Abatement Contractor licensed by the State of New Jersey, Department of Labor.

18. Critical Barrier - Two layers of nominal six (6) mil polyethylene sheeting that completely seals off the work area to prevent the distribution of fibers to the surrounding area, such as the opening between the top of a wall and the underside of ceiling construction, electrical outlets, non-removable lights, HVAC systems, windows, doorways, entranceways, ducts, grilles, grates, diffusers, wall clocks, speaker grilles, floor drains, sink drains, etc.

19. Curtained Doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing three (3) weighted overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of the two outer sheets along one vertical side of the doorway and securing the vertical edge of the middle sheet along the opposite vertical side of the doorway. Other effective designs are permissible.

20. Decontamination Enclosure System - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers and equipment.

21. Disposal Bag – six (6) mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site. Each is labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
AVOID BREATHING AIRBORNE ASBESTOS FIBERS
AND
ASBESTOS, NA2212, RQ
AND
CLASS 9 LABEL

22. The Contractor shall also label all disposal bags and/or containers with the name of the waste generator (Owner) and the location from which the waste was generated; all in accordance with the USEPA NESHAPS regulation - 40 CFR Part 651, Subpart M. Excursion Limit: No employee shall be exposed to airborne concentrations of asbestos fibers at any time equal to or greater than 1.0 fibers per cubic centimeter (cm^3) of air averaged over a 30 minute sampling period, as determined by NIOSH Analytical Method #7400.

23. Encapsulant - A liquid material which can be applied to asbestos-containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

24. Encapsulation - The application of an encapsulant to asbestos-containing materials to control the release of asbestos fibers into the air.

25. Filter - A media component used in respirators to remove solid or liquid particles from the inspired air.

26. Flame-Resistant Polyethylene Sheeting - A single polyethylene film in the largest sheet size possible to minimize seams, nominal six (6) mil thick, conforming to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films.

27. Friable Asbestos Material - ACM that when dry, may be easily crumbled, pulverized, or reduced to powder by hand pressure. This includes previously non-friable material after it becomes damaged to the extent that when dry, may be easily crumbled, pulverized, or reduced to powder by hand or mechanical pressure.

28. HEPA/P-100 Filter Equipment - Vacuuming equipment containing a HEPA filter system capable of preventing passage of asbestos dust with an efficiency of 99.97 % of all particulates greater than 0.3 microns in size.

29. HVAC - Heating, Ventilation and Air Conditioning system.

30. HEPA Filter - A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

31. Negative Pressure - Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

32. Negative Pressure Respirator - A respirator in which the air pressure inside the respirator inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

33. Negative Pressure Air Filtration Device (AFD) - A local exhaust system device, utilizing HEPA filtration capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.

34. Personal Monitoring - Sampling of asbestos fiber concentrations within the breathing zone of a worker to establish OSHA PEL data values.

35. Permissible Exposure Limit (PEL) - No employee shall be exposed to airborne concentrations of asbestos fibers equal to or greater than 0.1 fibers per cm^3 of air as an 8-hour time weighted average (TWA) as determined by NIOSH Analytical Method #7400.

36. Regulated Asbestos-Containing Material (RACM) - (a) Friable asbestos material, (b) Category I Non-friable ACM that has become friable, (c) Category I Non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II Non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

37. Removal - The stripping of any asbestos-containing materials from surfaces or components of a facility.

38. Renovation - Altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

39. Respirator - A device designed to protect the wearer from the inhalation of harmful atmospheres.

40. Shower Room - A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination.

41. Surfactant - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

42. Time-Weighted Average (TWA) - Three samples are required to establish the 8-hour time weighted average. The TWA is an 8-hour time weighted average airborne concentration of asbestos fibers per cm^3 of air.

43. Visible Emissions - Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

44. Water Column (wc) - A unit of measurement for pressure differential.

45. Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops or other cleaning utensils that have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

46. Work Area - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area that has been sealed, plasticized and equipped with a negative pressure air-filtration system.

47. Worker decontamination enclosure - A decontamination system consisting of a clean room, a shower room, and an equipment room separated from each other and from the work area by airlocks and curtained doorways. This system is used for all worker entrances and exists to and from the work area and for equipment pass out for small jobs.

C. REQUIREMENTS

1. Compliance:

   a. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and County regulations pertaining to work practices, hauling, disposal, and protection of the site. The Contractor is responsible for providing medical examinations and maintaining records of personnel as required by the applicable Federal, State, and local regulations.

2. Qualifications:

   a. The Contractor shall have a minimum of two (2) years of experience on asbestos removal, which shall be evidenced by a complete list of all asbestos removal and disposal projects

undertaken in the past three (3) years indicating the owner of the facility (including name, address and phone number of the owner project manager), type of facility, volume of material removed and name of the Contractor and “Competent Person” supervising work.

b. The Contractor shall have successfully completed at least two (2) projects of comparable scope to this Contract within the past three (3) years which shall be evidenced by identifying the owner of the facility (including name, address and phone number of the owner project manager), type of facility, volume of material removed and name of the Contractor and “Competent Person” supervising work.

c. The Contractor shall have on staff and assign to this Contract a “Competent Person” with a minimum of two (2) years’ experience in removal and disposal of asbestos and at least five (5) years’ experience in construction trades, who has served as “Competent Person” on a minimum three (3) projects of comparable scope and methodology to this project. This shall be evidenced by providing the name of the person and proof of training as Supervisor. The “Competent Person” shall be a full-time employee of the Subcontractor.

3. Notification:

a. Permits and Notification:

1) The Contractor will prepare all notifications required by New Jersey, and EPA based upon these Specifications, and will submit them to the appropriate agency. Send written notification required by N.J.A.C. 5:23-8 to the Department of Community Affairs within three (3) days of issuance of the construction permit for asbestos abatement. Send notification to:

New Jersey Department of Community Affairs
Division of Codes and Standards
Bureau of Code Services Asbestos/Lead Safety Unit
101 South Broad Street
PO Box 816
Trenton, NJ 08625-0816

2) The Contractor shall obtain all permits required by Federal, State, and/or County regulatory agencies or jurisdictions for the transportation and disposal of asbestos-containing materials. The removal of asbestos shall require a construction permit in accordance with N.J.A.C. 5:23-8.5.

Additionally, a demolition permit must be obtained pursuant to N.J.A.C. 5:23-2.

3) The Contractor shall post one copy of all permits at the work site and keep on file at the Contractor's office one copy of each.

4) The Contractor shall submit written certification prior to the commencement of work that the required permits, site location, and arrangements for transportation and disposal of asbestos-containing wastes have been made.

b. Contractor Documentation:

1) The Contractor shall submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos-containing wastes removed from the property, within ten (10) days of such removal.

2) The Contractor shall submit documentation prior to the commencement of work that the Contractor's employees, including foreman, supervisors, and any other company personnel or agents who may be exposed to airborne asbestos have received the following:

- Training as required by OSHA 29 CFR 1926.1101 (k) (3).
- Medical surveillance as required by OSHA 20 CFR 1926.1101(m) and have been determined by a physician to be physically able to wear required respiratory protection.
- Respirator fit testing as required by OSHA 29 CFR 1926.1101 (h) (4).
- New Jersey Asbestos and Permits.

3) The Contractor shall submit prior to the commencement of Work the names and Social Security numbers of the Contractor's employees.

4) The Contractor shall submit the identity and qualifications of his designated "competent person" to be on-site during removal work as required by OSHA 29 CFR 1926.1101 (e) (6) (ii) and the individual or firm that will be conducting his employee exposure monitoring as required by OSHA 29 CFR 1926.1101 (f) to the CM prior to the commencement of work.

5) The Contractor shall have in his possession, on-site, copies of the above referenced regulations, as well as, a copy of the Contractor's asbestos training and work practices manual, written respirator program, and these Specifications.

6) The Contractor shall maintain a daily log within the Decontamination Unit documenting the dates and times of the following items: visitations; authorized and unauthorized Personnel; by name, entering and leaving the work area.

c. Licenses:

1) Maintain current licenses as required by applicable Federal, and New Jersey regulatory agencies or jurisdictions for the removal, transporting, disposal, and/or other regulated activity relative to the work of this contract.

2) Posting and Filing of Licenses: Maintain two (2) copies of applicable Federal, and New Jersey licenses described above. Post one copy of each at the job site and keep on file in Subcontractor's office one copy of each.

D. SUBMITTALS

1. Within 60 days after Contract Award, the Contractor shall submit the following:

a. Applications, notifications, permits (i.e. variances, agency approvals, etc.)

b. Evidence of prior experience conducting similar work

c. Qualifications of firm and personnel including licenses, respirator fit tests, medical clearance exams

d. List and qualifications of subcontractors to be utilized

e. Corporate & Site Specific Health & Safety Plan

1) Hazard Communication Program

2) Emergency Response Plan (ERP) & Contingency Plan

3) Respiratory Protection Program

4) Personal Protective Equipment (PPE)

5) Medical Surveillance program

f. Site Specific Work Plan

1) Scope of Work

2) Abatement Design drawings/engineered drawings, approved by a licensed Professional Engineer (if applicable)

3) Means and Methods of abatement

4) Personnel Decontamination Design

5) Temporary Construction Plan with location of negative air pressure machine

6) Work Schedule & Progress Reports

7) Containment Plan

8) Waste Storage Plan

9) Material Safety Data Sheets

g. Catalogue, cut sheets, product & technical data sheets.

2. Submit the name, address, and telephone number of each testing laboratory selected for the analysis, and reporting of airborne concentrations of asbestos fibers along with evidence that each laboratory selected holds the appropriate New Jersey license and/or permits and certification that each laboratory is American Industrial Hygiene Association (AIHA) accredited and that persons counting the samples have been judged proficient by current inclusion on the AIHA Asbestos Analysis Registry (AAR) and successful participation of the laboratory in the Proficiency Analytical Testing (PAT) Program. Where analysis to determine asbestos content in bulk materials or transmission electron microscopy is required, submit evidence that the laboratory is accredited by the National Institute of Science and Technology (NIST) under National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos analysis.

3. Submit written evidence that the landfill for disposal is approved for asbestos disposal by the USEPA and New Jersey regulatory agency(s). Submit waste shipment records, prepared in accordance with Federal regulations, signed and dated by an agent of the landfill, certifying the amount of asbestos materials delivered to the landfill, within three (3) days after delivery.

4. Submit certificates signed by each employee indicating that the employee has received training in the proper handling of materials and wastes that contain asbestos in accordance with 40 CFR 763 and New Jersey requirements; understands the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of the respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis.

5. Provide a written certification for each worker and supervisor, signed by a licensed physician indicating that the worker and supervisor has met or exceeded all of the medical prerequisites listed herein and in 29 CFR 1926.1101 and 29 CFR 1926.103 as prescribed by law.

6. The Contractor shall submit a signed notarized statement disclosing all OSHA and EPA citations or violations on asbestos removal jobs in the past three (3) years.

1.2 RELATED SECTIONS

A. Section 02010 – Environmental Requirements

B. Section 02220 – Demolition

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 RESPIRATORS

A. The Contractor shall administer a respiratory protection program as required by OSHA (29 CFR 1910.134). The Contractor shall provide individual respirators, from those approved by the NIOSH, Department of Health and Human Services, for each employee. The Contractor shall require all employees to wear Powered Air Purifying Respirators (PAPR) inside the work area for the duration of the project, or unless acceptable levels have been established through air sampling. The Contractor shall require that respiratory protection be used at all times there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental, until the area has been cleared for reoccupancy. The Contractor shall not allow the use of single-use, disposal respirators for any purpose.

3.2 PERSONAL DECONTAMINATION

A. Provide a temporary, negative pressure unit with a separate decontamination room and clean room with a shower that complies with 29 CFR 1926.1101. Provide a separate decontamination area for personnel required to don and doff whole body protective clothing. Keep street clothing and street shoes a clean area. HEPA vacuum and remove asbestos contaminated disposable protective clothing while still wearing respirators at the boundary of the asbestos work area and seal in impermeable bags or containers for disposal.

3.3 WARNING SIGNS AND LABELS

A. Provide warning signs printed in English at all approaches to asbestos control areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos.

Legend	Notation
Cancer	1-inch Sans Serif Gothic or Block
Asbestos	1-inch Sans Serif Gothic or Block
Cancer and Luna Disease Hazard	1-inch Sans Serif Gothic or Block
Authorized Personnel Only	1-inch Gothic
Respirators and Protective Clothing are Required in this Area	1-inch Gothic

3.4 LOCAL EXHAUST SYSTEM

A. Provide a local exhaust system in the asbestos control area in accordance with ANSI Z 9.2 and 29 CFR 1926.1101 that will provide at least four air changes per hour inside of the negative pressure enclosure. Maintain a minimum pressure differential in the control area of minus 0.02 inch of water column relative to adjacent, unsealed areas. The local exhaust system shall terminate out of doors and remote from any public access or ventilation system intakes.

3.5 TOOLS

A. Vacuums shall be leak proof to the filter and equipped with HEPA filters. Do not use power tools to remove asbestos containing materials unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation systems. Remove all residual asbestos from reusable tools prior to storage or reuse.

3.6 WORK PROCEDURE

A. Perform asbestos related work in accordance with 29 CFR 1925.1101, 40 CFR 51, SUBPART M, NJAC 5:23-8 and as specified herein. Use wet removal procedures. Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, chewing gum, tobacco, or

applying cosmetics shall not be permitted in the asbestos work or control areas. Personnel of other trades not engaged in the removal and demolition of asbestos containing material shall not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection and training provisions of this specification are adhered to by the trade personnel. If an asbestos fiber release or spill occurs outside of the asbestos control area, stop work immediately, correct the condition including clearance sampling, prior to resumption of work.

1. The Contractor shall arrange and pay for all air quality monitoring including air sampling, monitoring, and analysis required for regulatory compliance. The firm and persons engaged shall be properly licensed, certified, and must be properly insured

2. All persons entering the work area shall wear disposable coveralls and NIOSH-approved respirators with HEPA filters. Workers will remove protective equipment prior to leaving the work area and proceed to a remote shower facility for final decontamination.

3. Perform work without damage or contamination of adjacent work. Where such work is damaged or contaminated using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to NJ Transit. This includes inadvertent spill of dirt, dust, or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, stop work immediately, clean up the spill. When satisfactory visual inspection and air sampling results are obtained, work may proceed.

4. When the use of scaffolding is required by the Contractor to access the asbestos-containing materials all scaffolding shall be erected in accordance with OSHA standard 29 CFR 1926.451. No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons.

5. Block and seal openings in the areas where the release of airborne asbestos fibers can be expected. Establish an asbestos negative pressure enclosure. Negative pressure enclosure development shall include protective covering of walls and ceilings with 2 layers of minimum 6-mil plastic sheet sealed with tape to prevent water or other damage. Provide local exhaust system in the asbestos control area.

6. Wet asbestos material with a fine spray of amended water during removal, cutting, or other handling, so as to reduce the emission of airborne fibers. Remove material and immediately place in 6-mil plastic disposal bags. Remove asbestos containing material in a gradual manner, with continuous application of the amended water or wetting agent in such a manner that no asbestos material is disturbed prior to being adequately wetted. Where unusual circumstances prohibit the use of 6-mil plastic bags, submit an alternate proposal for containment of asbestos fibers for approval. Asbestos containing material shall be

containerized while wet. At no time shall asbestos material be allowed to accumulate or become dry. Handle asbestos containing material as indicated.

7. Sampling of airborne concentrations of asbestos fibers shall be performed in accordance with 29 CFR 1926.1101, NJAC 5:23-8 and as specified herein. A qualified person shall perform sampling performed in accordance with 29 CFR 1926.1101. Unless otherwise specified, use NIOSH Method 7400 for sampling and analysis.

8. The Contractor shall request a pre-sealant inspection prior to removal of barriers and after pre-clearance cleanup of gross contamination. The asbestos control monitor shall conduct a visual inspection of all areas affected by the removal in accordance with ASTM E 1368 and NJAC 5:23-8. Inspect for any visible fibers. A post removal (lock-down) encapsulant shall then be spray applied to ceiling, walls, floors and other areas exposed in the removal area. The exposed area shall include but not be limited to plastic barriers; furnishings and articles to be discarded as well as dirty change room, air locks for bag removal and decontamination chambers.

9. While performing asbestos engineering control work, the Contractor shall be subject to on-site inspection by the CM or NJ Transit if the work is found to be in violation of this specification. The CM or NJ Transit will issue a stop work order to be in effect immediately and until the violation is resolved. All related costs including standby time required to resolve the violation shall be at the Contractor's expense.

10. The Contractor and asbestos control monitor will perform a complete visual inspection of the entire work area. Following final clearance air sampling, encapsulation, and air sample results below 0.01 fibers per cubic centimeter. If the final clearance inspection is not acceptable, the Contractor must remedy all deficiencies. All related costs to perform final clearance samples per N.J.A.C 5-16 shall be at the Contractor's expense and standby time required to resolve any violation/deficiencies shall be at the Contractor's expense.

11. All waste materials, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified in the applicable Federal and New Jersey regulations and herein.

12. Collect asbestos waste, asbestos contaminated water, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing which may produce airborne concentrations of asbestos fibers and place in sealed fiber-proof, waterproof, non-returnable containers (e.g. double plastic bags 6-mils thick, cartons, drums or cans). Wastes within the containers must be adequately wet in accordance with 40 CFR 61-SUBPART M and NJAC 5:23-8 and NJAC 7:26. Procedure for hauling

and disposal shall comply with 40 CFR 61, SUBPART M, Federal, New Jersey, and other applicable standards.

PART 4 COMPENSATION

4.1 MEASUREMENT

A. Removal of previously identified asbestos-containing or presumed asbestos containing materials will be not be measured for payment and paid under an allowance.

4.2 PAYMENT

Payment will be made under:

PAY ITEM	***PAY UNIT***
Asbestos Abatement	Allowance

No separate payment will be made for the removal of the asbestos-cement anchor bolt; their associated removal procedures, air monitoring, and transport/disposal; but the costs thereof will be included in the lump sum price bid for the pay item.

END OF SECTION

SECTION 02461
STEEL PIPE PILES

PART 1 GENERAL

1. 1 SECTION INCLUDES

A. Provide labor, supervision, materials, equipment, tools, supplies, and permits necessary for the installation of steel Pipe piles and dynamic pile testing, as shown on the Contract Drawings and as specified herein.

1. 2 RELATED WORK

A. Section 02481 - Vibration and Movement Monitoring

B. Section 05120 - Structural Steel

1. 3 PERFORMANCE REQUIREMENTS

A. Drive piles to tip elevations and design ultimate capacity as specified on the Contract Drawings.

B. Avoid damaging piles by overdriving.

C. Minimize noise through housing of the hammer or other approved methods.

1. 4 SUBMITTALS

A. Site Specific Work Plan (SSWP), no later than 45 days prior to beginning pile driving operations for approval by the Construction Manager.

B. Certified mill test reports for steel Pipe piles.

C. Certification by the hammer manufacturer of the striking energy per blow, rated speed, source of the energy, serial number and condition and operational characteristics of proposed pile hammer. A wave equation analysis (WEA) to determine the adequacy of the proposed pile driving equipment shall also be submitted to the Construction Manager for approval. The WEA shall demonstrate that the pile will not be overstressed during driving. The WEA must be signed and sealed by a Professional Engineer licensed to practice in the State of New Jersey.

D. A complete description of the hammer assembly components.

E. Shop drawings showing details of special pile driving equipment including crane size, leads, cushion blocks, templates, guides and erection details.

F. Shop drawings showing proposed installation procedure, sequence of driving piles, a list of order lengths of piles for approval by the Construction Manager. If splices cannot be avoided, submit the method of splicing and splice location for each pile.

G. A drawing showing the exact "As-Driven" location of all driven piles and identifying abandoned piles.

H. Proof of welding qualifications as defined in Section 1.6.

1. 5 PROJECT RECORD DOCUMENTS

A. Stake out the location of all piles, establish all elevations required, maintain all location stakes, and be responsible for the correct locations of all piles.

B. The Construction Manager will record and maintain the pile driving records and provide pile inspection reports at the end of driving. The Construction Manager will provide full time presence during pile driving. A copy of the pile driving records shall be submitted to the Engineer at the end of the contract.

C. Do not drive any piles except in the presence of the Construction Manager. The Contractor may keep a record independent of that made by the Construction Manager.

D. Prepare an accurate record for each pile driven. The report shall include:

1. Date of driving.
2. Pile number.
3. Type and size of pile.
4. Type, number and location of splices.
5. Length before driving.
6. Length of cut-off.
7. Elevation of top and of tip immediately after driving, to nearest 0.1 foot.
8. Elevation of top to determine amount of heave after driving adjacent piles and after re-driving, all to the nearest 0.1 inch.
9. Final elevation of tip, if re-driving is required, of entire pile group.
10. Hammer type and size.
11. Hammer speed.
12. Blows per foot of driven length and final blows per inch for last 3 inches.
13. Blows per ½ inch of re-drive.
14. The time pile driving is started, interrupted, resumed and stopped.
15. Description of any unusual circumstances affecting the driving of the particular pile.
16. Record of time, method and depth for pre-drilling holes for piles, if necessary.
17. Slope of pile.
18. Location plan showing where pile is driven.

1. 6 QUALIFICATIONS

A. Qualifications for Welding Work:

1. Qualify welding processes and welding operators in accordance with AWS D1.1.
2. Provide certification that welders to be employed have satisfactorily passed the AWS qualification tests within the 12 months prior to the Notice to Proceed (NTP) date.

a. If recertification of welders is required, retesting will be the Contractor's responsibility.

B. Inspection and Testing:

1. Quality control inspections shall be performed by the Contractor at least to the minimal extent specified, and, additionally, any other testing and

inspections necessary to control production quality shall be made. Quality assurance inspections will be performed by the Construction Manager.

a. Welded splices located between the pile top and 15 feet below the existing ground surface, or within 35 feet of the pile tip shall be tested ultrasonically in accordance with AWS requirements. Test results shall be submitted for approval.

b. Welded splices located outside of the zones listed in (a.) above shall be inspected visually in accordance with AWS requirements. Ultrasonic testing will not be required on welds located outside of these zones.

1. 7 CODES AND STANDARDS

A. Work shall conform to the following:

1. American Institute of Steel Construction (AISC).
2. American Society for Testing and Materials (ASTM).
3. American Railway Engineering and Maintenance-of-Way Association (AREMA).
4. State and Local ordinances for hours of pile driving operations and noise level requirements.

1. 8 FIELD MEASUREMENTS

A. Verify that field measurements and survey bench marks are as indicated on Drawings.

PART 2 PRODUCTS

2. 1 PILING

A. Steel Pipe Piles, 14-in diameter with 0.5 in. wall thickness: ASTM A572, Grade 50.

B. Steel Pile Tip: High-strength cast steel, ASTM A-27 65/35, heat-treated, P13006 conical point as manufactured by Associated Pile and Fitting Corp., or approved equal. All piles shall be fitted with tips.

C. Steel Pile Splice: Splicing of steel piles shall be performed by using approved full penetration butt welding of the continuous section and sufficient to fully develop the full strength of the pile.

2. 2 EQUIPMENT

A. Piles shall be driven by air, hydraulic or diesel hammers, having a rated energy capable of transferring a minimum energy to the top of the pile to achieve the required capacity as shown on the Contract Drawings. The valve mechanism and other parts of hammers shall be maintained in a condition which will ensure that the length of stroke and number of blows per minute for which the hammer is designed will be realized. Air hammers shall have air capacity which is not less than that specified by the hammer manufacturer; and compressor shall have either pressure gauges or other devices calibrated in a manner which will allow hammer energy to be determined. When the determination of the final driving resistance is being made, the hammer shall be operated at not less than 90 percent of the maximum

blows per minute for which the hammer is rated by the manufacturer. The Contractor shall maintain the air pressure recommended by the manufacturer and shall employ hose and connections of the proper sizes. Pile and hammer shall be held in alignment by leads and in a manner which will ensure that the centerline of the hammer is an extension of the centerline of the pile. All piles shall be driven through fixed templates to maintain alignment and location. Driving head shall fit the top of the pile and shall extend down the sides of the pile not less than 4 inches.

B. Leads of the pile-driving rig shall be fixed at two points; the points shall be at least half the length of the leads apart in order to maintain the pile and hammer in axial alignment of the correct plan location during the entire driving operation. The leads shall extend down to the lowest point at which the hammer must operate. Templates shall be fixed and braced to sheeting, cross bracing, previously driven piles, or other rigidly fixed structure. The template shall be made of materials and shall be of a size and shape to resist forces during driving so that the pile will not move laterally or rotate. The use of followers will not be permitted, unless otherwise directed.

C. The proposed pile-driving equipment shall be subject to the approval of the Construction Manager. Approval shall be secured before pile-driving starts. The same equipment shall be used for all production piles and test piles. Approval by the Construction Manager of the Contractor's equipment will merely signify that the Contractor may make an initial trial installation with the proposed equipment. Approval will not relieve the Contractor of his responsibility for providing and installing piles capable of supporting the design loads by whatever means necessary, including changing the equipment and procedures from those used in the initial trial.

D. Cap block cushions shall consist of multiple layers of aluminum-micarta discs, stacked in steel housing with steel top and bottom plates. Alternative arrangements, if proposed, shall be demonstrated to be equally efficient in transmitting the energy of the hammer and preventing damage to the top of the piles.

PART 3 EXECUTION

3. 1 PREPARATION FOR DRIVING

A. Furnishing Equipment for Driving Piles: Prior to delivery of the equipment to the work site, information regarding the type, striking energy per blow, rated speed, source of energy and serial number of the hammer proposed for use is to be submitted for approval.

3. 2 PILE DRIVING EQUIPMENT

A. Use rigid frame lead type driving system capable of supporting pile firmly in vertical position or to required batter.

B. Unless approved by the Construction Manager, leads shall be of sufficient length so that use of a follower will not be necessary.

C. Use an approved driving head designed to properly fit the head of the pile and to prevent damage to the top of the pile.

D. Use an approved cushion consisting of alternate plates of aluminum and micarta.

E. Do not use wood chips, small blocks, shavings or similar material to absorb energy of the hammer.

F. Equipment shall be capable of maintaining the rated speed of the hammer during the full time of pile driving.

G. Use a hammer with a rated energy capable of producing the minimum transferred energy to the top of the pile to achieve the required capacity as shown on the Contract Drawings.

3. 3 METHODS OF DRIVING

A. Piles shall be driven to an ultimate driving resistance of 250 kips/pile.

B. Accuracy of Driving: The Contractor must use steel templates for setting and locating all piles. Piles shall be driven with a variation of not more than 1/8 inch per foot from the vertical. Piles shall not be out of the required plan position by more than one (1) inch at end of driving.

C. If for any reason the piles cannot be driven in accordance with the Contract Drawings, the Contractor shall submit an alternate pile layout to the Construction Manager for approval, at no additional cost. The alternate pile layout shall be structurally equivalent to the layout specified in the Contract Drawings.

D. Splices: Unless clearance restrictions do not allow it, piles of 60 feet and less in length shall be driven without splicing. If field splicing of piles is required, the field splice shall be made with full penetration welds and shall be capable of developing the full axial, tensile and flexural strength of the section of the pile.

E. The method of splicing and splice location for each pile shall be submitted no later than 30 days prior to start of pile driving to the Construction Manager for approval.

F. Drive piles without interruption from the first hammer blow until required penetration and driving resistance has been attained.

G. Improperly Driven and Damaged Piles: Piles shall be driven within 1 inch of the plan location. Variations of more than 1/8 inch per foot from the vertical, or from the batter line when batter piles are required, may be subject to rejection by the Construction Manager. Any pile so out of line or plumb as to impair its usefulness shall be pulled and/or an additional pile driven, as required by the Construction Manager. Any pile so injured in driving or handling as to impair its structural capacity as a pile under conditions of use shall be replaced by a new pile, or the injured part shall be replaced by splicing or other remedial measures, all as directed by the Construction Manager.

H. Re-driving of Heaved Piles: Previously driven piles shall be carefully checked during the driving of adjacent piles, and if any uplift in excess of ¼ inch occurs, they shall be re-driven to the required penetration or resistance as directed by the Construction Manager.

I. Interrupted Driving: When driving is interrupted or the rate of blows retarded for any reason, a careful record shall be kept of the extent of the delay or retardation. Then, upon resuming driving, overcome friction due to stoppage and drive to required capacity and penetration.

3. 4 INSPECTION OF PILE DRIVING

A. Pile driving operations will be inspected by the Construction Manager.

3. 5 TOP CUT-OFF ELEVATION

A. Piles shall be cut off at the designated elevation. The length of pile cutoff shall be sufficient to permit the removal of all injured material.

B. Cutoffs of steel Pipe piles shall be made at right angles to the axis of the pile. The cuts shall be made in clean, straight lines.

3. 6 TEST PILES

A. Pile locations selected for test piles shall be driven as shown on the Contract Drawings and where directed. The test piles shall be driven to the tip elevation or minimum driving resistance specified on the Contract Drawings. The test piles shall be driven with the same equipment that is used for driving production piles.

3. 7 DYNAMIC PILE TESTING

A. Engage a dynamic pile testing firm that shall have a minimum of five years experience in dynamic pile testing and analysis. The dynamic pile testing firm shall perform dynamic measurements and analysis on test piles and monitor performance.

B. Data obtained from the dynamic measurements shall include:

1. Transferred energy from hammer to top of pile.

2. Predicted ultimate static capacity.

3. Maximum tensile and compressive stresses in pile.

4. Maximum impact velocity at pile top.

5. Maximum pile top acceleration.

C. Dynamically monitor all piles designated as test piles with the Pile Dynamic Analyzer. In addition, approximately 10 percent of production piles may be monitored as selected by the Construction Manager.

D. All test piles shall be driven before production pile driving commences. The approved hammer shall be used to drive the piles. The test piles shall be driven to the ultimate driving resistance criteria shown on the Contract Drawings.

E. The dynamic monitoring shall be performed using a Pile Driving Analyzer, two accelerometers, and two strain transducers attached to the pile head. The dynamic testing shall be performed using CAPWAP wave equation analysis with actual pile dynamic measurement to determine pile capacity, driving stresses, and hammer performance.

F. The dynamic pile testing firm shall prepare a written report summarizing the dynamic testing results. The report shall discuss hammer performance, driving stress level and predicted pile ultimate capacity. The report shall include refined wave equation analysis based on actual field measurements.

3. 8 UNACCEPTABLE PILES

A. The procedure for driving shall not subject the piles to excessive and undue abuse producing deformation of the steel. Manipulation of piles to force them into proper position, considered to be excessive, will not be permitted. Any pile damaged by reason of internal defects, improper driving, use of an improper hammer, or driven out of its proper location shall be corrected without additional compensation by one

of the following methods, approved by the Engineer and Construction Manager, for the pile in question:

1. The pile shall be withdrawn and replaced by a new and, if necessary, longer pile.

2. A second pile shall be driven adjacent to the defective pile. Cut off the defective pile 2 feet below existing grade.

3. The pile shall be spliced or built up as otherwise provided herein or a sufficient portion of the footing extended to properly embed the pile.

B. All piles pushed up by the driving of adjacent piles or by any other cause shall be re-driven. Any pile which cannot be driven as specified due to an obstruction shall be considered complete if adequate penetration has been achieved in the sole judgment of the Construction Manager.

3. 9 PROTECTION OF SURROUNDING ROADS, STRUCTURES AND UTILITIES

A. Damage to surrounding roads, structures or utilities caused by the installation of the piles shall be repaired to the satisfaction of the Construction Manager at no additional cost to NJ TRANSIT. Severe damage which causes a safety hazard shall be immediately repaired to the satisfaction of the Construction Manager. The operation shall be halted until a satisfactory prevention method is instituted.

B. All cranes, lifts, or other equipment that will be operated in the vicinity of aerial power transmission facilities shall be operated and electrically grounded as directed by the Construction Manager and shall comply with OSHA Safety and Health Standards, 29 CFR 1926 Subpart N and Subpart V; or as provided by the High Voltage Proximity Act. All work shall also be performed in accordance with NJ Transit's General Requirements for Working within the Right-of-Way.

PART 4 COMPENSATION

4.01 MEASUREMENT

A. Steel Piles, buildups or extensions, will be measured by the linear foot under item Pile Installation. The part cut off after driving will not be measured. Test Piles will be measured by the number of units. Furnish Pile Driving Equipment and Dynamic Pile Load Test.

4.02 PAYMENT

A. Payment for Steel Piles will be made at the price per linear foot bid for the item PILE INSTALLATION, which price shall include all costs for furnishing and installing the piles, test piles, disposal of cutoffs, and coal tar epoxy coating; all materials, labor, tools, equipment and all else necessary therefor and incidental thereto.

B. Payment for Dynamic Pile Testing will be paid by lump sum under the item DYNAMIC PILE LOAD TEST, which price shall include all work for performing the testing; all materials, labor, tools, equipment, and all else necessary therefor and incidental thereto.

C. Payment for Test Piles will be paid by the number of units under the item TEST PILE, DRIVEN, which price shall include all work for performing the testing; all materials, labor, tools, equipment, and all else necessary therefor and incidental thereto.

D. Splices and pile tips required for steel piles will not be paid for separately, but included in the unit price bid for the appropriate steel pile item.

E. Furnishing equipment for driving piles will be paid by lump sum under the item FURNISH PILE DRIVING EQUIPMENT.

F. Separate payment will not be made for pile cutoffs not used in the project. All costs therefor shall be included in the linear foot price bid for the item PILE INSTALLATION.

G. Re-driving of piles is incidental to the work.

H. Payment for mobilization of the above activities will be paid for under the lump sum price for the item FURNISH PILE DRIVING EQUIPMENT.

END OF SECTION

SECTION 02840

ASBESTOS ABATEMENT

PART 1 GENERAL

1.1 SUMMARY

A. DESCRIPTION

This work shall consist of the removal and disposal of all asbestos containing materials (ACM) and presumed asbestos containing materials (PACM) encountered during demolition, including, but not limited to, window caulking, window glazing imitation brick face, floor tiles, condensate tank insulation, and asbestos–cement anchor bolt sleeves as shown in the Plans or the existing drawings and as directed by the Construction Manager (CM), as specified herein. This work shall also include the proper disposal of asbestos wastes in accordance with Federal, States, Local rules, and regulations.

The portions of the project where asbestos removal will occur include, but are not limited to, the General Services Substation (Bay Head Yard). This location shall be considered to be the asbestos work area. The table below is a schedule of ACM to be removed.

Building Materials	ACM	Location	Approximate Quantity
Electrical Putty	ACM – 10% Chrysotile	General Services Substation	TBD

B. REFERENCES

All work shall be undertaken in accordance with applicable Federal, State and Local regulations, standards, codes, and guidelines.

The most recent edition of regulations, standards, codes and guidelines shall be in effect, and the Contractor shall have copies available at the worksite. Where conflict among the regulations, standards, codes and guidelines and these specifications exists, the more stringent requirement shall govern.

The Contractor shall be solely responsible for supervising, directing and controlling all work under this contract; for the means, methods, techniques, and procedures for asbestos removal, and the handling of asbestos-containing and contaminated materials at a permitted site; and for safety precautions and programs incident to the work.

1. Federal:

    a. Title 40 Code of Federal Regulations

        i. Part 763, Asbestos-Containing Materials in Schools Rule (AHERA).

        ii. Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP).

        iii. Parts 141 and 142, Safe Drinking Water Act.

    b. Title 29 Code of Federal Regulations:

        i. Section 1910.1001, Asbestos.

        ii. Section 1910, Subpart I, Personal Protective Equipment

        iii. Section 1910.20, Subpart C, General Health and Safety Provisions.

        iv. Section 1910.146, Permit-Required Confined Spaces.

        v. Section 1910.1200, Hazard Communication.

        vi. Section 1926, Safety and Health Regulations for Construction

    c. EPA Guidance Document:

        i. EPA 560/5-85-024; Guidance for Controlling Asbestos-Containing Materials in Buildings.

2. New Jersey:

    a. Uniform Construction Code Act. (New Jersey S.A. 52-170-119 et. seq., P.L. 1984)

    b. Asbestos Control and Licensing Act. (NJSA 34:5A-32 et. seq., P.L. 1984)

    c. Asbestos Licenses and Permits N.J.A.C. 12:120-1,2,3,5,7 and 8:60-1,2,3,4,5,7

    d. Asbestos Training Courses N.J.A.C. 8:60-2 and 6, 12:120-2 and 6 New Jersey Department of Health Asbestos Control Project

e. Solid Waste Management Act. (NJSA 13:1E-1, 13:109, et. seq., as amended)

f. Disposal Regulations N.J.A.C. 7:26 New Jersey Department of Environmental Protection, Division of Waste Management, Bureau of Field Operations

g. Control and Prohibition of Air Pollution by Toxic Substances, New Jersey Department of Environmental Protection, N.J.A.C. Title 7, Chapter 27, Subchapter 17, effective date: December 17, 1979.

h. Asbestos Subchapter of the New Jersey Safety and Health Standards for Public Employees, N.J.A.C. 12:100 et. seq.

3. American National Standards Institute (ANSI)

a. ANSI Z9.2 - American National Standard Fundamentals Governing the Design and Operation of Local Exhaust System.

b. ANSI Z88.2 - American National Standard Practice for Respiratory Protection.

4. American Society for Testing and Materials

a. ASTMC732 – (1982; R 1987) Aging Effects of Artificial Weathering on Latex Sealants

b. ASTM D 522 - (1993; Rev. A) Mandrel Bend Test of Attached Organic Coatings

c. ASTM D 1331 - (1989) Surface and Interfacial Tension of Solutions of Surface-Active Agents

d. ASTM D 2794 - (1993) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)

e. ASTM E 84 - (1994) Surface Burning Characteristics of Building Materials

f. ASTME96 - (1994) Water Vapor Transmission of Materials

g. ASTM E 1368 - Visual Inspection of Asbestos Abatement Projects

C. DEFINITIONS

1. Abatement - Procedures to control fiber release from asbestos-containing materials; which include removal, encapsulation, enclosure, repair, demolition, and renovation activities.

2. Airlock - A serial arrangement of rooms whose doors are spaced a minimum of four (4) feet apart so as to permit ingress or egress through one (1) room without interfering with the next and constructed in such a manner as to prevent or restrict the free flow of air in either direction.

3. Amended Water - Water to which a surfactant has been added.

4. Area Monitoring - Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area, which is representative of the airborne concentrations of asbestos fibers which may reach the breathing zone.

5. Asbestos - The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

6. Asbestos-Containing Material (ACM) - Material composed of asbestos of any type in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials.

7. Asbestos-Containing Waste Materials - Any material that is or suspected of being or any material contaminated with an asbestos-containing material, which is to be removed from a work area for disposal.

8. Asbestos Control Area - An area where asbestos removal operations are performed which is isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris.

9. Authorized Personnel - The Owner, the Owner's representative, Asbestos Abatement Contractor personnel, Asbestos Air Monitor personnel, emergency personnel, or a representative of any Federal, State or local regulatory agency or other personnel under contract for or having jurisdiction over the project.

10. Barrier - Any surface that seals off the work area to inhibit the movement of fibers.

11. Breathing Zone - A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.

12. Building Owner - The Owner or his authorized representative.

13. Category I Non-friable ACM - Asbestos-containing packing, gaskets, resilient floor covering and asphalt roofing products containing more than one (1) % asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light

Microscopy.

14. Category II Non-friable ACM - Any material, excluding Category I non-friable ACM, containing more than 1 % asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, Section l, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

15. Ceiling Concentration - The concentration of an airborne substance that shall not be exceeded.

16. Clean Room - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.

17. Contractor - The Asbestos Abatement Contractor licensed by the State of New Jersey, Department of Labor.

18. Critical Barrier - Two layers of nominal six (6) mil polyethylene sheeting that completely seals off the work area to prevent the distribution of fibers to the surrounding area, such as the opening between the top of a wall and the underside of ceiling construction, electrical outlets, non-removable lights, HVAC systems, windows, doorways, entranceways, ducts, grilles, grates, diffusers, wall clocks, speaker grilles, floor drains, sink drains, etc.

19. Curtained Doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing three (3) weighted overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of the two outer sheets along one vertical side of the doorway and securing the vertical edge of the middle sheet along the opposite vertical side of the doorway. Other effective designs are permissible.

20. Decontamination Enclosure System - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers and equipment.

21. Disposal Bag – six (6) mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site. Each is labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
AVOID BREATHING AIRBORNE ASBESTOS FIBERS
AND
ASBESTOS, NA2212, RQ
AND
CLASS 9 LABEL

22. The Contractor shall also label all disposal bags and/or containers with the name of the waste generator (Owner) and the location from which the waste was generated; all in accordance with the USEPA NESHAPS regulation - 40 CFR Part 651, Subpart M. Excursion Limit: No employee shall be exposed to airborne concentrations of asbestos fibers at any time equal to or greater than 1.0 fibers per cubic centimeter (cm^3) of air averaged over a 30 minute sampling period, as determined by NIOSH Analytical Method #7400.

23. Encapsulant - A liquid material which can be applied to asbestos-containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

24. Encapsulation - The application of an encapsulant to asbestos-containing materials to control the release of asbestos fibers into the air.

25. Filter - A media component used in respirators to remove solid or liquid particles from the inspired air.

26. Flame-Resistant Polyethylene Sheeting - A single polyethylene film in the largest sheet size possible to minimize seams, nominal six (6) mil thick, conforming to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films.

27. Friable Asbestos Material - ACM that when dry, may be easily crumbled, pulverized, or reduced to powder by hand pressure. This includes previously non-friable material after it becomes damaged to the extent that when dry, may be easily crumbled, pulverized, or reduced to powder by hand or mechanical pressure.

28. HEPA/P-100 Filter Equipment - Vacuuming equipment containing a HEPA filter system capable of preventing passage of asbestos dust with an efficiency of 99.97 % of all particulates greater than 0.3 microns in size.

29. HVAC - Heating, Ventilation and Air Conditioning system.

30. HEPA Filter - A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

31. Negative Pressure - Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

32. Negative Pressure Respirator - A respirator in which the air pressure inside the respirator inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

33. Negative Pressure Air Filtration Device (AFD) - A local exhaust system device, utilizing HEPA filtration capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.

34. Personal Monitoring - Sampling of asbestos fiber concentrations within the breathing zone of a worker to establish OSHA PEL data values.

35. Permissible Exposure Limit (PEL) - No employee shall be exposed to airborne concentrations of asbestos fibers equal to or greater than 0.1 fibers per cm^3 of air as an 8-hour time weighted average (TWA) as determined by NIOSH Analytical Method #7400.

36. Regulated Asbestos-Containing Material (RACM) - (a) Friable asbestos material, (b) Category I Non-friable ACM that has become friable, (c) Category I Non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II Non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

37. Removal - The stripping of any asbestos-containing materials from surfaces or components of a facility.

38. Renovation - Altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

39. Respirator - A device designed to protect the wearer from the inhalation of harmful atmospheres.

40. Shower Room - A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination.

41. Surfactant - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

42. Time-Weighted Average (TWA) - Three samples are required to establish the 8-hour time weighted average. The TWA is an 8-hour time weighted average airborne concentration of asbestos fibers per cm^3 of air.

43. Visible Emissions - Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

44. Water Column (wc) - A unit of measurement for pressure differential.

45. Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops or other cleaning utensils that have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

46. Work Area - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area that has been sealed, plasticized and equipped with a negative pressure air-filtration system.

47. Worker decontamination enclosure - A decontamination system consisting of a clean room, a shower room, and an equipment room separated from each other and from the work area by airlocks and curtained doorways. This system is used for all worker entrances and exists to and from the work area and for equipment pass out for small jobs.

C. REQUIREMENTS

1. Compliance:

   a. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and County regulations pertaining to work practices, hauling, disposal, and protection of the site. The Contractor is responsible for providing medical examinations and maintaining records of personnel as required by the applicable Federal, State, and local regulations.

2. Qualifications:

   a. The Contractor shall have a minimum of two (2) years of experience on asbestos removal, which shall be evidenced by a complete list of all asbestos removal and disposal projects

undertaken in the past three (3) years indicating the owner of the facility (including name, address and phone number of the owner project manager), type of facility, volume of material removed and name of the Contractor and “Competent Person” supervising work.

b. The Contractor shall have successfully completed at least two (2) projects of comparable scope to this Contract within the past three (3) years which shall be evidenced by identifying the owner of the facility (including name, address and phone number of the owner project manager), type of facility, volume of material removed and name of the Contractor and “Competent Person” supervising work.

c. The Contractor shall have on staff and assign to this Contract a “Competent Person” with a minimum of two (2) years’ experience in removal and disposal of asbestos and at least five (5) years’ experience in construction trades, who has served as “Competent Person” on a minimum three (3) projects of comparable scope and methodology to this project. This shall be evidenced by providing the name of the person and proof of training as Supervisor. The “Competent Person” shall be a full-time employee of the Subcontractor.

3. Notification:

a. Permits and Notification:

1) The Contractor will prepare all notifications required by New Jersey, and EPA based upon these Specifications, and will submit them to the appropriate agency. Send written notification required by N.J.A.C. 5:23-8 to the Department of Community Affairs within three (3) days of issuance of the construction permit for asbestos abatement. Send notification to:

New Jersey Department of Community Affairs
Division of Codes and Standards
Bureau of Code Services Asbestos/Lead Safety Unit
101 South Broad Street
PO Box 816
Trenton, NJ 08625-0816

2) The Contractor shall obtain all permits required by Federal, State, and/or County regulatory agencies or jurisdictions for the transportation and disposal of asbestos-containing materials. The removal of asbestos shall require a construction permit in accordance with N.J.A.C. 5:23-8.5.

Additionally, a demolition permit must be obtained pursuant to N.J.A.C. 5:23-2.

3) The Contractor shall post one copy of all permits at the work site and keep on file at the Contractor's office one copy of each.

4) The Contractor shall submit written certification prior to the commencement of work that the required permits, site location, and arrangements for transportation and disposal of asbestos-containing wastes have been made.

b. Contractor Documentation:

1) The Contractor shall submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos-containing wastes removed from the property, within ten (10) days of such removal.

2) The Contractor shall submit documentation prior to the commencement of work that the Contractor's employees, including foreman, supervisors, and any other company personnel or agents who may be exposed to airborne asbestos have received the following:

- Training as required by OSHA 29 CFR 1926.1101 (k) (3).
- Medical surveillance as required by OSHA 20 CFR 1926.1101(m) and have been determined by a physician to be physically able to wear required respiratory protection.
- Respirator fit testing as required by OSHA 29 CFR 1926.1101 (h) (4).
- New Jersey Asbestos and Permits.

3) The Contractor shall submit prior to the commencement of Work the names and Social Security numbers of the Contractor's employees.

4) The Contractor shall submit the identity and qualifications of his designated "competent person" to be on-site during removal work as required by OSHA 29 CFR 1926.1101 (e) (6) (ii) and the individual or firm that will be conducting his employee exposure monitoring as required by OSHA 29 CFR 1926.1101 (f) to the CM prior to the commencement of work.

5) The Contractor shall have in his possession, on-site, copies of the above referenced regulations, as well as, a copy of the Contractor's asbestos training and work practices manual, written respirator program, and these Specifications.

6) The Contractor shall maintain a daily log within the Decontamination Unit documenting the dates and times of the following items: visitations; authorized and unauthorized Personnel; by name, entering and leaving the work area.

c. Licenses:

1) Maintain current licenses as required by applicable Federal, and New Jersey regulatory agencies or jurisdictions for the removal, transporting, disposal, and/or other regulated activity relative to the work of this contract.

2) Posting and Filing of Licenses: Maintain two (2) copies of applicable Federal, and New Jersey licenses described above. Post one copy of each at the job site and keep on file in Subcontractor's office one copy of each.

D. SUBMITTALS

1. Within 60 days after Contract Award, the Contractor shall submit the following:

a. Applications, notifications, permits (i.e. variances, agency approvals, etc.)

b. Evidence of prior experience conducting similar work

c. Qualifications of firm and personnel including licenses, respirator fit tests, medical clearance exams

d. List and qualifications of subcontractors to be utilized

e. Corporate & Site Specific Health & Safety Plan

1) Hazard Communication Program

2) Emergency Response Plan (ERP) & Contingency Plan

3) Respiratory Protection Program

4) Personal Protective Equipment (PPE)

5) Medical Surveillance program

f. Site Specific Work Plan

1) Scope of Work

2) Abatement Design drawings/engineered drawings, approved by a licensed Professional Engineer (if applicable)

3) Means and Methods of abatement

4) Personnel Decontamination Design

5) Temporary Construction Plan with location of negative air pressure machine

6) Work Schedule & Progress Reports

7) Containment Plan

8) Waste Storage Plan

9) Material Safety Data Sheets

g. Catalogue, cut sheets, product & technical data sheets.

2. Submit the name, address, and telephone number of each testing laboratory selected for the analysis, and reporting of airborne concentrations of asbestos fibers along with evidence that each laboratory selected holds the appropriate New Jersey license and/or permits and certification that each laboratory is American Industrial Hygiene Association (AIHA) accredited and that persons counting the samples have been judged proficient by current inclusion on the AIHA Asbestos Analysis Registry (AAR) and successful participation of the laboratory in the Proficiency Analytical Testing (PAT) Program. Where analysis to determine asbestos content in bulk materials or transmission electron microscopy is required, submit evidence that the laboratory is accredited by the National Institute of Science and Technology (NIST) under National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos analysis.

3. Submit written evidence that the landfill for disposal is approved for asbestos disposal by the USEPA and New Jersey regulatory agency(s). Submit waste shipment records, prepared in accordance with Federal regulations, signed and dated by an agent of the landfill, certifying the amount of asbestos materials delivered to the landfill, within three (3) days after delivery.

4. Submit certificates signed by each employee indicating that the employee has received training in the proper handling of materials and wastes that contain asbestos in accordance with 40 CFR 763 and New Jersey requirements; understands the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of the respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis.

5. Provide a written certification for each worker and supervisor, signed by a licensed physician indicating that the worker and supervisor has met or exceeded all of the medical prerequisites listed herein and in 29 CFR 1926.1101 and 29 CFR 1926.103 as prescribed by law.

6. The Contractor shall submit a signed notarized statement disclosing all OSHA and EPA citations or violations on asbestos removal jobs in the past three (3) years.

1.2 RELATED SECTIONS

A. Section 02010 – Environmental Requirements

B. Section 02220 – Demolition

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 RESPIRATORS

A. The Contractor shall administer a respiratory protection program as required by OSHA (29 CFR 1910.134). The Contractor shall provide individual respirators, from those approved by the NIOSH, Department of Health and Human Services, for each employee. The Contractor shall require all employees to wear Powered Air Purifying Respirators (PAPR) inside the work area for the duration of the project, or unless acceptable levels have been established through air sampling. The Contractor shall require that respiratory protection be used at all times there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental, until the area has been cleared for reoccupancy. The Contractor shall not allow the use of single-use, disposal respirators for any purpose.

3.2 PERSONAL DECONTAMINATION

A. Provide a temporary, negative pressure unit with a separate decontamination room and clean room with a shower that complies with 29 CFR 1926.1101. Provide a separate decontamination area for personnel required to don and doff whole body protective clothing. Keep street clothing and street shoes a clean area. HEPA vacuum and remove asbestos contaminated disposable protective clothing while still wearing respirators at the boundary of the asbestos work area and seal in impermeable bags or containers for disposal.

3.3 WARNING SIGNS AND LABELS

A. Provide warning signs printed in English at all approaches to asbestos control areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos.

Legend	Notation
Cancer	1-inch Sans Serif Gothic or Block
Asbestos	1-inch Sans Serif Gothic or Block
Cancer and Luna Disease Hazard	1-inch Sans Serif Gothic or Block
Authorized Personnel Only	1-inch Gothic
Respirators and Protective Clothing are Required in this Area	1-inch Gothic

3.4 LOCAL EXHAUST SYSTEM

A. Provide a local exhaust system in the asbestos control area in accordance with ANSI Z 9.2 and 29 CFR 1926.1101 that will provide at least four air changes per hour inside of the negative pressure enclosure. Maintain a minimum pressure differential in the control area of minus 0.02 inch of water column relative to adjacent, unsealed areas. The local exhaust system shall terminate out of doors and remote from any public access or ventilation system intakes.

3.5 TOOLS

A. Vacuums shall be leak proof to the filter and equipped with HEPA filters. Do not use power tools to remove asbestos containing materials unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation systems. Remove all residual asbestos from reusable tools prior to storage or reuse.

3.6 WORK PROCEDURE

A. Perform asbestos related work in accordance with 29 CFR 1925.1101, 40 CFR 51, SUBPART M, NJAC 5:23-8 and as specified herein. Use wet removal procedures. Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, chewing gum, tobacco, or

applying cosmetics shall not be permitted in the asbestos work or control areas. Personnel of other trades not engaged in the removal and demolition of asbestos containing material shall not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection and training provisions of this specification are adhered to by the trade personnel. If an asbestos fiber release or spill occurs outside of the asbestos control area, stop work immediately, correct the condition including clearance sampling, prior to resumption of work.

1. The Contractor shall arrange and pay for all air quality monitoring including air sampling, monitoring, and analysis required for regulatory compliance. The firm and persons engaged shall be properly licensed, certified, and must be properly insured

2. All persons entering the work area shall wear disposable coveralls and NIOSH-approved respirators with HEPA filters. Workers will remove protective equipment prior to leaving the work area and proceed to a remote shower facility for final decontamination.

3. Perform work without damage or contamination of adjacent work. Where such work is damaged or contaminated using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to NJ Transit. This includes inadvertent spill of dirt, dust, or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, stop work immediately, clean up the spill. When satisfactory visual inspection and air sampling results are obtained, work may proceed.

4. When the use of scaffolding is required by the Contractor to access the asbestos-containing materials all scaffolding shall be erected in accordance with OSHA standard 29 CFR 1926.451. No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons.

5. Block and seal openings in the areas where the release of airborne asbestos fibers can be expected. Establish an asbestos negative pressure enclosure. Negative pressure enclosure development shall include protective covering of walls and ceilings with 2 layers of minimum 6-mil plastic sheet sealed with tape to prevent water or other damage. Provide local exhaust system in the asbestos control area.

6. Wet asbestos material with a fine spray of amended water during removal, cutting, or other handling, so as to reduce the emission of airborne fibers. Remove material and immediately place in 6-mil plastic disposal bags. Remove asbestos containing material in a gradual manner, with continuous application of the amended water or wetting agent in such a manner that no asbestos material is disturbed prior to being adequately wetted. Where unusual circumstances prohibit the use of 6-mil plastic bags, submit an alternate proposal for containment of asbestos fibers for approval. Asbestos containing material shall be

containerized while wet. At no time shall asbestos material be allowed to accumulate or become dry. Handle asbestos containing material as indicated.

7. Sampling of airborne concentrations of asbestos fibers shall be performed in accordance with 29 CFR 1926.1101, NJAC 5:23-8 and as specified herein. A qualified person shall perform sampling performed in accordance with 29 CFR 1926.1101. Unless otherwise specified, use NIOSH Method 7400 for sampling and analysis.

8. The Contractor shall request a pre-sealant inspection prior to removal of barriers and after pre-clearance cleanup of gross contamination. The asbestos control monitor shall conduct a visual inspection of all areas affected by the removal in accordance with ASTM E 1368 and NJAC 5:23-8. Inspect for any visible fibers. A post removal (lock-down) encapsulant shall then be spray applied to ceiling, walls, floors and other areas exposed in the removal area. The exposed area shall include but not be limited to plastic barriers; furnishings and articles to be discarded as well as dirty change room, air locks for bag removal and decontamination chambers.

9. While performing asbestos engineering control work, the Contractor shall be subject to on-site inspection by the CM or NJ Transit if the work is found to be in violation of this specification. The CM or NJ Transit will issue a stop work order to be in effect immediately and until the violation is resolved. All related costs including standby time required to resolve the violation shall be at the Contractor's expense.

10. The Contractor and asbestos control monitor will perform a complete visual inspection of the entire work area. Following final clearance air sampling, encapsulation, and air sample results below 0.01 fibers per cubic centimeter. If the final clearance inspection is not acceptable, the Contractor must remedy all deficiencies. All related costs to perform final clearance samples per N.J.A.C 5-16 shall be at the Contractor's expense and standby time required to resolve any violation/deficiencies shall be at the Contractor's expense.

11. All waste materials, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified in the applicable Federal and New Jersey regulations and herein.

12. Collect asbestos waste, asbestos contaminated water, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing which may produce airborne concentrations of asbestos fibers and place in sealed fiber-proof, waterproof, non-returnable containers (e.g. double plastic bags 6-mils thick, cartons, drums or cans). Wastes within the containers must be adequately wet in accordance with 40 CFR 61-SUBPART M and NJAC 5:23-8 and NJAC 7:26. Procedure for hauling

and disposal shall comply with 40 CFR 61, SUBPART M, Federal, New Jersey, and other applicable standards.

PART 4 COMPENSATION

4.1 MEASUREMENT

A. Removal of previously identified asbestos-containing or presumed asbestos containing materials will be not be measured for payment and paid under an allowance.

4.2 PAYMENT

Payment will be made under:

PAY ITEM	***PAY UNIT***
Asbestos Abatement	Allowance

No separate payment will be made for the removal of the asbestos-cement anchor bolt; their associated removal procedures, air monitoring, and transport/disposal; but the costs thereof will be included in the lump sum price bid for the pay item.

END OF SECTION

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJ TRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

March 4, 2019

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 13

To Whom it May Concern:

The following constitutes Addendum No.13 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

- Additional drawings have been included.
- The Bid Form has been revised.

This concludes Addendum No. 13. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

March 20, 2019

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 14

To Whom it May Concern:

The following constitutes Addendum No.14 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

- The bid due date has been extended to 2:00 p.m., on Thursday, April 18, 2019.

This concludes Addendum No. 14. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

Philip D. Murphy, Governor
Sheila Y. Oliver, Lieutenant Governor
Diane Gutierrez-Scaccetti, Commissioner
Kevin S. Corbett, Executive Director

NJTRANSIT
One Penn Plaza East
Newark, NJ 07105-2246
973-491-7000

April 1, 2019

Re: NJ TRANSIT Invitation for Bid No. 17-026X
Bay Head Yard Substation Replacement
Addendum No. 15

To Whom it May Concern:

The following constitutes Addendum No.15 and must be acknowledged with each bid. Prospective bidders are advised of the following clarifications, additions and/or revisions to the above referenced Invitation for Bid:

- Answers to questions have been included.

This concludes Addendum No. 15. An authorized representative of your organization shall acknowledge receipt of this Addendum in the Exhibit provided with its bid. Failure to acknowledge receipt of all Addenda may cause the rejection of the Bid as non-responsive.

Sincerely,

Maggie Sotolongo
Principal Contract Specialist
Procurement Department

1. **The existing pull box on the west side of and adjacent to the Existing Layover Substation is directly under the new footings for the stair platform at the new generator building. This pull box has 22 EA - 3" conduits and currently feeds the snow melt panels and wayside power. One of the new footings will rest on top of the existing duct bank as well. Note 4 on E-013 indicates that the existing 22 EA - 3" conductors "shall have the conductors removed and the conduits shall remain as spares." The note does not indicate whether it is intended to have the existing pull box be used to access these conduits or whether it needs to be removed. Also, Section 6/S-511 does not address the existing pull box and existing duct bank under the new footing. Should the existing pull box and duct bank be removed and backfilled to support the new footing or is there a detail to leave the pull box in its existing location?**

   The exact location of pull box and conduits at west side of the proposed building are unknown. The contractor shall survey the location of conduits and pull box, and provide that information to the engineer. The engineer will review the actual filed measured information and provide direction to the contractor. The drawings may need to be updated based on this survey information.

2. **The details provided in Addendum 7 on Drawing C-500A for the restoration of the trenches shows existing sheets being cut off below grade. Are these existing sheets or is this meant to show a temporary sheet used for the support of excavation during the excavation for new duct bank. Additionally, the detail shows that the sheets are cut 50" below grade for the section under tracks. What is meant by "existing sheet pile" and is this the minimum depth of 50" shown for the sheet removal under tracks correct?**

   No existing sheet piles anticipated, detail revised in previous addendum.

3. **The fire protection details shown on Drawing FP-500 show wiring that feed back to the Main FACP. Please provide the location and details for the Main FACP. There are no fire alarm details shown in the drawings in addition to the fire protection system.**

   The clean agent control panel is the only fire alarm panel. The clean agent system provides all detection and notification. There is no separate Main FACP. Per Drawing E111, the electrical contractor will provide empty conduit from the clean agent control panel to both the telephone backboard and the SCADA cabinet for use in off-site monitoring

4. **The revisions to Drawing No. C-101 in Addendum 7 added the note to "Restore area within fence of generator building to existing conditions following construction." The current conditions have a concrete slab at the location outside of the new generator building. Is the intent to have the concrete slab removed and be restored with a gravel surface treatment as shown in the detail on C-500 or to leave the current concrete slab?**

   The intent is to restore the existing concrete slab, an 8” thick 3,500 PSI concrete with 6x6 – W2.1 x W2.1 welded wire fabric, to existing conditions. If majority of slab is impacted this can be replaced with asphalt. Costs associated with this restoration are to be included with the Demolition Lump Sum price.

5. **C-500A was referenced in the response to Question 44 to provide site restoration details pertaining to C-100 through C-102. However, this only provided restoration details at the trenches and not around the structures. Please provide the details for the remaining areas.**

   See C-500 for asphalt and stone sections to be used, exiting concrete pads shall be restored using an 8” thick 3,500 PSI concrete with 6x6 – W2.1 x W2.1 welded wire fabric.

6. **The current LOD provided in the drawings only encompasses the areas around the trench and structures excavations along with some area being provided for temporary laydown. Currently the stabilized construction access (required in Note 10 of the OCSCD Soil Erosion and Sediment Control Notes on Drawing SE-001 and shown on Drawings SE-010) and existing fuel tank area to be removed (shown on Drawing E-032) are not included in the LOD provided. Will this area need to be added to the currently permitted LOD?**

   Any required additional areas of disturbance are to be coordinated with the Ocean County SESC District as needed. No revisions will be made to the permitted LOD at this time.

7. **What area outside of the LOD will be allowed for construction staging, construction equipment use, office trailers, parking, and handling/treatment facilities for dewatering? Will this area need to be added to the currently permitted LOD?**

   The only area available for construction staging, construction equipment use, trailers and parking is near the storage yard, northwest of the substation.

8. **It appears from the drawings (specifically C-011) that overhead power lines run in close proximity to the top of the north corner of the New Substation Building. Will it be necessary to temporarily relocate the power from the overhead power lines to the Existing Layover Substation in order to drive the foundation piles for the New Substation Building and construct the north corner of the New Substation Building? If this relocation is necessary, how will the cost be handled - by NJ Transit, assumed by the Contractor, or in an additional Bid Item such as "Protection of Public Utilities" as offered in General Provision 4.7.3?**

   This will be Contractor's means, methods, construction sequence. No additional cost will be provided.

9. **The response to Question 10 in Addendum 7 provided that the revised Bid Form had a separate LS bid item to address the "Vibration and Movement Monitoring." Bid items were added to the bid form for "Static Pile Load Test" and "Dynamic Pile Load Test," but a Bid Item addressing the vibration monitoring was not added. Will there be a separate bid item added for the "Vibration and Movement Monitoring?"**

   See revised specification issued in previous addendum.

10. **The response to Question 30 in Addendum 7 provided an updated quantity of 22 tons for Flexible Pavements. The revised Bid Form listed a quantity of 24 tons. Which revised quantity is correct?**

    Use quantity in revised Bid Form in previous addendum

11. **Drawings E-013 and E-017 appear to show the limits of the concrete duct bank stopping outside the footprint of the Wayside Power Station Platform and the New Substation Building line. Does the concrete duct bank run fully under the new structures? What duct bank detail is required for conduit buried under structures?**

    For wayside substation, continue concrete duct envelope to inside the perimeter then install direct buried PVC coated rigid steel below the platform.

    For the new substation building, except for conduit noted in 3.3, concrete encasement is not required under the floor slab. Non-metallic Sch 80 PVC is acceptable.

    For the 34.5 kV service conductor conduits, continue the concrete envelope under the building floor slab.

12. **Addendum 7, Question 111 asked for an allowance for "Asbestos Abatement." The question response indicated that there would be an allowance added to the revised Bid Form for "Asbestos Abatement." There was not an allowance in the revised Bid form. Will the "Asbestos Abatement" be paid for under an allowance or under the current lump sum item?**

    The payment for Asbestos Abatement will be handled by the Allowance provided in the Bid Form.

13. **What areas at the Bay Head Substation would be available for Contractor office trailer setup, and where does NJ Transit intend to have their field office setup? Please provide a layout drawing.**

    The only area available for contractor office trailers and laydown is near the existing storage yard across the tracks, northwest of the substation building. A Flagman will be required to direct all track crossings to reach the site.

14. **Addendum 7 incorporated a bid item for "Static Pile Load Test." There is not a static pile load test requirement provided in Specification 02461 - Steel Pipe Piles. Is a static pile load test required, and if so, is there a specification being provided for this testing requirement.**

    See revised specification issued in previous addendum.

15. **Addendum 7 provided the as-built drawings for the electrical portion of previous work at the site. Are there any details that can be provided for the dimensions and locations of existing structures onsite, i.e. substation building/foundation, compressor building/foundation, out-of-service substation, pull boxes, etc.?**

    No additional existing drawings are available.

16. **Will there be additional time added to the bid period to carefully exam the transmission line scope of work that will be added to the General Contract as indicated in the responses to questions addressed in Addendum 7? And, will time be granted to submit questions and review any answers provided?**

    At this time no further extensions will be granted.

17. **SP-18 specifies that the "Cost of the Construction Sign shall be included in the line item for Project 'Mobilization.'" The bid form includes the Bid Item "C01-01-002-004.0 Construction Sign." Should the cost of the construction sign be included in the allowance item for the construction sign?**

    There is a line item for the sign, see Line C01-002-004.0.

18. The February 13, 2015 Limited Site Investigation provided with Addendum 7 contains information relating to the treatment of groundwater in the last paragraph of the "Executive Summary" stating, "Groundwater generated during construction dewatering operations at Bay Head Yard, Henderson Yard, and MMC will require involvement with the site-specific LSRP to determine whether discharge back to groundwater within the project limits is feasible under a NJDEP-approved Discharge to Groundwater Permit-by-Rule (DGW PBR) or if off-site disposal at a permitted facility is required."(pg. viii) In order to better understand the cost implications of dewatering excavations, what determinations (for reference) have been made by the site-specific LSRP in regard to groundwater generated by dewatering operations and the available discharge options, specifically relating to discharge onsite, available discharge points, and any requirement for off-site disposal?

The LSRP has reviewed the contaminant constituents and determined that, given the appropriate construction dewatering treatment and permitting, the water could be discharged to groundwater. Contrary to that documented by Gannet Fleming, Mott MacDonald documents the groundwater elevation within two feet of the ground surface. The contractor shall determine if discharge to groundwater is feasible. NJ Transit has not obtained the NJDEP-approved Discharge to Groundwater Permit-by-Rule (DGW PBR) permit.

19. The General Provisions specify in 4.2.7 that the "Contractor shall provide watchmen service, when necessary or when directed by the Construction Manager throughout the period of construction, to adequately protect the work, stored materials and temporary structures located on the premises, and to prevent unauthorized persons from entering upon the construction site." Please clarify the periods that will be deemed "necessary" to provide watchmen?

The contractor is responsible for securing the construction site.

20. Will there be a charge for water used for temporary water?

There will be no charge for temporary water.

21. The response to Question 103 provided in Addendum 7 specifies that Wetland Restoration will "be paid for under lump sum item 'Landscaping' see revised Bid Form and specification 02056 and 02930." The revised Bid Form does not include a lump sum item landscaping. The item “Plantings” was added to the revised Bid Form in and is referenced in Specification 02930 as the item for this work to be paid under. Should the reference to "Landscaping" in the question response be changed to "Plantings?"

Yes, payment is covered under the Bid Item ‘Plantings’

22. Is there a location onsite where power can be fed to feed the temporary power needs for the project? Please provide the location if this is available.

Temporary electric power is available near the storage yard, northwest of the substation.

23. Please confirm that only one flagger will be required to manage the site during construction activities requiring a flagman.

Flagmen will be required based on proximity to the rails, and will be provided by NJ TRANSIT.

24. To better understand costs associated with work with flagmen and delays, please provide any historical data available (for reference) for flagmen reporting for duty.

Flagmen will be provided by NJ TRANSIT.

25. Regarding Q/A #77 in Addendum #7, the provided June 2015 Hazardous Materials Assessment Report did not provide any detail on existing contaminants for site soil or groundwater. Please confirm if there are any present contaminants in the site soils and groundwater.

Testing and results for the soil and groundwater are included within the Limited Site Investigation from February 2015.

26. Reference is made to Addendum #7 Q/A item 30 which indicates a updated quantity of 22 tons for Flexible Pavements.; please note the revised Addendum 8 Bid Form indicates a quantity of 24 tons, not 22 as stated in the Q/A,. Please confirm which quantity is to be bid.

Please see the Revised Bid Form.

27. Reference is made to Addendum #7 Q/A item 109 which indicates an Allowance of $122,026.00 for Permit Fees; please note the revised Addendum 8 Bid Form indicates an Allowance of $175,298.71. Please confirm which Allowance amount is to be bid.

Allowances shown in the latest Bid Form to be used.

28. Please clarify the height of the Chain Link Fencing; Spec Section 02821, 2.02.A indicates an 8’ High Fence while Dwg. C-500 indicates a 10’ High Fence.

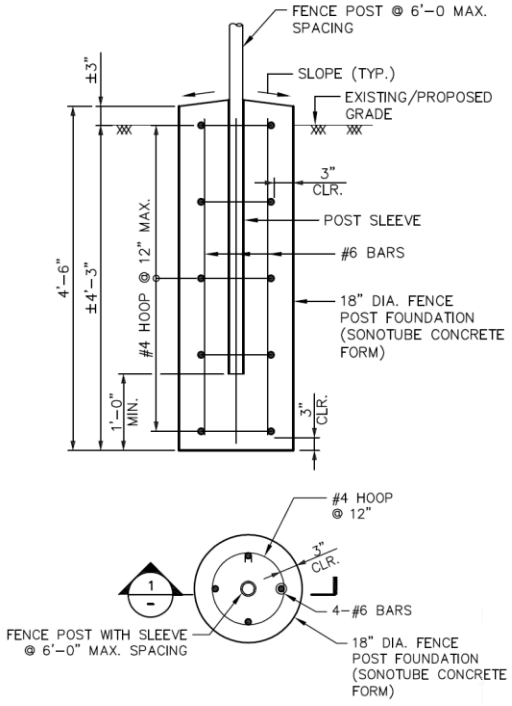
10’ high fence to be used.

29. Dwg. C-101 indicates the Chain Link Fence for the New Generator Building to "Replace In-Kind with Rolling Gate, See C-500"; this Dwg. does not indicate a detail for a Rolling Gate. Please provide specifications, details, location of rolling gate and size of rolling gate. Also is the rolling gate the only gate required for the New Generator Building?

Rolling gate detail provided on the revised C-500A provided with previous addendum. A separate 3' pedestrian gate will also be provided as directed. Cost to be included within the chain link fence and gates lump sum bid.

30. The details for Chain Link Fence and Gate on Dwg. C-500 indicate to See Structural Drawings for Additional Information related to the Fence Post Footings; the structural drawings do not provide this additional information. Please provide.

Foundation shall be 4'3" below grade with #4 hoops at 12" maximum spacing extending to 3" of bottom of foundation with 4-#6 bars. Fence posts shall have a 6' maximum spacing and be inserted into an 18" post foundation to a depth 3'3" below grade.



31. Dwg. C-500 indicates a detail for Gravel Surface Treatment; please identify where this detail is required and how and under what Bid Item it will it be paid.

This shall be used as indicated on A-101 along with any areas of stone being disturbed/restored.

32. Dwg. C-100 identifies a proposed 8' x 50' area to be provided with Hatched Striping, 4" Thick with 4" Spacing; is this spacing correct as it conflicts with the lines of diagonal striping indicated on this drawing and would lead to the painting of the entire surface. Please clarify.

The striping shown on drawing is the proposed striping.

33. Please provide requirements for the final restoration of all project site areas disturbed due to construction including specifications, drawing details and site drawings indicating the type of surface restoration such as bituminous pavement, stone surfacing, topsoiling and seeding, etc.; as the current documents do not reflect this information. Also provide the applicable Bid Items for payment.

See C-500 for asphalt and stone sections to be used, exiting concrete pads shall be restored using 8" thick plain cement concrete pavement Mix 9.

34. Bid Item C02-007-002.1 – Flexible Pavements has a bid quantity of 34 Tons; we can only find flexible pavements identified as the 1' strip next to the new concrete curb (See Dwg. C-500) which amounts to approximately 6 Tons. Please identify where the balance of the flexible pavement is required to be installed.

Please see the Revised Bid Form.

35. The Asphalt Pavement – Curb Detail on Dwg. C-500 indicates four (4) layers which make up the pavement section; please identify the required materials for the 4" and 6" layers between the Surface Course and Subbase layers.

4" – HMA 25M64-22 Base course
6" – Aggregate Base course
Please refer to previously provided revised detail which includes the materials.

36. Please clarify how and under what Bid Item the following items of work are paid:

a. Gravel for the Substation Stair 01
b. Gravel for the Substation XFMR Crawl Space

All gravel backfill (under building crawlspace slab, gen slab, wayside power substation, transformer area and stair, transformers 1 & 2) are paid under Backfilling C02-004-006.0

37. Reference is made to Details 2 and 4 on Drawing A602.Please clarify where insect/bird screens are required at new louvers or equipment screens. The louver details call out for an insect/bird screen at the Equipment Screen which is installed at the roof, open to the sky above, but not on the building louvers in the weathertight building walls. Are the insect/bird screens required at the Equipment Screen (4/A-602)? Are the insect/bird screens required at the building wall Louver (2/A-602)?

The equipment screen at the roof is a screen to shield the view of the equipment, it is open to the air above and does not require an insect or bird screen. As per specification 10200 section 2.4, provide bird screens at all louvers at all building louvers.

38. The paint notes on Drawings A-312, and A-313 call for all exposed steel to be painted. Please clarify if there is a different paint requirement for the steel exposed to the open air versus the steel exposed to view within the enclosed building.

All structural steel inside and outside of buildings shall receive primer as per specification section 09910 3.07 A 1 and a finish coat as per 3.07 B 1.

39. Please clarify requirements for High Performance Paint" required on exposed steel and indicated. We find no reference to High Performance Paint in the Painting Specification Section 09910.

Ignore this reference, refer to specification 09910 for painting requirements.

40. Please clarify the requirements for paint on new galvanized steel. The Painting Specification indicates products to be applied to Steel/Metal/Galvanized Existing, but not new.

Specification section 09910 3.07 A 2 shall govern the primer to be used for galvanized steel whether it's new or existing.

41. Please indicate what work is associated with, and paid under Item # C02-006-002.0 "Site Water Lines". We find no new site water lines indicated on the drawings.

Cost to include the 4" water service and tap into existing water line along with all related costs for this work per specification 02510.

42. Please clarify what type of concrete sealer is to be used on the exposed concrete floors throughout. The painting specification section 3.07 Painting Schedule includes a material specification for Concrete Floors and lists a clear Epoxy product. Please confirm if this is this the sealer we are to use on the floor surfaces scheduled to receive a "Sealed Concrete" finish in the Room Finish Schedule on Drawing A-502.

Section 3.07 A of the Painting Specification 09910 refers to the primers or base coats, Section 3.07 B refers to the finish coats, The concrete floor shall receive 1 base coat of clear epoxy as per 3.07 A 7 and 2 coats of finish epoxy as per 3.07 B 6.

43. Please clarify what the "Epoxy Resin" finish at the Battery Room is and what specification Section will govern this work.

The system defined by paint specification 09910 3.0 7 A 7 & 09910 3.07 B6 can be used for the battery room.

44. The drawings and specifications call for a custom cored norman brick at the lattice areas. In conversations with the brick supplier we have been informed that the manufacturer, Endicott Clay Products, may not be able to provide this custom cored product. Can the Owner provide an alternate brick if this is the case? Our supplier is confirming with the manufacturer and will let us know.

Alternate bricks will only be considered if they are an exact match to the color, texture, appearance, and all other performance criteria of the specified brick.

45. Please clarify the core location for the custom cored bricks. The specification indicates a ¾" core, 1" from the edge of the brick, while drawing detail 6/A-231 appears to indicate 1" to centerline of the core. Please clarify.

The drawing 6/A-231 is the correct depiction of the custom cored brick.

46. NJ Transit General Provision for Construction, Section 4.2, Use of Premises and the Special Provision modifying this section do not describe the site specific allowable track closures for the Bay Head Yard. Multiple responses to requests for information on the track closures have been provided which state "The contractor shall coordinate track outages and work hours for track crossings with the Construction Manager." The installation of the ductbanks underneath the tracks must be performed during an outage and the allowable closure information must be provided so that our proposal can accurately incorporate the required costs to allow for safe installation of the ductbanks. Please provide the allowable track closures schedule so that we can accurately prepare our bid.

Please refer to responses provided in Question No. 48.

47. The revised Addendum No. 8 Bid Schedule has added an item for Static Pile Load Testing (Item C02-005-001.0.1). Please note that Specification 02461 – Steel Pile Piles only includes the requirement for Dynamic Pile Testing. Please provide a specification for Static Load Testing and designate/identify the piles which are required to be Static Load Tested.

Please refer to previously provided revised specification with the Static Load Testing removed.

48. The response provided in Addendum 12 to Question 6 states that "it is possible to schedule outages for two (2) tracks at a time that may be left open for 2 days; however, at the discretion of the Yard master and in coordination with the Construction Manager, outages may be extended when exact dates are known. Due to ongoing operations in the yard, NJ TRANSIT cannot commit to more than a weekend outage, but outages extending for a week have been provided. Extended track outages shall be planned ahead of time. NJ TRANSIT will assist with the removal of rail road ties and will re-track each rail and inspect the work before the trench is covered." Please clarify the following points so that we can develop an accurate schedule for work crossing the tracks:

a. In regard to taking two tracks out of service and being left open for 2 days, should we anticipate having the two full days in the outage to excavate, install duct bank, and place backfill? Or, is the time needed to remove the tracks and bring the tracks back into service included in this two day period? Please confirm the work activities that must be completed during the outage period and the duration of time needed to remove and replace the tracks.

A two day outage will be provided to install the duct bank and place backfill by the contractor. All other work performed by NJ TRANSIT will be done under a separate outage.

b. Would it be possible to work the two day outage or the extended outages referenced in the response using a 24 hour/day shift?

No.

c. Is the two day outage only applicable for the weekend outages as referenced in the response or can the outages be planned for work during the week?

This applies to both weekend and weekday outages

d. Extended outages planned ahead of time for up to a week are referenced in the response. Would extended outages longer than a week be possible? Or, is there a maximum duration that will be considered for track outages?

NJ TRANSIT will only guarantee a 2-day outage for track crossings due to the work in an active rail yard. All other outages are to be based on working conditions and determined by NJ TRANSIT's Construction Manager.

e. How many planned extended outages will be allowed?

Please see the responses above.

f. What is the anticipated time required between 2 day outages or between planned extended outages?

Please see the responses above.

49. Please reference Addendum No. 7 Question No. 106 & 107 in where NJ Transit has reconfirmed the requirement of the 5120 specification that requires the Steel Fabricator to be "AREMA certified" (5120 specification reaffirmed Addendum No. 7 attached for reference). We have contacted AREMA regarding a list of "certified" fabricators and shared the subject project 5120 specifications with them and have received the following response.
-AREMA produces recommended practices pertaining to the design, construction and maintenance of railway infrastructure. We do not produce certifications or certify products. A product can be developed in accordance with AREMA specifications but it cannot be certified by AREMA as we do not certify.

Please consider revising the specification to require an appropriate AISC certification or in the alternative at minimum not require a "AREMA certification" as AREMA does not "certify".

The Structural Specification (05120) Section 1.05 A1 (Fabricator's Shop or Facility) will be revised to "All structural steel must be fabricated at a fabrication shop having a Building QMS certification (BU) in accordance with AISC".

For further information please refer to attached specification.

50. Please reference RFI response to Question#6 in addendum 12. The answer states that "NJT cannot commit to more than a weekend outage, but outages extending for a week have been provided." Please clarify if the tracks will shut down for 2 days or 7 days. Again, without knowing the exact track closure hours, we cannot accurately develop a cost for the work in and around the tracks.

Please refer to responses provided in Question No. 48.

51. Please reference Addendum #12 Q/A #6 Response which states NJT will assist with the removal of railroad ties and will re track each rail and inspect the work before the trench is covered; We have 2 questions:

a) Please confirm that NJT will complete ALL track work associated with this contract. This includes demolition and replacement of the existing track and ties and all appurtenances associated with the track to provide clean access for us to complete the work of our contract.

NJ TRANSIT will remove the tracks and ties to allow the contractor to construct the duct banks.

b) Please indicate the time frame associated with this work, both upfront for demolition and removals and then for replacement. We need to know how much time we have to allocate to NJT for track work and inspections before we can get another 2 tracks closed to continue with the contract work we are responsible for?

A two day outage will be provided to the contractor to install the duct bank and place backfill by the contractor. All other work performed by NJ TRANSIT will be done under a separate outage that will be coordinated with the Construction Manager. NJ TRANSIT will not provide the contractor with the exact working sequences and plans for construction. The contractor shall work with the Construction Manager and plan all sequences of the work based on the rail yard conditions. The Construction Manager will coordinate this work.

52. Reference is made to Addendum #12 Q/A response #27, last paragraph regarding asbestos cement anchor bolts – While the response indicates costs associated with the sampling testing and subsequent removals if required, of asbestos cement containing anchor bolts will be included in the new Allowance item for Asbestos Abatement, Page 17 of the Specification Section 02840, provided with the Addendum, references the Lump Sum Price Bid for the Pay item as the method of payment. Please clarify this Lump Sum Price is in fact the Allowance Amount provided.

The payment for Asbestos Abatement will be handled by the Allowance provided in the Bid Form

53. Within the Addendum #12 revision to Specification Section 02461 – Steel Pipe Piles, explicitly Paragraph 4.02A; coal tar epoxy coating has now been added to the pile work scope to be included for payment. Please provide the applicable requirements for this coating within the Specification.

2.2 PROTECTIVE COATING

A. General

1. Shop-applied zinc rich primer and 16 mils coal tar epoxy applied in two coats at a dry film thickness of 8 mils each for all portions from top of the pipe pile bottom including splices.

B. Shop Coating Procedure

1. Remove visible oil, grease, and drawing and cutting compounds by solvent cleaning SSPC-SP1(1982) prior to blast cleaning of surfaces to be painted. After solvent cleaning the steel pipe pile surfaces to be protective coated shall be blast cleaned in accordance with the requirements of Steel Structures Painting Council SSPC-SP10 (Near-White Blast Cleaning), then remove residual dust from blasted surfaces by blowing with dry, oil-free air, vacuuming or sweeping to provide a surface profile of at least 2.5 mils thickness.
2. Apply zinc rich primer coating to dry surfaces not more than 4 hours after near white blast cleaning. Apply coats of each system so that finished surfaces are free from runs, sags, brush marks and variations in color. Allow the previous coat to dry to tack free condition but not more than 72 hours before applying the next coat. If more than 72 hours elapses between coats, clean surface, apply a 2 mil wet film thickness of previous coat, allow to cure to a tacky film, and apply a full thickness of the next coat.
3. Promptly coat the surface with two (2) applications of coal tar epoxy-polyamide at the rate and in accordance with the procedures and instructions of the materials manufacturer if other than as specified herein. Epoxy-polyamide coatings consist of a two-component system that includes a pigmented polyamide resin, Component A and an epoxy resin, Component B. Mix both components in a ratio of 1 to 1 by volume. Do not thin coatings when doing so will result in total volatile organic compounds exceeding limits enacted by local air pollution control district. When thinning is allowed and is necessary, such as during cold temperature application or to improve application characteristics, add up to 1 pint of ethylene glycol monoethyl (EGM) either for each gallon of the coating. Mix components of coating by power stirring until a smooth, uniform consistency results. Stir coating periodically during its induction period. Use the following table for induction time and pot life of mixed batches.

Ambient Temperature Degrees F	Induction Time (in hours)
40 to 50	2 at 70 Degrees F
50 to 60	2
60 to 70	1 to 1.5
70 and above	0.5 to 1

4. Apply epoxy coating on the outside only. The coating shall be of uniform color, gloss and thickness, and shall be free of blisters, pinholes, fish eyes, sags, runs, and any other irregularities.
5. The Engineer shall have access to each part of the process and shall have the right and opportunity to witness any of the quality control tests and/or perform such test himself on a random sampling basis.

C. Field Touch-Up Procedure

1. Provide a compatible touch up system for repair of coating defects/ damaged piles in accordance with the coating manufacturer's recommendations and as approved by the Engineer. The touch up epoxy material shall have high-solids two (2) parts epoxy coating having the matching color with the designed epoxy system. The two parts must be thoroughly mixed until a uniform color is achieved. The epoxy should be capable of being applied with ordinary brush at a temperature of 50 degrees Fahrenheit and above. A tack-free surface should be achieved in 3 to 5 days at 72 degrees Fahrenheit. Care should be exercised in handling parts before they are fully cured.
2. Protect the existing works/ area from spilling and spattering during coating application. All spillages and spattering shall be cleaned up immediately. Contractor is responsible to leave existing areas free of all such foreign materials.

D. Each dry film thickness shall be measured in the presence of the Engineer using a magnetic dry film thickness gage in accordance with:

    1. ASTM D1186-01 Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base; and
    2. ASTM E376-96 Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods.

C. Mill Test Reports:

1. Submit mill test reports of structural steel materials, showing conformance with AREMA Manual Chapter 15 and the specified ASTM Specifications.

2. Steel materials which are not properly certified as conforming with specified ASTM Specifications will be rejected.

D. Welding Records and Data:

1. Retain all radiographs upon completion of fabrication.

2. Retain certifications that magnetic particle and dye-penetrant inspections have been satisfactorily completed.

3. Submit records of ultrasonic testing to the Engineer upon completion.

4. If field welding is permitted, submit descriptive data for field welding equipment.

E. Prepare as-built drawings upon completion of erection of all structural steel. Drawings to include any and all changes pertaining to steel which may have arisen during construction, including, but not necessarily limited to, steel member sizes, quantities, etc.

1.05 QUALITY ASSURANCE

A. Fabricator's Shop or Facility

1. All structural steel must be fabricated at a fabrication shop having a Category III certification in accordance with AREMA Manual Chapter 15, section 3.1.1.

2. Fabricator's shop or facility will be inspected before the start of fabrication work. Notify the Engineer in writing at least ten days before the scheduled start of fabrication work.

B. Indicated Dimensions

1. Unless otherwise indicated, dimensions at expansion joints and similar construction were determined for a temperature of 60°F. Make proper adjustments for temperature when the structure is to be fabricated and installed at any other temperature.

C. Tolerances: All structural steel members must be fabricated to the tolerances as stated in AREMA Manual Chapter 15, section 3.1.7 and the following: