

THE PORT AUTHORITY OF NY & NJ

**PROCUREMENT DEPARTMENT
4 WORLD TRADE CENTER, 21ST FL.
150 GREENWICH STREET
NEW YORK, NY 10007**

INVITATION FOR BID

ISSUE DATE: 03/19/2020

TITLE: Traffic Signal Maintenance, Repair, Installation and Limited Construction, Services Contract at Newark Liberty International Airport.

BID NO.: 60786

Refer to Part I Section 2 "Form and Submission of Bid" for submission instructions.

BID DUE DATE: 04/08/2020

TIME: 11:00 AM

BUYER NAME: LARRY WAXMAN

PHONE NO.: (212) 435-4639

EMAIL: LWAXMAN@PANYNJ.GOV

**BIDDER INFORMATION
(TO BE COMPLETED BY THE BIDDER)
(PLEASE PRINT)**

(NAME OF BIDDING ENTITY)

(ADDRESS, CITY, STATE, ZIP CODE)

(REPRESENTATIVE TO CONTACT - NAME AND TITLE)

(EMAIL ADDRESS, PHONE NO. AND FAX NO.)

FEDERAL TAX ID NO.: _____ **BUSINESS CORPORATION** _____
PARTNERSHIP _____ **INDIVIDUAL** _____ **OTHER:** _____

INVITATION FOR BID

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PART I - STANDARD INFORMATION FOR BIDDERS

1. General Information: The Port Authority of New York and New Jersey

For background with respect to The Port Authority of New York and New Jersey (the “Port Authority”), see www.panynj.gov. Additionally, an electronic version of the Port Authority’s most recent Annual Report is available at <http://corpinfo.panynj.gov/pages/annual-reports/html>.

2. Form and Submission of Bid

The Port Authority has temporarily ceased public bid openings and will allow for the digital submission of bids.

Bidders are advised that their bids must be readable format, either Microsoft Word or Adobe PDF.

Bidders shall be allowed to submit modifications to bids or withdraw previously submitted bids electronically up to, but not after, the time of the Bid Due Date.

The Port Authority shall accept **only** those bids in electronic format for which the submission or modification is completed at the time of the Bid Due Date. Bid submissions will be accepted by e-mail. Bids must be emailed and received by the Port Authority by 11:00 A.M. ET in order to be considered.

THERE WILL BE NO PUBLIC BID OPENINGS. Bid results will be posted to the Port Authority’s website as soon as they are available.

Bids will be received electronically until 11:00 A.M. ET on the Bid Due Date. Electronic Bids should be submitted via email only to Bid Custodian at bidrfpsubmittal@panynj.gov. The Port Authority may request an original, signed paper submission at any time following the Bid Due Date.

If requested by the Port Authority, the paper submission must be identical to the electronic submission. In the event of a discrepancy, the electronic submission shall take precedence.

Each electronic Bid submission must include all required information, as further described the clause entitled “PAPERS ACCOMPANYING BIDS.”

THERE WILL BE NO PUBLIC BID OPENINGS AND HAND DELIVERIES WILL NOT BE ACCEPTED.

Bidders should anticipate that some emails may take a period of time to be delivered, and as such, should send them as early as possible so as to ensure it is received no later than 11:00 A.M. ET in the designated Port Authority’s designated email account.

Bidders should note that there is a limit to the size of attachments that can be received by the Port Authority’s designated email account. That limit is 100MB.

Bidders internal networks may have limits on the size of emails they can send. Therefore, it is incumbent upon the Bidder to determine ahead of time that the file(s) being submitted can both be transmitted by their servers and accepted by Port Authority servers. If the files are too big, the Port Authority will accept Bid in multiple emails, provided all parts which comprise a complete submission are received by the Bid Due Date and time and all emails must include the Bid # and title. Under this circumstance, Bidders should note in the description of the email that the Bid will be arriving in multiple parts and include in the subject line the total number of components and which component, of the total, the particular transmission represents.

3. Vendor Profile

To ensure maximum opportunities, it is vitally important that Bidders keep their vendor profiles up to date with an appropriate e-mail address, as this will enable their firm to receive timely notice of advertisements, reminders, solicitations and addenda. Bidders may update their vendor profile or register as a Port Authority Vendor by accessing the online registration system at <https://www.paprocure.com/>.

4. Acknowledgment of Addenda

If any Addenda are posted or sent as part of this Bid, the Bidder shall complete, sign and include with its Bid the addenda form(s). In the event any Bidder fails to conform to these instructions, its Bid will nevertheless be construed as though the Addenda had been acknowledged.

If the Bidder downloaded this solicitation document, it is the responsibility of the Bidder to periodically check the Port Authority website at <http://www.panynj.gov/business-opportunities/bid-proposal-advertisements.html> and download any addenda that might have been issued in connection with this solicitation.

5. Firm Offer

The Bidder offers to provide the Port Authority of New York and New Jersey the services and to perform all Work in connection therewith required under this Contract, all as specified by the terms and conditions of the Contract, based on the Pricing Sheets provided herein.

EXCEPTIONS TAKEN OR CONDITIONS IMPOSED BY A BIDDER TO ANY PORTION OF THE CONTRACT DOCUMENTS WILL RESULT IN REJECTION OF THE BID.

6. Acceptance or Rejection of Bids

The acceptance of a Bid will be by a written notice signed by an authorized representative on behalf of the Authority. No other act of the Port Authority, its Commissioners, officers, agents or employees shall constitute acceptance of a Bid. The Port Authority reserves the unqualified right, in its sole and absolute discretion, to reject any or all Bids or to accept any Bid, which in its judgment will best serve the public

interest and to waive defects in any Bid. No rights accrue to any Bidder unless and until its Bid is accepted.

7. Bidder's Questions

Any questions by prospective Bidders concerning the Work to be performed or the terms and conditions of the Contract may be addressed to the Contracts Specialist listed on the Cover Sheet of this document. The Contracts Specialist is only authorized to direct the attention of prospective Bidders to the portions of the Contract. No employee of the Port Authority is authorized to interpret any portion of the Contract or to give information in addition to that contained in the Contract. When Contract interpretation or additional information as to the Contract requirements is deemed necessary by the Port Authority, it will be communicated to all Bidders by written addenda issued under the name of the Manager, Commodities & Services Division, Procurement Department of the Port Authority and may be posted on the Port Authority website. Addenda shall be considered part of the Contract.

8. Additional Information To and From Bidders

Should the Authority require additional information from the Bidder in connection with its bid, such information shall be submitted within the time frame specified by the Port Authority.

If the Bidder is a corporation, a statement of the names and residences of its officers should be submitted on the Name and Residence of Principals Sheet, directly following the Signature Sheet.

9. Union Jurisdiction

All prospective Bidders are advised to ascertain whether any union now represented or not represented at the Facility will claim jurisdiction over any aspect of the operations to be performed hereunder and their attention is directed to the paragraph entitled "Harmony" in the Standard Contract Terms and Conditions.

10. Assessment of Bid Requirements

The Bidder should carefully examine and study the entire contents of these bid documents and shall make its own determinations as to the services and materials to be supplied and all other things required to be done by the Contractor.

11. Bidder's Prerequisites

Only Bids from Bidders that can satisfactorily demonstrate meeting the prerequisites specified within Part II hereof at the time of bid submission will be considered. By furnishing this document to the Bidder, the Port Authority has not made a determination that the Bidder has met the prerequisites or has otherwise been deemed qualified to perform the services. A determination that a Bidder has met the prerequisites is no assurance that it will be deemed qualified in connection with other bid requirements included herein.

12. Qualification Information

The Port Authority may give oral or written notice to the Bidder to furnish the Port Authority with information and to meet with designated representatives of the Port

Authority relating to the Bidder's qualifications and ability to fulfill the Contractor's obligations hereunder. The requested information shall be submitted no later than three (3) days after said notice unless otherwise indicated. Matters upon which the Port Authority may inquire may include, but may not be limited to, the following:

- a. The Bidder may be required to demonstrate that it is financially capable of performing this Contract, and the determination of the Bidder's financial qualifications will be made by the Port Authority in its sole discretion. The Bidder shall submit such financial and other relevant information as may be required by the Port Authority from time to time including, but not limited to, the following:
 1. (i) Certified financial statements, including applicable notes, reflecting the Bidder's assets, liabilities, net worth, revenues, expenses, profit or loss and cash flow for the most recent calendar year or the Bidder's most recent fiscal year.
 - (ii) Where the certified financial statements set forth in (i) above are not available, then either reviewed or compiled statements from an independent accountant setting forth the aforementioned information shall be provided.
 - (iii) Where neither certified financial statements nor financial statements from an independent accountant are available, as set forth in (i) and (ii) above, then financial statements containing such information prepared directly by the Bidder may be submitted; such financial statements, however, must be accompanied by a signed copy of the Bidder's most recent Federal income tax return and a statement in writing from the Bidder, signed by an executive officer or their authorized designee, that such statements accurately reflect the present financial condition of the Bidder.

Where the statements submitted pursuant to subparagraphs (i), (ii) or (iii) are dated prior to forty-five (45) days before the bid opening, then the Bidder shall submit a statement in writing, signed by an executive officer of the Bidder or their designee, that the present financial condition of the Bidder is at least as good as that shown on the statements submitted.
 2. Bidder's statement of work on hand, including any work on which a bid has been submitted, and containing a description of the work, the annual dollar value, the location by city and state, the current percentage of completion, the expected date for completion, and the name of an individual most familiar with the Bidder's work on these jobs.
 3. The name and address of the Bidder's banking institution, chief banking representative handling the Bidder's account, the Bidder's Federal Employer Identification Number (i.e., the number assigned to firms by the Federal Government for tax purposes), the Bidder's Dun and Bradstreet number, if any, the name of any other credit service to which the Bidder has furnished information, and the number, if any, assigned by such service to the Bidder's account.
- b. Information relating to the Bidder's Prerequisites, if any, as set forth in this document.

- c. If the Bidder is a corporation: (1) a copy of its Certificate of Incorporation and, if applicable, all Amendments thereto with a written declaration signed by the Secretary of the Corporation with the corporate seal affixed thereto, stating that the copy furnished is a true copy of the Certificate of Incorporation and any such Amendments as of the date of the opening of the bid and (2) if the Bidder is not incorporated under the laws of the state in which the service is to be performed, a certificate from the Secretary of State of said state evidencing the Bidder's legal qualification to do business in that state.
- d. A statement setting forth the names of those personnel to be in overall charge of the service and those who would be exclusively assigned to supervise the service and their specific roles therein, setting forth as to each the number of years of experience and in which functions and capacities each would serve.
- e. Information to supplement any statement submitted in accordance with the Standard Contract Terms and Conditions entitled "Contractor's Integrity Provisions."
- f. In the event that the Bidder's performance on a current or past Port Authority or Port Authority Trans-Hudson Corporation (PATH) contract or contracts has been rated less than satisfactory, the Manager, Purchasing Services Division, may give oral or written notice to the Bidder to furnish information demonstrating to the satisfaction of such Manager that, notwithstanding such rating, such performance was in fact satisfactory or that the circumstances which gave rise to such unsatisfactory rating have changed or will not apply to performance of this Contract, and that such performance will be satisfactory.
- g. The Bidder recognizes that it may be required to demonstrate to the satisfaction of the Port Authority that it in fact can perform the services as called for in this Contract and that it may be required to substantiate the warranties and representations set forth herein and the statements and assurances it may be required to give.

Neither the giving of any of the aforesaid notices to a Bidder, the submission of materials by a Bidder, any meeting which the Bidder may have with the Port Authority, nor anything stated by the Port Authority in any such meeting shall be construed or alleged to be construed as an acceptance of said Bidder's Bid. Nothing stated in any such meeting shall be deemed to release any Bidder from its offer as contained in the bid documents.

13. Contractor's Integrity Provisions

By submitting a Bid, Bidders shall be deemed to have made the certifications contained in the clauses entitled "Certification of No Investigation (criminal or civil anti-trust), Indictment, Conviction, Debarment, Suspension, Disqualification and Disclosure of Other Information," and "Non-Collusive Bidding, and Code of Ethics Certification, Certification of No Solicitation Based On Commission, Percentage, Brokerage, Contingent or Other Fees" contained within the Standard Terms and Conditions within these bid documents. If the Bidder is unable to make the certifications contained therein the Bidder shall submit a statement with its Bid

explaining why any such certification(s) cannot be made. Such a submission shall be submitted in a separate envelope along with your Bid, clearly marked "CERTIFICATION STATEMENT."

14. Code of Ethics for Port Authority Vendors

Bidder's attention is directed to the Port Authority's "Code of Ethics for Port Authority Vendors" (the "Code"). The Code of Ethics can be found on the Port Authority's website at <https://www.panynj.gov/business-opportunities/become-vendor.html>.

15. Facility Inspection

Details regarding the Facility inspection for all parties interested in submitting a bid are stipulated in Part II hereof. All Bidders must present company identification and photo identification for access to the Facility.

16. Available Documents - General

Certain documents, listed in Part II hereof, will be made available for reference and examination by Bidders either at the Facility Inspection, or during regular business hours. Arrangements to review these documents at a time other than the Facility Inspection may be made by contacting the person listed in Part II as the contact for the Facility Inspection.

These documents were not prepared for the purpose of providing information for Bidders upon this Contract, but they were prepared for other purposes, such as for other contracts or for design purposes for this or other contracts, and they do not form a part of this Contract. The Port Authority makes no representation or guarantee as to, and shall not be responsible for, their accuracy, completeness or pertinence, and, in addition, shall not be responsible for the inferences or conclusions to be drawn there from.

17. Pre-award Meeting

The lowest qualified Bidder may be called for a pre-award meeting prior to award of the Contract.

18. Price Preference

A price preference may be available for Minority/Women Business Enterprises (MBE/WBEs) or Small Business Enterprises (SBEs) as set forth in the Standard Contract Terms and Conditions.

19. MBE/WBE Subcontracting Provisions

Bidders shall use every good-faith effort to provide for participation by Port Authority certified Minority Business Enterprises (MBEs) and Port Authority certified Woman-owned Business Enterprises (WBEs) in all purchasing and subcontracting opportunities associated with this Contract, including purchase of equipment, supplies and labor services, in accordance with the "MBE/WBE Subcontracting Provisions" contained within Part III, and the section of the Standard Terms and Conditions entitled "MBE/WBE Good Faith Participation."

20. Certification of Recycled Materials

Bidders are requested to submit, with their bid, a written certification entitled "Certified Environmentally Preferable Products / Practices" attached hereto as "Attachment I-A", attesting that the products or items offered by the Bidder contain the minimum percentage of post-consumer recovered material in accordance with the most recent guidelines issued by the United States Environmental Protection Agency (EPA), or, for commodities not so covered, the minimum percentage of post-consumer recovered materials established by other applicable regulatory agencies. The data submitted by the Bidder in Attachment I-A is being solicited for informational purposes only.

Recycling Definitions:

For purposes of this numbered section, the following definitions shall apply:

- a. "Recovered Material" means any waste material or by-product that has been recovered or diverted from solid waste, excluding those materials and by-products generated from, and commonly reused within, an original manufacturing process.
- b. "Post-consumer Material" means any material or finished product that has served its intended use and has been discarded for disposal or recovery having completed its life as a consumer item. "Post-consumer material" is included in the broader category of "Recovered Material".
- c. "Pre-consumer Material" means any material or by-product generated after the manufacture of a product but before the product reaches the consumer, such as damaged or obsolete products. Pre-consumer Material does not include mill and manufacturing trim, scrap, or broken material that is generated at a manufacturing site and commonly reused on-site in the same or another manufacturing process.
- d. "Recycled Product" means a product that contains the highest amount of post-consumer material practicable, or when post-consumer material is impracticable for a specific type of product, contains substantial amounts of Pre-consumer Material.
- e. "Recyclable Product" means the ability of a product and its packaging to be reused, reconditioned for use, or recycled through existing recycling collection programs.
- f. "Waste Reducing Product" means any product that will result in less waste generated due to its use rather than another product designed to serve the same function with a greater waste generation rate. This shall include, but not be limited to, those products that can be reused, refilled or have a longer life expectancy and contain a lesser amount of toxic constituents.

21. City Payroll Tax

Bidders should be aware of the payroll tax imposed by the:

- a. City of Newark, New Jersey for services performed in Newark, New Jersey;
- b. City of New York, New York for services performed in New York, New York; and
- c. City of Yonkers, New York for services performed in Yonkers, New York.

These taxes, if applicable, are the sole responsibility of the Contractor. Bidders should consult their tax advisors as to the effect, if any, of these taxes. The Port Authority

provides this notice for informational purposes only and is not responsible for either the imposition or administration of such taxes. The Port Authority exemption set forth in the Paragraph headed “Sales or Compensating Use Taxes”, in the Standard Contract Terms and Conditions included herein, does not apply to these taxes.

22. Automated Clearing House Enrollment

The Port Authority of New York and New Jersey has transitioned to an electronic method of paying its vendors, contractors and consultants via an Automated Clearing House (“ACH”) funds transfer. It is the Port Authority’s expectation that all vendors, contractors and consultants will be paid via an ACH funds transfer. To avoid delays in payment, vendors, contractors, and consultants should enroll in ACH and complete the Port Authority’s “Authorization Agreement For Direct Deposits And Direct Payments (ACH Credits)” form, which is available at <https://www.panynj.gov/business-opportunities/pdf/Vendor-ACH-auth-form.pdf>. The Authorization Agreement shall remain in full force and effect until the Port Authority has received written notification from the vendor, contractor or consultant of its termination in such time and in such manner as to afford the Port Authority and the depository financial institution(s) a reasonable opportunity to act on it. Any questions on this process may be directed to the Comptrollers Department ACH Enrollments contact line at 201 216-6002 or emailed to ACHENROLLMENT@PANYNJ.GOV.

23. Additional Bidder Information

Prospective Bidders are advised that additional vendor information, including but not limited to, forms, documents and other information, including protest procedures, may be found on the Port Authority website at: <http://www.panynj.gov/business-opportunities/become-vendor.html>.

24. Safe Vehicle Operation

The Bidder may be required to demonstrate that it has a satisfactory Federal Motor Carrier Safety Administration (FMCSA) safety record and vehicle maintenance program. If applicable, the Bidder shall submit this safety information as may be required by the Port Authority, including, but not limited to:

1. Information about their overall FMCSA safety program;
2. Information about their drivers training program;
3. Information about their vehicle maintenance program;
4. Results of Commercial Vehicle inspections;
5. Information about actions taken to remedy safety issues and violations.

The determination that the Bidder's safety record and safety programs are satisfactory will be made by the Port Authority at its sole discretion.

ATTACHMENT I A - Certified Environmentally Preferable Products/Practices

Bidder Name: _____ Date: _____

In line with the Port Authority's efforts to promote products and practices which reduce our impact on the environment and human health, Bidders are encouraged to provide information regarding their environmentally preferable/sustainable business practices as they relate to this contract wherever possible. Bidders are requested to complete this form and submit it with their response, if appropriate. Bidders are requested to submit appropriate documentation to support the items for which the Bidder indicates a "Yes" and present this documentation, in the proper sequence of this Attachment.

1. Packaging

Has the Bidder implemented any of the following environmental initiatives? (A checkmark indicates "Yes")

- _____ Use of corrugated materials that exceed the required minimum EPA recommended post-consumer recycled content
- _____ Use of other packaging materials that contain recycled content and are recyclable in most local programs
- _____ Promotes waste prevention and source reduction by reducing the extent of the packaging and/or offering packaging take-back services, or shipping carton return
- _____ Reduces or eliminates materials which have been bleached with chlorine or chlorine derivatives
- _____ Eliminates any packaging that may contain polyvinyl chloride (PVC), or polystyrene or heavy metals.

If yes, a description of the practices being followed should be included with the submission.

2. Business Practices / Operations / Manufacturing

Does the Bidder engage in practices that serve to reduce or minimize an impact to the environment, including, but not necessarily limited to, the following items? (A checkmark indicates "Yes")

- _____ Recycles materials in the warehouse or other operations
- _____ Use of alternative fuel vehicles or vehicles equipped with diesel emission control devices for delivery or transportation purposes
- _____ Use of energy efficient office equipment or signage or the incorporation of green building design elements
- _____ Use of recycled paper (that meets federal specifications) in their marketing and/or resource materials
- _____ Other sustainable initiative

If yes, a description of the practices being followed should be included with the submission.

3. Training and Education

Does the Bidder conduct/offer a program to train or inform customers and employees of the environmental benefits of the products to be offered under this contract, and/or does the Bidder conduct environmental training of its own staff?

- Yes No If yes, Bidder shall attach a description of the training offered and the specific criteria targeted by the training.

4. Certifications

Has the Bidder or any of its manufacturers and/or subcontractors obtained any of the following product / industry certifications? (A checkmark indicates "Yes")

- _____ ISO 14000 or adopted some other equivalent environmental management system
- _____ Other industry environmental standards (where applicable), such as the CERES principles, LEED Certification, C2C Protocol, Responsible Care Codes of Practice or other similar standards
- _____ Third Party product certifications such as Green Seal, Scientific Certification Systems, Smartwood, etc.

If yes, Bidders should attach copies of the certificates obtained.

I hereby certify under penalty of law, the above statements are true and correct.

_____ Name _____ Date

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PART II - CONTRACT SPECIFIC INFORMATION FOR BIDDERS

The following information may be referred to in other parts hereof, or further detailed in other parts hereof, if applicable.

1. Service(s) Required

Traffic signal certification, repair and maintenance.

2. Location(s) Services Required

Newark Liberty International Airport (EWR) , as more fully described in the definition of "Facility" in the Specifications, attached as Part V of the Contract.

3. Expected Date of Commencement of Contract

On or about May 1, 2020.

4. Contract Type

Lump Sum and Unit Price.

5. Duration of Contract

Three (3) years to expire on or about April 30, 2023.

6. Price Adjustment during Base Term (Index Based)

Price adjustment during the Base Term shall be pursuant to the clause entitled "Price Adjustment" in Part III hereof.

7. Option Period(s)

There shall be up to one (1), one (1) year option period.

8. Price Adjustment during Option Period(s) (Index Based)

Price adjustment during the Option Period(s) shall be pursuant to the clause entitled "Price Adjustment" in Part III hereof.

9. Extension Period

Up to 120 days applicable.

10. Specific Bidder's Prerequisites

- a. The Bidder shall have had at least three (3) year(s) of continuous experience immediately prior to the date of submission of its Bid in the management and operation of traffic signal repair and maintenance services, and during that time shall have actually engaged in providing said or such services to commercial or industrial accounts under contract. The Bidder may fulfill this prerequisite if the Bidder can demonstrate to the satisfaction of the Port Authority that the persons or entities owning and controlling the Bidder have had a cumulative total of at least

three (3) year(s) of experience immediately prior to the date of the submission of its Bid in the management and operation of a business actually engaged in providing these services to commercial or industrial accounts under contract during that time, or have owned and controlled other entities which have actually engaged in providing the above described services during that time period.

- b. During the time period stated in (a) above, the Bidder, or persons or entities owning and controlling the Bidder, shall have satisfactorily performed or shall be performing under at least one (1) contract(s) requiring similar services of similar scope to those required under this Contract.
- c. The Bidder shall have had in its last fiscal year, or the last complete calendar year immediately preceding the opening of its Bid, a minimum of four hundred thousand dollars (\$400,000) annual gross income.
- d. The bidder shall be a licensed electrical contractor in the State of New Jersey.
- e. In the event a bid is submitted by a joint venture the foregoing prerequisites will be considered with respect to such Bid as follows: The prerequisite in subparagraph (a) and (b) and d) above, will be considered satisfied if the joint venture itself, or any of its participants individually, can meet the requirements. The prerequisite in subparagraph (c) above, will be considered satisfied if the gross income of the joint venture itself meets the prerequisite or the gross income of the participants in the joint venture cumulatively meets the prerequisite. If a joint venture which has not been established as a distinct legal entity submits a bid, it and all participants in the joint venture shall be bound jointly and severally and each such participant in the joint venture shall execute the bid and do each act and thing required by this Invitation for Bid. On the original bid and wherever else the Bidder's name would appear, the name of the joint venture Bidder should appear if the joint venture is a distinct legal entity. If the Bidder is a common law joint venture, the names of all participants should be listed followed by the words "acting jointly and severally". All joint venture Bidders must provide documentation of their legal status.

Supporting documentation that the above prerequisites are met should be submitted with the Bid.

11. Personnel Assurance Program and Contractor Staff Background Screening

The Contractor awarded this Contract may be required to have its staff, and any subcontractor's staff working under this Contract, authorize the Authority or its designee to perform background checks. Such authorization shall be in a form acceptable to the Authority. The Contractor and any subcontractors may also be required to use an organization designated by the Authority to perform the background checks. The cost for said background checks for staff that pass and are granted a credential may be reimbursable to the Contractor and its subcontractors as an out-of-pocket expense. Costs for staff that are rejected for a credential for any reason are not reimbursable.

Such background checks shall be performed through the Authority's personnel assurance program provider. The Secure Worker Access Consortium ("S.W.A.C.") is the only Port Authority approved provider to be used to conduct background screening, except as otherwise required by federal law and/or regulation. Information about S.W.A.C., instructions, corporate enrollment, online applications, and location of processing centers can be found at <http://www.secureworker.com>, or S.W.A.C. may be contacted directly at (877) 522-7922.

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PART III – CONTRACT SPECIFIC TERMS AND CONDITIONS

1. General Agreement

Subject to all of the terms and conditions of this Contract, the undersigned (hereinafter called the “Contractor”) hereby offers and agrees to provide all the necessary supervision, personnel, equipment, materials and all other things necessary to perform the Work required by this Contract as specified in Part II, and fully set forth in the Part V, (the “Specifications,”) at the location(s) listed in Part II and as more fully set forth in the Specifications, and to do all other things necessary or proper therefor or incidental thereto, all in strict accordance with the provisions of the Contract Documents and any future changes therein; and the Contractor further agrees to assume and perform all other duties and obligations imposed upon it by this Contract.

In addition, all things not expressly mentioned in the Specifications but involved in the carrying out of their intent and in the complete and proper execution of the matters referred to in and required by this Contract are required by the Specifications, and the Contractor shall perform the same as though they were specifically delineated, described and mentioned therein.

2. Duration

- a) The initial term of this Contract (hereinafter called the “Base Term”) shall commence on or about the date specified in Part II hereof, on the specific date set forth in the Port Authority’s written notice of bid acceptance (hereinafter called the “Commencement Date”), and unless otherwise terminated, revoked or extended in accordance with the provisions hereof, shall expire as specified in Part II hereof (hereinafter called the “Expiration Date”).
- b) If specified as applicable to this Contract and set forth in Part II hereof, the Port Authority shall have the right to extend this Contract for additional period(s), either through an extension or an option (hereinafter collectively referred to as the “Option Period(s)”) following the Expiration Date, upon the same terms and conditions subject only to adjustments of charges, if applicable to this Contract, as may be hereinafter provided in the paragraph entitled “Price Adjustments”. If the Port Authority shall elect to exercise the Option(s) to extend this Contract, then, no later than thirty (30) days prior to the Expiration Date, the Port Authority shall send a notice that it is extending the Base Term of this Contract, and this Contract shall thereupon be extended for the applicable Option Period. If the Contract provides for more than one Option Period, the same procedure shall apply with regard to extending the term of this Contract for succeeding Option Periods.
- c) Unless specified as not applicable to this Contract in Part II hereof, the Port Authority shall have the absolute right to extend the Base Term for an additional period of up to one hundred and twenty (120) days subsequent to the Expiration Date of the Base Term, or the Expiration Date of the final exercised Option Period (hereinafter called the “Extension Period”), subject to the same terms and conditions as the previous contract period. The prices quoted by the Contractor

for the previous contract period shall remain in effect during this Extension Period without adjustment. If it so elects to extend the term of Contract, the Port Authority will advise the Contractor, in writing, that the term is so extended, and will stipulate the length of the extended term, at least thirty (30) days prior to the expiration date of the previous contract period.

3. Payment

Subject to the provisions of this Contract, the Port Authority agrees to pay to the Contractor and the Contractor agrees to accept from the Port Authority as full and complete consideration for the performance of all its obligations under this Contract and as sole compensation for the Work performed by the Contractor hereunder, a compensation calculated from the actual quantities of services performed and the respective prices inserted by the Contractor in the Pricing Sheet(s), forming a part of this Contract, exclusive of compensation under the clause hereof entitled "Extra Work". The manner of submission of all bills for payment to the Contractor by the Port Authority for Services rendered under this Contract shall be subject to the approval of the Manager in all respects, including, but not limited to, format, breakdown of items presented and verifying records. All computations made by the Contractor and all billing and billing procedures shall be done in conformance with the following procedures:

- a) Payment shall be made in accordance with the prices for the applicable service (during the applicable Contract year) as they appear on the Pricing Sheet(s), as the same may be adjusted from time to time as specified herein, minus any deductions for services not performed and/or any liquidated damages to which the invoice may be subject and/or any adjustments as may be required pursuant to increases and decreases in areas or frequencies, if applicable. All Work must be completed within the time frames specified, or as designated by the Manager.
- b) The Contractor shall submit an invoice to the Manager by the fifth day after the submittal of the annual certification results. The invoice must show the Contractor's Federal Tax Identification Number. Payment will be made within thirty (30) days of Port Authority verification of the invoice.
- c) No certificate, payment, acceptance of any Work or any other act or omission of any representative of the Port Authority shall operate to (1) release the Contractor from any obligation under or upon this Contract, or to (2) estop the Port Authority from showing at any time that such certificate, payment, acceptance, act or omission was incorrect or to (3) preclude the Port Authority from recovering any monies (a) paid in excess of those lawfully due or (b) to which the Port Authority may be entitled on account of and any damage sustained by the Port Authority.
- d) In the event an audit of received invoices should indicate that the correct sum due the Contractor for the relevant billing period is less than the amount actually paid by the Port Authority, the Contractor shall pay to the Port Authority the difference promptly upon receipt of the Port Authority's statement thereof. The Port Authority may, however, in its discretion elect to deduct said sum or sums from any subsequent monthly payments payable to the Contractor hereunder.

“Final Payment”, as the term is used throughout this Contract, means the final payment made for services rendered in the last month of the Base Term or any extended term. However should this Contract be terminated for any reason prior to the last month of the Base Term or any extended term, then Final Payment shall be the payment made for services rendered in the month during which such termination becomes effective. The Contractor’s acceptance of Final Payment shall act as a full and complete release to the Port Authority of all claims of and of all liability to the Contractor for all things done or furnished in connection with this Contract and for every act and neglect of the Port Authority and others relating to or arising out of this Contract, including claims arising out of breach of contract and claims based on claims of third persons. No payment, however, final or otherwise shall operate to release the Contractor from any obligations in connection with this Contract.

4. Price Adjustment

For each year following the first year of the Base Term and for any Option Period that is applicable to this Contract and is exercised hereunder, (excluding the 120 day Extension Period as described in the paragraph entitled “Duration in Section 2 of Part III), the Port Authority shall adjust the amounts payable to the Contractor utilizing the Consumer Price Index for CPI-All Urban Consumers (Current Series) Series Id: CUURS12ASA0L2, CUUSS12ASA0L2 Not Seasonally Adjusted Series Title: All items less shelter in New York-Newark-Jersey City, NY-NJ-PA, all urban consumers, not seasonally adjusted Area: New York-Newark-Jersey City, NY-NJ-PA Item: All items less shelter Base Period: 1982-84=100, published by the Bureau of Labor Statistics of the United States Department of Labor (hereinafter called the “Price Index”).

For the one (1) year Option Period of the Contract, the Price Index shall be determined for the months of January 2022 and January 2023. The amounts payable to the Contractor in the final year of the Base Term shall be multiplied by a fraction the numerator of which is the Price Index for January 2023 and the denominator of which is the Price Index for January 2022 . The resulting product shall be the amounts payable to the Contractor in the one (1) year Option Period.

In the event of a change in the basis for the computation of the Price Index or the discontinuance of its publication, such other appropriate index shall be substituted as may be agreed upon by the Authority and the Contractor as properly reflecting changes in the value of the current United States money in a manner similar to that established in the Price Index. In the event of the failure of the parties to so agree, the Port Authority may select and use such index as it deems appropriate. Notwithstanding the provisions of this section, in no event shall any adjustment hereunder be greater than three (3%) per annum.

The amounts payable to the Contractor during the 120-day Extension Period shall not be subject to adjustment.

If, after an adjustment referred to in this section, the Price Index used for computing such adjustment shall be changed or adjusted, then the amounts payable to the Contractor for that period shall be recomputed. If such re-computation results in a smaller increase in the amount payable to the Contractor for such period, then after notification of the change or adjustment, the recomputed amounts shall be in effect and, upon demand by the Port Authority, the Contractor shall refund to the Port Authority excess amounts paid by the Port Authority for such period.

5. Liquidated Damages

- a) The Contractor's obligations for the performance and completion of the Work within the time or times provided for in this Contract are of the essence of this Contract. In the event that the Contractor fails to satisfactorily perform all or any part of the Work required hereunder in accordance with the requirements set forth in the Specifications (as the same may be modified in accordance with provisions set forth elsewhere herein) then damages for breach by the Contractor may be liquidated, but only at an amount which is reasonable in the light of the anticipated or actual harm caused by the breach, the difficulties of proof of loss, and the inconvenience or nonfeasibility of otherwise obtaining an adequate remedy, as follows:
 - i. If the Contractor fails to satisfactorily perform any of the annual traffic intersection certifications as required in the Specifications, the compensation due the Contractor by the Port Authority shall be reduced by two thousand five hundred dollars (\$2,500) per intersection the Contractor fails to satisfactorily certify.
 - ii. If the Contractor fails to respond to any service calls as required in the Specifications, the compensation due the Contractor by the Port Authority shall be reduced by two hundred fifty dollars (\$250) per hour, or part thereof, that the Contractor fails to respond.
 - iii. If the Contractor fails to provide any equipment necessary to safely perform the Work, the compensation due the Contractor by the Port Authority shall be reduced by two hundred fifty dollars (\$250) per hour, or part thereof, that the equipment needed is not on site.
 - iv. If the Contractor fails to submit ADS templates to the Port Authority as required in the Specifications, then the amount payable to the Contractor shall be reduced by one hundred dollars (\$100) per day, or part thereof, until the Contractor provides the required templates.
 - v. If any of the Contractor's employees fail to have in their possession, while performing Work pursuant to this Contract, a cellular telephone that is in working order with working voicemail (i.e., a voicemail that is setup to receive messages and is not full) and e-mail capabilities, then the

compensation payable to the Contractor by the Port Authority shall be reduced an amount equal to fifty dollars (\$50) per day, or part thereof, for each employee who fails to have such a cellular telephone while performing Work.

- vi. If any of the Contractor's employees fail to comply with the uniform and/or identification requirements in the Contract, then the amount payable to the Contractor by the Port Authority shall be reduced by an amount equal to fifty dollars (\$50) per day, per violation, that the Contractor's employees fail to comply with the uniform and/or identification requirements. For the avoidance of doubt, a violation of both the uniform and identification requirement for one day would result in a liquidated damage in the amount of fifty dollars (\$50) for each violation for a total liquidated damage of one hundred dollars (\$100) for both.
 - vii. If the Contractor fails to respond on site and/or fails to begin satisfactorily performing emergency services within four (4) hours of the Manager's notification that emergency services are necessary, then the amount payable to the Contractor by the Port Authority shall be reduced by an amount equal to one thousand two hundred dollars (\$1,200) per day, or for any partial day on a pro-rata basis, until the Work is satisfactorily performed.
 - viii. If the Contractor fails to provide any monthly invoices, reports, records, and any other information or documentation required under this Contract within the time stipulated in this Contract, then the amount payable to the Contractor by the Port Authority shall be reduced by fifty dollars (\$50) per day, or part thereof, until the Contractor provides the required monthly invoices, reports, records, or any other information and documentation.
- b) The Manager shall determine whether the Contractor has performed in a satisfactory manner and their determination shall be final, binding and conclusive upon the Contractor.
 - c) Failure of the Manager or the Port Authority to impose liquidated damages shall not be deemed Port Authority acceptance of unsatisfactory performance or a failure to perform on the part of the Contractor or a waiver of its remedies hereunder.

6. Insurance Procured by the Contractor

The Contractor and its subcontractor(s) shall take out, maintain, and pay the premiums on Commercial General Liability Insurance, for the life of the Contract and such Insurance and shall be written on an ISO occurrence form CG 00 01 0413 or its equivalent covering the obligations assumed by the Contractor under this Contract including but not limited to premise-operations, products and completed operations

and independent contractors coverage, with contractual liability language covering the obligations assumed by the Contractor under this Contract and, if vehicles are to be used to carry out the performance of this Contract, then the Contractor shall also take out, maintain, and pay the premiums on Automobile Liability Insurance covering any autos in the following minimum limits:

Commercial General Liability Insurance - \$2million combined single limit per occurrence for bodily injury and property damage liability.

Automobile Liability Insurance - \$2million combined single limit per accident for bodily injury and property damage liability.

The insurance shall be written on an occurrence basis, as distinguished from a “claims made” basis, and shall not include any exclusions for “action over claims” (insured vs. insured) and minimally arranged to provide and encompass at least the following coverages:

- Contractual Liability to cover liability assumed under the Contract;
- Independent Contractor’s Coverage;
- Premise-Operations, Products and Completed Operations Liability Insurance;
- The insurance coverage (including primary, excess and/or umbrella) hereinafter afforded by the Contractor and all subcontractor(s) shall be primary insurance and non-contributory with respect to the additional insureds;
- Excess/umbrella policies shall “follow form” to the underlying policy;
- Excess/umbrella policies shall have a liberalization clause with drop down provision;
- To the extent any coverage the Contractor and subcontractor(s) obtains and/or maintains under this Contract contains “Other Insurance” language or provisions, such language or provisions shall not be applicable to the additional insureds or to any insurance coverage maintained by the additional insureds;
- All insurance policies shall include a waiver of subrogation, as allowed by law, in favor of the additional insureds;
- Defense costs must be outside of policy limits. Eroding limits policies are not permitted;
- In the event the Contractor and/or its subcontractors obtains and/or maintains insurance in an amount greater than the minimum limits required under this Contract, then the full limits of that insurance coverage will be available to respond to any claim asserted against the additional insureds that arises out of or is in any way connected with this Contract;
- Additional insureds coverage shall not be restricted to vicarious liability unless required by controlling law.

In addition, the liability policy (ies) shall be written on a form at least as broad as ISO Form CG 20 10 10 01 (for ongoing operations work) together with ISO Form CG 20 37 10 01 (for completed operations work) or their equivalent and endorsed to and name “The Port Authority of New York and New Jersey and its related entities, their Commissioners, Directors, Superintendents, officers, partners, employees, agents, the

City of New York, their affiliates, successors or assigns” as Insured (as defined in the policy or in an additional insured endorsement amending the policy’s “Who is An Insured” language as the particular policy may provide). The “Insured” shall be afforded coverage and defense as broad as if they are the first named insured and regardless of whether they are otherwise identified as additional insureds under the liability policies, including but not limited to premise-operations, products-completed operations on the Commercial General Liability Policy. Such additional insureds status shall be provided regardless of privity of contract between the parties. The liability policy (ies) and certificates of insurance shall contain separation of insured and severability of interests clauses for all policies so that coverage will respond as if separate policies were in force for each insured. An act or omission of one of the insureds shall not reduce or void coverage to the other insureds. The Contractor is responsible for all deductibles or losses not covered by commercially procured insurance. Any portion of the coverage to be provided under a Self-Insured Retention (SIR) of the Contractor is subject to the review and approval of the General Manager, Risk Finance. Furthermore, any insurance or self-insurance maintained by the above additional insureds shall not contribute to any loss or claim.

If any of the Work is to be done on or at Port Authority facilities by subcontractors and, if the Contractor requires its subcontractors to procure and maintain such insurance in the name of the Contractor, then such insurance as is required herein shall include and cover the additional insureds and it must have insurance limits not lower than those set forth by the Port Authority herein, along with all the insurance requirements in this section known as “Insurance Procured by the Contractor”.

All insurance coverage shall be provided by the Contractor and/or by or for any of its subcontractors at no additional expense to the Port Authority and its related entities. A copy of this section titled “Insurance Procured by the Contractor” shall be given to your insurance agent and subcontractors and shall form a part of the covered contract or subcontract for insurance purposes in furtherance of the insurance requirements under this Contract.

Further, it is the Contractor’s responsibility to maintain, enforce and ensure that the type of coverages and all limits maintained by it and any of all subcontractors are accurate, adequate and in compliance with the Port Authority requirements; and the Contractor is to retain a copy of its subcontractors’ certificates of insurance. All certificates of insurance shall be turned over to the Port Authority prior to the start of work, including subcontractors’ work, and upon completion of the Contract.

The Contractor, its subcontractors, and its insurers shall not, without obtaining the express advance written permission from the General Counsel of the Port Authority, raise any defense involving in any way the jurisdiction of the Tribunal over the person of the Port Authority, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority, or the provisions of any statutes respecting suits against the Port Authority.

The Contractor and its subcontractor(s) shall also take out, maintain, and pay premiums on Workers' Compensation Insurance in accordance with the requirements of law in the state(s) where work will take place, and Employer's Liability Insurance with limits of not less than \$1 million per each accident.

Each policy above shall contain an endorsement that the policy may not be canceled, terminated, or modified without thirty (30) days' prior written notice to the Port Authority Att: Facility Contract Administrator, at the location where the work will take place with a copy to the General Manager, Risk Finance.

The Port Authority may, at any time during the term of this Contract, change or modify the limits and coverages of insurance. Should the modification or change results in an additional premium, the General Manager, Risk Finance for the Port Authority may consider such cost as an out-of-pocket expense.

Within five (5) days after the award of this Contract and prior to the start of work, the Contractor must submit an original certificate of insurance to the Port Authority Facility Contract Administrator, at the location where the work will take place. This certificate of insurance MUST show evidence of the above insurance policy (ies), including, but not limited to, the cancellation notice endorsement and stating the contract number prior to the start of work. The Contractor is also responsible for maintaining and conforming to all insurance requirements from the additional insureds and their successors or assigns.

The General Manager, Risk Finance must approve the certificate(s) of insurance before any work can begin. Upon request by the Port Authority, the Contractor shall furnish to the General Manager, Risk Finance, a certified copy of each policy, including the premiums.

If at any time the above liability insurance should be canceled, terminated, or modified so that the insurance is not in effect as above required, then the Contractor and all subcontractors shall suspend performance of the Contract at the premises until a satisfactory insurance policy (ies) and certificate of insurance is provided to and approved by Risk Finance, unless the Facility or Project Manager directs the Contractor, in writing, to continue to performing work under the Contract. If the Contract is so suspended, no extension of time shall be due on account thereof.

Renewal certificates of insurance or policies shall be delivered to the Port Authority Facility Contractor Administrator, and upon request from the additional insureds, their successors or assigns at least fifteen (15) days prior to the expiration date of each expiring policy. The General Manager, Risk Management must approve the renewal certificate(s) of insurance before work can resume on the facility.

If at any time any of the certificates or policies shall become unsatisfactory to the Port Authority, the Contractor shall promptly obtain a new and satisfactory certificate and policy and provide same to the Port Authority.

Failure by the Contractor to meet any of the insurance requirements, including the requirement that the Port Authority be afforded the full extent of the insurance obtained under this Contract without limitation, shall be deemed a material breach of contract and may be a basis for termination of this Contract by the Port Authority.

The requirements for insurance procured by the Contractor and subcontractor(s) shall not in any way be construed as a limitation on the nature or extent of the contractual obligations assumed by the Contractor under this Contract. The insurance requirements are not a representation by the Port Authority as to the adequacy of the insurance necessary to protect the Contractor against the obligations imposed on it by law or by this or any other contract. [CITS#6087N]

7. Increase and Decrease in Areas or Frequencies

The Manager shall have the right, at any time and from time to time in their sole discretion, to increase or decrease the frequencies of all or any part of the services required hereunder and/or to add areas not described herein in the Specifications or to remove areas or parts of areas which are hereunder so described. In the event the Manager decides to change any frequencies or areas such change shall be by written notice given to the Contractor not less than ten (10) calendar days prior to the effective date of said changes, said changes to be effective upon the date specified in said notice.

In the event of an increase or decrease in areas or frequencies, the Contractor's compensation will be adjusted to reflect such change in areas or frequencies utilizing the applicable Unit Price for such services (for the applicable Contract year) as set forth on the Pricing Sheet(s).

Where no specific Unit Price has been quoted for the type of services to be increased or decreased, the Manager shall have the right to negotiate the compensation to reflect such change, whether an increase or decrease in areas or frequencies, which, in the opinion of the Manager, are necessary to complete the work, by multiplying the increased or decreased amount by the negotiated rate.

In the event of a decrease, the Contractor shall not be entitled to compensation for Work not performed.

No such change in areas or frequency will be implemented which results in a total increase or decrease in compensation that is greater than fifty percent (50%) of the Total Estimated Contract Price for the Base Term or, if changes are to be implemented during an Option Period, fifty percent (50%) for that Option Period.

Any increases in frequencies or areas shall not constitute Extra Work and, as such, shall not be limited by the Extra Work provisions of this Contract.

8. Extra Work

The Contractor is required to provide separate materials, supplies, equipment and personnel for Extra Work when such is deemed necessary by the Manager. "Extra Work" as used herein shall be defined as work which differs from that expressly or impliedly required by the Specifications in their present form. Total Extra Work performed by the Contractor shall not exceed six percent (6%) of the Total Estimated Contract Price of this Contract for the entire Term of this Contract including extensions thereof, or six percent (6%) of the Total Estimated Contract Price of each Section if this Contract is awarded by separate Sections.

An increase in area or frequency does not constitute Extra Work, but shall be compensable based on the prices in the Pricing Sheet(s) and the paragraph herein titled "Increase or Decrease in Areas or Frequencies".

The Contractor is required to perform Extra Work pursuant to a written order of the Manager expressly recognizing such work as Extra Work. If Lump Sum or Unit Price compensation cannot be agreed upon by the parties in writing prior to the start of Work, the Contractor shall perform such Extra Work and the Contractor's compensation shall be increased by the sum of the following amounts and such amounts only: (1) the actual net cost, in money, of the labor, and material, required for such Extra Work; (2) ten percent (10%) of the amount under (1) above; (3) such rental as the Manager deems reasonable for plant and equipment (other than small tools) required for such Extra Work; (4) if the Extra Work is performed by a subcontractor, an additional five percent (5%) of the sum of the amounts under (1) through (3) above.

As used in this numbered clause (and in this clause only):

"Labor" means laborers, mechanics, and other employees below the rank of supervisor, directly employed at the Site of the Work subject to the Manager or their designee's authority to determine what employees of any category are "required for Extra Work" and as to the portion of their time allotted to Extra Work; and "cost of labor" means the wages actually paid to and received by such employees plus a proper proportion of (a) vacation allowances and union dues and assessments which the employer actually pays pursuant to contractual obligation upon the basis of such wages, and (b) taxes actually paid by the employer pursuant to law upon the basis of such wages and workers' compensation premiums paid pursuant to law. "Employees" as used above means only the employees of one employer.

"Net Cost" means the Contractor's actual cost after deducting all permitted cash and trade discounts, rebates, allowances, credits, sales taxes, commissions, and refunds (whether or not any or all of the same shall have been taken by the Contractor) of all parts and materials purchased by the Contractor solely for the use in performing its obligation hereunder provided, where such purchase has received the prior written approval of the Manager as required herein. The Contractor shall promptly furnish to the Manager such bills of sale and other instruments as the Manager may require, executed, acknowledged and delivered, assuring to the Manager title to such materials, supplies, equipment, parts, and tools free of encumbrances.

“Materials” means temporarily-installed and consumable materials as well as permanently-installed materials; and “cost of materials” means the price (including taxes actually paid by the Contractor pursuant to law upon the basis of such materials) for which such materials are sold for cash by the manufacturers or producers thereof, or by regular dealers therein, whether or not such materials are purchased directly from the manufacturer, producer or dealer (or if the Contractor is the manufacturer or producer thereof, the reasonable cost to the Contractor of the manufacture and production), plus the reasonable cost of delivering such materials to the Site of the Work in the event that the price paid to the manufacturer, producer or dealer does not include delivery and in case of temporarily-installed materials, less their salvage value, if any.

The Manager shall have the authority to decide all questions in connection with Extra Work. The exercise by the Manager of the powers and authorities vested in him/her by this section shall be binding and final upon the Port Authority and the Contractor.

The Contractor shall submit all reports, records and receipts as are requested by the Manager so as to enable him/her to ascertain the time expended in the performance of the Extra Work, the quantity of labor and materials used therein and the cost of said labor and materials to the Contractor.

The provisions of this Contract relating generally to Work and its performance shall apply without exception to any Extra Work required and to the performance thereof. Moreover, the provisions of the Specifications relating generally to the Work and its performance shall also apply to any Extra Work required and to the performance thereof, except to the extent that a written order in connection with any particular item of Extra Work may expressly provide otherwise.

If the Contractor deems work to be Extra Work, the Contractor shall give written notice to the Manager within twenty-four (24) hours of performing the work that it so considers as Extra Work, and failure of the Contractor to provide said notice shall constitute a waiver of any claim to an increase in compensation for such work and a conclusive and binding determination that it is not Extra Work.

The Contractor shall supply the amount of materials, supplies, equipment and personnel required by the Manager within eight (8) hours following the receipt of written or verbal notice from the Manager, or in the case of an emergency as determined by the Manager, within six (6) hours following the receipt by the Contractor of the Manager’s written or oral notification. Where oral notification is provided hereunder, the Manager will thereafter confirm the same in writing.

All Extra Work shall be billed to the Port Authority on a separate invoice on a monthly basis.

9. MBE/WBE Subcontracting Provisions

The Port Authority has a long-standing practice of making its business opportunities available to Minority Business Enterprises (MBEs) and Women-owned Business Enterprises (WBEs) and has taken affirmative steps to encourage such firms to seek business opportunities with the Port Authority. The Contractor shall use every good-faith effort to provide for participation by Port Authority Certified Minority Business Enterprises (MBEs) and Port Authority Certified Women-owned Business Enterprises

(WBEs) in all purchasing and subcontracting opportunities associated with this Contract, including purchase of equipment, supplies and labor services.

The Contractor shall use good faith efforts to achieve participation equivalent to twenty percent (20%) of the total Contract price for Port Authority certified MBEs and ten percent (10%) of the total Contract price for Port Authority certified WBEs.

Good faith efforts to include and facilitate participation by MBE/WBEs shall include, but not be limited to the following:

- a. Dividing the services and materials to be procured into smaller portions, where feasible.
- b. Giving reasonable advance notice of specific contracting, subcontracting and purchasing opportunities to such MBE/WBEs as may be appropriate.
- c. Soliciting services and materials from a Port Authority certified MBE/WBE. To access the Port Authority's Directory of MBE/WBE Port Authority certified firms go to <http://www.panynj.gov/business-opportunities/sd-mwsdbe-profile.html>.
- d. Ensuring that provision is made to provide progress payments to MBE/WBEs as defined in the prompt payment provision below.
- e. Observance of reasonable commercial standards of fair dealing in the respective trade or business.

Bidders are directed to use form PA3760A as the recording mechanism for the MBE/WBE Participation Plan, annexed hereto as Attachment 'G', BID #60786 which may be downloaded at:
<http://www.panynj.gov/business-opportunities/become-vendor.html>.

Bidders shall include with their bids, a MBE/WBE Participation Plan for each MBE/WBE subcontractor, to be reviewed and approved by the Authority's Office of Business Diversity and Civil Rights (OBDCR).

Each MBE/WBE Participation Plan submitted by the Contractor to the Port Authority shall contain, at a minimum, the following:

- Identification of the MBE/WBE: Provide the name and address of MBE/WBE included in the Plan. If none are identified, describe the process for selecting participant firms in order to achieve the good faith goals under this Contract.
- Level of Participation: Indicate the dollar value and percentage of MBE/WBE participation expected to be achieved.
- Scope of Work: Describe the specific scope of work the MBE/WBEs will perform.

The MBE/WBE subcontractors listed on the MBE/WBE Participation Plans must be certified by the Port Authority in order for the Contractor to receive credit toward the MBE/WBE goals set forth in this Contract. Please go to <http://www.panynj.gov/business-opportunities/sd-mwsdbe-profile.html> to search for MBE/WBEs by a particular commodity or service. The Port Authority makes no representation as to the financial responsibility of these firms or their ability to perform work under this Contract.

Subsequent to Contract award, all changes to any of the MBE/WBE Participation Plans must be submitted via a Modified MBE/WBE Participation Plan to the Manager for review and approval by the Authority's Office of Business Diversity and Civil Rights. For submittal of modifications to the MBE/WBE Participation Plans, Contractors are directed to use form PA3760B, which may be downloaded at <http://www.panynj.gov/business-opportunities/become-vendor.html>. The Contractor shall not make changes to its approved MBE/WBE Participation Plan or substitute MBE/WBE subcontractors or suppliers for those named in their approved plan without the Manager's prior written approval. Unauthorized changes or substitutions, including performing the work designated for a subcontractor with the Contractor's own forces, shall be a violation of this section. Progress toward attainment of MBE/WBE participation goals set forth herein will be monitored throughout the duration of this Contract.

The Contractor shall also submit to the Manager, along with invoices, a Statement of Subcontractor Payments (PA3968) which may be downloaded at <http://www.panynj.gov/business-opportunities/become-vendor.html>. The Statement must include the name and business address of each MBE/WBE subcontractor and supplier actually involved in the Contract, a description of the work performed and/or product or service supplied by each such subcontractor or supplier, the date and amount of each expenditure, and such other information that may assist the Manager in determining the Contractor's compliance with the foregoing provisions.

Prompt Payment/Retainage

The Contractor agrees to pay each subcontractor under this Contract, for satisfactory performance of its subcontract, no later than ten (10) days from the receipt of each payment the Contractor receives from the Authority. The Contractor agrees further to return retainage payments, if any, to each subcontractor within ten days after the subcontractors' work is satisfactorily completed. Any delay or postponement of payment from the above referenced timeframe may occur only for good cause following written approval of the Authority.

MBE/WBE Conditions of Participation

MBE/WBE participation will be counted toward meeting the MBE/WBE contract goal, subject to all of the following conditions:

- A. Commercially Useful Function. An MBE/WBE is considered to perform a commercially useful function when it is responsible for the execution of a distinct

element of work on a contract and carries out its responsibilities by actually performing, managing, and supervising the work involved in accordance with normal industry practice. Regardless of whether an arrangement between the Contractor and the MBE/WBE represent standard industry practice, if the arrangement erodes the ownership, control or independence of the MBE/WBE or in any other way does not meet the commercially useful function requirement, that firm shall not be included in determining whether the MBE/WBE goal is met and shall not be included in MBE/WBE reports. If this occurs with respect to a firm identified as an MBE/WBE, the Contractor shall receive no credit toward the MBE/WBE goal and may be required to backfill the participation. An MBE/WBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction or contract through which funds are passed in order to obtain the appearance of MBE/WBE participation. An MBE/WBE may rebut a determination by the Authority that the MBE/WBE is not performing a commercially useful function to the Authority.

B. Work Force. The MBE/WBE must employ a work force (including administrative and clerical staff) separate and apart from that employed by the Contractor, other Subcontractors on the contract, or their Affiliates. This does not preclude the employment by the MBE/WBE of an individual that has been previously employed by another firm involved in the Contract, provided that the individual was independently recruited by the MBE/WBE in accordance with customary industry practice. The routine transfer of work crews from another employer to the MBE/WBE shall not be allowed.

C. Supervision. All Work performed by the MBE/WBE must be controlled and supervised by the MBE/WBE without duplication of supervisory personnel from the Contractor, other Subcontractors on the contract, or their Affiliates. This does not preclude routine communication between the supervisory personnel of the MBE/WBE and other supervisors necessary to coordinate the Work.

D. Equipment: MBE/WBE subcontractors may supplement their equipment by renting or leasing additional equipment in accordance with customary industry practice. If the MBE/WBE obtains equipment from the Contractor, their affiliates and other subcontractors performing Work on the Contract, the MBE/WBE shall provide documentation to the Authority demonstrating that similar equipment and terms could not be obtained at a lower cost from other customary sources of equipment. The required documentation shall include copies of the rental or leasing agreements, and the names, addresses and terms quoted by other sources of equipment.

Counting MBE/WBE Participation

The value of the Work performed by an MBE/WBE, with its own equipment, with its own forces, and under its own supervision will be counted toward the goal, provided the utilization is a commercially useful function. An MBE/WBE prime contractor shall still provide opportunities for participation by other MBE/WBEs. Work performed by MBE/WBEs will be counted as set forth below. If the Authority determines that some or all of the MBE/WBEs work does not constitute a commercially useful function, only the portion of the work considered to be a commercially useful function will be credited toward the goal.

- A. Subcontractors. One hundred percent (100%) of the value of the Work to be performed by an MBE/WBE subcontractor will be counted toward the MBE/WBE goal. The value of such Work includes the cost of materials and supplies purchased by the MBE/WBE, except the cost of supplies or equipment leased from the Contractor, other Subcontractors or their affiliates will not be counted. When an MBE/WBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward MBE/WBE goals only if the MBE/WBE subcontractor is itself an MBE/WBE. Work that an MBE/WBE subcontracts to a non-MBE/WBE firm does not count toward MBE/WBE goals.
- B. Manufacturers/Fabricators. One hundred percent (100%) of the expenditure to an MBE/WBE manufacturer or fabricator will be counted towards the MBE/WBE goal.
- C. Material Suppliers. Sixty percent (60%) of the expenditure to an MBE/WBE material supplier will be counted toward the MBE/WBE goal. Packagers, brokers, manufacturer's representatives, or other persons who arrange or expedite transactions are not material suppliers within the meaning of this paragraph.
- D. Broker's/Manufacturer's Representatives. One hundred percent (100%) of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees for transportation charges for the delivery of materials or supplies provided by an MBE/WBE broker/manufacturer's representative will be counted toward the MBE/WBE goal, provided they are determined by the Authority to be reasonable and not excessive as compared with fees customarily allowed for similar services. The cost of the materials and supplies themselves will not be counted.
- E. Services. One hundred percent (100%) of fees or commissions charged by an MBE/WBE for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of the Work will be counted toward the MBE/WBE goal, provided the fee is reasonable and not excessive as compared with fees customarily allowed for similar services.
- F. Trucking Operations. If using an MBE/WBE firm for trucking operations, the MBE/WBE trucking firm of record is the firm that is listed on the MBE/WBE Participation Plan. The MBE/WBE trucking firm shall own and operate at least one registered, insured, and fully operational truck used for the performance of the Work and shall be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting the MBE/WBE goal. The MBE/WBE trucking firm of record shall control the day-to-day MBE/WBE trucking operations for performance of the Work, and shall be responsible for (1) negotiating and executing rental/leasing agreements; (2) hiring and terminating the work force; (3) coordinating the daily trucking needs with the Contractor; and (4) scheduling and dispatching trucks.
1. MBE/WBE Owned/Leased Trucks. One hundred percent (100%) of the value of the trucking operations the MBE/WBE provides for the performance of the Work using

trucks it owns or leases on a long-term basis that are registered, insured, and operated by the MBE/WBE using drivers it employs, will be counted toward the MBE/WBE goal.

2. MBE/WBE Short-Term Leased Trucks. The MBE/WBE may lease trucks on a short-term basis from another MBE/WBE, including an owner/operator who is Port Authority certified as an MBE/WBE. One hundred percent (100%) of the value of the trucking operations that the lessee MBE/WBE provides will be counted toward the MBE/WBE goal.

3. Non-MBE/WBE Trucks. The MBE/WBE may lease trucks on a short-term basis from a non-MBE/WBE, including an owner-operator. One hundred percent (100%) of the fee or commission the MBE/WBE receives as a result of the lease arrangement will be counted toward the MBE/WBE goal. The value of the trucking operations provided by the lessee will not be counted toward the MBE/WBE goal.

G. Joint Venture. Joint ventures between MBE/WBEs and non-MBE/WBEs may be counted toward the MBE/WBE goal in proportion to the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract that the MBE/WBE performs with its own forces. Please contact the Office of Business Diversity and Civil Rights at (201) 395-3958 for more information about requirements for such joint ventures.

FOR TRAFFIC LIGHTS BID # 6078
ATTACHMENT 6

THE PORT AUTHORITY OF NY & NJ
OFFICE OF BUSINESS DIVERSITY AND CIVIL RIGHTS

MBE/WBE PARTICIPATION PLAN AND AFFIRMATION STATEMENT

PA 3760A/B-16

Instructions: Submit one MBE/WBE PARTICIPATION PLAN AND AFFIRMATION STATEMENT form for each MBE/WBE firm used on this Contract. To avoid undue repetition, the following terms, as used in this Agreement, shall be construed as follows: Bidder/Proposer/Respondent - can be used interchangeably and mean any Contractor, Consultant, Supplier, or Vendor who submits a response to this solicitation.

BID NUMBER AND TITLE: _____

BIDDER:
Name of Firm: _____ Telephone: _____
Address: _____
Email Address: _____

MBE/WBE:
Name of Firm: _____ Telephone: _____
Address: _____

Description of work to be performed by MBE/WBE: _____
Calculation (supply only): _____

The Bidder is committed to utilizing the above-named MBE/WBE for the work described above. The estimated dollar value of this work is \$ _____)
or _____ % of the total contract amount of \$ _____. The anticipated start date is _____ and the anticipated completion date is _____.

AFFIRMATION of MBE/WBE
The above-named MBE/WBE affirms that it will perform the portion of the Contract for the estimated dollar value as stated above.
By: _____ Date: _____
Signature of Principal or Officer of MBE/WBE - Print Name and Title

I _____ (print name), an officer of _____ (company name), certify that I have read the PA 3760A MBE/WBE Participation Plan and Affirmation Statement and the information contained in it is true. I fully understand that any false statement within this submittal may prevent the company and/or the undersigned from being found to be responsible Bidders/Proposers in connection with future agreements. In addition, any false statement within this submittal may subject the company and/or the undersigned to criminal charges in the state and federal courts of New York and New Jersey.

Signature of Bidder _____ Title _____
Date _____

Please Note: Only 60% of the expenditure to a MBE/WBE material supplier will be counted toward the MBE/WBE goal. Please show calculation above. Example: \$100,000 x 60% = \$60,000 estimated MBE/WBE dollar value of work. Plan cannot be accepted without calculation.

Officer of Bidder must have **ACKNOWLEDGEMENT BY NOTARY PUBLIC** completed on the reverse side.

1/2

EWING TRAFFIC LIGHTS
BID # 60780
ATTACHMENT 'G'

ACKNOWLEDGEMENT BY NOTARY PUBLIC
PA 3760A
MBE/WBE PARTICIPATION PLAN AND AFFIRMATION STATEMENT (reverse)

STATE OF _____)
COUNTY OF _____)

S.S.:

On the ____ day of _____ in the year 20____, before me, the above undersigned, personally appeared _____, the
_____, of _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s)
whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity.

Name of Notary (print)

(Affix Notary Stamp Here)

My Commission Expires _____

(Notary Signature)

_____ (Date)

2/2

PART IV – SIGNATURE SHEET, NAME AND RESIDENCE OF PRINCIPALS SHEET AND PRICING SHEET(S), TABLE OF CONTENTS

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PART IV – SIGNATURE SHEET, NAME AND RESIDENCE OF PRINCIPALS SHEET AND PRICING SHEET(S)

1. SIGNATURE SHEET

OFFER: The undersigned offers and agrees to furnish to the Port Authority of New York and New Jersey the services and/or materials in compliance with all terms, conditions, specifications and addenda of the Contract. Signature also certifies understanding and compliance with the certification requirements of the standard terms and conditions as contained in the Standard Contract Terms and Conditions. This offer shall be irrevocable for one hundred twenty (120) days after the date on which the Port Authority opens this Bid.

ONLY THE COMPANY NAMED AS THE BIDDING ENTITY BELOW WILL RECEIVE PAYMENT. THIS MUST BE THE SAME NAMED COMPANY AS INDICATED ON THE COVER SHEET.

Bidding Entity's Legal Business Name _____

Bidder's Address _____

City, State, Zip _____

Telephone No. _____ FAX _____

Email _____ EIN# _____

SIGNATURE _____ Date _____

Print Name and Title _____

ACKNOWLEDGEMENT:

STATE OF: _____

COUNTY OF: _____

On this ___ day of _____, 20___, personally came before me, _____, who duly sworn by me, did depose that (s)he has knowledge of the matters herein stated, that they are in all respects true and that (s)he has been authorized to execute the foregoing offer and statement of irrevocability on behalf of said corporation, partnership or firm.

Notary Public

NOTE: If a joint venture is bidding, duplicate this Signature Sheet and have each party to the joint venture sign separately and affix to the back of this Signature Sheet.

Bidder attention is called to the certification requirements contained in the Standard Contract Terms and Conditions, Part III. Indicate below if a signed, explanatory statement in connection with this section is attached hereto.

If certified by the Port Authority as an SBE or M/W/BE: _____ (indicate which one and date of the certification).

2. NAME AND RESIDENCE OF PRINCIPALS SHEET

Names and Residence of Principals of Bidder. If general or limited partner, or individual, so indicate.

NAME	TITLE	ADDRESS OF RESIDENCE (Do not give business address)
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3. PRICING SHEET(S)

Entry of Prices

- a. The prices quoted shall be written in figures, in ink, preferably in black ink where required in the spaces provided on the Pricing Sheet(s) attached hereto and made a part hereof. Prices must be quoted in United States Dollars. All figures inserted will be interpreted as being quoted in United States Dollars.
- b. All Bidders are asked to ensure that all charges quoted for similar operations in the Contract are consistent.
- c. Prices must be submitted for each Item required on the Pricing Sheet(s). Bidders are advised that the Items on the Pricing Sheet(s) correspond to the required services set forth in the Specifications.
- d. Bidders must insert all figures as required and verify all computations for accuracy. The Port Authority in its sole judgment reserves the right to: (1) reject Bids without checking them for mathematical errors or omissions, (2) reject Bids that contain or appear to contain errors or omissions, and (3) supply corrections to Bids that contain or appear to contain mathematical errors and omissions, and in this case the Port Authority reserves the right to recompute the Total Estimated Contract Price based upon the Unit Prices inserted by the Bidder, which amount shall govern in all cases.
- e. In the event that a Bidder quotes an amount in the Total Estimated column but omits to quote a Unit Price for that amount in the space provided, the Port Authority reserves the right to compute and insert the appropriate Unit Price.
- f. The Total Estimated Contract Price is solely for the purpose of facilitating the comparisons of Bids. Compensation shall be in accordance with the section of this Contract entitled "Payment."
- g. The Total Estimated Four (4) Year Contract Price shall be obtained by adding the Total Estimated Contract Price for Exhibits A, B, C, D, E, F, and G, and line H., the Estimated Allowance for SWAC.

Contractor's Pricing Sheets
EXHIBIT A - Labor *

* Labor rates are all-inclusive rates which shall include, but are not limited to, the Contractor's overhead, profit, travel and cost for vehicle use including tolls.

YEAR ONE

Item of work	Estimated Annual Quantity Hours		Unit Price		Estimated Annual Total
ISMA Certified Signal Technician Level II, Monday through Friday, 8 am to 4 pm	40	x		=	\$
ISMA Certified Signal Technician Level II, All other hours	40	x		=	\$
Traffic Signal Electrician, Monday through Friday, 8 am to 4 pm	40	x		=	\$
Traffic Signal Electrician, All other hours	40	x		=	\$
ESTIMATED YEAR ONE LABOR PRICE (SUM OF ABOVE)				=	\$

YEAR TWO

Item of work	Estimated Annual Quantity Hours		Unit Price		Estimated Annual Total
ISMA Certified Signal Technician Level II, Monday through Friday, 8 am to 4 pm	40	x		=	\$
ISMA Certified Signal Technician Level II, All other hours	40	x		=	\$
Traffic Signal Electrician, Monday through Friday, 8 am to 4 pm	40	x		=	\$
Traffic Signal Electrician, All other hours	40	x		=	\$
ESTIMATED YEAR TWO LABOR PRICE (SUM OF ABOVE)				=	\$

**Contractor's Pricing Sheets
EXHIBIT A - Labor ***

YEAR THREE

Item of work	Estimated Annual Quantity Hours		Unit Price		Estimated Annual Total
ISMA Certified Signal Technician Level II, Monday through Friday, 8 am to 4 pm	40	x		=	\$
ISMA Certified Signal Technician Level II, All other hours	40	x		=	\$
Traffic Signal Electrician, Monday through Friday, 8 am to 4 pm	40	x		=	\$
Traffic Signal Electrician, All other hours	40	x		=	\$
ESTIMATED YEAR THREE LABOR PRICE (SUM OF ABOVE)				=	\$

A. ESTIMATED THREE YEAR CONTRACT PRICE FOR LABOR: \$ _____

(YEAR 1+2+3)

**Contractor's Pricing Sheets
Exhibit B - Parts**

The percentage markup + or discount - or Zero 0 inserted by the Contractor shall not be subject to adjustment and shall remain firm for the duration of the Contract, including any options or extensions, if

"Net Cost" shall be the Contractor's actual cost after deducting all permitted cash and trade discounts, rebates, allowances, credits, sales taxes, commissions and refunds (whether or not any or all the same shall have been taken by the contractor) of all parts, materials or equipment purchased or leased by the Contractor solely for the use in performing his obligation hereunder provided such purchases or lease has received the prior written approval of the Manager. The documentation that the contractor receives from its supplier that accompanies the material shall substantiated these charges.

Estimated Four Year Net Cost of Parts		Contractor's Percentage Markup + or Discount -or Zero 0	=	Estimated Contractor's Percentage Price	+	Estimated Four Year Net Cost of Parts	=	Estimated Four Year Contract Price for Parts
\$60,000	x	_____ %	=	\$ _____	+	\$60,000	=	\$ _____

B. ESTIMATED THREE YEAR CONTRACT PRICE FOR PARTS:

\$ _____

Contractor's Pricing Sheets
 Exhibit C - Project Work

Intersection Number	Signal Replacement Intersection Name	#	Number of		Price to replace signal fixtures and all associated hardware for complete installation
			Vehicular Signal Heads (3 Section)	Vehicular Signal Head (5 Section)	
ITEM A	EWR-SA-354 .Earhart Dr & Wiley Post Rd.		14	2	\$ _____
Project					
ITEM B	Replace Back Plates (Reflective Type)	24			\$ _____
Port Authority Staff Training					
ITEM C	Training - As per Part V, item 14			16 hours	\$ _____

ESTIMATED TOTAL PROJECT WORK (SUM of ABOVE)
 (A+B+C) \$ _____

**Contractor's Pricing Sheets
Exhibit D - Annual Certification**

YEAR ONE

Intersection Number	Intersection	Intersection Certification Unit Price
EWR-TA 302	Route 1/9 Ramp to Parking and South Service Road Merge	\$
EWR-TA-303	Terminal A HOV Roadway Pedestrian Crossing 1	\$
EWR-TA-304	Terminal A HOV Roadway Pedestrian Crossing 2	\$
EWR-TB-310	Terminal B HOV Roadway Pedestrian Crossing 1	\$
EWR-TB-311	Terminal B HOV Roadway Pedestrian Crossing 2	\$
EWR-TB-314	Terminal B HOV CTA/Parking Road Red. Crosswalk 1	\$
EWR-TB-315	Terminal B HOV CTA/Parking Road Red. Crosswalk 2	\$
EWR-TC-319	Terminal C HOV Pedestrian Crossing 1	\$
EWR-TC-320	Terminal C HOV Pedestrian Crossing 2	\$
EWR-TC-321	Terminal C LOV Pedestrian Crossing 1	\$
EWR-TC-322	Terminal C LOV Pedestrian Crossing 2	\$
EWR-CA-328	Lindbergh Road and Earhart Drive	\$
EWR-CA-329	Lindbergh Road and Hertz Driveway	\$
EWR-CA-335	Pitcairn Road and Martin Road	\$
EWR-CA-341	Brewster Road and Lindbergh Road	\$
EWR-CA-342	Brewster Road and Pitcairn Road	\$
EWR-NA-343	Brewster Road and I-78 Entrance Ramp	\$
EWR-NA-345	Brewster Road and Entrance from 1&9 North	\$
EWR-NA-346	Brewster Road and Conrad Road	\$
EWR-NA-347	Brewster Road and Port Street Connector	\$
EWR-NA-348	Port Street and Port Street Connector (Entrance to P6)	\$
EWR-SA-354	Earhart Drive and Wiley Post Road	\$
ESTIMATED YEAR ONE ANNUAL CERTIFICATION PRICE (SUM of ABOVE)		= \$

Contractor's Pricing Sheets
 Exhibit D - Annual Certification

YEAR TWO

Intersection Number	Intersection	Intersection Certification Unit Price
EWR-TA 302	Route 1/9 Ramp to Parking and South Service Road Merge	\$
EWR-TA-303	Terminal A HOV Roadway Pedestrian Crossing 1	\$
EWR-TA-304	Terminal A HOV Roadway Pedestrian Crossing 2	\$
EWR-TB-310	Terminal B HOV Roadway Pedestrian Crossing 1	\$
EWR-TB-311	Terminal B HOV Roadway Pedestrian Crossing 2	\$
EWR-TB-314	Terminal B HOV CTA/Parking Road Red. Crosswalk 1	\$
EWR-TB-315	Terminal B HOV CTA/Parking Road Red. Crosswalk 2	\$
EWR-TC-319	Terminal C HOV Pedestrian Crossing 1	\$
EWR-TC-320	Terminal C HOV Pedestrian Crossing 2	\$
EWR-TC-321	Terminal C LOV Pedestrian Crossing 1	\$
EWR-TC-322	Terminal C LOV Pedestrian Crossing 2	\$
EWR-CA-328	Lindbergh Road and Earhart Drive	\$
EWR-CA-329	Lindbergh Road and Hertz Driveway	\$
EWR-CA-335	Pitcairn Road and Martin Road	\$
EWR-CA-341	Brewster Road and Lindbergh Road	\$
EWR-CA-342	Brewster Road and Pitcairn Road	\$
EWR-NA-343	Brewster Road and I-78 Entrance Ramp	\$
EWR-NA-345	Brewster Road and Entrance from 1&9 North	\$
EWR-NA-346	Brewster Road and Conrad Road	\$
EWR-NA-347	Brewster Road and Port Street Connector	\$
EWR-NA-348	Port Street and Port Street Connector (Entrance to P6)	\$
EWR-SA-354	Earhart Drive and Wiley Post Road	\$
ESTIMATED YEAR TWO ANNUAL CERTIFICATION PRICE (SUM of ABOVE)		= \$

**Contractor's Pricing Sheets
Exhibit D - Annual Certification**

YEAR THREE

Intersection Number	Intersection	Intersection Certification Unit Price
EWR-TA 302	Route 1/9 Ramp to Parking and South Service Road Merge	\$
EWR-TA-303	Terminal A HOV Roadway Pedestrian Crossing 1	\$
EWR-TA-304	Terminal A HOV Roadway Pedestrian Crossing 2	\$
EWR-TB-310	Terminal B HOV Roadway Pedestrian Crossing 1	\$
EWR-TB-311	Terminal B HOV Roadway Pedestrian Crossing 2	\$
EWR-TB-314	Terminal B HOV CTA/Parking Road Red. Crosswalk 1	\$
EWR-TB-315	Terminal B HOV CTA/Parking Road Red. Crosswalk 2	\$
EWR-TC-319	Terminal C HOV Pedestrian Crossing 1	\$
EWR-TC-320	Terminal C HOV Pedestrian Crossing 2	\$
EWR-TC-321	Terminal C LOV Pedestrian Crossing 1	\$
EWR-TC-322	Terminal C LOV Pedestrian Crossing 2	\$
EWR-CA-328	Lindbergh Road and Earhart Drive	\$
EWR-CA-329	Lindbergh Road and Hertz Driveway	\$
EWR-CA-335	Pitcairn Road and Martin Road	\$
EWR-CA-341	Brewster Road and Lindbergh Road	\$
EWR-CA-342	Brewster Road and Pitcairn Road	\$
EWR-NA-343	Brewster Road and I-78 Entrance Ramp	\$
EWR-NA-345	Brewster Road and Entrance from 1&9 North	\$
EWR-NA-346	Brewster Road and Conrad Road	\$
EWR-NA-347	Brewster Road and Port Street Connector	\$
EWR-NA-348	Port Street and Port Street Connector (Entrance to P6)	\$
EWR-SA-354	Earhart Drive and Wiley Post Road	\$
ESTIMATED YEAR THREE ANNUAL CERTIFICATION PRICE (SUM of ABOVE)		= \$

D. ESTIMATED TOTAL THREE YEAR CONTRACT PRICE FOR CERTIFICATION (YEAR 1+2+3) \$ _____

Contractor's Pricing Sheets
Exhibit E - Maintenance of Traffic (MOT) Vehicle Compensation

YEAR ONE

Item of Work	Estimated Annual Quantity Hours		Unit Price		Estimated Annual Total
Signal Technician Bucket Truck	20	X	\$	=	\$
Attenuator Vehicle Including All Equipment Necessary for MOT Per Attached "C" Entitled "Roadway Area Protection" (PA O&M Standard 20)	20	X	\$	=	\$
ESTIMATED YEAR ONE MOT PRICE (SUM of ABOVE)				=	\$

YEAR TWO

Item of Work	Estimated Annual Quantity Hours		Unit Price		Estimated Annual Total
Signal Technician Bucket Truck	20	X	\$	=	\$
Attenuator Vehicle Including All Equipment Necessary for MOT Per Attached "C" Entitled "Roadway Area Protection" (PA O&M Standard 20)	20	X	\$	=	\$
ESTIMATED YEAR TWO MOT PRICE (SUM of ABOVE)				=	\$

Contractor's Pricing Sheets
Exhibit E - Maintenance of Traffic (MOT) Vehicle Compensation

YEAR THREE

Item of Work	Estimated Annual Quantity Hours		Unit Price		Estimated Annual Total
Signal Technician Bucket Truck	20	X	\$	=	\$
Including All Equipment Necessary for MOT Per Attached "C" Entitled "Roadway Area Protection" (PA O&M Standard 20)	20	X	\$	=	\$
ESTIMATED YEAR THREE MOT PRICE (SUM of ABOVE)				=	\$

ESTIMATED THREE YEAR MOT PRICE (YEAR 1+2+3)	=	\$
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Contractor's Pricing Sheet F - Inventories of System Data

Item No.	Description	Estimated Quantity of Templates	All-inclusive Unit Price	Estimated Four-Year Contract Price
1	Populate Asset Data Specification, Job Plan and Safety Plan Templates	22	\$	\$
F.	Total Estimated THREE-Year Contract Price		\$	

Contractors Pricing Sheets

Exhibit G - Future Equipment Certification

	It is currently anticipated, but not guaranteed, that the following equipment will become part of this Contract during the base term. Such services shall be considered as integral part of the Contract as well as an integral part of the bid comparison. This equipment will become part of the Contract in it's entirety.		
	Equipment		
	<i>Intersection Number</i>	<i>Intersection</i>	<i>Annual Intersection Certification Unit Price</i>
G1	EWR-TB-312	Terminal B INNER Roadway Pedestrian Crossing 1	\$ _____
G2	EWR-TB-313	Terminal B INNER Roadway Pedestrian Crossing 2	\$ _____
G3	TBD	Metroplex Road and Earhart Drive	\$ _____
		Exhibit G (Sum of items G1 through G3)	\$ _____

CONTRACTOR'S PRICING SUMMARY SHEET

Exhibit /Line		
A.	Estimated Four Year Contract Price for Labor	\$ _____
B.	Estimated Four Year Contract Price for Parts, Material and Equipment	\$ _____
C.	Estimated Four Year Contract Price for Project Work	\$ _____
D.	Estimated Four Year Contract Price for Annual Certification	\$ _____
E.	Estimated Four Year Contract Price for Maintenance of Traffic	\$ _____
F.	Estimated Four Year Contract Price for Implementation and Maintenance of the Computerized Maintenance Management System	\$ _____
G.	Estimated Four Year Contract Price for Future Equipment	\$ _____
H.	SWAC	<u>\$7,902.00</u>
I.	Total Estimated Contract Price for four (4) years. (sum of items A thru H above)	\$ _____

Note: Line item "H" has a total per price entered by the Port Authority for SWAC services if required under this Contract. As such, Bidders are instructed to include this line item total when establishing their Total Estimated Four (4) Year Contract Price. The estimated per person SWAC price is \$439.00 each . The cost for said background checks for staff that pass and are granted a credential may be reimbursable to the Contractor (and its subcontractors) as an out-of-pocket expense as provided herein.

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Attachment F – EWR Intersection ID Key Plan

PART V – SPECIFICATIONS

1. Specific Definitions

To avoid undue repetition, the following terms, as used in this Contract, shall be construed as follows:

- a. "Facility" means Newark Liberty International Airport (EWR) in Newark New Jersey.
- b. "Maintenance of Traffic" and "MOT" mean a plan for continued traffic flow in a safe manner. This plan shall include using necessary safety equipment such as early warning system, signs, traffic cones, and attenuator vehicles as needed. The Contractor shall be required to strictly adhere to Port Authority Operations and Maintenance ("O&M") Standard 20 for typical roadway work area protection procedures (see Attachment C).
- c. "Manager" means the Manager of the Facility for the time being or his/her successor in duties for the purpose of this Contract, acting personally or through his/her duly authorized representative.

2. Work Required by the Specifications

These Specifications relate generally to the performance of traffic signal intersection certification, preventative maintenance, repair, inspection and emergency response to traffic signal knockdowns, traffic cabinet knockdowns and any traffic signal related issues deemed necessary by the Manager. Intersection certification will consist of the work to be performed as per "Attachment A" entitled "Traffic Signal Certification Preventive Maintenance Checklist".

The Port Authority Electrical Maintenance unit is generally the first responder to any calls involving traffic signals and may perform any of the work described under this Contract

3. Personnel Assurance Program

As directed by the Manager, the Contractor is required to have certain individuals of its staff, and any subcontractor's staff, materialmen, visitors or others over whom the Contractor/subcontractor has control, who have access to certain areas, systems or information, authorize the Authority and/or PATH or its designee to perform background checks and a personal identity verification check. Such background checks shall be performed through the Authority's personnel assurance program provider. The Secure Worker Access Consortium (S.W.A.C.) is the only Port Authority approved provider to be used to conduct background screening and personal identity verification, except as otherwise required by federal law and/or

regulation (such as the Transportation Worker Identification Credential for personnel performing in secure areas at Maritime facilities). Information about S.W.A.C., instructions, corporate enrollment, online applications, and location of processing centers can be found at <http://www.secureworker.com>, or S.W.A.C. may be contacted directly at (877) 522-7922 for more information and the latest pricing. The cost for said background checks for staff that pass and are granted a credential may be reimbursable to the Contractor and its subcontractors, if approved in advance by the Manager in writing. Staff that are rejected for a credential for any reason are never reimbursable.

4. Prevailing Wages

The Contractor shall provide (and shall cause all sub-contractors to pay or provide) to its Electrician, and Traffic Signal Electrician Technician Level I and Traffic Signal Electrician Technician Level II who are employed by it to work on an hourly or daily basis at any trade or occupation at or about the Facility) at least the prevailing rate of wage and supplements for others engaged in the same trade or occupation in the locality in which the Work is being performed at the time the Work is being performed and notwithstanding that such rate may be higher than the rate in effect on the date of the opening of the Bids.

For the purposes of this Contract, for work being performed in the State of New Jersey, Contractors and Subcontractors are directed to utilize the State of New Jersey, Department of Labor and Workforce Development prevailing wage levels established pursuant to the New Jersey Prevailing Wage Act (N.J.S.A. 34:11-56.25 et seq.) for workers engaged in public works projects in the Counties of Essex, and Union.

The provisions of this clause are inserted in this Contract for the benefit of such Electrician, Traffic Signal Electrician Technician Level I and Traffic Signal Electrician Technician Level II as well as for the benefit of the Port Authority; and if the Contractor or any subcontractor shall pay or provide any workmen, laborer, carpenter or mechanic less than the rates of wages and supplements above described, such workmen, laborers, carpenters and mechanics shall have a direct right of action against the Contractor or such subcontractor for the difference between the wages and supplements actually paid or provided and those to which they are entitled under this clause. If such Electrician, Traffic Signal Electrician Technician Level I and Traffic Signal Electrician Technician Level II are employed by any subcontractor whose subcontract does not contain a provision substantially similar to the provisions of this clause (requiring the payment or provision of a least the above minimum, and providing for a cause of action in the event of the subcontractor's failure to pay or provide such wages and supplements) such Electrician, Traffic Signal Electrician Technician Level I and Traffic Signal Electrician Technician Level II shall have a direct right of action against the Contractor. The Port Authority shall not be a necessary party to any action brought by any Electrician, Traffic Signal Electrician Technician Level I and Traffic Signal Electrician Technician Level II to obtain a money judgment against the Contractor or any subcontractor pursuant to this clause.

Nothing herein contained shall be construed to prevent the Contractor or any subcontractor from paying higher rates or providing higher supplements than the minimum hereinbefore described; and nothing herein contained shall be construed to constitute a representation or guarantee by the Port Authority that the Contractor or any subcontractor can obtain

Electrician, Traffic Signal Electrician Technician Level I and Traffic Signal Electrician Technician Level II for the minimum hereinbefore described.

The Contractor's or Subcontractor's failure to comply with any provision of this numbered clause may be deemed as a substantial breach of this Contract.

5. Communications

The Contractor shall provide a cellular phone to each of its employees performing Work under this Contract, and each employee shall carry such device at all times while performing Work. Each employee's cellular phone must be operable, including having working voicemail (i.e., a voicemail that is setup to receive messages and is not full) and e-mail functionality, at all times while they are performing Work. All costs associated with communication devices shall be borne by the Contractor and shall not be separately billable to the Port Authority. The Contractor shall provide cellular phone numbers for each of its employees to the Manager within five (5) calendar days after the start of the Contract. The Contractor shall notify the Manager immediately if any such phone numbers change.

6. Personnel Requirements

The Contractor shall have a sufficient number of experienced Traffic Signal Electrician Technicians on staff to perform signal certification, maintenance, repair and inspection work under this Contract.

Traffic Signal Electrician Technicians working under this Contract must have a minimum of three (3) years of previous experience at the Journeyman level and must have a working knowledge of applicable electrical code in effect during the term of this Contract and any option and extension, if exercised. All electrical work must be performed under the supervision of a licensed master Electrician who is employed by the Contractor and who is licensed in the State Of New Jersey.

The Traffic Signal Electrician Technicians may be either Level I or Level II. Traffic Signal Electrician Technicians Level I specialize in and possess the technical skills and relevant experience in regard to the installation, maintenance, repair, troubleshooting and performance of modifications to traffic signal control equipment, wiring systems, outdoor overhead lighting, and other electrical devices and performs other related work as required.

Traffic Signal Electrician Technician Level II has had the proper training and is certified by the International Municipal Signal Association ("IMSA") as a Traffic Signal Electrician Level II and has a deep understanding of traffic signal operation, troubleshooting, repair and maintenance.

Technicians responsible for the traffic signal controller and conflict monitor certification testing tasks shall be trained to service the controllers and conflict monitors that exist at the facility, shall be an IMSA Certified Traffic Signal Electrician Technician Level II and have a minimum of (2) two years of verifiable field experience as Traffic Signal Electrician Technicians.

The Contractor must submit to the Manager a copy of individual IMSA certification, on an

annual basis, for each technician working on controllers, conflict monitors or in the controller cabinet under this Contract. The Contractor must also submit a copy of the Electrician(s) license(s) on an annual basis for each Electrician supervising or performing work under this Contract.

All licenses and certifications required to perform Work under this Contract must remain current and valid during the duration of this Contract.

All personnel assigned to the Contract and that will be working on the Facility will be required to undergo background screening and/or a security investigation in order to obtain a credential to access the facility, as described in Part II, Section 12, entitled "Personnel Assurance Program and Contractor Staff Background Screening." The Contractor will be obligated to replace any person who does not pass the security check. All personnel shall comply with all security regulations and display ID at all times. Failure to comply may result in removal from the Contract.

All personal assigned to this contract must display the company's name/logo on their outer most garment or uniform.

7. Respond to Emergency

The Contractor shall provide twenty-four (24) hour emergency service and shall provide the Port Authority with a landline phone number and a cellular number for communication. In the case of a traffic signal or controller issue deemed an emergency by the Manager, the Contractor will be required to respond with experienced traffic signal technicians, equipment and material necessary to start a repair within (4) four hours of the call. Emergency response will be compensated in accordance with the Pricing Sheets, Exhibit A - Labor, for the applicable hourly labor rates, Exhibit B – Parts, Material and Equipment for material markup, and Exhibit E – Maintenance of Traffic (MOT) Vehicle Compensation for MOT.

8. Management and Supervision

The Contractor is responsible for all aspects of supervision for the Contractor's employees, and any subcontractors and its employees, working under this Contract.

9. Parts

The Contractor shall supply all materials, supplies and equipment to perform yearly certification work under this Contract at no additional cost to the Port Authority. Any parts needed for repairs found during yearly certification work will be compensated in accordance to Exhibit B of the Pricing Sheets.

10. Annual Certification of Traffic Signal Intersections

Annual certification includes, but is not limited to, the performance of inspections and preventative maintenance tasks for specified intersection(s) on an annual basis to ensure the

electrical, operational and mechanical integrity of the Facility's traffic signals as more fully detailed below and in "Attachment A." Reference Attachment F for facility intersection locations.

Within thirty (30) calendar days of Contract award, the Contractor shall submit a schedule to perform the annual certification and preventative maintenance Work, and the date for the Work to be performed shall not exceed (45) forty-five days of the start of this Contract.

For the remaining years under this Contract, the annual certification and preventative maintenance Work shall be performed every (12) twelve months thereafter. Annual certification and preventative maintenance shall include, but not be limited to, all labor, equipment, vehicles and signage necessary to safely perform this task. Costs for all Maintenance of Traffic equipment (MOT) needed shall be included in the Pricing Sheets for this Work. No separate payment will be made for MOT associated with certification and preventative maintenance Work, nor for any testing equipment needed. Compensation will be pursuant to Exhibit E of the Pricing Sheets.

The Contractor shall inspect and clean each signal head, check wiring connections in each signal head and tighten same as needed, inspect associated brackets, inspect and clean signs, inspect poles, inspect pole bases and tighten all hardware as needed.

The Contractor shall inspect the intersection controllers and wiring connections and tighten as needed. The Contractor shall inspect and check that the intersections controller, conflict monitor, modems, video detection equipment, vehicle detectors, loops, switches, relays, Uninterruptible Power Supply (UPS) batteries, transfer switches and all associated equipment is working properly. The Contractor shall perform the following tests:

- a) Loop and Loop Detector Test:
The Work shall require testing of loops and loop detectors. The Contractor shall be required to perform the following tasks to identify failed loop detection components when directed by the Authority:
 - i. Open the loop wire to lead-in cable splice in the curbside pull/junction box and test the inductance, series resistance, ground leakage functions for each loop utilizing an ATSI Model HILT 9000 handheld inductive loop tester or an approved equal.
 - ii. All loop lead-in cables shall also be tested for continuity between the curbside pull box/junction box and the controller cabinet.
 - iii. Loops and lead-in cable that are demonstrated to be operable shall be re-spliced in accordance with Port Authority standards. A hard copy of all loop and lead-in test results must be provided to the Manager for each loop tested.
 - iv. Loops that are demonstrated to be inoperable will either be repaired by the Port Authority facility staff or the Contractor as directed by the Manager.

Compensation for labor and material for replacement of loops or loop detectors will be in accordance with "Exhibit A" and "Exhibit B" of the Pricing Sheets.

b) Conflict Monitor Test

Conflict monitor test shall include all Work and all other things necessary and required to test traffic signal conflict monitors as specified herein. The Port Authority will furnish one new conflict monitor assembly to initiate the conflict monitor testing process. Conflict monitors removed from Facility intersections shall be tested, utilizing factory-supplied program boards, in accordance with the below noted procedure and factory recommendations. Subsequent to successful testing, these units will be utilized in rotation to continue the prescribed process until all facility conflict monitors have been tested. Conflict monitors shall be tested in accordance to the following procedure utilizing an ATSI Model PCMT 2600 test unit or Port Authority approved equal. Upon completion of the testing process, the conflict monitor supplied by the Port Authority shall be returned to the Facility.

Testing Procedure:

The Contractor shall be required to maintain traffic during the following process to avoid motorist confusion. The Contractor shall submit a work plan to the Manager for approval, prior to starting test procedures.

The Contractor shall replace the existing conflict monitor with a previously tested unit, utilizing the existing intersection specific monitor program board at each location.

- i. Conflict monitor program board test - Force a green indication on conflicting phases to verify that the conflict is detected on all non-concurrent phases.
- ii. Absence of red test - Simulate the absence of red on each phase to verify that this condition is detected.
- iii. Controller power failure test- Simulate a controller power failure to verify that this condition is detected.

A hard copy and a digital file of the above conflict monitor test (using the model PCMT-2600 unit) must be provided to the Manager for each conflict monitor tested. digital files must be downloaded to a laptop computer in the field subsequent to each monitor test procedure. In addition, a hard copy of the conflict monitor test results shall also be provided to the Manager.

The Contractor shall provide all materials, tools and equipment that is required to test conflict monitors, as described herein, including the specified conflict monitor tester. All costs for conflict monitor testing including MOT shall be included in the Pricing Sheets for Exhibit D - Annual Certification. No separate payment will be made for purchasing/acquiring of required test equipment's herein.

The Contractor shall verify that the intersection is running as per Port Authority Traffic Engineering timing plans for each intersection.

The Contractor shall completely fill out Attachment A, noting any deficiencies and corrective action taken. An original of this list is to be supplied to the Manager.

The Contractor shall immediately notify the Manager of any deficiencies found while performing the annual certification. The Manager will determine if the repair should be made immediately. There will be no additional compensation for labor due to repairs made as a result of certification work findings. Compensation for material will be in accordance with "Exhibit B" of the Pricing Sheets.

The Contractor shall supply a schedule for performing the annual certification to the Manager and once approved by the Manager, the Contractor may proceed with Work within that schedule unless instructed otherwise by the Manager. Any changes to this schedule must be approved by the Manager. No Work on any of the traffic signals will be performed unless it is authorized verbally or in writing by the Manager.

11. Inspection of Traffic Controller Cabinet and Equipment

The Contractor shall inspect each traffic controller cabinet and all of the cabinets' contents for proper operation including controller, conflict monitor, vehicle detectors, video detection, relays, load switches, cabinet light, cabinet fan, filters and shall verify the intersection timing is correct as per the Port Authority's Traffic Engineering specification for the intersection. The Contractor shall perform a visual inspection from the ground of all poles, pole bases, signals, pushbuttons and supply the Port Authority with a written inspection report for each Intersection. The Contractor shall perform inspections six (6) months after each yearly certification work is completed for the duration of this Contract. See "Attachment B" for listing of the Facility's intersections.

12. Traffic Signal Repair

The Contractor shall supply all qualified labor and necessary materials to respond to any and all traffic signal repairs as requested by the Manager. Compensation for labor will be in accordance to "Exhibit A" of the Pricing Sheets and compensation for materials will be in accordance to "Exhibit B" of the Pricing Sheets.

13. Training for Port Authority Staff

The Contractor shall supply materials and labor to perform training sessions for the Port Authority's Electrical Maintenance staff on site at the Facility when requested by the Manager. The training shall consist of instruction on traffic controller cabinet maintenance, overview of traffic signal controller operation including operation of conflict monitor, vehicle detectors, video detection systems, UPS and transfer switches. This training will fall under the category of Project Work and the Contractor will be compensated in

accordance with "Exhibit C" of the Pricing Sheets. This training shall be conducted by an IMSA Certified Traffic Signal Electrician Technician Level II and will consist of a total of sixteen (16) hours of training during the Base Term of this Contract.

14. Work Authorization and Coordination

The Contractor shall coordinate all work activities with the Manager for authorization to perform any Work under this Contract. No Work shall commence unless it has been authorized in writing via letter or electronically via e-mail from the Manager. In the case of an emergency, the Manager may elect to notify the Contractor verbally by phone.

The Port Authority Electrical Maintenance Unit at Newark Liberty International Airport is responsible for the daily operation of the traffic signal system. Port Authority Facility electricians will be always be first responders to all traffic signal complaints.

From time to time, the Contractor shall be required to coordinate and interact with the Port Authority's Electrical Maintenance Unit and the Port Authority Traffic Engineering Group to address traffic signal issues and concerns as directed by the Manager.

15. Maintenance of Traffic

The Contractor shall furnish all required MOT equipment necessary and required when performing Work under this Contract.

The Contractor shall be required to strictly adhere to Port Authority Operations and Maintenance (O&M) Standard 20 for typical roadway work area protection procedures (see Attachment C).

All vehicles used in performance of Work in the roadways shall be equipped with warning lights, safety signs, safety cones and other equipment necessary for protection of Facility patrons and workers.

Compensation for attenuator backup vehicle and other necessary equipment for roadway work, other than annual certification, will be compensated in accordance to Exhibit "A" (Labor) and Exhibit "E" (MOT Vehicle Compensation) of the Pricing Sheets.

For any work areas that require site-specific MOT plans, those plans will be provided by Port Authority Traffic Engineering. The Contractor shall at all times conduct operations to ensure the convenience of all travelers and the abutting property owners and their safety as well as the safety of his own employees. Such conduct shall include, but not be limited to, ensuring that all materials and equipment are removed from the work site during non-working hours, or are protected in such manner that they shall not constitute a hazard.

16. Lane Closure Restrictions

Peak hour lane closure restrictions may apply for annual certification work; however, this Work will be scheduled during the daytime on non-Holiday weekdays. The Contractor must adhere to O&M standard 20, Road Work Area Protection, Attachment C.

17. Records

In addition to record keeping requirements outlined elsewhere in this Contract, the Contractor shall maintain complete and accurate records in hard copy and electronic file format, acceptable to and approved by the Manager, of all maintenance, repair, annual certifications and any other events relating to and performed on the traffic signals under this Contract. The project records, files, and equipment owned by the Port Authority shall be delivered to the Manager with submittal of the final invoice by the Contractor. The Port Authority shall not render final payment until all conditions of the Contract have been met.

18. Salvage Equipment

The Port Authority shall retain the rights to all traffic signal equipment. The Contractor shall deliver components of salvaged equipment to a Port Authority designated site at the Facility when directed by the Manager.

19. Supply and Delivery of Materials

The Contractor must supply and deliver various traffic signal-related materials including, but not limited to traffic signal fixtures, traffic signal poles, traffic signal controllers, conflict monitors, vehicle detectors, and all other traffic signal material as per the Manager's request. Compensation for these materials will be in accordance with "Exhibit B" of the Pricing Sheets.

20. Project Work

The Contract includes Project Work that the Port Authority may or may not elect to perform. Project Work may include but not be limited reflective signal back plates, signal head replacement and Port Authority Staff Training. If the Port Authority elects for the Contractor to perform Project Work, it will be compensated in accordance with "Exhibit C" of the Pricing Sheets. All Traffic signal equipment installed under this contract shall be in accordance with Attachment D and Attachment E.

21. Inventories of System Data

The Port Authority will provide the Contractor with Asset Data Specification ("ADS") templates to include, but not limited to, System, Subsystem, Assets, Components, and Spare Parts, that the Contractor shall be required to populate with required asset information for each existing piece of equipment and update as needed when equipment is replaced. Contractor is required to complete the initial ADS templates within sixty (60) calendar days after receiving the templates from the Port Authority. Contractor is required, at no cost to the Port Authority, to provide updated ADS templates within thirty (30) calendar days after assets and/or components are replaced.

Additionally, the Contractor shall develop job plans and safety plans that outline the required step-by-step inspection and maintenance activities for equipment specified herein. The Contractor shall submit completed job plan and safety plan templates in the required file format to the Port Authority within sixty (60) calendar days of receipt of the templates from the Port Authority. Naming convention rules (i.e. acronyms) for asset, components, spare parts, job plans, and safety plans, will be supplied by the Port Authority to the Contractor and shall be followed by the Contractor when populating templates. Compensation will be in accordance with the "All-Inclusive Unit Price" in "Exhibit F" of the Pricing Sheets.

22. Safety Provisions

In the performance of this Contract, the Contractor shall exercise every precaution to prevent damage to property and injuries to employees of the Contractor, other workers at the Facility, Port Authority employees, and members of the general public. The Contractor shall, at its own expense, provide such temporary structures, place such watch persons, design and erect such barricades, fences and railings, give such warnings, display such lights, signals and signs, and take such precautions as may be necessary. The Contractor shall create a Health & Safety Plan ("HASP") within five (5) business days of the commencement date of this Contract for review and approval by the Manager. The Contractor is responsible for posting the HASP in a clearly visible location at the worker's gathering location on the job site. The Contractor's staff must be adequately trained to work on live electrical equipment and must use all approved Personnel Protective Equipment ("PPE") to protect themselves from hazards such as, but not limited to, electrical shock, and arc flash hazards in accordance with all applicable OSHA rules, regulations, and guidelines.

The Contractor shall promptly report to the Manager, in writing, all accidents whatsoever arising out of or in connection with the performance of Work pursuant to the Contract, whether on or adjacent to the site of the work, which result in death, injuries or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damage is caused, the accident shall be reported immediately by telephone to the Manager.

23. Safe Vehicle Operation

Contractor shall perform services in compliance with all Federal Motor Carrier Safety Administration ("FMCSA") regulations. The Contractor shall have in place an overall safety program, a driver's training program, and vehicle maintenance program. Upon request of the Port Authority, the Contractor must provide a written description of the aforementioned safety, training, and maintenance programs, or any other information relating to safety, including but not limited to, results of inspections and actions taken to remedy safety issues and violations. The Port Authority may evaluate the Contractor's overall safety program, with due regard to the services being performed. The Port Authority reserves the right to request changes in a Contractor's safety, training, and maintenance program to assure that they are rigorous and effective. In the event the Contractor is subject of an investigation, compliance review, and/or enforcement action related to safety, the Contractor must fully disclose said investigation, compliance review, and/or enforcement action(s) in accordance with the Standard Terms and Conditions, Part III.

24. Future Equipment

It is currently anticipated, but not guaranteed, that the equipment listed in Exhibit G, will become part of this Contract during the base term. Such services shall be considered as integral part of the Contract as well as an integral part of the bid comparison. This equipment will become part of the Contract in it's entirety.

Attachment A
Traffic Signal Certification Preventive Maintenance Checklist (8/2019)

Facility: _____

Date: _____

Intersection #: _____

Start Time: _____

Location: _____

Finish Time: _____

Contractor: _____

Signal Technician: _____

OK	TASK	DEFICIENCY NOTED	DEFICIENCY CORRECTED
Cabinet			
	Replace Cabinet filter.		
	Check operation of fan and thermostat		
	Vacuum control cabinet to remove all dust and debris		
	Check operation of cabinet light and switch; replace if necessary		
	Check bonding and resistance to ground rod, clean and re-tighten as required		
	Measure and record incoming AC service voltage at input side of mercury/solid state relay: (V=_____)		
	Check and tighten all terminal connections		
	Check all Police Functions: Flash Switch and Manual Control		
	Test & reset ground fault receptacles, circuit breakers and all equipment fuses, replace as required		
	Check radio interference filter and surge arrestor, replace as required		
	Lubricate hinges and locks		
	Tighten anchor bolts as required		
	Replace dust seal as required for all conduit entrances		
	Check for water accumulation in cabinet, seal as required		
	Check the perimeter of foundation mounts cabinets. Seal around cabinet base with silicone sealant as required		
	Verify that all spare conductors are landed on spare terminal blocks or taped off		
	Test and reset GFCI receptacle on power distribution panel; replace as required		
	Check door gaskets and realign or replace as required		
Vehicle and Pedestrian Signal Heads			
	Check safety chains to make sure they are securely fastened		
	Check signal and mast arm sign mounting hardware re-tighten as required		
	Check for cracked and /or damaged mounting brackets		
	Check for cracked and/or missing screws on signal housings, visors and back plates. Replace / re-tighten as required.		
	Check bushings on cable outlet and universal hangers; replace as required		

Attachment A
Traffic Signal Certification Preventive Maintenance Checklist (8/2019)

Facility: _____

Date: _____

Intersection #: _____

Start Time: _____

Location: _____

Finish Time: _____

Contractor: _____

Signal Technician: _____

OK	TASK	DEFICIENCY NOTED	DEFICIENCY CORRECTED
	Check terminal block connections and re-tighten as required		
	Check signal cable for nicks or damage inside signal head and weather head		
	Check serrated rings in signal heads for damage and re-tighten as required. Missing serrated rings shall be reported to PANYNJ		
	Clean back plates and check for cracks or damage		
	Check and clean lenses, visors and signs		
	Check gaskets for water infiltration and deterioration		
	Check signal head doors, wing nuts, hinges, visors & louvers (if Installed)		
	Inspect traffic signal housing for cracks or damage		
	Check Vehicular and Pedestrian heads LED module for failures. Notify PANYNJ		
	Relamp all incandescent signals and clean reflectors {Excludes LED & Optically programmed}. Notify PANYNJ of all existing incandescent lamp locations.		
	Re-lamp sealed beams for programmed signal heads.		
	Measure and record vertical clearance for span wire mounted signals (roadway to bottom of signal).		
	Check alignment of vehicle & pedestrian heads for the approach they serve, reorient as required.		
	Check for branches & foliage obstructing signal indication. Report to PANYNJ.		
Pushbuttons			
	Check pushbutton and sign condition. Re-tighten / replace hardware as required.		
	Test pushbuttons for proper operation		
	Check for damage to paint. Touch up as required.		
Poles, Mast Arms & Span Wires			
	Check poles, transformer bases and arms for wear and/or damage.		
	Adjust alignment & tighten mast arms to conform with approved drawings located in the cabinet.		
	Check and tighten bolts between transformer base and foundation and shoe base.		
	Check wire at outlets for chafing, ensure drip loop is properly installed; report issues to PANYNJ for action.		
	Check paint condition and/or corrosion and notify PANYNJ.		

Attachment A

Traffic Signal Certification Preventive Maintenance Checklist (8/2019)

Facility: _____

Date: _____

Intersection #: _____

Start Time: _____

Location: _____

Finish Time: _____

Contractor: _____

Signal Technician: _____

OK	TASK	DEFICIENCY NOTED	DEFICIENCY CORRECTED
	Check for missing pole caps and mast arm end caps; replace as required		
	Replace missing pole base access door		
	Re-tighten / replace bolt cover hardware		
	Check that each pole is electrically bonded. Install / replace bonding as required.		
	Visually inspect pole condition. Check for cracks and / or checks (Wood Poles)		
	Clear drain holes in pole bases if present		
	Check all splices in pole bases and on span wire. Re-splice as required.		
	Check condition of varmint screen at base of pole if present. Repair / replace as required.		
	Visually check the condition of traffic signal cable for dry rot, nicks, cuts deterioration.		
	Check signal cable on span wire for nicks / damage and ensure that cables are properly secured to span.		
	Check foundations for damage or deterioration.		
	Check condition of strain vises, if applicable.		
	Visually inspect each upper and lower tether span wire for damage or deterioration.		
	Visually inspect each upper and lower tether span wire for excess sag; report issues to PANYNJ for action.		
	Inspect all connecting span wire hardware; report issues to PANYNJ for action.		
	Inspect guy anchors for proper attachment and / or damage		
Detection			
	Perform visual inspection of all loop detectors and roadway areas.		
	Check operation of loop amplifiers & tune as required ¹		
	Check all loop detectors to verify that vehicles are being detected. Test loops as required ¹		
	Check amplifier connections for tightness		
	Check microwave detectors to verify that vehicles are detected in all zones, tune as required.		
	Clean and inspect video detection camera housings and lenses		
	Check video detectors to verify that vehicles are detected in all target zones, tune as required.		
	Check camera mounting hardware to verify that it is secure, adjust as necessary.		

Attachment A
Traffic Signal Certification Preventive Maintenance Checklist (8/2019)

Facility: _____

Date: _____

Intersection #: _____

Start Time: _____

Location: _____

Finish Time: _____

Contractor: _____

Signal Technician: _____

OK	TASK	DEFICIENCY NOTED	DEFICIENCY CORRECTED
	Note and record make, model, firm ware version, and serial number for controller, conflict monitors and other major components.		
	Check and verify signal timing with the timing plan located in the cabinet and time, day & daylight savings settings.		
	Check conflict monitor by actual conflicts with recording conflict monitor tester ²		
	Check and verify communications to master controller and ID number of controller.		
	Verify the time settings in the local to match the master.		
	Verify vehicle and pedestrian calls.		
	Check and verify that central to local controller communications is operational. Report communications failures to PANYNJ.		
	Check controller to verify it operates in the mode selected by the supervisory master.		
	Disconnect from the master supervisory system and check for "free" or backup operation.		
	Check load switches, flasher and relays for proper fit into socket.		
	Wipe dust off controller, detectors, and auxiliary equipment.		
	Check indicator lamps on controller, loop amplifiers and other electronics in cabinet.		
	Check for electrical wiring plan, Traffic Signal sequencing plan and timing chart, notify PANYNJ is missing.		
	Check and verify operation of UPS equipment. Restore operation as required.		
	Verify UPS automatic transfer switch operation.		
	Verify UPS incoming line voltage.		
	Verify UPS DC output batteries.		
	Verify UPS AC output on inverter.		
	Check UPS electrical connections.		
	Test UPS system via simulated power outage at cabinet.		
Miscellaneous Tasks			
	Check splice boxes and pull boxes for proper grade.		
	Check splice box & pull box ground rod, clean and tighten conduit clamps as required.		

Attachment A

Traffic Signal Certification Preventive Maintenance Checklist (8/2019)

Facility: _____

Date: _____

Intersection #: _____

Start Time: _____

Location: _____

Finish Time: _____

Contractor: _____

Signal Technician: _____

OK	TASK	DEFICIENCY NOTED	DEFICIENCY CORRECTED
	Remove foreign material from junction boxes, pull boxes & hand holes.		
	Check the integrity of splices. Replace with waterproof splice kits as required.		
Other			

Signature: _____ Date: _____

- 1 Malfunctioning loop amplifiers shall be temporarily replaced by an amplifier of know quality to isolate the problem. Replacement of amplifiers that are determined to be inoperable shall be performed only when directed by PANYNJ. Only loops that are determined to be inoperable shall be tested in accordance with the specifications when directed by the Manager.
- 2 All conflict monitors shall be tested in accordance with the provisions in the specifications.
- 3 In order to insure that all maintenance tasks have been performed and that all deficiencies have been identified and/or corrected, each line must be filled out and this page must be signed by the inspecting technician and the original copy shall be provided to the Facility Electrical Maintenance Unit.

Attachment B - Facility Intersection Listing

Signalized Intersections

Signalized Intersections		Controller											
Intersection Number	Facility Area	Intersection Name	Model	Firmware Version	Conflict Monitor	UPS	Loop Detection Equipment	Video Detection Equipment	Other Equipment	Number of Pedestrian Signal Heads	Number of Vehicle Signal Heads (3 Sections)	Number of Vehicular Signal Heads (4 Section)	Number of Vehicular Signal Heads (5 Section)
EWR-TA-302	Terminal A	Route 119 Ramp to Parking and South Service Road Merge	Peak 3000E Siemens M60		EDI	NO	NONE	YES 2 Cameras	NONE	4	4		
EWR-TA-303	Terminal A	Terminal A HOV Roadway Pedestrian Crossing 1	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	5		
EWR-TA-304	Terminal A	Terminal A HOV Roadway Pedestrian Crossing 2	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	5		
EWR-TB-310	Terminal B	Terminal B HOV Roadway Pedestrian Crossing 1	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	6		
EWR-TB-311	Terminal B	Terminal B HOV Roadway Pedestrian Crossing 2	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	6		
EWR-TB-314	Terminal B	Terminal B HOV CTA/Parking Road Red. Crosswalk 1	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	5		
EWR-TB-315	Terminal B	Terminal B HOV CTA/Parking Road Red. Crosswalk 2	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	5		
EWR-TC-319	Terminal C	Terminal C HOV Pedestrian Crossing 1	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	6		
EWR-TC-320	Terminal C	Terminal C HOV Pedestrian Crossing 2	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	6		
EWR-TC-321	Terminal C	Terminal C LOV Pedestrian Crossing 1	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	6		
EWR-TC-322	Terminal C	Terminal C LOV Pedestrian Crossing 2	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	NO	GPS CLOCK	4	6		
EWR-CA-328	Central Area	Lindbergh Road and Earhart Drive	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	YES 2 Cameras	GPS CLOCK	4	9		
EWR-CA-329	Central Area	Lindbergh Road and Hertz Driveway	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	YES 1 Camera	GPS CLOCK	0	9	2	
EWR-CA-335	Central Area	Pitcairn Road and Martin Road	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	YES 2 Cameras	GPS CLOCK	2	11		
EWR-CA-341	Central Area	Brewster Road and Lindbergh Road	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	YES 3 Cameras	GPS CLOCK	0	15		
EWR-CA-342	Central Area	Brewster Road and Pitcairn Road	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	YES 1 Camera	GPS CLOCK	0	13		
EWR-NA-343	North Area	Brewster Road and I-78 Entrance Ramp	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	Camera	GPS CLOCK	0	8		
EWR-NA-345	North Area	Brewster Road and Entrance from I-89 North	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	YES 3 Cameras	GPS CLOCK	0	11		
EWR-NA-346	North Area	Brewster Road and Conrad Road	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	YES	NONE	YES 4 Cameras	None	4	7	4	
EWR-NA-347	North Area	Brewster Road and Port Street Connector	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	YES	NONE	YES 4 Cameras	GPS CLOCK	0	19		
EWR-NA-348	North Area	Port Street and Port Street Connector (Entrance to P6)	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	YES	NONE	YES 4 Cameras	GPS CLOCK	2	15	4	
EWR-SA-354	South Area	Earhart Drive and Wiley Post Road	8133-0004-099 Siemens M60	4.58d	SSM-12LEC EDI	NO	NONE	YES	GPS CLOCK	4	13		2
										56	190	6	6
Future Equipment													
G1	Terminal B	Terminal B HOV Roadway Pedestrian Crossing 1 (non-operational)	Siemens M60	4.58d	EDI	NO	NONE	NO	GPS CLOCK	4	4		
G2	Terminal B	Terminal B HOV Roadway Pedestrian Crossing 2 (non-Operational)	Siemens M60	4.58d	EDI	NO	NONE	NO	GPS CLOCK	4	4		
G3	TBD	Earhart Drive [Metrolinx Road and Earhart Drive]	TBD	TBD	TBD	YES	NO	YES	GPS CLOCK	4	7		2

ROADWAY WORK AREA PROTECTION

I. INTRODUCTION

This standard establishes the typical methods and procedures for Port Authority and Contractor work crews to perform short-term stationary work on Port Authority roadways. (Up to one day's work schedule is considered "short-term stationary" although it may be necessary to re-establish the protection schemes on following days.) **Longer duration work, which may involve the installation of concrete barrier, traffic detours, etc., require special study by the Chief Traffic Engineer's Office, which should be contacted to provide appropriate traffic control plans before the work is started.**

All work should be coordinated with regularly scheduled lane closures, and should be coordinated with Facility Operations and Police to assure adequate protection of the work area and motorists. The Facility Communications Center must be notified of the location and type of work.

II. SHORT-TERM STATIONARY WORK AREA PROTECTION SCHEMES

Four typical roadway work area protection schemes are illustrated. These schemes will guide work crews in the required procedures for establishing the following protected work areas:

- closure of left lane
- closure of right lane
- closure of center lane (one way roadways only)
- closure of two adjacent lanes (one way roadways only)



III. TRAFFIC CONTROL PLANNING

The following should be considered by the Facility Maintenance Supervisor and/or the Resident Engineer's Office in consultation with Facility Operations prior to the beginning of work:

1. The possibility of fully closing the roadway and providing a detour route, to minimize worker exposure to traffic.
2. Other alternatives, such as doing the work during off-peak periods, or closing additional (adjacent) lanes to provide buffer space for workers.
3. Utilizing a rolling roadblock to hold traffic for brief durations, such as during the setup or removal of traffic control devices, to minimize worker exposure.
4. Other measures, such as tighter cone spacing, utilization of variable message signs, and/or police presence may be used, if there are concerns with sight distance limitations, nighttime visibility, excessive traffic speeds, roadway geometry, etc.
5. For moving operations or for brief duration work, setting up a reduced number of warning signs and other devices can minimize worker exposure to traffic. Police assistance and/or additional back-up trucks should be considered in these situations.
6. For work involving excavations adjacent to active traffic lanes, concrete barrier may be warranted. (Contact the Chief Traffic Engineer's Office.)

IV. USE OF TRAFFIC CONTROL DEVICES

A. General

Traffic control devices shall be properly installed prior to the commencement of construction or maintenance operations, and shall be monitored and properly maintained. The devices shall remain in place as long as work is in progress, and shall be immediately removed thereafter. Where operations are performed in stages, only those devices that apply to the current stage shall be in place. Signs not applicable to the current stage of work shall be removed, covered, or turned so as not to be seen by oncoming traffic. Signs or other traffic control devices shall not be located in such a manner that would mislead or misdirect motorists; obstruct or interfere with motorists' views of approaching, merging, or intersecting traffic; or obstruct existing permanent signs. All traffic control devices must possess retro-reflective properties (i.e. with high intensity grade sheeting) or be illuminated.

B. Trailer Mounted Flashing Arrow

This sign consists of lights displayed in the form of an arrow, or in "Caution Mode". The displayed arrow lights flash to indicate the direction of the required traffic movement when a lane closure occurs. (See work area protection schemes for illustration.)

C. Back-up Truck with Impact Attenuator and Flashing Arrow

Back-up trucks shall have a nominal actual weight of 15,000 lbs. with nominal 24,000 lbs. gross vehicle weight registration, and rear-most wheels situated close to the rear of the truck body. Standard "ICC"-type rear bumpers are not an acceptable substitute for the required rear wheel location. In addition, the truck(s) shall be equipped with:

- standard flashing emergency hazard lights (parking and taillights).
- sealed-beam rotating yellow warning light, seven to ten feet above the roadway, and located so as to be visually unobstructed by any part of the truck body, load or equipment.
- truck or trailer mounted impact attenuator "TMA" unit, as manufactured by Energy Absorption Systems, Inc., Chicago, Ill, or approved equal. *Units purchased after January 1, 2010 must meet NCHRP 350 test level 3.*
- Flashing arrow: display "Caution Mode" when the back-up truck is preceded by a trailer-mounted flashing arrow. When not preceded by a trailer-mounted flashing arrow, the truck-mounted flashing arrow must display the appropriate arrow direction.

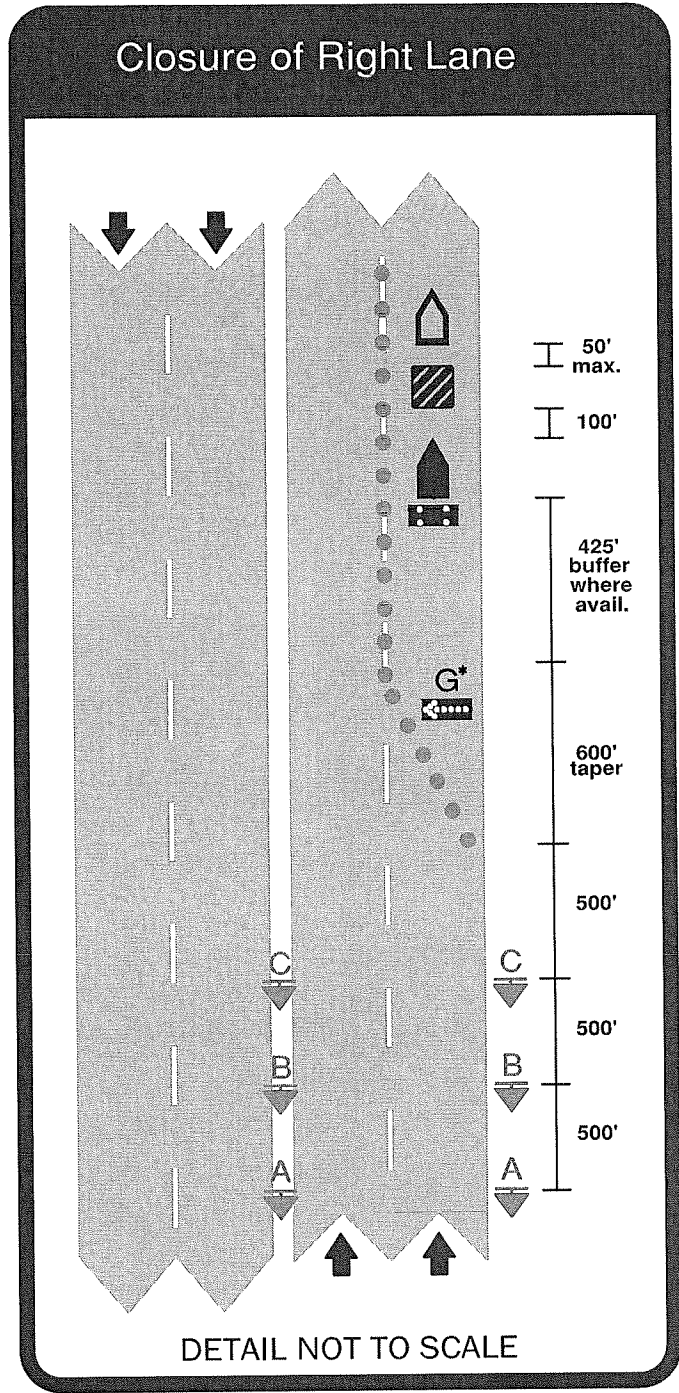
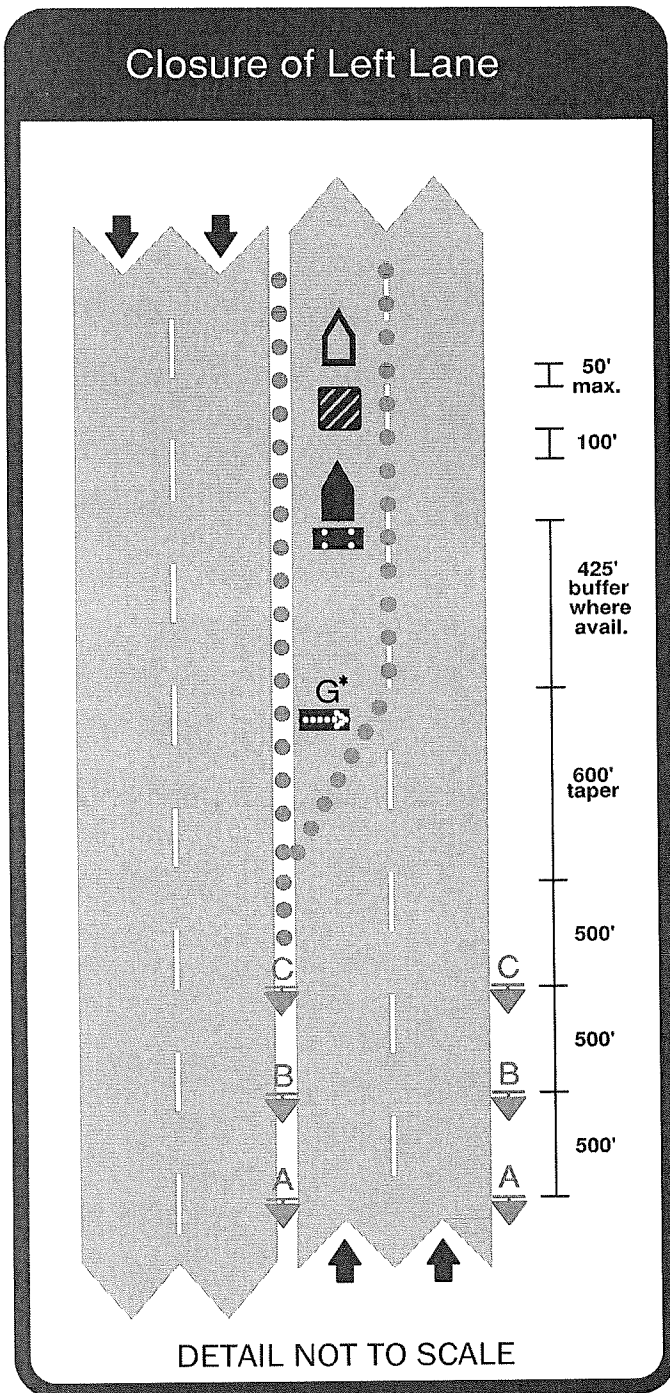
V. RESPONSIBILITIES

1. Facility management staff shall assure that the work crews adhere, as a minimum, to this standard.
2. The Facility may contact the Chief Traffic Engineer's Office to issue a request to the Port Authority Sign Shop to supply the necessary signs when they are not available at the Facility.
3. The Chief Traffic Engineer's Office will design roadway traffic control plans for special conditions and long-term stationary work.
4. If Contractor services are required, the Contractor shall supply and maintain the signs, traffic control devices, barricades, and other equipment as noted in the Contract Documents.

This Standard shows the recommended traffic control devices required, but it is not a substitute for good judgment.



Short Term Stationary Typical Roadway Work Area Protection



Legend

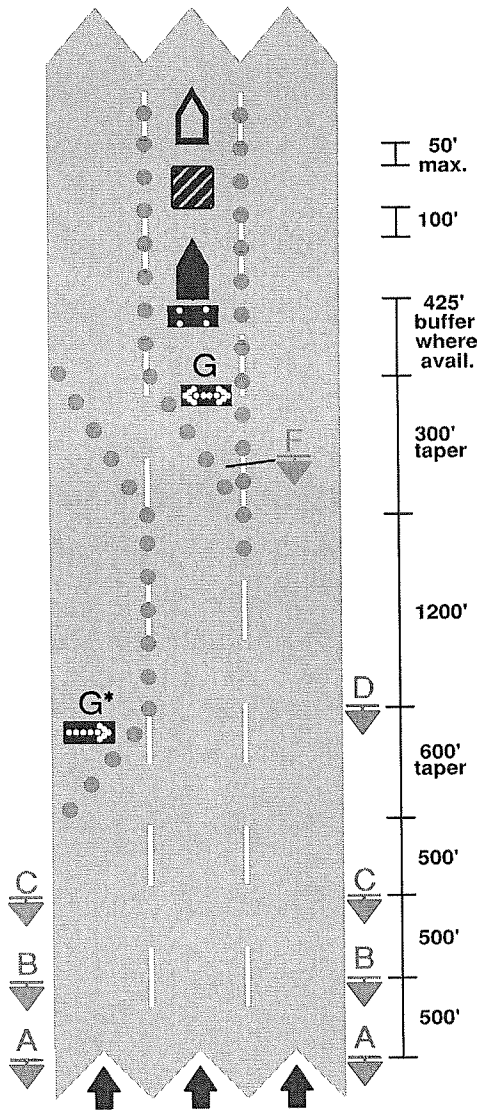
see other side for notes

A ROAD WORK AHEAD 48" x 48" sign W20-1	D CENTER LANE CLOSED AHEAD 48" x 48" sign W9-3a	28" high orange traffic cones at 25' intervals	back-up truck with impact attenuator and flashing warning lights in caution mode
B LEFT or RIGHT LANE CLOSED XXX FT 48" x 48" sign W20-5	E 2 RIGHT LANES CLOSED XXX FT 48" x 48" sign W20-5a	G flashing arrow 8' X 4' sign (set on low intensity at night) Arrow points to open lane	* If an 8' wide min. shoulder is present, place the flashing arrow in the shoulder at the beginning of the 600 ft. taper, preceded by a 200 ft. tapered cone line (to close the shoulder)
C LEFT or RIGHT LANE CLOSED XXX FT 48" x 48" sign W4-2	F 48" x 48" sign W12-1	work area	work vehicle with flashing warning lights (Impact attenuator not required on this vehicle)



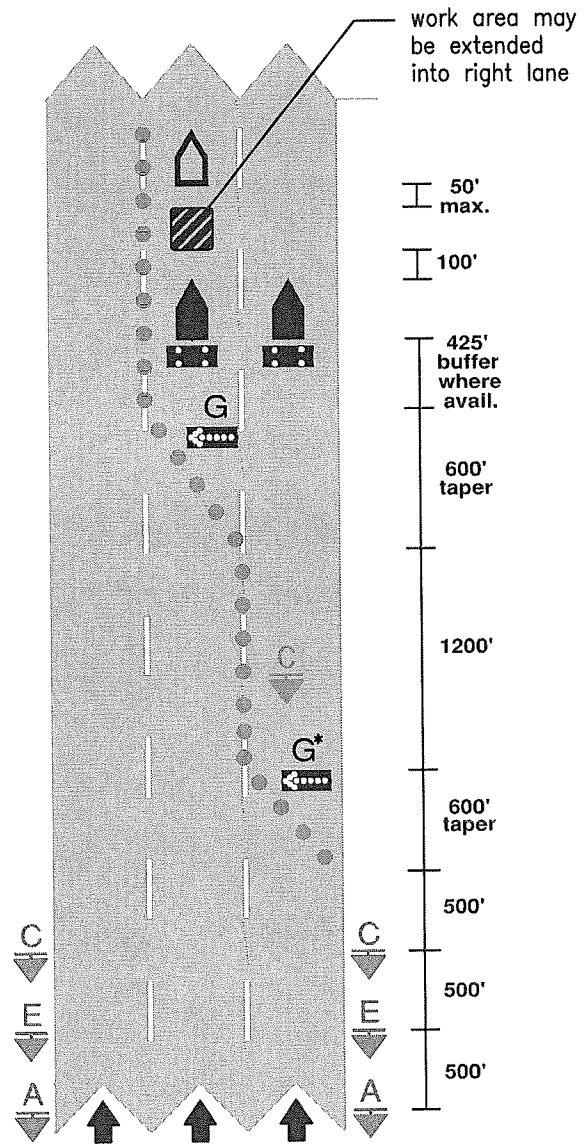
Short Term Stationary Typical Roadway Work Area Protection

Closure Of Center Lane



DETAIL NOT TO SCALE

Closure Of Two Adjacent Lanes



DETAIL NOT TO SCALE

Notes

see other side for legend

1. Notify the Communications Center of the location and type of work.
2. During staged construction, remove or otherwise cover any traffic control devices that do not apply to the current stage.
3. All fixed-message signs shall be black on reflective fluorescent orange.
4. Place Signs A, B, C, and E on both sides of roadway where possible.
5. Where travel speeds are 30MPH or less, 500' spacing may be reduced to 200', 600' taper reduced to 200', 1200' cone line reduced to 600', and 425' buffer reduced to 200'.
6. Median cone line not required on roadways physically separated by raised barrier or medians over 12' wide.
7. For longer duration work or special conditions, contact the Chief Traffic Engineer's Office for special traffic control plans.



Attachment D

THE PORT AUTHORITY OF NY & NJ

Traffic Standard Details

TD 20 SIGNALS

No.	Date	Revision	Approved
-----	------	----------	----------

DEPUTY DIRECTOR - DESIGN	_____	DATE	_____
PROGRAM DIRECTOR	_____	DATE	_____
CHIEF ENGINEER	_____	DATE	_____

Drawing Number **TD20.00**
PDS

INDEX

SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE
1	TD20.00	COVER SHEET
2	TD20.IND	INDEX OF DRAWINGS
3	TD20.01	TYPICAL ALUMINUM TRAFFIC SIGNAL INSTALLATION
4	TD20.02	ALUMINUM TRAFFIC SIGNAL POLE FOUNDATION (SFT, SPF, SFK)
5	TD20.03	TYPE "S-A" STEEL TRAFFIC SIGNAL POLE ARM AND BASE (1 of 2)
6	TD20.04	TYPE "S-A" STEEL TRAFFIC SIGNAL POLE ARM AND BASE (2 of 2)
7	TD20.05	TYPE "STF-A" STEEL TRAFFIC SIGNAL POLE FOUNDATION
8	TD20.06	TYPE "S-B" STEEL TRAFFIC SIGNAL POLE ARM AND BASE (1 of 2)
9	TD20.07	TYPE "S-B" STEEL TRAFFIC SIGNAL POLE ARM AND BASE (2 of 2)
10	TD20.08	TYPE "STF-B" STEEL TRAFFIC SIGNAL POLE FOUNDATION
11	TD20.09	TYPE "T" AND "K" POLES ELEVATION, SHOW, BASE, CABLE OUTLET, AND CAP
12	TD20.10	ALUMINUM "T" POLE TRANSFORMER BASE
13	TD20.11	ALUMINUM "K" POLE TRANSFORMER BASE
14	TD20.12	"T" POLE TRUSS TYPE MAST ARM, CLAMP AND END
15	TD20.13	"K" POLE TRUSS TYPE MAST ARM, CLAMP AND END
16	TD20.14	TRAFFIC SIGNAL PEDESTAL ASSEMBLY
17	TD20.15	POLE CLAMP MOUNTING ASSEMBLIES
18	TD20.16	SIGNAL HEAD POLE TOP AND BRACKET MOUNTING
19	TD20.17	UNIVERSAL JOINT WIRE OUTLET, ELEVATOR PLUMBIZER, AND MAST ARM SLIP FITTER
20	TD20.18	SIGNAL HEAD MID-MAST ARM AND SAFETY CHAIN MOUNTING
21	TD20.19	HOLLOW SPIDER ASSEMBLY
22	TD20.20	SIGNAL HEADS AND BACKPLATES
23	TD20.21	OVERHEAD MAST ARM SWING SIGN BRACKET
24	TD20.22	SPAN WIRE MOUNTED INSTALLATION
25	TD20.23	SPAN WIRE TRAFFIC SIGNAL POLE FOUNDATION
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28	TD20.26	TEMPORARY SPAN WIRE SIGNAL INSTALLATION (2 of 2)
29	TD20.27	TEMPORARY MAST ARM AND PEDESTAL
30	TD20.28	PULL BOX FRAME, COVER, AND LOOP DETECTOR SPLICE BOX
31	TD20.29	CONDUIT INSTALLATION
32	TD20.30	CABINET FOUNDATIONS (P, P-SME, SME)
33	TD20.31	CABINET FOUNDATION P-MC AND TEE DRAIN
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35	TD20.33	CONDUIT RISER AT UTILITY POLE AND CABINET FOUNDATION MCF
36	TD20.34	P CABINET LAYOUT
37	TD20.35	CONTROLLER CABINET SKIRT FOR UPS
38	TD20.36	SIDE-MOUNT ENCLOSURE (SME) AND SKIRT FOR UPS
39	TD20.37	ABOVE-GROUND CONTROLLER CABINET CONNECTION DETAIL AND UPS P CABINET LAYOUT
40	TD20.38	METER CABINET
41	TD20.39	METER CABINET SKIRT
42	TD20.40	LOOP DETECTOR INSTALLATION
43	TD20.41	CABLE IDENTIFICATION TAGS
44	TD20.42	VIDEO CAMERA MOUNTING DETAILS
45	TD20.43	RED SIGNAL-AHEAD SIGN

No.	Date	Revision	Approved
			ENGINEERING DEPARTMENT
			PANNJ
			Traffic Standard
			Details

TRAFFIC
Title
TRAFFIC SIGNALS
INDEX

Designed by
Drawn by
Checked by
Date
AUGUST 2018
Contract Number
Drawings Number
TD20.IND
P/21

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- NOTES:
- ALL ALUMINUM SIGNAL STRUCTURE ELEMENTS SHALL BE DESIGNED IN ACCORDANCE WITH THE MAST, MAST ARM AND MAST ARM SUPPORTS FOR HIGHWAY SIGNALS, STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNALS, AND TRAFFIC SIGNALS DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
 - DESIGN LIFE: 25 YEARS
 - BASIC WIND SPEED: 110 MPH (IN ACCORDANCE WITH SECTION 3.8)
 - FATIGUE DESIGN SHALL BE WAIVED
 - FATIGUE DESIGN SHALL BE WAIVED
 - SIGNAL ARM, POLE BASE, CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOADS COMBINATIONS SHOWN IN THE CONTRACT PLANS AS A MINIMUM, THE DESIGN LOAD SHALL BE:
 - 1.1 10' WIND LOAD
 - 1.2 30' WIND LOAD
 - 1.3 30' WIND LOAD
 - 1.4 WIND 3 SECTION SIGNAL LOCATED AT 14'-0" (FREE SWINGING)
 - 1.5 WIND 3 SECTION SIGNAL LOCATED AT 8'-0" (FREE SWINGING)
 - 1.6 WIND 3 SECTION SIGNAL LOCATED AT 4'-0" (FIX MOUNT)
 - 1.7 10' WIND LOAD
 - 1.8 WIND 3 SECTION SIGNAL LOCATED AT 19'-0" (FREE SWINGING)
 - 1.9 WIND 3 SECTION SIGNAL LOCATED AT 14'-0" (FREE SWINGING)
 - 1.10 WIND 3 SECTION SIGNAL LOCATED AT 8'-0" (FREE SWINGING)
 - 1.11 WIND 3 SECTION SIGNAL LOCATED AT 4'-0" (FIX MOUNT)
 - 1.12 WIND 3 SECTION SIGNAL LOCATED AT 12'-0" (FIX MOUNT)

DESIGN LOAD DOES NOT INCLUDE EFFECTS OF BACKLATES ON SIGNAL HEADS. IF DESIGN LOAD DOES NOT INCLUDE EFFECTS OF BACKLATES, ADDITIONAL LOADS AND SHALL BE INCLUDED IN THE DESIGN OF THE STRUCTURE.

THE ALUMINUM SIGNAL STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE MANUFACTURER SHALL DESIGN AND FABRICATE ALL ALUMINUM SIGNAL STRUCTURE AND SIGNAL HEADS AND DETAILS TO MEET ALL APPLICABLE AND COMPLICATING REQUIREMENTS AND SHALL VERIFY, CONFIRM AND/OR RE-DESIGN IF REQUIRED STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.

MINIMUM VERTICAL CLEARANCE SHALL BE AS NOTED IN DESIGN TABLE OR ON CONTRACT DRAWINGS.

CLAMP MOUNTED TRAFFIC SIGNAL HEAD HEIGHT SHALL BE 17 FEET.

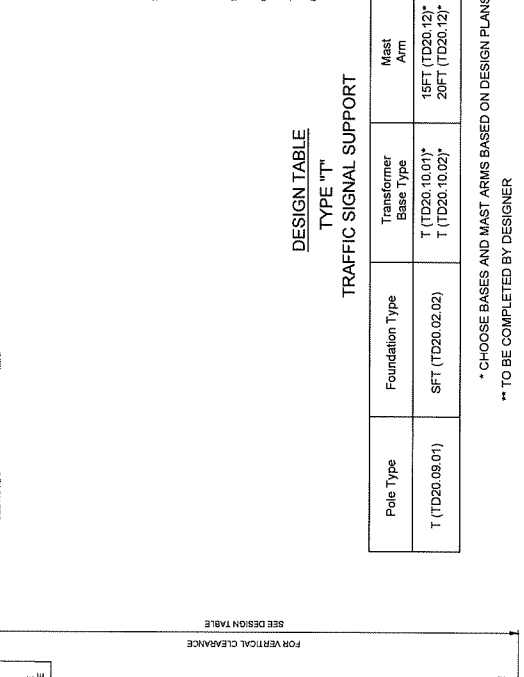
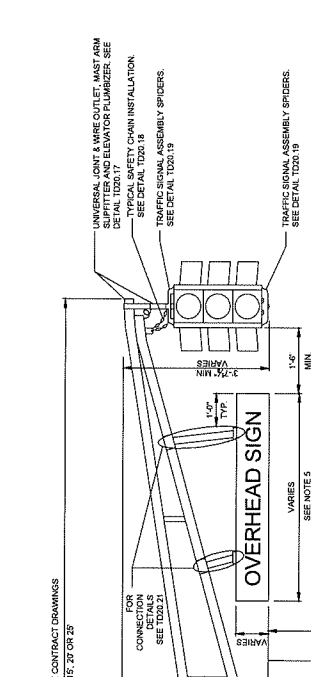
FOR REGRESTRAIN SIGNAL HEADS, THE HEIGHT IS 8 FEET UNLESS OTHERWISE NOTED IN DESIGN TABLE OR ON CONTRACT DRAWINGS.

OVERHEAD SIGNS SHALL BE MOUNTED PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW.

IF USED, MAST ARM AND MAST ARM SUPPORTS SHALL BE INSTALLED FOR ALL TRAFFIC SIGNAL HEADS. SEE DETAILS TDD217.

ALL FREE SWINGING TRAFFIC SIGNAL HEADS MUST BE ALUMINUM.

TRAFFIC SIGNAL HEAD ASSEMBLY AND INSTALLATION DETAILS, SEE TDD217, TDD218 AND TDD219.



DESIGN TABLE
TYPE "T"
TRAFFIC SIGNAL SUPPORT

Pole Type	Foundation Type	Transformer Base Type	Mast Arm	**Vertical Clearance
T (TDD20.09.01)	SFT (TDD20.02.02)	T (TDD20.10.01)* T (TDD20.10.02)*	15FT (TDD20.12)* 20FT (TDD20.12)*	**Vertical Clearance

DESIGN TABLE
TYPE "K"
TRAFFIC SIGNAL SUPPORT

Pole Type	Foundation Type	Transformer Base Type	Mast Arm	**Vertical Clearance
K (TDD20.09.02)	SFK (TDD20.02.01)	K (TDD20.11)	25FT (TDD20.13)	**Vertical Clearance

* CHOOSE BASES AND MAST ARMS BASED ON DESIGN PLANS
** TO BE COMPLETED BY DESIGNER

TYPICAL ALUMINUM TRAFFIC SIGNAL INSTALLATION
NT 13

No.	Date	Revision	Approved
1			
2			
3			

ENGINEERING DEPARTMENT
PANYNJ
Traffic Signal
Details

TRAFFIC
Signals
TYPICAL ALUMINUM
TRAFFIC SIGNAL
INSTALLATION

Designed by: _____
Drawn by: _____
Checked by: _____
Date: _____
Contract Number: _____
Drawing Number: TD20.01
REV

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No.	Date	Revision	Approved
			ENGINEERING DEPARTMENT
			PANKAJ
			Traffic Standard Details

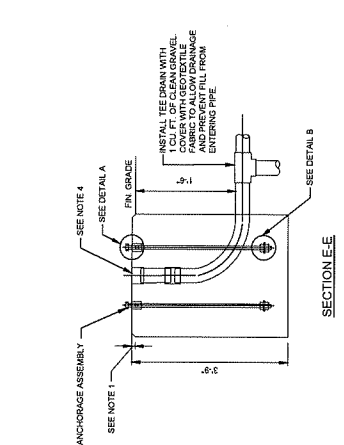
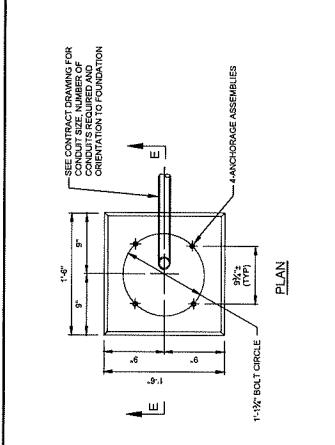
TRAFFIC
TITLE

TRAFFIC SIGNALS

ALUMINUM TRAFFIC
SIGNAL POLE
FOUNDATION
(SPF, SPF, SFK)

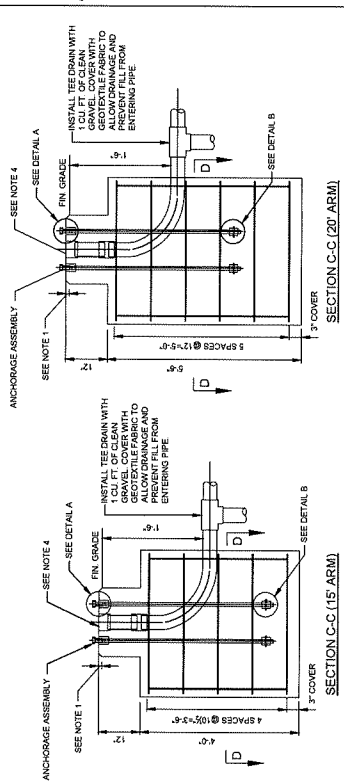
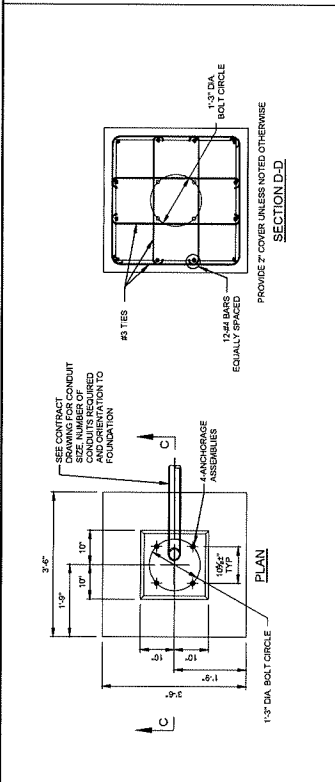
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Checked by
Date
Contract Number
Drawing Number
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TD20.02



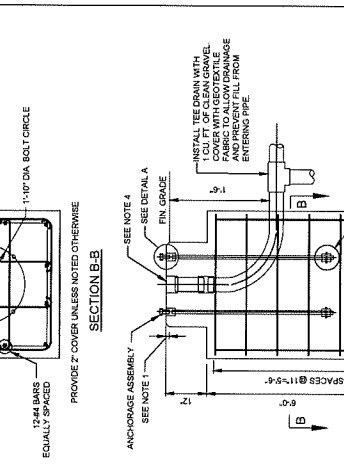
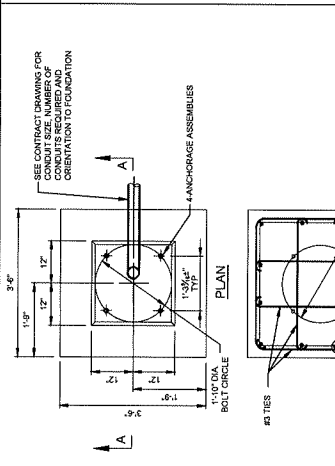
PEDESTAL FOUNDATION TYPE "SPF"
N.T.S.

	GR I	GR II	GR III
AXIAL	172	172	363
SHEAR	0	533	283
MOMENT	82	6663	2968
TORSION	0	180	90



FOUNDATION TYPE "SFT"
N.T.S.

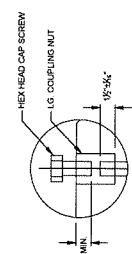
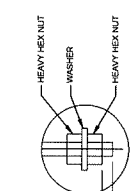
	GR I	GR IA	GR IB	GR IIA	GR IIB	GR IIB
AXIAL	453	453	453	453	453	970
SHEAR	0	782	514	486	327	327
MOMENT	407	1325	1588	1055	1333	1333
TORSION	0	705	424	495	247	247



FOUNDATION TYPE "SFK"
N.T.S.

	GR I	GR IA	GR IB	GR IIA	GR IIB	GR IIB
AXIAL	573	573	604	1096	1096	420
SHEAR	0	918	641	824	1752	1752
MOMENT	6558	17567	14078	18234	17552	17552
TORSION	0	1048	689	839	3639	3639

- NOTES:
- TOP OF FOUNDATION SHALL BE AT LEAST 3' ABOVE FINISHED GROUND SURFACE A MINIMUM HEIGHT AS FOLLOWS:
 - 1" IF SURROUNDING GROUND IS CLAY OR SILT
 - 2" IF SURROUNDING GROUND SURFACE IS EARTH OR SIMILAR
 - MATERIALS:
 - CONCRETE CATEGORY V: f_c = 4000 PSI
 - RIGHT GRADING STEEL - A575 A515 GR 50
 - FOUNDATION SHALL BE POURED MONOLITHICALLY AND THE TOP FINISHED LEVEL.
 - CONDUIT SHALL BE INSTALLED SO THAT COUPLING IS EMBEDDED ALUMB AND FLUSH WITH TOP OF CONDUIT FOUNDATION.
 - PROVIDE 1" x 1" CHAMFER ON ALL EXPOSED EDGES.
 - ANCHOR BOLTS SHOWN IN THIS DRAWING ARE DESIGNED FOR LOADS SHOWN.
 - SUITABLE FILL MATERIALS AS DIRECTED BY THE INSURER SHALL BE USED FOR FOUNDATION SUBGRADE LEVEL. OVER-EXCAVATE BY 3 FEET AND REPLACE WITH SUITABLE FILL MATERIALS AS DIRECTED BY THE INSURER.
 - TRAFFIC SIGNAL POLES TO BE CENTERED ON FOUNDATIONS AS SHOWN.

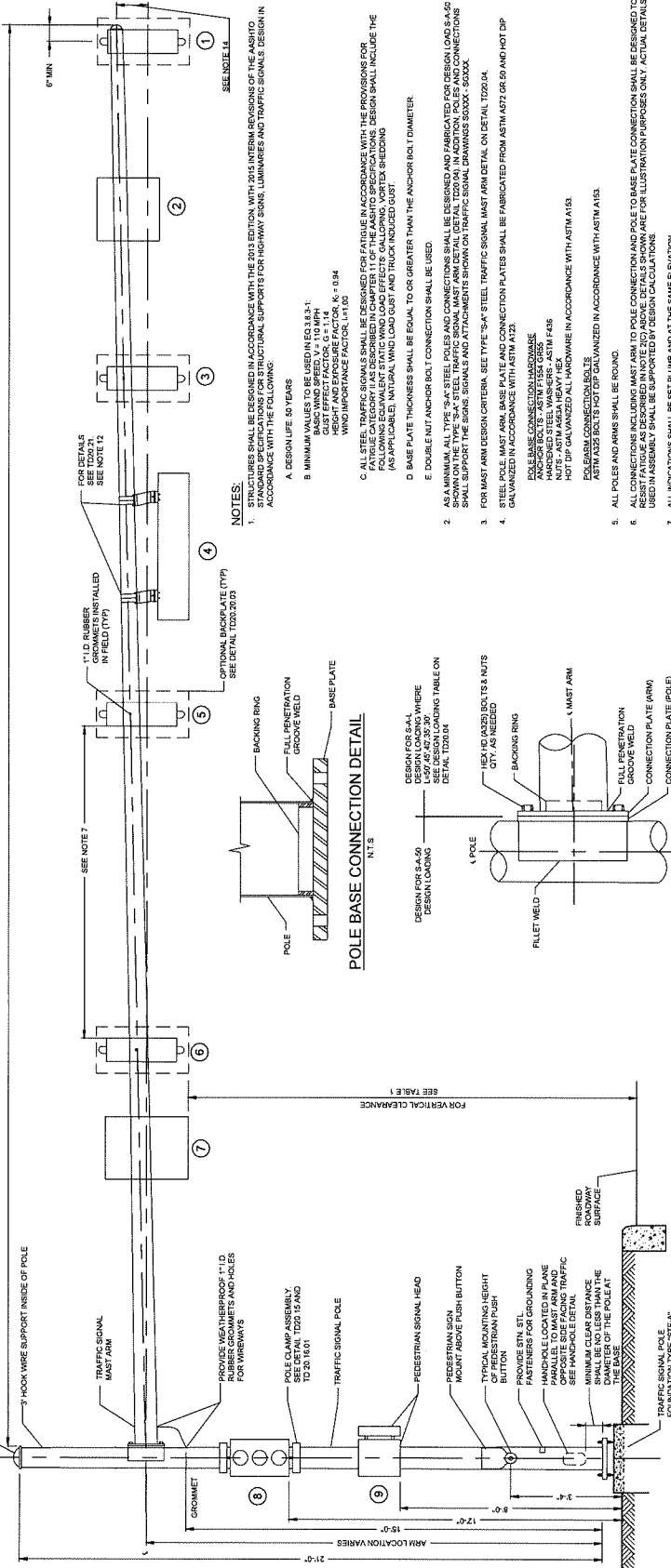


ANCHORAGE ASSEMBLY:

- 1-1" STAINLESS STEEL HEX HEAD CAP SCREW (ASTM A193 GR B8)
- 1-1" STAINLESS STEEL LOCK WASHER (S30304)
- 1-1" x 1/2" LG. HEAVY HEX COUPLING NUT (ASTM A193 GR 9)
- 1-1" x 1/2" LG. HEAVY HEX COUPLING NUT (ASTM A193 GR 9)
- 1-1" x 1/2" LG. ANCHOR ROD OR THREADED ROD (ASTM F554 OR F5)
- 1-1" HEAVY HEX NUTS (ASTM A550)
- 1-1" HEAVY HEX NUTS (ASTM A550)
- 1-1" WASHER (ASTM A563) NOT DIP GALVANIZED (ASTM F2306 OR A153)
- 1-1" HEAVY HEX NUT (ASTM A550) NOT DIP GALVANIZED (ASTM F2306 OR A153)

NOTE:

FOR SPF FOUNDATION USE 3/4" HARDWARE WITH 2" ANCHOR ROD OR THREADED ROD.



- NOTES:**
- TRAFFIC SIGNAL SUPPORTS SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION WITH 2014 INTERIM PROVISIONS OF THE ASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
 - DESIGN LIFE 30 YEARS
 - MINIMUM VALUES TO BE USED IN EQ. 3.3.3-1:
 BASIC WIND SPEED, $V = 110$ MPH
 EXPOSURE CATEGORY, $B = B$
 HEIGHT AND EXPOSURE FACTOR, $K_z = 0.84$
 WIND IMPORTANCE FACTOR, $I = 1.00$
 - ALL STEEL TRAFFIC SIGNALS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE PROVISIONS FOR FATIGUE DESIGN IN THE 2013 EDITION WITH 2014 INTERIM PROVISIONS OF THE ASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. DESIGN SHALL INCLUDE THE FOLLOWING EQUAL STATISTICAL WIND LOAD EFFECTS: GALVANIZING, WELDED STEERING (AS APPLICABLE), NATURAL WIND LOAD GUST AND TRUCK INDUCED GUST.
 - BASE PLATE THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.
 - DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.
 - AS A MINIMUM ALL TYPE "S-A" STEEL SIGNS AND SIGNALS SHALL BE DESIGNED AND FABRICATED FOR SIGNALS FOR SIGNALS AS SHOWN ON THE TYPE "S-A" STEEL TRAFFIC SIGNAL MAST ARM DETAIL T202.01 IN ADDITION POLES AND CONNECTIONS SHALL SUPPORT THE SIGNS, SIGNALS AND ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWINGS S200X - S200X.
 - FOR MAST ARM DESIGN CRITERIA, SEE TYPE "S-A" STEEL TRAFFIC SIGNAL MAST ARM DETAIL ON DETAIL T202.04.
 - STEEL POLE, MAST ARM, BASE PLATE AND CONNECTION PLATES SHALL BE FABRICATED FROM ASTM A572 OR SA AND HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A133.
 - POLE BASE CONNECTION HARDWARE
 ANCHOR BOLTS - ASTM F1554 GR55
 NUTS - ASTM A193 HEAVY HEX
 HOT DIP GALVANIZED ALL HARDWARE IN ACCORDANCE WITH ASTM A153
 DOUBLE NUT CONNECTION BOLTS
 ASTM A325 BOLTS HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.
 ALL POLES AND ARMS SHALL BE ROUND.
 - ALL CONNECTIONS INCLUDING MAST ARM TO POLE CONNECTION AND POLE TO BASE CONNECTION SHALL BE DESIGNED TO RESIST FATIGUE AS DESCRIBED IN NOTE 707 ABOVE. DETAILS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL DETAILS USED IN FABRICATION SHALL BE SUPPLIED BY DESIGN CALCULATION.
 - ALL INDICATIONS SHALL BE SET PLUMB AND AT THE SAME ELEVATION.
 - ALL HEX NUTS SHALL BE INSTALLED BY "TURN OF THE NUT METHOD" SEAT NUT, THEN TORQUE MINIMUM 1/2 TURN.
 - ANCHOR BOLTS, LOCK WASHERS, FLAT WASHERS, NUTS AND LEVELING NUTS SHALL BE SUPPLIED WITH EACH POLE.
 - ALL ARMS SHALL BE FABRICATED IN ONE PIECE FOR LENGTHS UP TO 45 FEET. FOR LENGTHS EXCEEDING 45 FEET AND AS SET FABRICATE ARMS USING TWO-PIECE CONSTRUCTION WITH AN OVERLAP JOINT. LENGTH OF 1/2 TIMES THE MAXIMUM INSIDE DIAMETER OF THE OUTER SHAFT. SECURE THE OVERLAP JOINT WITH A THROUGH-BOLT AND LOCK NUT FOR NONSTANDARD SIZE. THE OVERLAP JOINT SHALL BE SET PLUMB AND AT THE SAME ELEVATION. SEE SPECIFICATIONS SECTION 102.27 - TRAFFIC SIGNAL POLES, MAST ARMS, SPAN WIRE AND POLE FOUNDATION.
 - CLAMP MOUNTED TRAFFIC SIGNAL HEAD AND PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED AT HEIGHTS SHOWN.
 - OVERHEAD SIGNS SHALL BE INSTALLED PERPENDICULAR TO THE DIRECTION OF TRAFFIC WHICH THEY ARE INTENDED TO SERVE.
 - THE CONTRACTOR SHALL SUBMIT A CERTIFICATION FOR EACH TRAFFIC SIGNAL ASSEMBLY PROVIDED. THE CERTIFICATION SHALL STATE THAT THE SIGNAL ASSEMBLY HAS BEEN DESIGNED AND FABRICATED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SHALL EXCEED ALL REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS. THE CERTIFICATION SHALL BE FOR ALL ELEMENTS LOCATED ABOVE THE TOP OF THE FOUNDATION INCLUDING OF THE POLE BASE CONNECTION. THE CONTRACTOR SHALL SUBMIT THE CERTIFICATION TO THE ENGINEER PRIOR TO CONSTRUCTION OF FOUNDATIONS.
 - IF THE CONTRACTOR OR THEIR REPRESENTATIVE DETERMINES THE CAPACITY OF THE POLE, BASE CONNECTION ELEMENTS SHOWN IN THE DETAILS ON DETAIL T202.01, THEY SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION OF FOUNDATIONS.
 - FINAL ELEVATION OF FREE END OF MAST ARM SHALL BE BASED ON A RISE OF 1/8" PER FOOT OF MAST ARM.
 - SIZE OF BASE PLATE SHALL BE DETERMINED BY THE MANUFACTURER. A MINIMUM OF SIX ANCHOR BOLTS SHALL BE USED FOR THE CONNECTION.
 - DO NOT INSTALL SUPPORT WITHOUT MAST ARM.

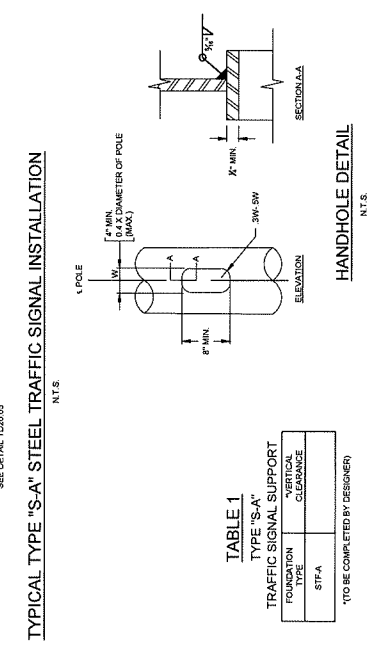
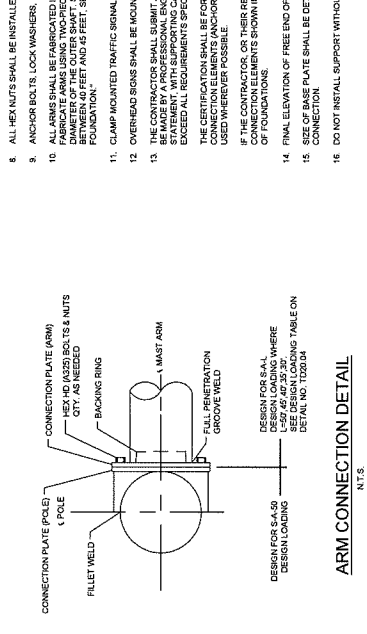
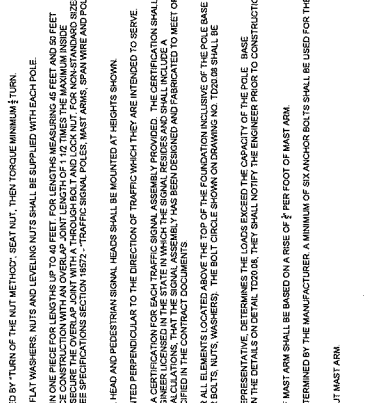


TABLE 1
 TYPE "S-A"
 TRAFFIC SIGNAL SUPPORT

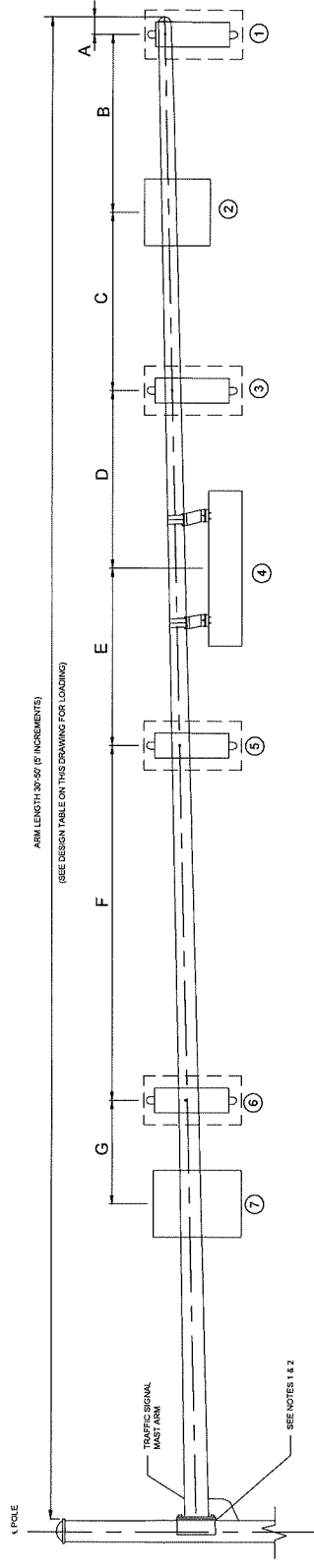
FOUNDATION TYPE	VERTICAL CLEARANCE
STF-A	

*TO BE COMPLETED BY DESIGNER

No.	Date	Revision	Approved
1			
2			
3			
4			
5			
6			
7			

ENGINEERING DEPARTMENT
 PANJNJ
 Traffic Standard
 Details
 TRAFFIC SIGNALS
 TYPE "S-A" STEEL TRAFFIC SIGNAL SUPPORT, ARM AND BASE (1 OF 2)

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TYPE "S-A" STEEL TRAFFIC SIGNAL MAST ARM DETAIL

DESIGN TABLE

DESIGN LOADING FOR TYPE "S-A" STEEL TRAFFIC SIGNAL INSTALLATION

NUMBER	ATTACHMENT 1	FIXED/FREE SWINGING	DEAD LOAD	WIND AREA 2		ICE LOAD	ATTACHMENT LOCATIONS							
				VERTICAL PROJECTION	HORIZONTAL PROJECTION		DESIGN LOADING S-A-10	DESIGN LOADING S-A-45	DESIGN LOADING S-A-40	DESIGN LOADING S-A-35	DESIGN LOADING S-A-30	DESIGN LOADING S-A-25	DESIGN LOADING S-A-20	
1	2 WAY SIGNAL WITH BACKPLATE	FIXED	72.6 LBS	5.63 SF ³	6.05 SF	168 LBS	A	0.5'	0.5'	0.5'	0.5'	0.5'	0.5'	0.5'
2	3P X 3P SIGN	FIXED	36 LBS	10.98 SF	0.9F	27 LBS	B	6'	6'	6'	6'	6'	6'	6'
3	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	64 LBS	C	6'	6'	6'	6'	6'	6'	6'
4	8P X 18" SIGN	FREE SWINGING	39 LBS	0.72 SF/10.33 SF ⁴	0.9F	31.5 LBS	D	6'	6'	6'	6'	6'	6'	6'
5	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	64 LBS	E	6'	6'	6'	6'	6'	6'	6'
1	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	64 LBS	F	12'	12'	12'	12'	12'	12'	12'
1	3P X 48" SIGN	FIXED	42 LBS	13.88 SF	0.9F	36 LBS	G	3.5'	3.5' (FROM NO. 5)	3.5' (FROM NO. 5)	3.5' (FROM NO. 4)	3.5' (FROM NO. 4)	3.5' (FROM NO. 4)	3.5' (FROM NO. 4)
1	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	NA	64 LBS		ON POLE	ON POLE	ON POLE	ON POLE	ON POLE	ON POLE	ON POLE
1	2 WAY PEDESTRIAN SIGNAL	FIXED	30 LBS	3.6 SF	NA	48.5 LBS		ON POLE	ON POLE	ON POLE	ON POLE	ON POLE	ON POLE	ON POLE

NOTES:

- ALL TYPE "S-A" POLES & CONNECTIONS INCLUDING CONNECTION PLATE (POLE) SHALL BE DESIGNED TO ACCOMMODATE DESIGN LOAD S-A-20.
- CONNECTION PLATE (ARM), BOLT PATTERN AND BOLT SIZE SHALL BE CONSISTENT WITH CONNECTION PLATE (POLE) AS DESCRIBED IN NOTE 1.
- AS A MINIMUM, ALL TYPE "S-A" MAST ARMS SHALL BE DESIGNED AND FABRICATED TO ACCOMMODATE THE DESIGN LOADS AND CONNECTIONS SHOWN ON TRAFFIC SIGNAL DRAWING S-A-1000. SUPPORT THE ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWING S-A-1000.
- DESIGN IN ACCORDANCE WITH THE FOLLOWING:
 - A. DESIGN LIFE: 50 YEARS
 - B. MINIMUM VALUES TO BE USED IN EO.3.3.1:
 - BASED WIND SPEED: 110 MPH
 - HEIGHT AND EXPOSURE FACTOR: K₂ = 0.84
 - WIND IMPORTANCE FACTOR: I_r = 1.00
 - C. ALL STEEL TRAFFIC SIGNALS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 101.05 OF THE PORT AUTHORITY DESIGN SPECIFICATIONS. DESIGN SHALL INCLUDE THE FOLLOWING EQUIVALENT STATIC WIND LOAD EFFECTS: GALLOPING, VORTEX SHEDDING (AS APPLICABLE), NATURAL WIND VIBRATION AND TRUCK-INDUCED GUST.
 - D. BOLT MINIMUM THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.
 - E. DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			
TRAFFIC			

TRAFFIC SIGNALS

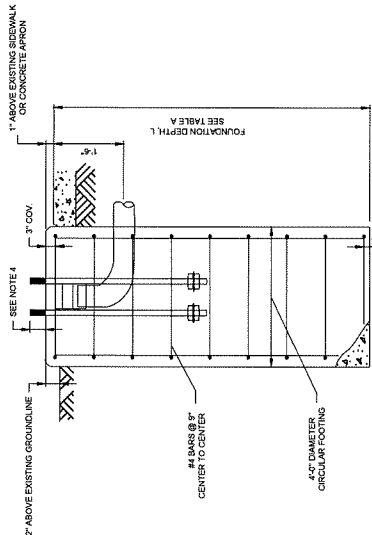
TYPE "S-A"
STEEL TRAFFIC SIGNAL
POLE, ARM AND BASE
(2 OF 2)

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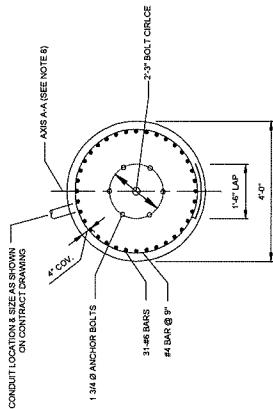
Designed by
Checked by
Date
Contract Number

SEPTEMBER 2010
TD20.04
P05

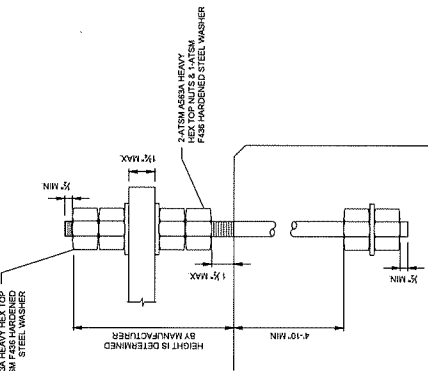
No.	Date	Revision	Approved



**TYPE "STF-A"
STEEL TRAFFIC SIGNAL POLE
FOUNDATION**
NTS



PLAN
NTS



**ANCHOR BOLT DETAIL
(FOUNDATION REINFORCEMENT NOT SHOWN)**
NTS

NOTES:

- USE WITH TYPE "SA" STEEL TRAFFIC SIGNAL POLE. ARM AND BASE SHOWN ON DETAILS TD20 03 & TD20 04.
- WATERSHALL CONCRETE SHALL HAVE A MINIMUM CONCRETE STRENGTH, $f'c = 4000$ PSI AT 28 DAYS. ALL REINFORCEMENT SHALL BE PERMITTED BY THE CONTRACTOR. ALL REINFORCEMENT SHALL BE ASTM A618 GR 60.
- ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED STEEL ASTM F1554 GRADE 55. GALVANIZE IN ACCORDANCE WITH ASTM A153.
- MANUFACTURER SHALL DETERMINE HEIGHT OF ANCHOR BOLT ABOVE TOP OF FOUNDATION.
- FOUNDATION DESIGN IS CALCULATED BASED ON TYPE "SA" DESIGN LOADING PROVIDED ON DETAILS TD20 04 AND SHALL BE AS SHOWN IN TABLE A.
- CONFORM TO THE SPECIFICATION 0221, "CAISSON (PILE) SAFETY FOR THE INSTALLATION OF THE POLE FOUNDATIONS, BEFORE STARTING THE POLE FOUNDATION, INSTALLATION, BACKFILL ANY OPEN EXCAVATION NEAR THE POLE FOOTING AS PER SPECIFICATION 0221, "EXCAVATION, BACKFILLING AND FILLING".
- ANCHOR BOLT DIAMETER AND BOLT CIRCLE PATTERN SHALL AS SHOWN ON PLANS. MANUFACTURER SHALL PROVIDE DETAILS OF ANCHOR BOLT PATTERN AND PATTERN ARE ACCEPTABLE. IF OTHER THAN SHOWN, CONTRACTOR SHALL NOTIFY PANYNJ.
- ORIENT ANCHOR BOLT PATTERN 90 DEGREE AS SHOWN AT 90 TO THE MARKET SIDE. ANCHOR BOLT SHALL BE CENTERED ON FOUNDATION AS SHOWN.

TABLE A (TYPE "STF-A" FOUNDATION)

CAISSON NO.	LOCATION	BORING NO.	FOUNDATION DEPTH (L)
1			
2			
3			
4			

* TO BE COMPLETED BY DESIGNER

TB/6/FFC
TITLE

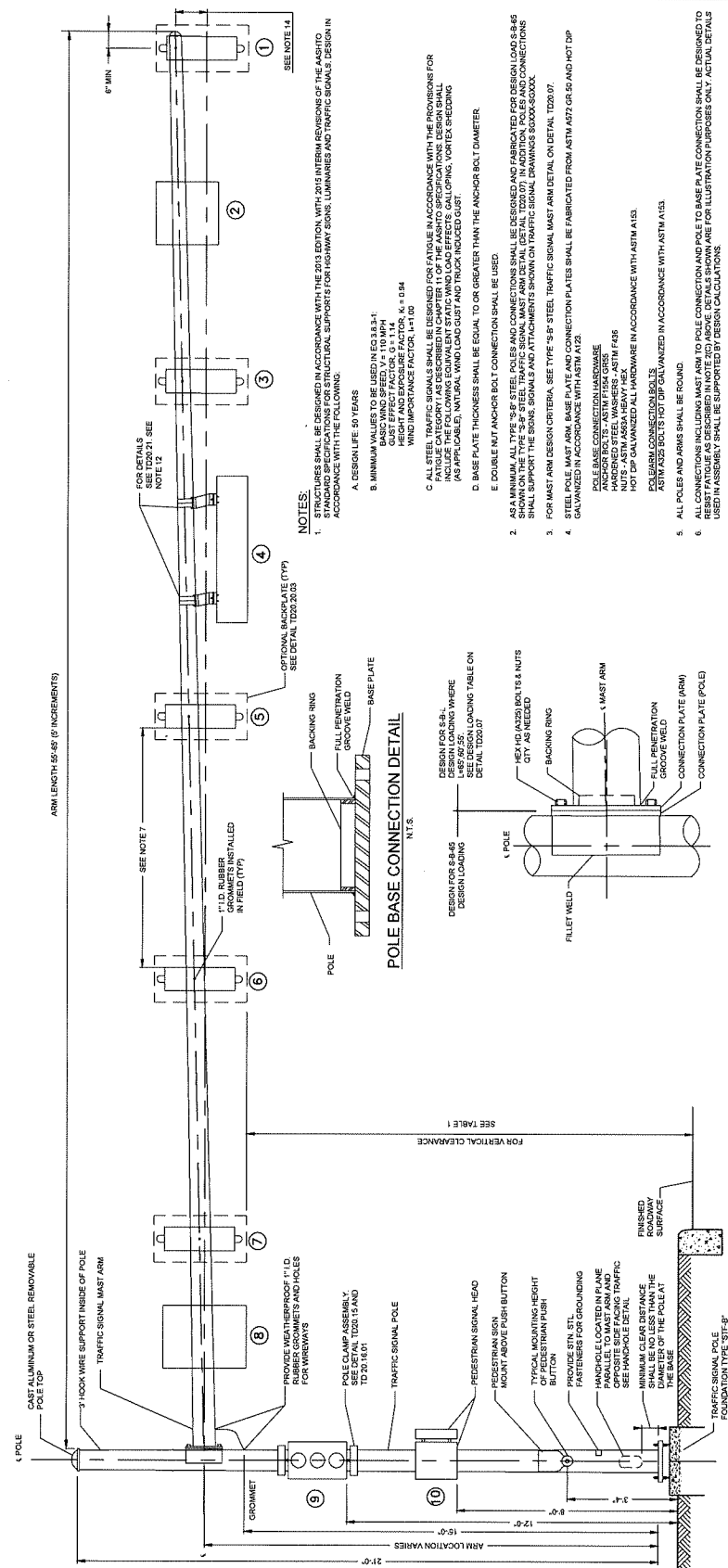
TRAFFIC SIGNALS

TYPE "STF-A"
STEEL
TRAFFIC SIGNAL
POLE FOUNDATION

The owner warrants that this contract is for the design and construction of a project for the Port Authority of New York and New Jersey. The contractor shall be responsible for obtaining all necessary permits, licenses and approvals for the project. The contractor shall be responsible for providing all necessary materials and labor for the project. The contractor shall be responsible for the construction of the project. The contractor shall be responsible for the safety of the project. The contractor shall be responsible for the quality of the project. The contractor shall be responsible for the completion of the project. The contractor shall be responsible for the maintenance of the project. The contractor shall be responsible for the repair of the project. The contractor shall be responsible for the replacement of the project. The contractor shall be responsible for the removal of the project. The contractor shall be responsible for the disposal of the project. The contractor shall be responsible for the storage of the project. The contractor shall be responsible for the transportation of the project. The contractor shall be responsible for the use of the project. The contractor shall be responsible for the disposal of the project. The contractor shall be responsible for the storage of the project. The contractor shall be responsible for the transportation of the project. The contractor shall be responsible for the use of the project.

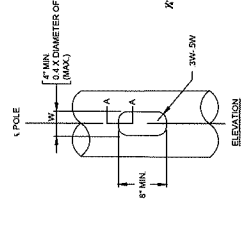
Designed by _____
Drawn by _____
Checked by _____
Date _____ SEPTEMBER 2018

Contract Number _____
Drawing Number **TD20.05**
RDS



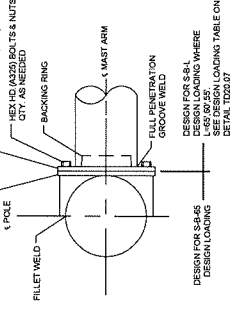
TYPICAL TYPE 'S-B' STEEL TRAFFIC SIGNAL INSTALLATION

NTS



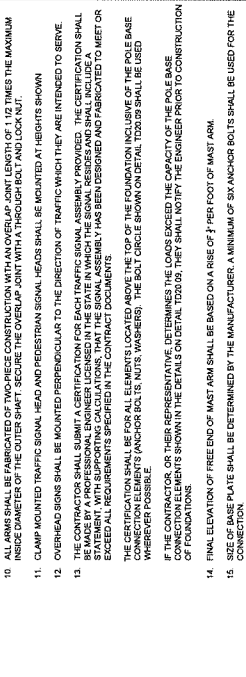
HANDHOLE DETAIL

NTS



ARM CONNECTION DETAIL

NTS



POLE BASE CONNECTION DETAIL

NTS

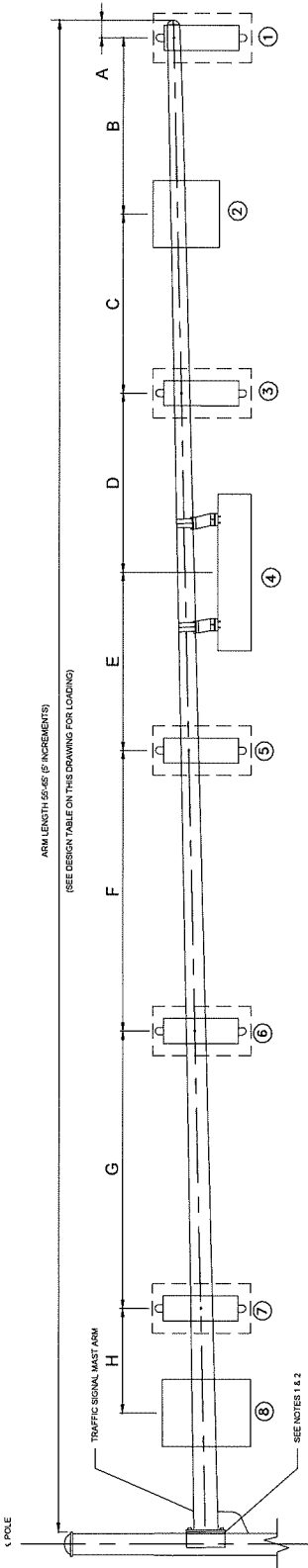
NOTES:

- DESIGN SHALL BE IN ACCORDANCE WITH THE DESIGN, MATERIALS, AND CONNECTIONS OF THE DESIGN STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS DESIGN IN ACCORDANCE WITH THE FOLLOWING:
 - DESIGN LIFE: 50 YEARS
 - MINIMUM VALUES TO BE USED IN EC 3.3.3.1:
 - BASIC WIND SPEED, $V = 110$ MPH
 - WIND EXPOSURE CATEGORY: 1
 - HEIGHT AND EXPOSURE FACTOR, $K_1 = 0.84$
 - WIND IMPORTANCE FACTOR, $I = 1.00$
- ALL STEEL TRAFFIC SIGNALS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE PROVISIONS FOR FATIGUE CATEGORY AS DESCRIBED IN CHAPTER 11 OF THE ASHTO SPECIFICATIONS. DESIGN SHALL BE BASED ON THE FOLLOWING:
 - DESIGN CATEGORY: 1
 - DESIGN LIFE: 50 YEARS
 - WIND SPEED: 110 MPH
 - WIND EXPOSURE CATEGORY: 1
 - HEIGHT AND EXPOSURE FACTOR, $K_1 = 0.84$
 - WIND IMPORTANCE FACTOR, $I = 1.00$
- BASE PLATE THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.
- DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.
- AS A MINIMUM, ALL TYPE 'S-B' STEEL POLES AND CONNECTIONS SHALL BE DESIGNED AND FABRICATED FOR DESIGN LOAD S&L SHALL SUPPORT THE SIGNS, SIGNALS AND ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWINGS S&S&X&X.
- FOR MAST ARM DESIGN CRITERIA, SEE TYPE 'S-B' STEEL TRAFFIC SIGNAL MAST ARM DETAIL ON DETAIL T202.07
- STEEL POLE MAST ARM, BASE PLATE AND CONNECTION PLATES SHALL BE FABRICATED FROM ASTM A572 GR. 50 AND HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.
- POLE BASE CONNECTION HARDWARE:
 - ANCHOR BOLTS: ASTM F1554 GR55
 - NUTS: ASTM A563A HEAVY HEX
 - HOT DIP GALVANIZED ALL HARDWARE IN ACCORDANCE WITH ASTM A153.
 - POLE ARM CONNECTION BOLTS: ASTM A325 BOLTS HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.
- ALL POLES AND ARMS SHALL BE ROUND.
- ALL CONNECTIONS INCLUDING MAST ARM TO POLE CONNECTION AND POLE TO BASE PLATE CONNECTION SHALL BE DESIGNED TO RESIST FATIGUE AS DESCRIBED IN NOTE 2C) ABOVE. DETAILS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL DETAILS USED IN ASSEMBLY SHALL BE SUPPORTED BY DESIGN CALCULATIONS.
- ALL INDICATIONS SHALL BE SET PLUMB AND AT THE SAME ELEVATION.
- ALL HEX NUTS SHALL BE INSTALLED BY "TURN OF THE NUT METHOD"; SEAT NUT, THEN TORQUE MINIMUM 1/2 TURN.
- ANCHOR BOLTS, LOCK WASHERS, FLAT WASHERS, NUTS AND LEVELING NUTS SHALL BE SUPPLIED WITH EACH POLE.
- ALL ARMS SHALL BE FABRICATED BY WELDING CONNECTION WITH AN OVERLAP JOINT LENGTH OF 1/2 TIMES THE MAXIMUM THICKNESS OF THE OVERLAP TO SECURE THE JOINT WITH AN OVERLAP JOINT LENGTH OF 1/2 TIMES THE MAXIMUM THICKNESS OF THE OVERLAP.
- CLAMP MOUNTED TRAFFIC SIGNAL HEAD AND PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED AT HEIGHTS SHOWN.
- OVERHEAD SIGNS SHALL BE MOUNTED PERPENDICULAR TO THE DIRECTION OF TRAFFIC WHICH THEY ARE INTENDED TO SERVE.
- THE CONTRACTOR SHALL SUBMIT A CERTIFICATION FOR EACH TRAFFIC SIGNAL ASSEMBLY PROVIDED. THE CERTIFICATION SHALL STATE THAT THE SIGNAL ASSEMBLY IS IN ACCORDANCE WITH THE DESIGN AND SHALL INCLUDE A STATEMENT WITH SUPPORTING CALCULATIONS IN THE STATE IN WHICH THE SIGNAL RESIDES AND SHALL EXCEED ALL REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS.
- THE CERTIFICATION SHALL BE FOR ALL ELEMENTS LOCATED ABOVE THE TOP OF THE FOUNDATION INCLUDING THE POLE BASE CONNECTION ELEMENTS (ANCHOR BOLTS, NUTS, WASHERS). THE BOLT CIRCLE SHOWN ON DETAIL T202.09 SHALL BE USED WHENEVER POSSIBLE.
- ONE CONTRACTOR OR OTHER REPRESENTATIVE DETERMINES THE LOADS EXCEED THE CAPACITY OF THE POLE BASE CONNECTION ELEMENTS SHOWN IN THE DETAILS ON DETAIL T202.09, THEY SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION OF FOUNDATIONS.
- FINAL ELEVATION OF FREE END OF MAST ARM SHALL BE BASED ON A RISE OF 1/2 PER FOOT OF MAST ARM.
- SIZE OF BASE PLATE SHALL BE DETERMINED BY THE MANUFACTURER. A MINIMUM OF SIX ANCHOR BOLTS SHALL BE USED FOR THE CONNECTION.
- DO NOT INSTALL SUPPORT WITHOUT MAST ARM.

TRAFFIC SIGNALS
TYPE 'S-B'
STEEL TRAFFIC SIGNAL
POLE, ARM AND BASE
(1 OF 2)

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			
TRAFFIC			
Title			
TRAFFIC SIGNALS			
Checked by			
Drawn by			
Date			
SEPTEMBER 2018			
Contract Number			
TD20.06			
Drawing Number			
REV			

DESIGNED BY
DRAWN BY
CHECKED BY
DATE
CONTRACT NUMBER
DRAWING NUMBER
REV



TYPE "S-B" STEEL TRAFFIC SIGNAL MAST ARM DETAIL

DESIGN TABLE

DESIGN LOADING FOR TYPE "S-B" STEEL TRAFFIC SIGNAL INSTALLATION

NUMBER	ATTACHMENT*	FIXED/FREE SWINGING	DEAD LOAD	WIND AREA†		ICE LOAD	ATTACHMENT LOCATIONS			
				VERTICAL PROJECTION	HORIZONTAL PROJECTION		DESIGN LOADING S-B-65	DESIGN LOADING S-B-69	DESIGN LOADING S-B-85	
1	2 WAY SIGNAL WITH BACKPLATE	FIXED	72.6 LBS	9.83 SF ²	6.05 SF	188 LBS	A	0.5'	0.5'	0.5'
2	36" X 36" SIGN	FIXED	36 LBS	10.88 SF	0 SF	27 LBS	B	6'	6'	6'
3	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.07 SF	84 LBS	C	6'	6'	6'
4	84" X 18" SIGN	FREE SWINGING	39 LBS	0.72 SF (10.33 SF ²)	0.9F	31.5 LBS	D	6'	6'	6'
5	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.07 SF	84 LBS	E	6'	6'	6'
6	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.07 SF	84 LBS	F	12'	12'	12'
7	1 WAY SIGNAL WITH BACKPLATE	FIXED	42 LBS	13.68 SF	0.6F	36 LBS	G	3.5'	3.5' (FROM NO. 8)	3.5' (FROM NO. 8)
8	36" X 48" SIGN	FIXED	36.3 LBS	9.83 SF	N/A	84 LBS	H	ON POLE	ON POLE	ON POLE
9	1 WAY SIGNAL WITH BACKPLATE	FIXED	36 LBS	3.6 SF	N/A	49.5 LBS	ON POLE	ON POLE	ON POLE	ON POLE

NOTES:
 1. ALL SIGNAL HEADS CONSIST OF 3-1/2" SECTIONS
 2. SIGNALS ARE BACK TO BACK
 3. SIGNALS ARE BACK TO BACK
 4. VALUE RESULTS EMANATE FROM NATURAL WIND GUST (11.2 MPH)
 FATIGUE

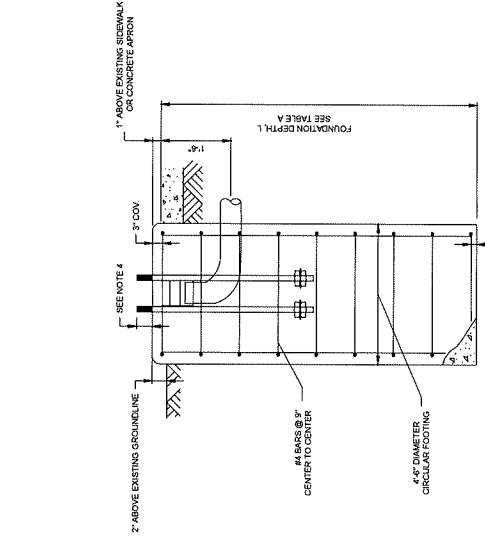
NOTES:
 1. CONNECTIONS, INCLUDING CONNECTION PLATE (POLE) SHALL BE DESIGNED TO ACCOMMODATE DESIGN LOADS.
 2. CONNECTION PLATE (ARM), BOLT PATTERN AND BOLT SIZE SHALL BE DESIGNED TO BE CONSISTENT WITH CONNECTION PLATE (POLE) AS DESCRIBED IN NOTE 1.
 3. AS A MINIMUM, ALL TYPE "S-B" MAST ARMS SHALL BE DESIGNED AND FABRICATED TO ACCOMMODATE THE DESIGN LOADINGS SHOWN IN THE DESIGN TABLE ON THIS DRAWING. IN ADDITION, MAST ARMS AND CONNECTIONS SHALL SUPPORT THE ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWINGS S2000.S000X.
 4. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
 A. DESIGN LIFE: 50 YEARS
 B. MINIMUM VALUES TO BE USED IN EQ 18.3-1:
 HEIGHT AND EXPOSURE FACTOR, $K_z = 1.14$
 GUST EFFECT FACTOR, $G = 1.14$
 WIND SURFACE ROUGHNESS COEFFICIENT, $R_z = 0.08$
 C. ALL ATTACHMENTS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE PROVISIONS FOR FATIGUE CATEGORY AS DESCRIBED IN CHAPTER 11 OF THE AASHTO SPECIFICATIONS. DESIGN SHALL INCLUDE THE FOLLOWING EQUIVALENT STATIC WIND LOAD EFFECTS: GALLOPING, VORTEX SHEDDING AS APPLICABLE, NATURAL WIND LOAD GUST AND TRUCK INDUCED GUST.
 D. BASE PLATE THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.
 E. DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANJNJ			
Traffic Standard			
Details			

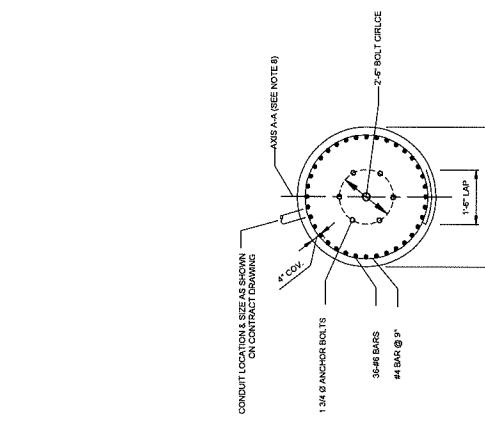
TRAFFIC
 708 TRAFFIC SIGNALS

TYPE "S-B"
 STEEL TRAFFIC SIGNAL
 POLE, ARM AND BASE
 (2 OF 2)

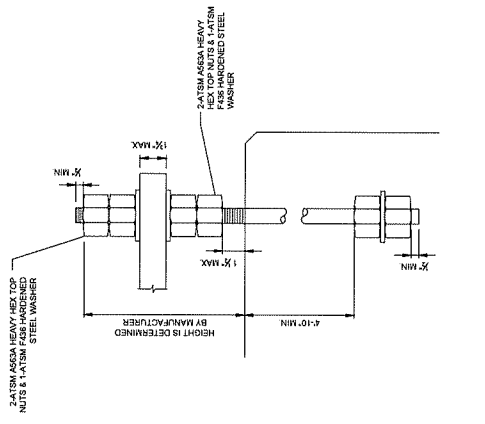
Designed by
 Drawn by
 Date
 Checked by
 Date
 Contract
 Number
 Drawing
 Number



ELEVATION
 TYPE "STF-B"
 STEEL TRAFFIC SIGNAL POLE FOUNDATION
 N.T.S.



PLAN
 N.T.S.



ANCHOR BOLT DETAIL
 (FOUNDATION REINFORCEMENT NOT SHOWN)
 N.T.S.

TABLE A (TYPE "STF-B" FOUNDATION)

CAISSON NO.	LOCATION	BORING NO.	FOUNDATION DEPTH (L)
1			
2			
3			
4			

* TO BE COMPLETED BY DESIGNER

NOTES:

- USE WITH TYPE "STF-B" STEEL TRAFFIC SIGNAL POLE ARM AND BASE SHOWN ON DETAIL TD20.06 & TD20.07.
- MATERIALS CONCRETE SHALL HAVE A MINIMUM CONCRETE STRENGTH (FC=4000 PSI AT 28 DAYS) AND REINFORCEMENT SHALL BE TYPE 60 EPOXY COATED REINFORCEMENT STEEL AS PER AASHTO M318.
- ANCHOR BOLTS SHALL BE NOT DIPPED GALVANIZED STEEL ASTM F1554 GRADE 55, GALVANIZED IN ACCORDANCE WITH ASTM A153.
- MANUFACTURER SHALL DETERMINE HEIGHT OF ANCHOR BOLT ABOVE TOP OF FOUNDATION.
- FOUNDATION DEPTH IS CALCULATED BASED ON TYPE "STF-B" DESIGN LOADING PROVIDED ON DETAIL TD20.07 AND SHALL BE AS SHOWN IN TABLE A.
- CONFORM TO THE SPECIFICATION U227, "CAISSON (DRILL SHAFT) FOR THE INSTALLATION OF THE POLE FOUNDATIONS. THE POLE FOUNDATION SHALL BE INSTALLED WITHIN ANY OPEN EXCAVATION NEAR THE POLE FOOTING AS PER SPECIFICATION U227, "EXCAVATION BACKFILLING AND FILLING".
- ANCHOR BOLT DIAMETER AND BOLT CIRCLE PATTERN SHALL BE AS SHOWN ON PLANS. MANUFACTURER SHALL PROVIDE CERTIFICATION THAT ANCHOR BOLT DIAMETER AND PATTERN ARE ACCEPTABLE IF OTHER THAN SHOWN. CONTRACTOR SHALL NOTIFY PANYNJ.
- ORIENT ANCHOR BOLT PATTERN SO AXIS A-A IS AT 90° TO THE MAJOR ARM. POLE SHALL BE CENTERED ON FOUNDATION AS SHOWN.

No.	Date	Revision	Approved

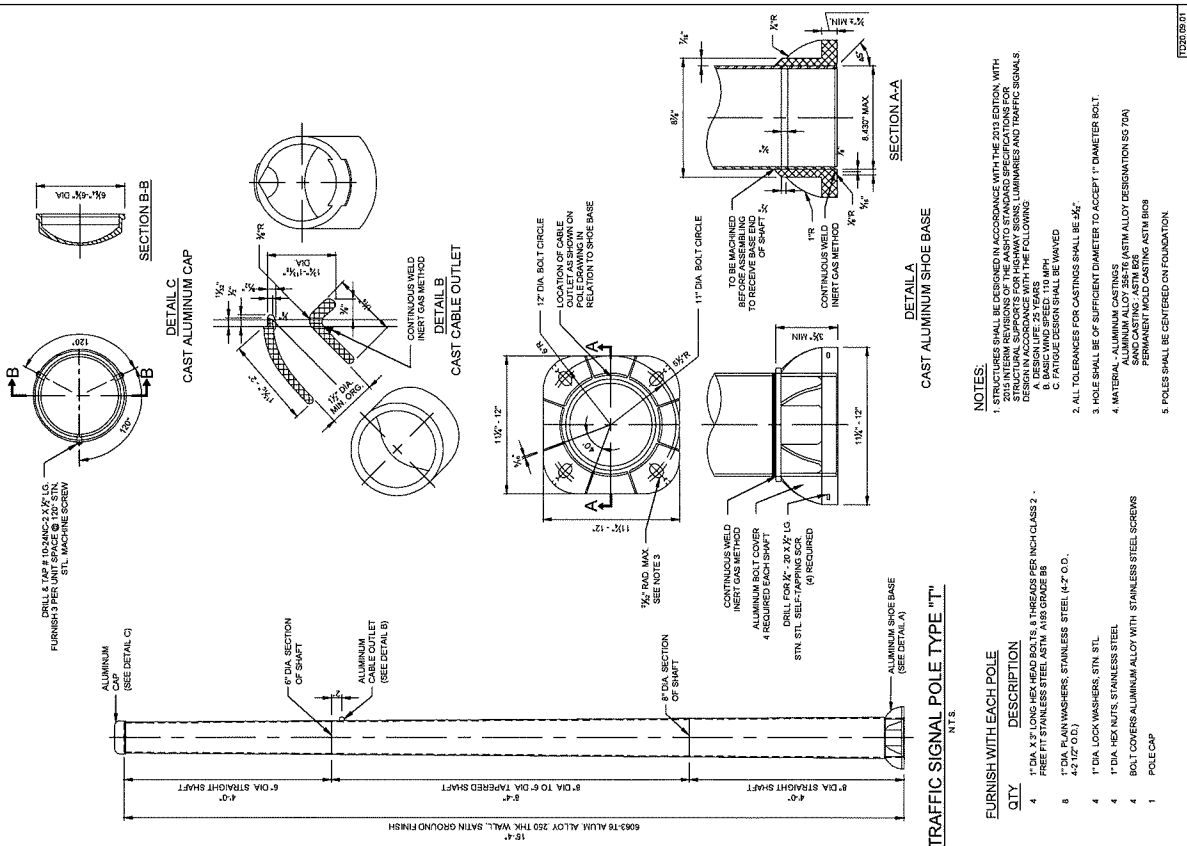
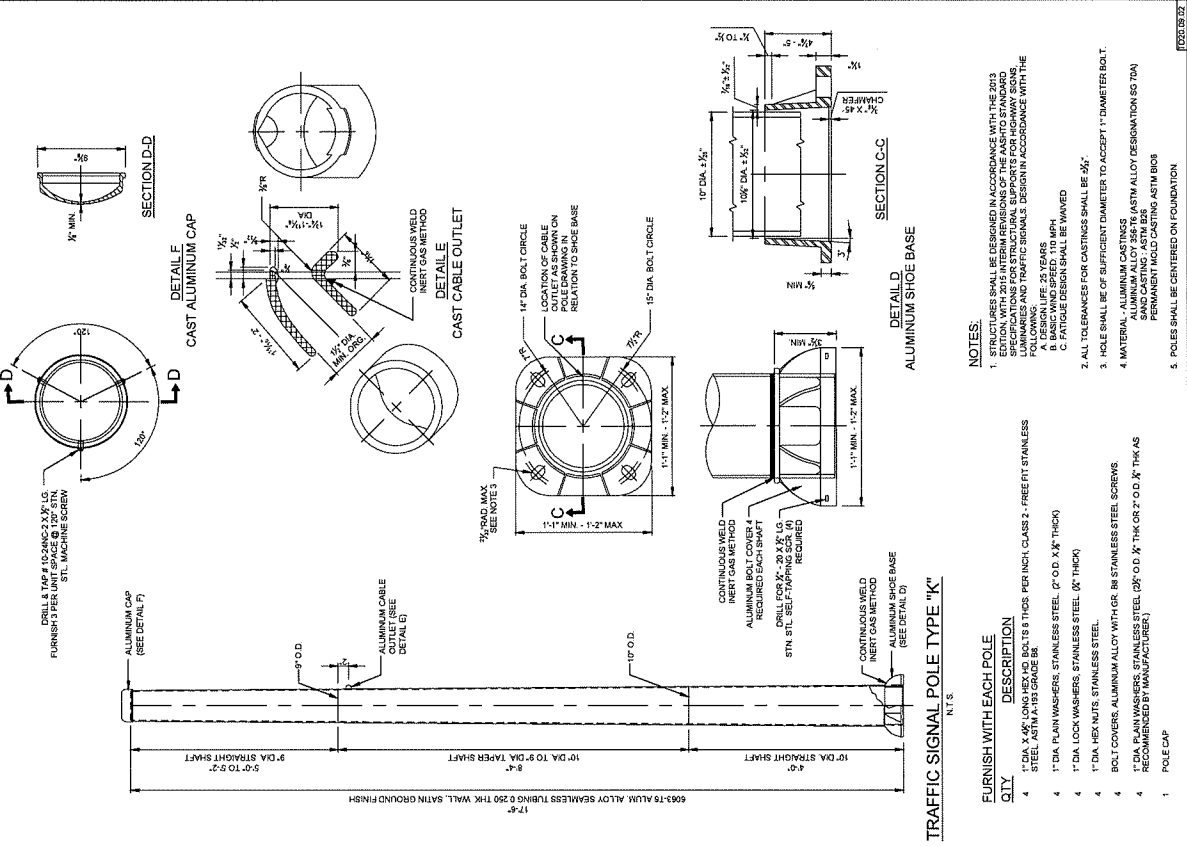
ENGINEERING DEPARTMENT
 PANYNJ
 Traffic Standard
 Details

TRAFFIC
 TITR

TRAFFIC SIGNALS
 TYPE "STF-B"
 STEEL
 TRAFFIC SIGNAL
 POLE FOUNDATION

DESIGNED BY
 DRAWN BY
 CHECKED BY
 DATE
 CONTRACT NUMBER
 DRAWING NUMBER
 SHEET

SEPTEMBER 2018
 TD20.08



No.	Date	Revision	Approved
1			
ENGINEERING DEPARTMENT			
PANNJ			
Traffic Standard			
Details			
TRAFFIC			
TRAFFIC SIGNALS			
TYPE "I" AND "K" POLES ELEVATION, SHOE BASE, CABLE OUTLET, AND CAP			

DESIGNED BY: SEPTEMBER 2018
CHECKED BY: SEPTEMBER 2018
DRAWING NUMBER: TD20.09
PAGE: 11

NOTES:
1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, WITH 2015 INTERIM REVISIONS OF THE AASHTO STANDARD SPECIFICATIONS FOR STEEL BRIDGE AND INFRASTRUCTURE, LUMINAIRES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
A. BASIC WIND SPEED: 110 MPH
B. BASIC WIND DIRECTION: 90 DEGREES
C. FATIGUE DESIGN SHALL BE WAVED
2. ALL TOLERANCES FOR CASTINGS SHALL BE $\pm .005$
3. HOLE SHALL BE OF SUFFICIENT DIAMETER TO ACCEPT 1" DIAMETER BOLT.
4. MATERIAL - ALUMINUM CASTINGS
ALUMINUM ALLOY 356-T6 (ASTM ALLOY DESIGNATION 356-T6A)
PERMANENT MOLD CASTING ASTM B108
5. POLES SHALL BE CENTERED ON FOUNDATION

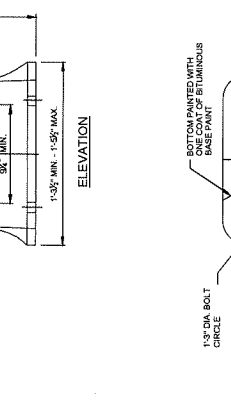
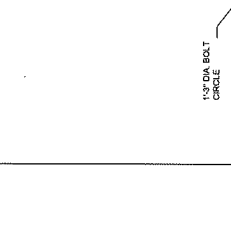
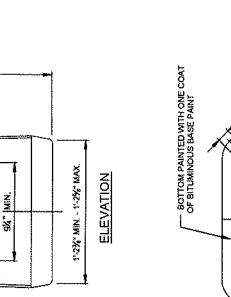
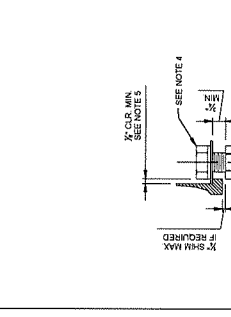
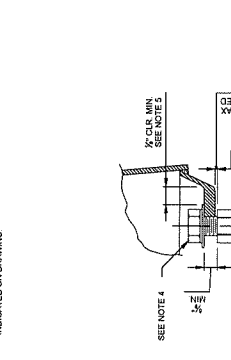
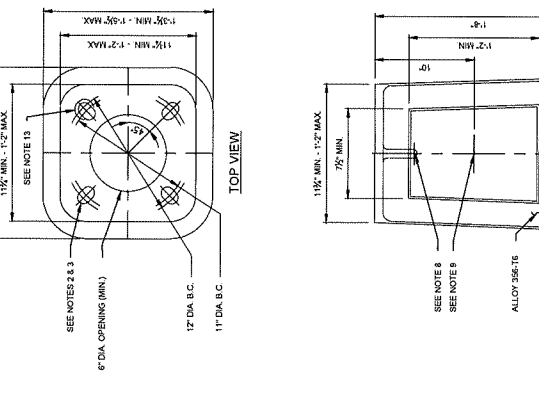
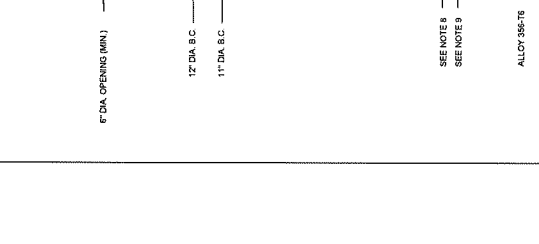
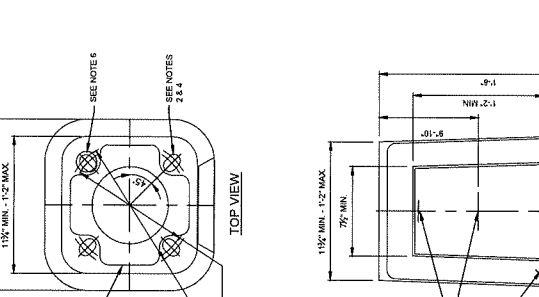
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PERMANENT MOLD CASTING ASTM B108
5. POLES SHALL BE CENTERED ON FOUNDATION

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No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			
TRAFFIC			
Title			
TRAFFIC SIGNALS			
ALUMINUM T ^T POLE			
TRANSFORMER BASE			

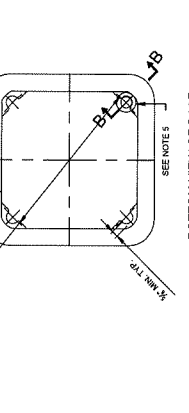
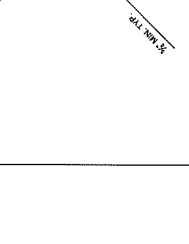
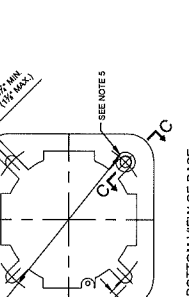
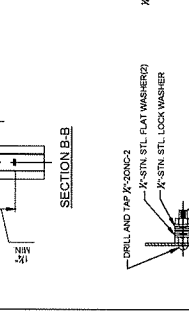
NOTES:

- THE T^T POLE TRANSFORMER BASE SHALL MEET THE INTERVENING REQUIREMENTS NECESSARY TO SUPPORT AND TRANSFER ALL LOADS FROM THE T^T POLE SHOE BASE TO THE SFT FOUNDATION.
- THE SLOT SHALL BE OF SUFFICIENT SIZE TO ACCEPT 1" DIA BOLTS.
- THE MAXIMUM LENGTH OF THE SLOT SHALL BE SUCH WHEN A 1 1/2" SQUARE SHOE BASE IS MOUNTED ON THAT TOP OF THE TRANSFORMER BASE, THE SLOTS SHALL BE COMPLETELY COVERED BY SHOE BASE.
- THE MAXIMUM ALLOWABLE TRANSFORMER BASE THICKNESS SHALL BE DETERMINED BY GUARANTEERS AT 7" ANCHOR BOLT WITH LOCK WASHER. FLAT WASHER SHALL BE USED TO PROVIDE A MINIMUM INSERTION OF 1/2" INTO THE COUPLER NUT. SEE SECTION C-C.
- THE BASE SHALL BE WASHED SUCH THAT THERE IS 5/16" MINIMUM CLEARANCE FROM THE SHOE BASE TO THE TRANSFORMER BASE. K: WASHING.
- THE BASE SHALL BE FINISHED WITH A MINIMUM CLEARANCE FROM THE 1" DIA. STN. STL. PLAIN FLAT WASHER TO THE OUTER SIDES OF THE TRANSFORMER BASE.
- THE MANUFACTURER SHALL PROVIDE INSTRUCTIONS AS WELL AS ALL NECESSARY DIMENSIONS AND MATERIALS NECESSARY FOR INSTALLATION OF T^T POLE TRANSFORMER BASE.
- PROVIDE ALUMINUM COUPLER NUTS AND LOCK WASHERS TO BE USED TO SECURE THE TRANSFORMER BASE TO THE SHOE BASE. APPROVED VANDAL RESISTANT LOCKING DEVICE SHALL BE USED AT 7" ANCHOR BOLT WITH LOCK WASHER. FLAT WASHER SHALL BE USED TO PROVIDE A MINIMUM INSERTION OF 1/2" INTO THE COUPLER NUT. SEE SECTION C-C.
- INSTALL GROUND STUD ON THE WALL OPPOSITE DOOR. SEE DETAIL A OR ALTERNATE DETAIL B.
- THE BOTTOM OF THE TRANSFORMER BASE STRUCTURE THAT IS IN CONTACT WITH THE FOUNDATION SHALL BE PAINTED WITH ONE COAT OF BITUMINOUS BASE PAINT.
- ALL HEX HD. BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL, ASTM A193, GRADE B8.
- EITHER TRANSFORMER BASE STYLE MAY BE USED AS LONG AS IT IS CONSISTENT THROUGHOUT THE PROJECT.
- SUPPLIER SHALL FURNISH DETAIL DRAWINGS OF TRANSFORMER BASE FOR APPROVAL.
- CERTIFIED MILL TEST REPORTS SHALL BE FURNISHED THAT INDICATE ALL MATERIALS MEET REQUIREMENTS AS INDICATED ON DRAWING.



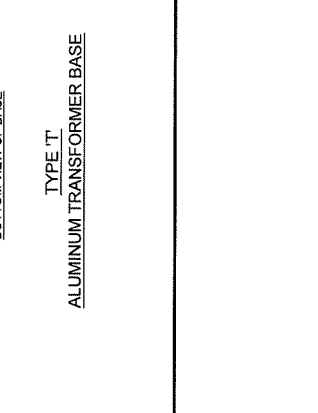
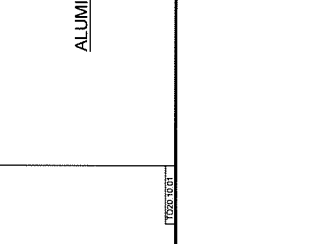
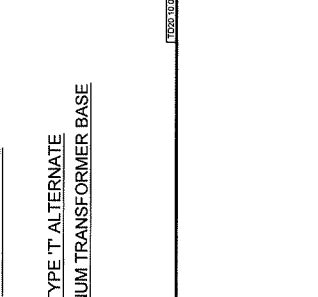
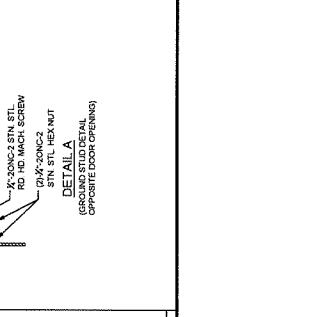
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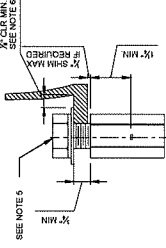
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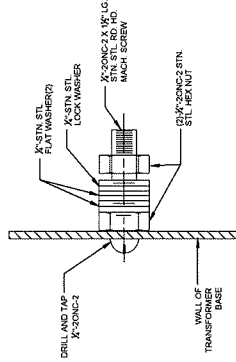
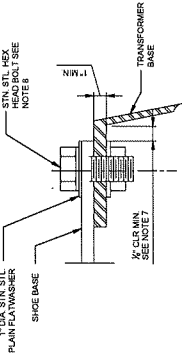
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- INSTALL GROUND STUD ON THE WALL OPPOSITE DOOR. SEE DETAIL A OR ALTERNATE DETAIL B.
- THE BOTTOM OF THE TRANSFORMER BASE STRUCTURE THAT IS IN CONTACT WITH THE FOUNDATION SHALL BE PAINTED WITH ONE COAT OF BITUMINOUS BASE PAINT.
- ALL HEX HD. BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL, ASTM A193, GRADE B8.
- EITHER TRANSFORMER BASE STYLE MAY BE USED AS LONG AS IT IS CONSISTENT THROUGHOUT THE PROJECT.
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- CERTIFIED MILL TEST REPORTS SHALL BE FURNISHED THAT INDICATE ALL MATERIALS MEET REQUIREMENTS AS INDICATED ON DRAWING.

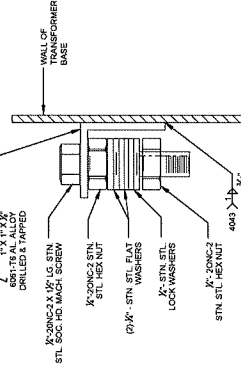




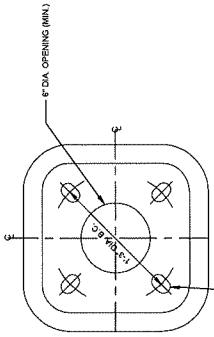
SECTION G-G



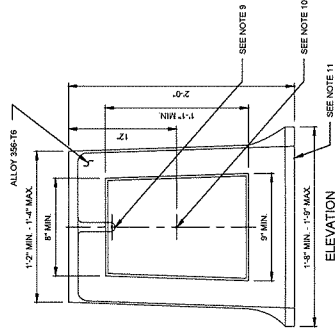
DETAILE
(GROUND STUD DETAIL
OPPOSITE DOOR OPENING)
N.T.S.



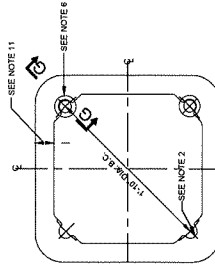
DETAIL F
(ALT. GROUND STUD DETAIL
OPPOSITE DOOR OPENING)
N.T.S.



TOP VIEW



ELEVATION



BOTTOM VIEW

NOTES:

1. THE "K" POLE TRANSFORMER BASE SHALL MEET THE STRENGTH REQUIREMENTS OF THE PORT AUTHORITY FOR ALL LOADS FROM "K" POLE BASES BASE TO THE SKY FOUNDATION.
2. SLOT SHALL BE OF SUFFICIENT SIZE TO ACCEPT 1" DIA. BOLTS ON A 1"10" DIA. BOLT CIRCLE.
3. SLOT SHALL BE OF SUFFICIENT SIZE TO ACCEPT 1" DIA. BOLTS ON A 1"5" DIA. BOLT CIRCLE.
4. THE MAXIMUM LENGTH OF SLOT SHALL BE SUCH THAT WHEN A 1"10" SQUARE SHOE BASE IS MOUNTED ON TOP OF THE TRANSFORMER BASE, THE SLOTS SHALL BE COMPLETELY COVERED BY SHOE BASE.
5. THE MAXIMUM ALLOWABLE TRANSFORMER BASE THICKNESS SHALL BE 1"10". THE TRANSFORMER BASE SHALL BE MOUNTED ON A MINIMUM INSERTION OF 1/2" INTO THE COUPLING NUT. SEE SECTION G-G.
6. THE BASE SHALL BE DESIGNED SUCH THAT THERE IS A 1/2" MINIMUM CLEARANCE FROM THE 2\"/>
- 7. THE BASE SHALL BE DESIGNED SUCH THAT IT IS NOT FLANGED AS SHOWN IN THE DRAWINGS UNLESS THE MANUFACTURER SHALL HAVE CLEARANCE TO THE INNER SIDES.
- 8. THE MANUFACTURER SHALL PROVIDE INSTRUCTIONS AS WELL AS ALL HARDWARE THEY DESIGN NECESSARY FOR INSTALLATION OF "K" POLE TRANSFORMER BASE.
- 9. THE MANUFACTURER SHALL PROVIDE INSTRUCTIONS TO THE BASE WITH AN APPROVED WINDWARD RESISTANT LOCKING DEVICE. LOCKING DEVICE SHOULD USE A 1/2" OR 3/4" STN. STL. GRADE B SOCKET HD. CAP SCREW. ALTERNATE DETAIL F.
- 10. INSTALL GROUND STUD ON WALL OPPOSITE DOOR. (SEE DETAIL E OR ALTERNATE DETAIL F)
- 11. THE BOTTOM OF THE TRANSFORMER BASE STRUCTURE THAT IS IN CONTACT WITH THE WALL OF THE FOUNDATION SHALL BE PAINTED WITH ONE COAT OF BUTAMOUS BASE PAINT.
- 12. ALL LEGS, RISERS, NUTS AND WASHERS SHALL BE STAINLESS STEEL.
- 13. SUPPLIER SHALL FURNISH DETAIL DRAWINGS OF TRANSFORMER BASE FOR APPROVAL.
- 14. THE MANUFACTURER SHALL FURNISH CERTIFIED MILL TEST REPORTS THAT SHOW ALL ALLOYS AND TEMPER ARE IN ACCORDANCE WITH WHAT IS SHOWN ON THE DRAWINGS.

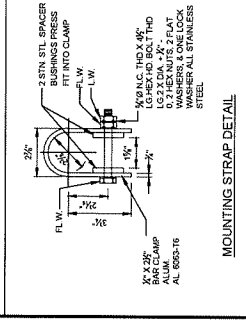
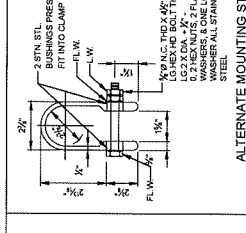
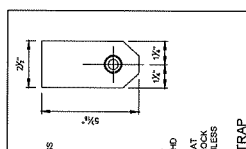
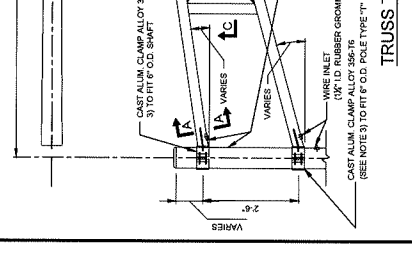
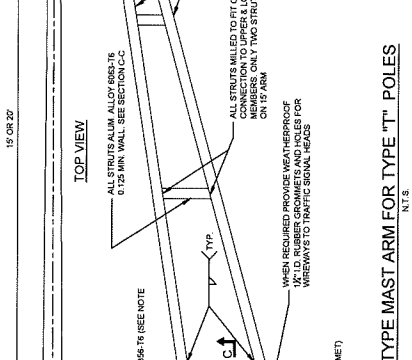
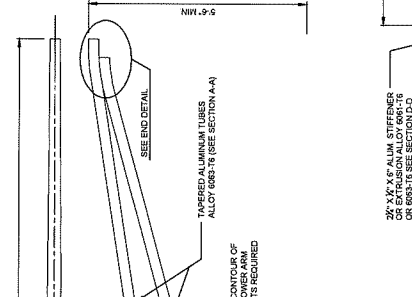
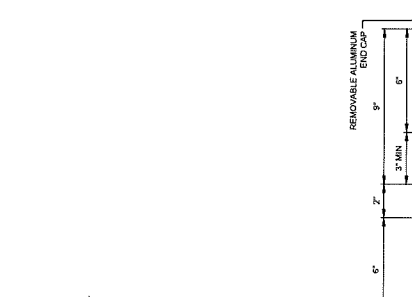
No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PAN/NJ			
Traffic Standard			
Details			
TRAFFIC			
TRAFFIC SIGNALS			
ALUMINUM "K" POLE TRANSFORMER BASE			

Designed by
Checked by
Date
Number

SEPTEMBER 2015

TD20.11
P&E

- NOTES:**
- TRAFFIC SIGNAL SHALL BE DESIGNED IN ACCORDANCE WITH THE VARIATION OF THE MAINTENANCE STANDARDS SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNALS, LUMINAIRES AND TRAFFIC SIGNALS, DESIGN IN ACCORDANCE WITH THE FOLLOWING:
 - BASIC WIND SPEED - 110 MPH
 - FATIGUE DESIGN SHALL BE MAINTAINED
 - SIGNAL ARM CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOAD COMBINATIONS SHOWN IN THE CONTRACT PLANS AS A MINIMUM. THE DESIGN LOAD SHALL BE:
 - 15' ARM
 - 1" W/1.3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 14'-6" FROM THE T.O.P. OF POLE
 - 1" W/1.3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 4'-8" FROM THE T.O.P. OF POLE
 - 1" W/1.3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 4'-6" FROM THE T.O.P. OF POLE
 - 1" W/1.3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 7'-4" FROM THE T.O.P. OF POLE
 DESIGN LOADS DO NOT INCLUDE EFFECTS OF BACKPLATES ON SIGNAL HEADS. IF BACKPLATES ARE NEEDED THEY CONSTITUTE ADDITIONAL LOADING AND SHALL BE INCLUDED IN THE DESIGN OF THE STRUCTURE.
 - THE ALUMINUM STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR THE STRUCTURE TO BE USED WITH THE PROPOSED ATTACHMENTS AND CONNECTIONS AS PER ASHRAE STANDARD AND SHALL BE VERIFIED BY THE CONTRACTOR. THE REQUIRED STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.
 - DO NOT USE THE STANDARDS DETAIL FOR 15' SIGNAL GUSSET FOR 15' POLES DUE TO VERTICAL CLEARANCE REQUIREMENTS.
 - THE END OF THE MAINT ARM FOR TYPE "T" POLES DUE TO VERTICAL CLEARANCE REQUIREMENTS.
 - MAINT ARMS WILL BE INSTALLED ON THE PORT AUTHORITY STANDARD ALUMINUM TRAFFIC SIGNAL POLE CONFORMING TO DETAIL TD20.09.01 WITH TRANSFORMER BASE DETAIL TD20.10.01 OR TD20.10.02.
 - AN EXTRUDED CLAMP MAY BE SUPPLIED AS AN ALTERNATE TO THE CAST BUSHING INDICATED. GENERAL CONFIGURATION MUST BE SIMILAR AND STIFFENERS MUST BE INSTALLED AS INDICATED. CLAMP MUST FIT EXCEEDED CAST CLAMP CONSTRUCTION EXTRUSION ALLOY 6061-T6.
 - ALL STAINLESS STEEL ITEMS SHALL CONFORM TO ASTM A193 GRADE B8.
 - CASTINGS SHALL BE FABRICATED TO THE DIMENSIONS SHOWN ON SHEET.
 - THE TOP AND BOTTOM CHUBS FOR THE 15' AND 20' MAINT ARMS SHALL BE FABRICATED FROM A TAPERED CAST ALUMINUM. THE CASTING SHALL CONFORM TO THE DIMENSIONS SHOWN IN DETAILS 1, 2, 3, AND 4 ON THIS SHEET.



TRAFFIC SIGNALS

15' TYP. POLE TRUSS TYPE MAINT ARM, CLAMP AND END

ENGINEERING DEPARTMENT

PANYNJ

Traffic Standard

Details

TRAFFIC

Designed by

Drawn by

Checked by

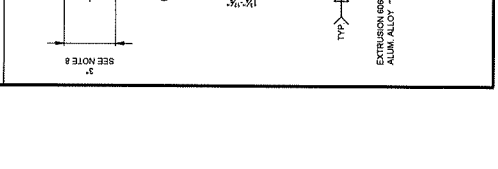
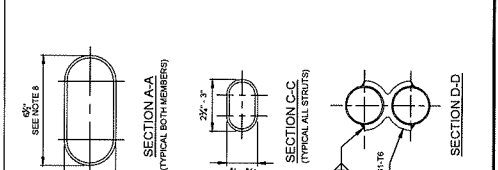
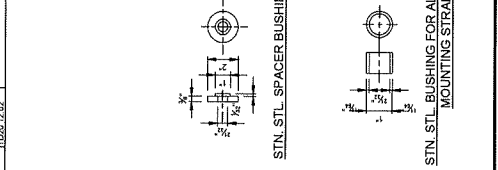
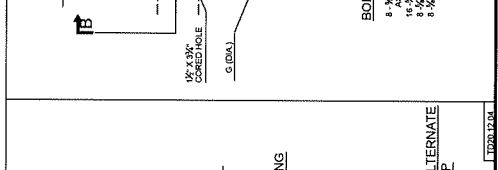
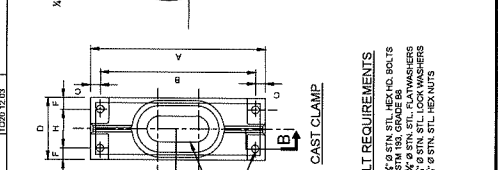
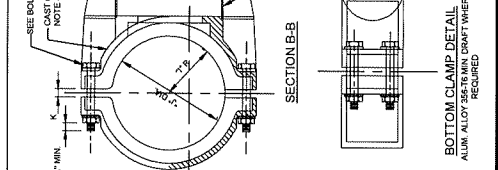
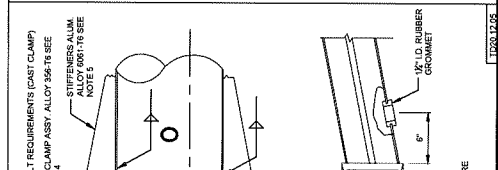
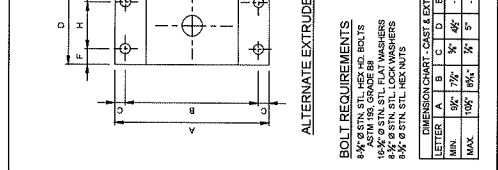
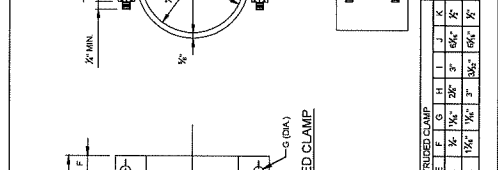
Date

Contract Number

SEPTEMBER 2018

TD20.12

THE PORT AUTHORITY OF NY & NJ IS NOT RESPONSIBLE FOR THE DESIGN OF THE TRAFFIC SIGNALS OR THE STRUCTURE TO BE USED WITH THE PROPOSED ATTACHMENTS AND CONNECTIONS AS PER ASHRAE STANDARD AND SHALL BE VERIFIED BY THE CONTRACTOR. THE REQUIRED STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.



NOTES:
1. DIMENSIONS SHALL BE OBSERVED IN ACCORDANCE WITH THE FIRST SECTION OF THE ASSOCIATED AISC DESIGN SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LAMINARIES AND TRAFFIC SIGNALS.
2. BASIC WIND SPEED: 110 MPH.
3. FATIGUE DESIGN SHALL BE MAINTAINED.

2. SIGNAL ARM CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOAD COMBINATIONS SHOWN IN THE DESIGN PLANS AS A MINIMUM. THE DESIGN SHALL BE:
1.4 WIND 3 SECTION SIGNAL HEAD (FREE SWINGING) LOCATED 2'-6" FROM THE L OF POLE
1.4 WIND 3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 12'-6" FROM THE L OF POLE
1.4 WIND 3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 12'-6" FROM THE L OF POLE
DESIGN LOAD DOES NOT INCLUDE EFFECTS OF BACKLATES ON SIGNAL HEADS. IF BACKLATES ARE NEEDED THEY CONSTITUTE ADDITIONAL LOADING AND SHALL BE INCLUDED IN THE DESIGN OF THE STRUCTURE.

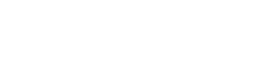
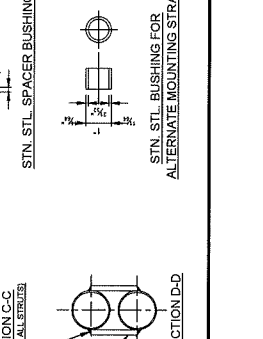
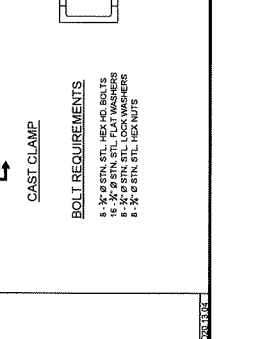
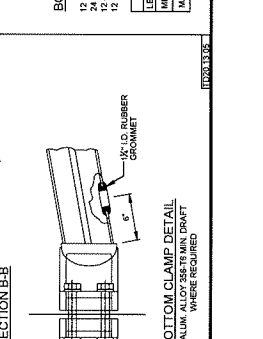
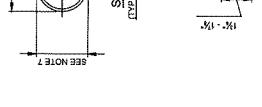
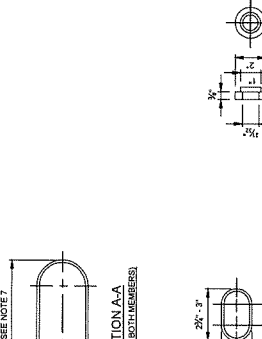
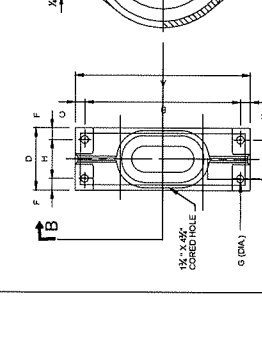
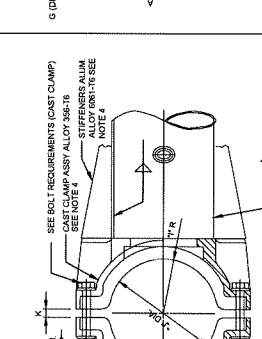
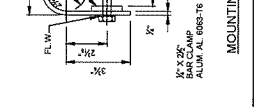
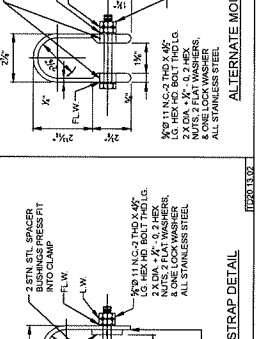
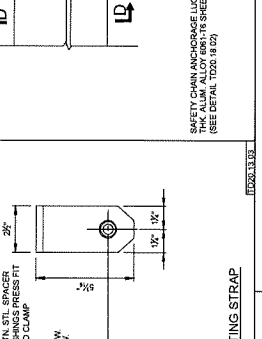
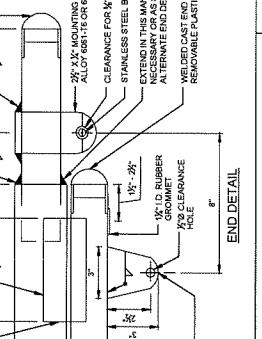
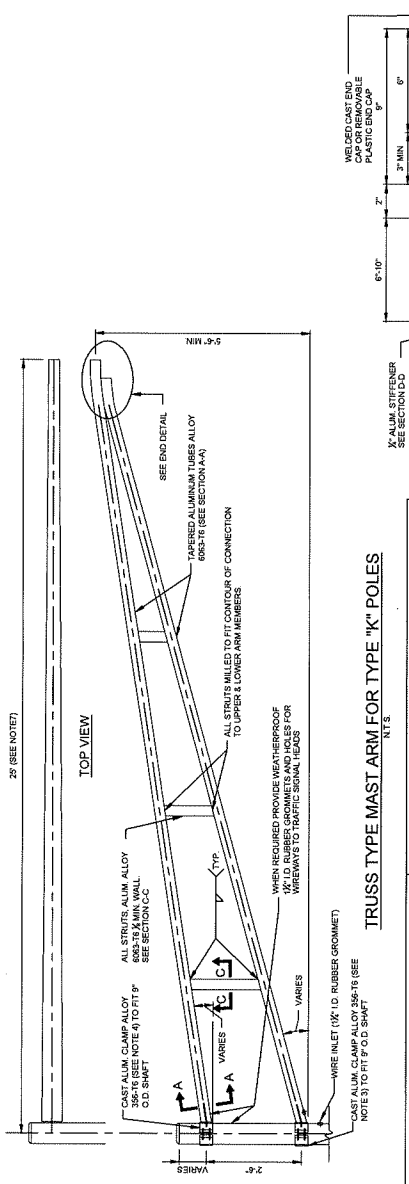
3. THE ALUMINUM SIGNAL STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY THE STRUCTURE SIZES AND DETAILS AS SHOWN IN THE DRAWINGS AND SHALL VERIFY THE CONFORMANCE WITH THE REQUIREMENTS OF THE AISC DESIGN SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LAMINARIES AND TRAFFIC SIGNALS.

4. THE ALUMINUM SIGNAL STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY THE STRUCTURE SIZES AND DETAILS AS SHOWN IN THE DRAWINGS AND SHALL VERIFY THE CONFORMANCE WITH THE REQUIREMENTS OF THE AISC DESIGN SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LAMINARIES AND TRAFFIC SIGNALS.

5. ALL STAINLESS STEEL ITEMS SHALL CONFORM TO ASTM A165 GRADE B1.

6. CASTINGS SHALL BE FABRICATED TO THE DIMENSIONS SHOWN 3/16".

7. THE TOP AND BOTTOM CHORD FOR THE 29 ARM SHALL BE FABRICATED FROM A TAPERED TUBE. MINIMUM TAPERED TUBE DIMENSIONS SHALL BE 6" DIA. X 0.187" THICK AT THE LARGER END AND SHALL TAPER SUFFICIENTLY TO ACCOMMODATE ELEMENTS SHOWN IN DETAILS 1, 2, 7 AND 4 ON THIS SHEET.



TRAFFIC SIGNALS

1"K" POLE TRUSS TYPE MAST ARM, CLAMP AND END

ENGINEERING DEPARTMENT

PANYNJ

Traffic Standard

Details

Approved

Checked by

DESIGNED BY

DRAWN BY

DATE

SEPTEMBER 2018

CONTRACT NUMBER

TD20.13

REVISION

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SEPTEMBER 2018

CONTRACT NUMBER

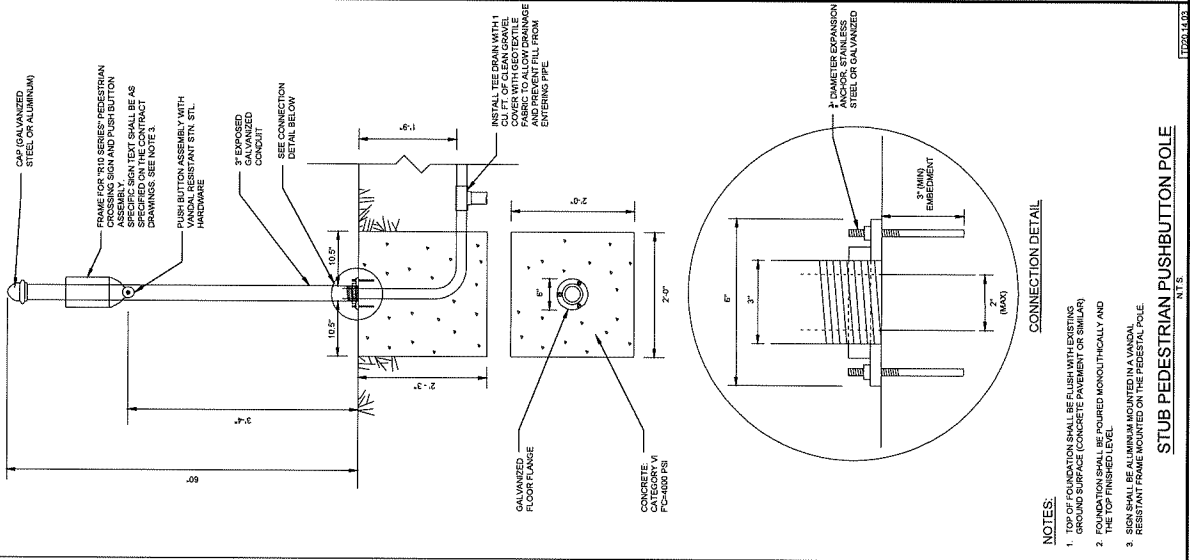
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REVISION

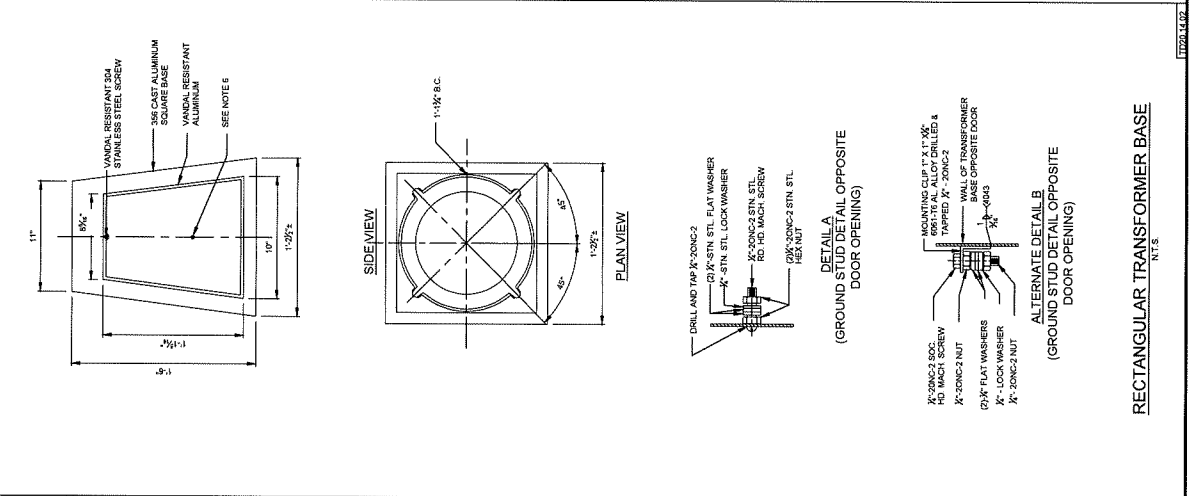
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ENGINEERING DEPARTMENT			
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TRAFFIC			
Title			
TRAFFIC SIGNALS			
TRAFFIC SIGNAL			
PEDESTAL ASSEMBLY			

Designed by
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 Date
 Contract Number
 Revision Number

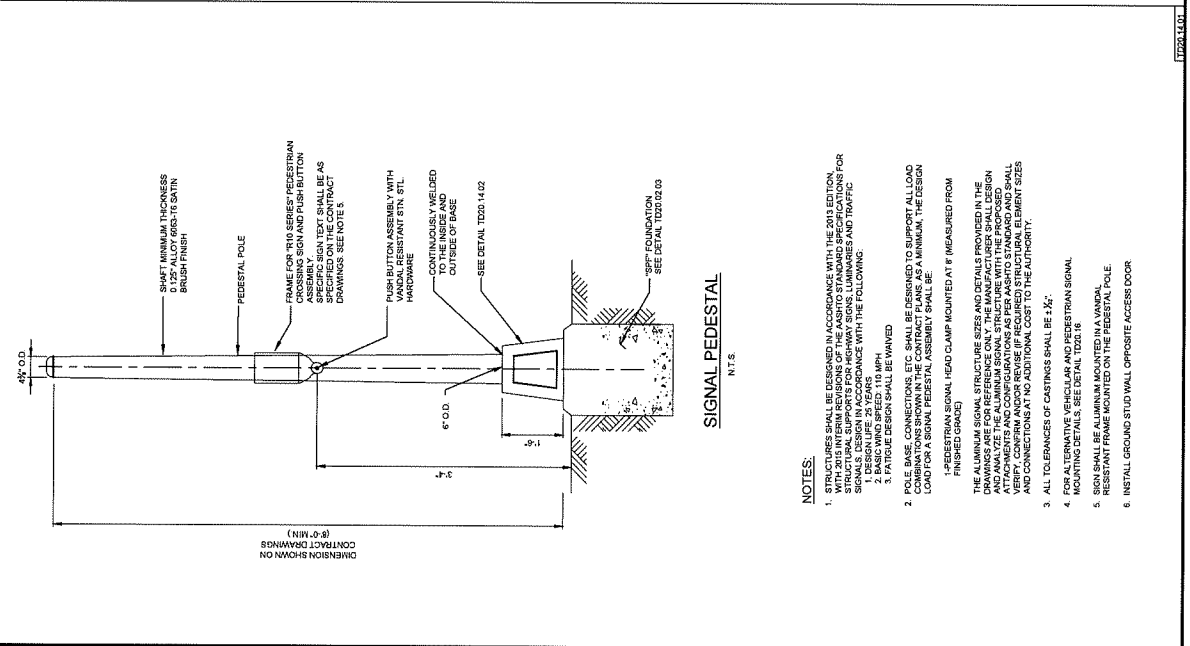
SEPTEMBER 2018
 TD20.14
 RFP



- NOTES:**
1. TOP OF FOUNDATION SHALL BE FLUSH WITH EXISTING GROUND SURFACE (CONCRETE PAVEMENT OR SIMILAR)
 2. THE TOP FINISHED LEVEL
 3. SIGN SHALL BE ALUMINUM MOUNTED IN A VANDAL RESISTANT FRAME MOUNTED ON THE PEDESTAL POLE.



RECTANGULAR TRANSFORMER BASE
 N.T.S.



SIGNAL PEDESTAL
 N.T.S.

- NOTES:**
1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, SECTION 1501.00, OF THE ASHRAE STANDARD SPECIFICATIONS FOR STRUCTURAL STEELWORK FOR BUILDINGS AND TRAFFIC.
 2. BASIC WIND SPEED: 110 MPH
 3. FATIGUE DESIGN SHALL BE WIND
 4. POLE BASE, CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOADS AND FACTORS THEREON. AS A MINIMUM, THE DESIGN LOAD FOR A SIGNAL PEDESTAL ASSEMBLY SHALL BE:
 1. PEDESTAL SIGNAL HEAD CLAMP MOUNTED AT 6' (MEASURED FROM FINISHED GRADE)
 THE ALUMINUM SIGNAL STRUCTURE SIZE AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE MANUFACTURER SHALL DESIGN ATTACHMENTS AND CONFIGURATIONS AS PER ASHRAE STANDARD AND SHALL VERIFY, CONFIRM AND/OR RE-DESIGN AS REQUIRED STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.
 5. ALL TOLERANCES OF CASTINGS SHALL BE 1/4%.
 6. FOR ALTERNATIVE VEHICULAR AND PEDESTRIAN SIGNAL MOUNTING DETAILS, SEE DETAIL TD20.18
 7. SIGN SHALL BE ALUMINUM MOUNTED IN A VANDAL RESISTANT FRAME MOUNTED ON THE PEDESTAL POLE.
 8. INSTALL GROUND STUD WALL OPPOSITE ACCESS DOOR

Notes:

- CLAMP TYPE POLE ASSEMBLY (CAST ALUMINUM) SHOWN MUST MEET THE FOLLOWING TEST: 8" DIA. CLAMP TEST.
COMPLETE CLAMP SHALL BE SET ON 8" DIA. POLE.
COMPLETE CLAMP AFTER BEING SET FROM 8" DIA. POLE SHALL BE RESET ON 12" DIA. POLE.
CLAMP SHALL NOT SHOW ANY FRACTURES AFTER THE SETTING AND RESETTING PROCEDURE.
TESTING SHALL BE IN THE PRESENCE OF A REPRESENTATIVE OF THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY.
MANUFACTURER SHALL ALSO SUBMIT DRAWING OF CLAMP TO BE TESTED TO THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY DEPT. OF ELECTRICAL ENGINEERING.
- CAST ALUM. CLAMPS OF LARGER DIA. WILL BE TESTED IN A SIMILAR MANNER.
- PROVIDE SLOTS OR SERRATIONS ON FACE OF BOLTS AND NUTS. SERRATED POSITIONING RING SLOTS TO BE 3/32" DP 3/16" W. SERRATIONS TO MATCH HOUSING AND ALLOW 5° ADJUSTMENT.
- STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2015 EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) AND THE 2015 EDITION OF THE INTERNATIONAL MECHANICAL AND ELECTRICAL PLUMBING CODE (IMC).
1. DESIGN LIFE 25 YEARS
2. WIND SPEED 100 MPH
3. FATIGUE DESIGN SHALL BE WAIVED
- INSTALL 1/4" (D) RUBBER GROMMET IN TRAFFIC SIGNAL STANDARD.
- ALL STN. STL. BOLTS PER ASTM A-193 GRADE B8 OR ASTM F593 ALLOY 304.
- ALL ALUM. SAND CASTINGS SHALL BE ASTM B26 ALLOY.
- ALL ALUM. NIPPLES SHALL BE 6061-T6, ASTM B-241 ALLOY, MIL. SPEC. CQA 20098F.
- HINGE STRAP IS ADAPTABLE TO ANY POLE DIA. BY ADDING OR REMOVING INNER LIMS.
- HINGE STRAP CAN BE INSTALLED ON ROUND, SQUARE, OCTAGONAL OR ANY SHAPE POLE DESIRED.
- ALL TOLERANCES OF CASTINGS SHALL BE .5X.
- WHEN PEDESTRIAN CLAMP IS INSTALLED ON 6" DIA. POLE, CLAMP SHALL BE DESIGNED TO PROVIDE A MINIMUM GAP OF 1/2".

Notes:

- TIGHTEN HARDWARE AS PER TORQUE RATING AS RECOMMENDED BY THE MANUFACTURER.
- HINGE STRAP TYPE ONLY
FOR HINGE STRAP TYPE ONLY,
ALL HINGE STRAP INNER LINK AND LOCK LINK PARTS SHALL BE CAST ALUMINUM.
PROVIDE A UNIFORM AND SMOOTH SURFACE.

Notes:

- HINGE STRAP TYPE ONLY
FOR HINGE STRAP TYPE ONLY,
ALL HINGE STRAP INNER LINK AND LOCK LINK PARTS SHALL BE CAST ALUMINUM.
PROVIDE A UNIFORM AND SMOOTH SURFACE.

Notes:

- HINGE STRAP TYPE ONLY
FOR HINGE STRAP TYPE ONLY,
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PROVIDE A UNIFORM AND SMOOTH SURFACE.

Notes:

- HINGE STRAP TYPE ONLY
FOR HINGE STRAP TYPE ONLY,
ALL HINGE STRAP INNER LINK AND LOCK LINK PARTS SHALL BE CAST ALUMINUM.
PROVIDE A UNIFORM AND SMOOTH SURFACE.

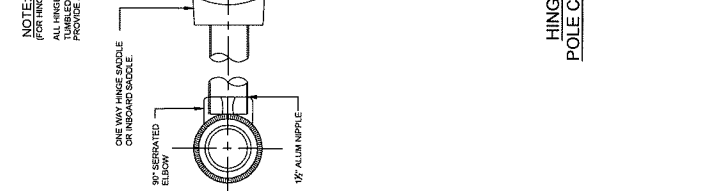
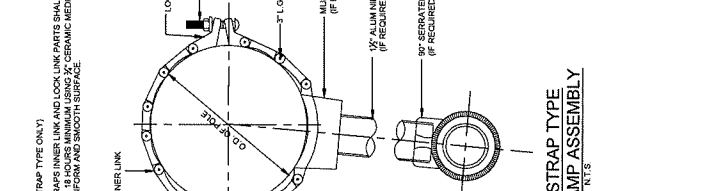
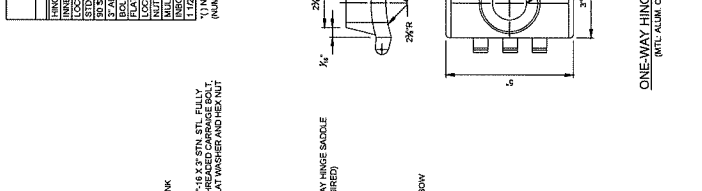
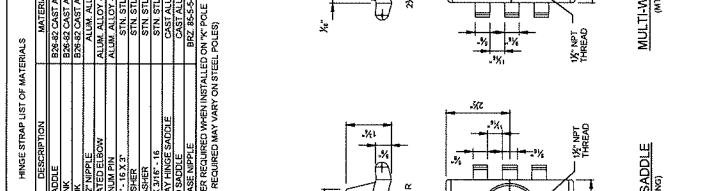
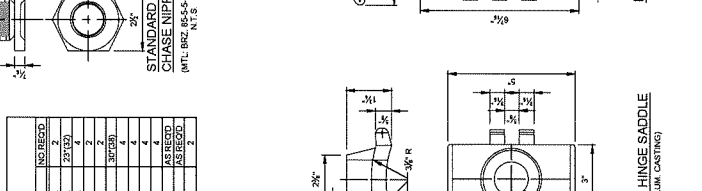
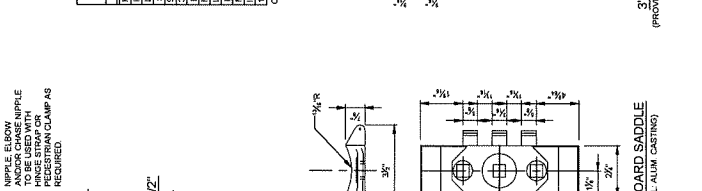
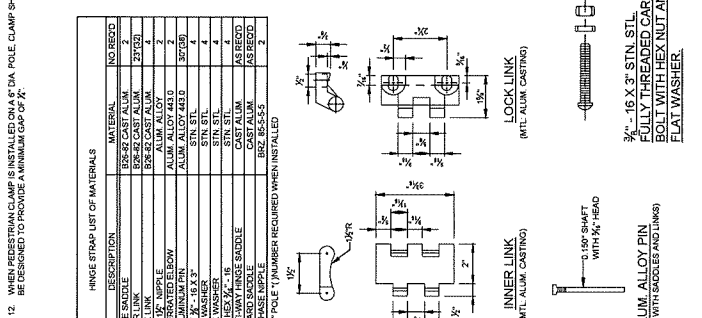
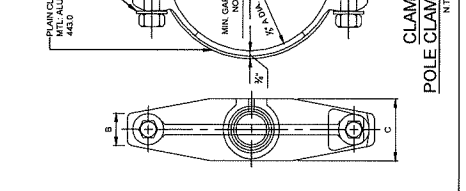
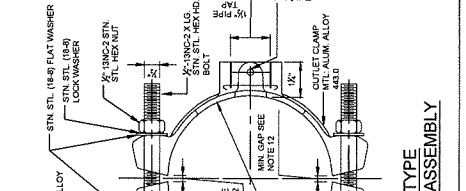
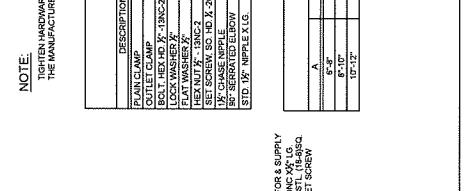
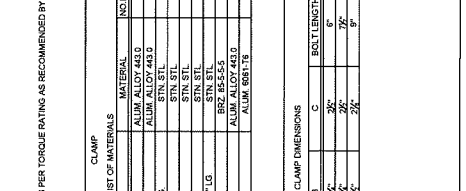
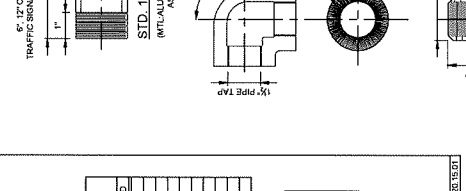
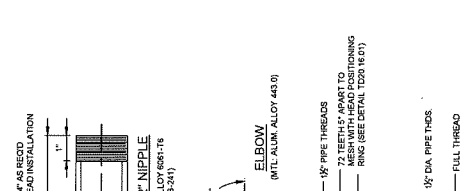
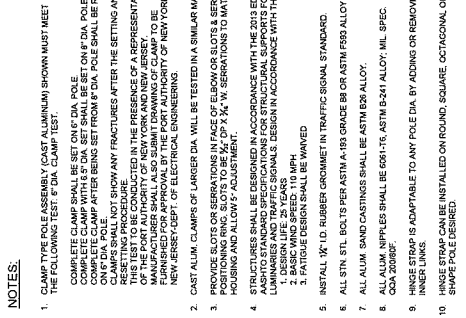
No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PAN/NJ			
Traffic Standard			
Details			
TRAFFIC			
TITLE			
TRAFFIC SIGNALS			
POLE CLAMP MOUNTING ASSEMBLIES			

DESIGNED BY
DRAWN BY
CHECKED BY
DATE

SEPTEMBER 2018

CONTRACT NUMBER
DRAWING NUMBER
PROJECT

TD20.15



DESCRIPTION	MATERIAL	NO. REQ'D
HINGE SADDLE	BZ-82 CAST ALUM	2
INNER LINK	BZ-82 CAST ALUM	2
LOCK LINK	BZ-82 CAST ALUM	2
STD. 1/2" NIPPLE	ALUM. ALLOY	2
90° SERRATED ELBOW	ALUM. ALLOY 443.0	2
FLAT WASHER	ALUM. ALLOY 443.0	2
STN. STL. BOLT	STN. STL.	4
STN. STL. NUT	STN. STL.	4
MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
1/2" CHASE NIPPLE	BZ-82 355-5-5	2

DESCRIPTION	MATERIAL	NO. REQ'D
HINGE SADDLE	BZ-82 CAST ALUM	2
INNER LINK	BZ-82 CAST ALUM	2
LOCK LINK	BZ-82 CAST ALUM	2
STD. 1/2" NIPPLE	ALUM. ALLOY	2
90° SERRATED ELBOW	ALUM. ALLOY 443.0	2
FLAT WASHER	ALUM. ALLOY 443.0	2
STN. STL. BOLT	STN. STL.	4
STN. STL. NUT	STN. STL.	4
MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
1/2" CHASE NIPPLE	BZ-82 355-5-5	2

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FLAT WASHER	ALUM. ALLOY 443.0	2
STN. STL. BOLT	STN. STL.	4
STN. STL. NUT	STN. STL.	4
MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
1/2" CHASE NIPPLE	BZ-82 355-5-5	2

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HINGE SADDLE	BZ-82 CAST ALUM	2
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MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
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DESCRIPTION	MATERIAL	NO. REQ'D
HINGE SADDLE	BZ-82 CAST ALUM	2
INNER LINK	BZ-82 CAST ALUM	2
LOCK LINK	BZ-82 CAST ALUM	2
STD. 1/2" NIPPLE	ALUM. ALLOY	2
90° SERRATED ELBOW	ALUM. ALLOY 443.0	2
FLAT WASHER	ALUM. ALLOY 443.0	2
STN. STL. BOLT	STN. STL.	4
STN. STL. NUT	STN. STL.	4
MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
1/2" CHASE NIPPLE	BZ-82 355-5-5	2

DESCRIPTION	MATERIAL	NO. REQ'D
HINGE SADDLE	BZ-82 CAST ALUM	2
INNER LINK	BZ-82 CAST ALUM	2
LOCK LINK	BZ-82 CAST ALUM	2
STD. 1/2" NIPPLE	ALUM. ALLOY	2
90° SERRATED ELBOW	ALUM. ALLOY 443.0	2
FLAT WASHER	ALUM. ALLOY 443.0	2
STN. STL. BOLT	STN. STL.	4
STN. STL. NUT	STN. STL.	4
MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
1/2" CHASE NIPPLE	BZ-82 355-5-5	2

DESCRIPTION	MATERIAL	NO. REQ'D
HINGE SADDLE	BZ-82 CAST ALUM	2
INNER LINK	BZ-82 CAST ALUM	2
LOCK LINK	BZ-82 CAST ALUM	2
STD. 1/2" NIPPLE	ALUM. ALLOY	2
90° SERRATED ELBOW	ALUM. ALLOY 443.0	2
FLAT WASHER	ALUM. ALLOY 443.0	2
STN. STL. BOLT	STN. STL.	4
STN. STL. NUT	STN. STL.	4
MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
1/2" CHASE NIPPLE	BZ-82 355-5-5	2

DESCRIPTION	MATERIAL	NO. REQ'D
HINGE SADDLE	BZ-82 CAST ALUM	2
INNER LINK	BZ-82 CAST ALUM	2
LOCK LINK	BZ-82 CAST ALUM	2
STD. 1/2" NIPPLE	ALUM. ALLOY	2
90° SERRATED ELBOW	ALUM. ALLOY 443.0	2
FLAT WASHER	ALUM. ALLOY 443.0	2
STN. STL. BOLT	STN. STL.	4
STN. STL. NUT	STN. STL.	4
MULTIWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
ONEWAY HINGE SADDLE	CAST ALUM.	AS REQ'D
1/2" CHASE NIPPLE	BZ-82 355-5-5	2

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

TRAFFIC
T16

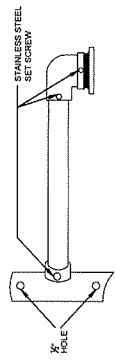
TRAFFIC SIGNALS

**SIGNAL HEAD POLE
TOP AND BRACKET
MOUNTING**

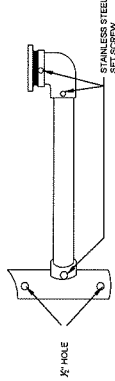
This drawing is the property of the Port Authority of New York and New Jersey. It is to be used only for the project and location for which it was prepared. It is not to be reproduced, copied, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Port Authority of New York and New Jersey. The Port Authority of New York and New Jersey is not responsible for any errors or omissions in this drawing. The user of this drawing is advised to verify all dimensions and specifications before construction. The Port Authority of New York and New Jersey is not responsible for any damage or injury resulting from the use of this drawing.

Designed by
Checked by
Date SEPTEMBER 2016
Contract Number

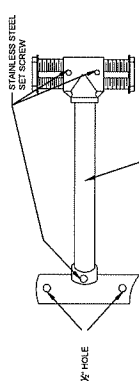
TD20.16.02
Drawing Number
TD20.16
P18



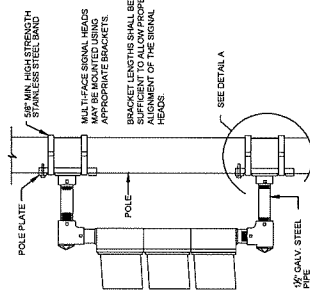
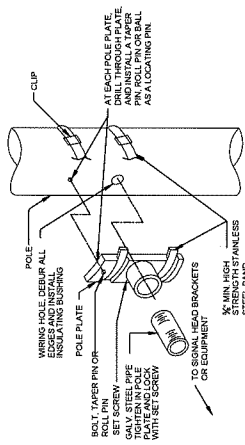
IF MOUNTED ON WOOD POLE A BRACKET ARM TO BE INSTALLED IN BRACKET ARM TO CONNECT SIGNAL HEAD CABLE CONDUIT.



FOR PEDESTRIAN SIGNAL WHERE NEEDED



N.T.S.



POLE CLAMP ASSEMBLY BAND TYPE

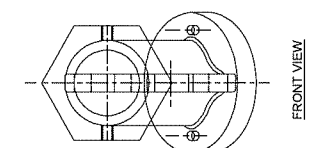
N.T.S.

- NOTES:**
- IF PEDESTRIAN SIGNALS ARE BEING INSTALLED, THE MOUNTING ATTACHMENTS SHALL BE A TYPE SPECIFICALLY MANUFACTURED FOR THAT PURPOSE
 - MOUNTING DETAILS SHOWN ARE TYPICAL FOR ONE WAY AND TWO WAY SIGNAL DISPLAY. MULTI-WAY ARRANGEMENTS, WHEN REQUIRED, SHALL BE OF SIMILAR APPROPRIATE DESIGN.
 - SEE DETAIL TD20.14 FOR TRAFFIC SIGNAL PEDESTAL STANDARD DETAILS
 - POLE AND HARDWARE COLOR SHALL MATCH.

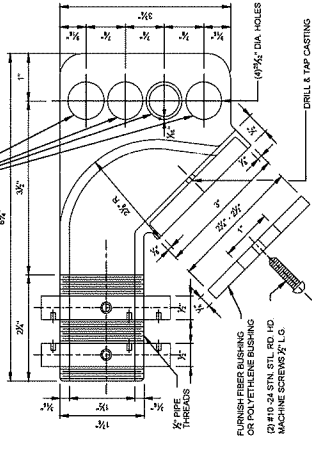
**THE PORT AUTHORITY
OF NY & NJ**

NOTES:
1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN INCHES.
2. ALL TOLERANCES OF CASTINGS SHALL BE $\pm .02$
3. ALL STAINLESS STEEL BOLTS ON THIS SHEET PER ASTM A193, GRADE B8

ON INSTALLATION THE CONTRACTOR SHALL
MOUNTING HOLE AS REQUIRED TO OBTAIN
OPTIMAL POSITIONING AND MAXIMUM VISIBILITY
OF SIGNALS. REFER TO THE APPROVED
ROADWAY



FRONT VIEW



WIRE OUTLET DETAIL
(MATERIAL: BRONZE, BS-54-3)
N.T.S.

NOTE:
DRILL HOLES IN INSERT (1) STN. STL. BUSHING $\frac{1}{8}$ " THK
BUSHING SHALL BE ASSURED BY THE FABRICATOR IN
MOUNTING HOLE AS REQUIRED TO OBTAIN
OPTIMAL POSITIONING AND MAXIMUM VISIBILITY
OF SIGNALS. REFER TO THE APPROVED
ROADWAY

FURNISH FIBER BUSHING
OR POLYETHYLENE BUSHING
(2) #10-24 STN. STL. RD. HD.
MACHINE SCREWS $\frac{1}{2}$ " L.G.

DRILL & TAP CASTING
FOR #10-24 THREAD

THRU HOLES
(1) $\frac{1}{8}$ " - 18NC X 1 L.G. STN. STL. HEX BOLT
(2) $\frac{1}{8}$ " - 18NC X 1 L.G. STN. STL. HEX NUT
(2) $\frac{1}{8}$ " - STN. STL. FLAT WASHER
(1) $\frac{1}{8}$ " - STN. STL. LOCK WASHER

72 TEETH SPACED 4" APART
AROUND ENTIRE CIRCUMFERENCE

BRONZE CHASE NIPPLE $\frac{1}{2}$ " L.G.

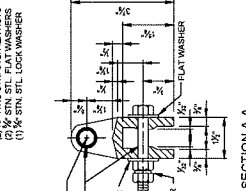
$\frac{1}{8}$ " - 20NC X $\frac{1}{2}$ " L.G. STN. STL. COP.
PI-HEX. RD. SET SCW.

3 HOLES EQUALLY SPACED FOR MIN.
 $\frac{1}{8}$ " - 18NC X 1 L.G. STN. STL. HEX.
RD. CAP SCW.

X" RAISED PIPE STOP

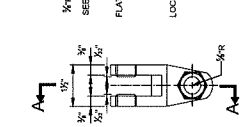
X" BUSHING

NOTE:
DRILL CASTING FOR CDM STN. STL. $\frac{1}{8}$ " THK
WALL BUSHING. FURNISH AND PRESS FIT
INTO CASTING.
FURNISH WITH EACH UNIVERSAL JOINT
ASSEMBLY: ONE (1) UNIVERSAL JOINT
(2) $\frac{1}{8}$ " - 18NC STN. STL. HEX NUTS
(2) $\frac{1}{8}$ " - STN. STL. FLAT WASHERS
(1) $\frac{1}{8}$ " - STN. STL. LOCK WASHER

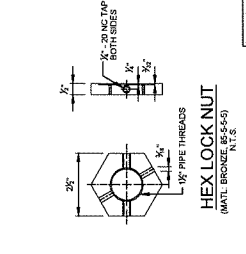


SECTION A-A
UNIVERSAL JOINT DETAIL
(MATERIAL: BRONZE, BS-54-3)
N.T.S.

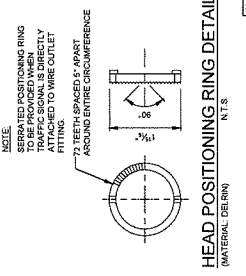
NOTE:
SERRATED POSITIONING RING
SHALL BE ATTACHED TO SIGNALS DIRECTLY
ATTACHED TO WIRE OUTLET
FITTING.
FITTING USED AS A PART
AROUND ENTIRE CIRCUMFERENCE



HEAD POSITIONING RING DETAIL
N.T.S.
(MATERIAL: DELRIN)

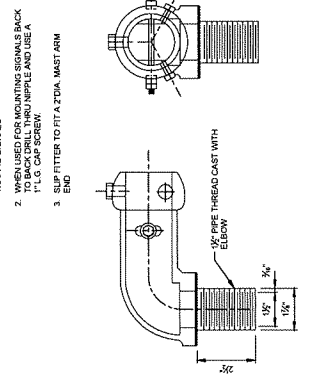


HEX LOCK NUT
(MATERIAL: BRONZE, BS-54-3)
N.T.S.

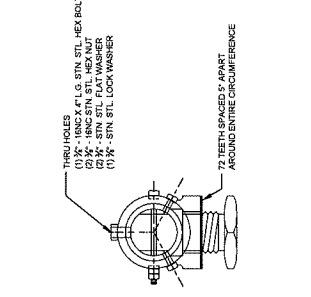


ELEVATOR PLUMBIZER DETAIL
(MATERIAL: ALUMINUM 6061-T6)
N.T.S.

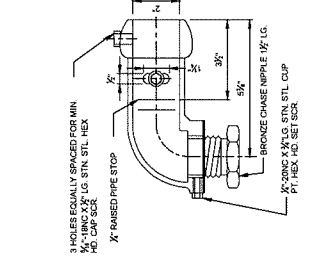
NOTE:
1. THE SLIP FITTER SHALL BE UTILIZED IN
MOUNTING SIGNALS ONLY PROGRAMMED
TRAFFIC SIGNALS
2. WHEN USED FOR MOUNTING SIGNALS BACK
TO BACK DRILL THRU PIPE AND USE A
1-LG. CAP SCREW.
3. END
FITTER TO FIT A ZDA MAST ARM



ALTERNATE MAST ARM SLIP FITTER
(MATERIAL: BRONZE, BS-54-3)
N.T.S.



MAST ARM SLIP FITTER DETAIL
(MATERIAL: BRONZE, BS-54-3)
N.T.S.



ELEVATOR PLUMBIZER DETAIL
(MATERIAL: ALUMINUM 6061-T6)
N.T.S.

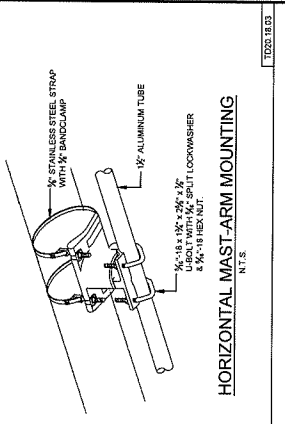
No.	Date	Revision	Approved
1			
ENGINEERING DEPARTMENT			
PANIYU			
Traffic Standard			
Details			

TRAFFIC SIGNALS

**UNIVERSAL JOINT,
WIRE OUTLET,
ELEVATOR,
PLUMBIZER
AND MAST ARM SPLIT
FITTER**

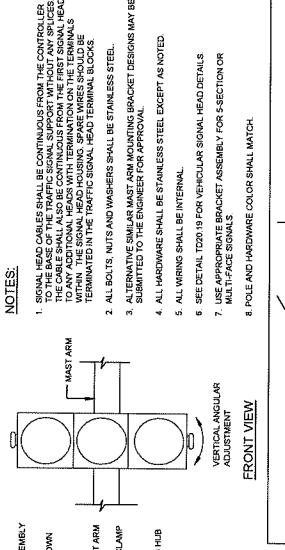
Designed by _____
Drawn by _____
Checked by _____
Date _____ SEPTEMBER 2016
Contract Number _____

TD20.17.06
Drawing Number
PER



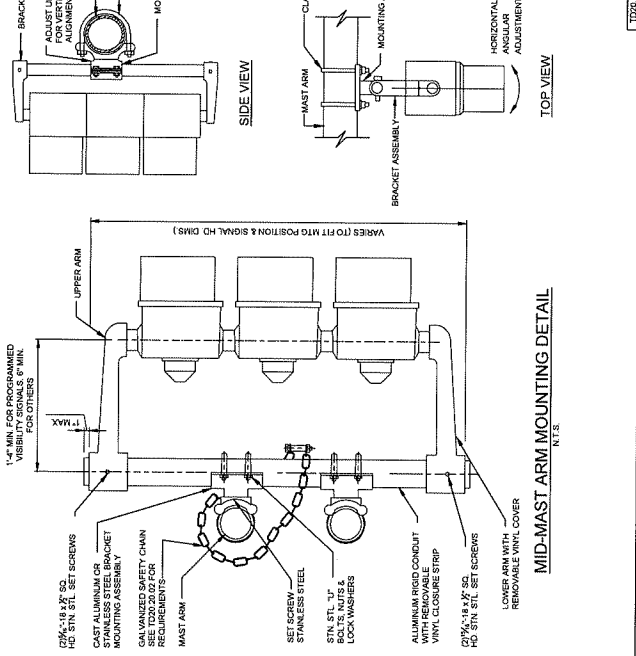
HORIZONTAL MAST-ARM MOUNTING
N.T.S.

TD20-18.03



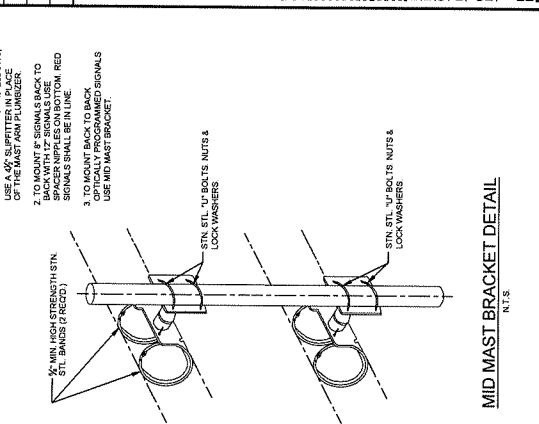
VERTICAL MAST-ARM MOUNTING
N.T.S.

TD20-18.04



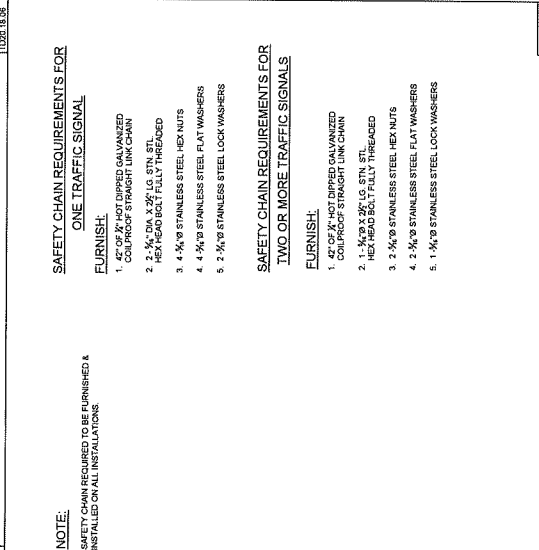
MID-MAST ARM MOUNTING DETAIL
N.T.S.

TD20-18.01



FIVE SECTION INSTALLATION
N.T.S.

TD20-18.02



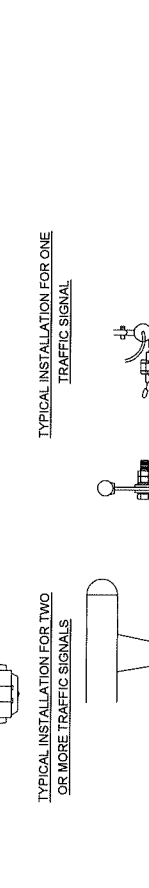
TYPICAL SAFETY CHAIN INSTALLATIONS
N.T.S.

TD20-18.02

- NOTES:**
1. SIGNAL HEAD CABLES SHALL BE CONTINUOUS FROM THE CONTROLLER TO THE BASE OF THE TRAFFIC SIGNAL SUPPORT WITHOUT ANY SPLICES. ALL CABLES SHALL BE PROTECTED BY A RIGID CONDUIT AND SECURED TO ANY ADDITIONAL HEADS WITH TERMINATION ON THE TERMINALS TO PREVENT THE SIGNAL HEAD HOUSING SPARE WIRES SHOULD BE TERMINATED IN THE TRAFFIC SIGNAL RIGID TERMINAL BLOCKS.
 2. ALL BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL.
 3. ALTERNATIVE SIMILAR MAST ARM MOUNTING BRACKET DESIGNS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
 4. ALL HARDWARE SHALL BE INTERNAL.
 5. ALL WIRING SHALL BE INTERNAL.
 6. SEE DETAIL TD20 19 FOR VERTICAL SIGNAL HEAD DETAILS.
 7. USE APPROPRIATE BRACKET ASSEMBLY FOR 5-SECTION OR MULTIFACE SIGNALS.
 8. PAINT AND HARDWARE COLOR SHALL MATCH.

- SAFETY CHAIN REQUIREMENTS FOR ONE TRAFFIC SIGNAL**
- FURNISH:**
1. 42\"/>
- SAFETY CHAIN REQUIREMENTS FOR TWO OR MORE TRAFFIC SIGNALS**
- FURNISH:**
1. 42\"/>

- NOTES:**
- SAFETY CHAIN REQUIRED TO BE FURNISHED & INSTALLED ON ALL INSTALLATIONS.

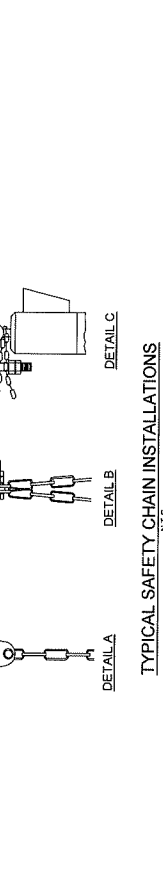


TYPICAL INSTALLATION FOR ONE TRAFFIC SIGNAL

DETAIL A

DETAIL B

DETAIL C



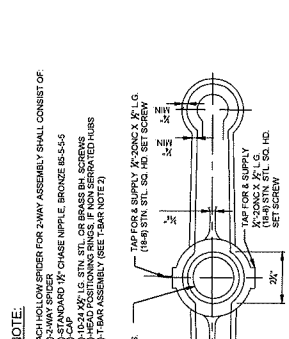
TYPICAL INSTALLATION FOR TWO OR MORE TRAFFIC SIGNALS

DETAIL A

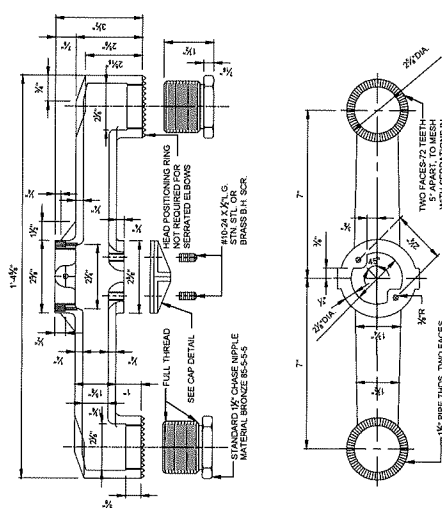
DETAIL B

DETAIL C

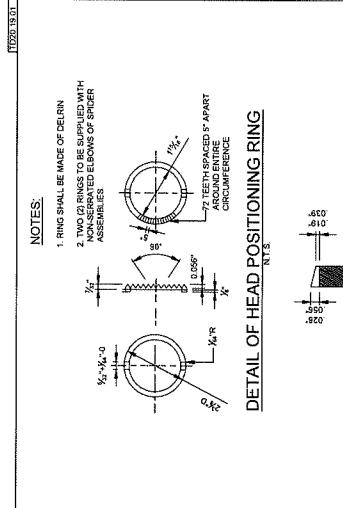
No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			
TRAFFIC			
TITLE		TRAFFIC SIGNALS	
SIGNAL HEAD MID-MAST ARM AND SAFETY CHAIN MOUNTING			
Designed by	Checked by	Date	SEPTEMBER 2016
Drawing Number		TD20.18	PAGE



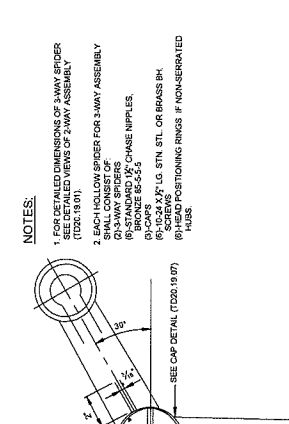
NOTE:
 EACH HOLLOW SPIDER FOR 2-WAY ASSEMBLY SHALL CONSIST OF:
 (1) STANDARD 1/2" CHASE NIPPLE (BRONZE BS-5-5)
 (2) CAP (MATERIAL ALUM. ALLOY 560)
 (3) HEAD POSITIONING RINGS, IF NON-SERRATED HUBS
 (4) T-BAR ASSEMBLY (SEE T-BAR NOTE 2)



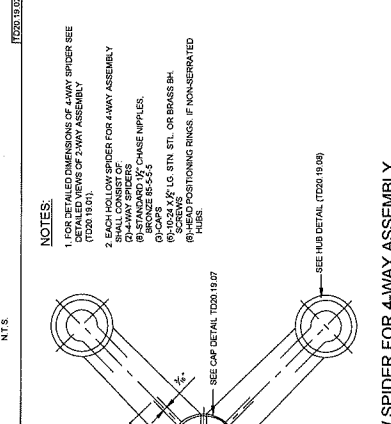
HOLLOW SPIDER FOR 2-WAY ASSEMBLY
 N.T.S.



DETAIL OF HEAD POSITIONING RING
 N.T.S.



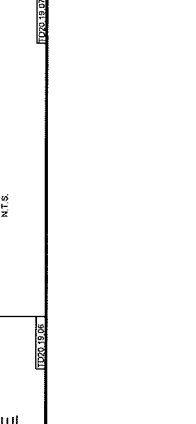
HOLLOW SPIDER FOR 3-WAY ASSEMBLY
 N.T.S.



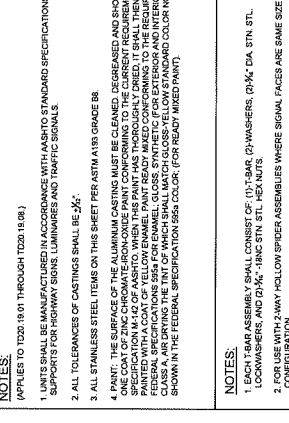
HOLLOW SPIDER FOR 4-WAY ASSEMBLY
 N.T.S.



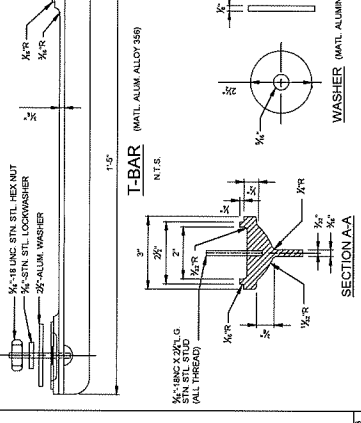
STANDARD 1-1/2" CHASE NIPPLE
 (MATERIAL BS-5-5-9)
 N.T.S.



CAP (MATERIAL ALLOY 560)
 N.T.S.



HOLLOW SPIDER HUB NON-SERRATED HUB (TYPICAL)
 N.T.S.



NOTE:
 PROVIDE SLOTS 1/2" DEEP X 1/4" WIDE FOR SERRATED POSITIONING RING

NOTES:
 (APPLIES TO TD20.19.01 THROUGH TD20.19.08)
 1. UNITS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASBTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.
 2. ALL TOLERANCES OF CASTINGS SHALL BE X/100.
 3. ALL STAINLESS STEEL ITEMS ON THIS SHEET PER ASTM A193 GRADE B8.
 4. ALL HARDWARE SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED. UNLESS OTHERWISE SPECIFIED, ALL HARDWARE SHALL BE SUPPLIED WITH GALVANNEAL COATING. UNLESS OTHERWISE SPECIFIED, ALL HARDWARE SHALL BE SUPPLIED WITH GALVANNEAL COATING. UNLESS OTHERWISE SPECIFIED, ALL HARDWARE SHALL BE SUPPLIED WITH GALVANNEAL COATING.
 5. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 6. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 7. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 8. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 9. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 10. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

NOTES:
 1. EACH T-BAR ASSEMBLY SHALL CONSIST OF: (1) T-BAR, (2) WASHERS, (3) 1/2" DIA. STN. STL. LOCKWASHERS, AND (4) 1/2" DIA. STN. STL. HEX NUTS.
 2. FOR USE WITH 2-WAY HOLLOW SPIDER ASSEMBLIES WHERE SIGNAL FACES ARE SAME SIZE AND CONFIGURATION.
 3. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.
 4. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.
 5. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.
 6. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.
 7. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.
 8. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.
 9. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.
 10. T-BAR SHALL BE GALVANNEAL COATED UNLESS OTHERWISE SPECIFIED.

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

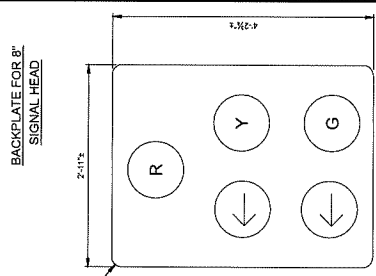
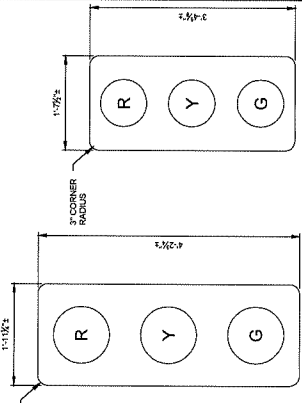
TRAFFIC SIGNALS
TITLE

SIGNAL HEADS AND BACKPLATES

THIS DRAWING IS SUBJECT TO THE PORT AUTHORITY'S STANDARD SPECIFICATIONS FOR TRAFFIC SIGNALS AND SIGNAL HEADS, WHICH MAY BE REVISED FROM TIME TO TIME WITHOUT NOTICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST EDITION OF THESE SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST EDITION OF THE PORT AUTHORITY'S STANDARD SPECIFICATIONS FOR TRAFFIC SIGNALS AND SIGNAL HEADS, WHICH MAY BE REVISED FROM TIME TO TIME WITHOUT NOTICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST EDITION OF THESE SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST EDITION OF THESE SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST EDITION OF THESE SPECIFICATIONS.

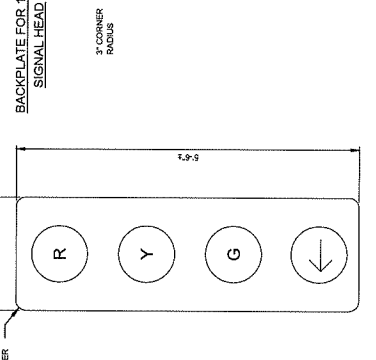
Designed by: _____
 Drawn by: _____
 Checked by: _____
 Date: SEPTEMBER 2018
 Contract Number: _____

TD 20.20
 Drawing Number
 2018



NOTES:

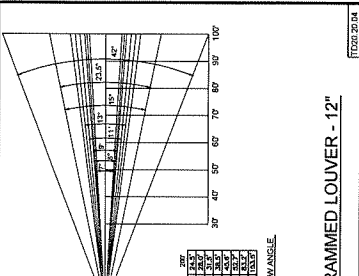
- ANY COMBINATION OF BACKPLATES FOR SIGNAL HEADS, INCLUDING MIXED 12" AND 8" SIGNAL HEADS, ARE AVAILABLE. REFER TO SHOP DRAWINGS FOR APPROVAL.
- MATERIAL: 1/2" BLACK ABS WITH MARCELL FINISH FRONT SIDE
- FABRICATION: VACUUM FORMED
- IF A BACKPLATE IS USED, THE VERTICAL CLEARANCE SHALL BE MAINTAINED AS SHOWN. THE BOTTOM OF THE BACKPLATE TO THE CENTER OF THE LENSES SHALL BE 1/2" CLEARANCE TO THE CENTER OF THE LENSES.
- DETAILS SHOWN ARE TYPICAL. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
- BACKPLATES SHALL BE REFLECTORIZED AND CONFORM TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES



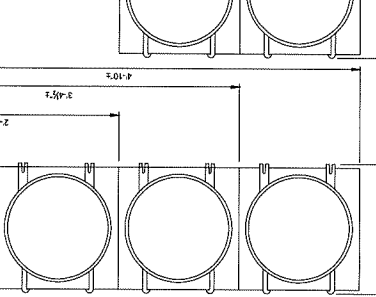
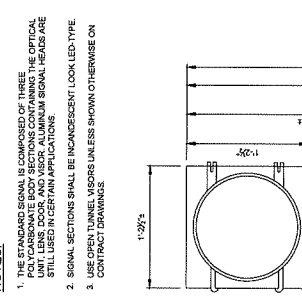
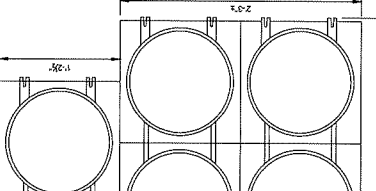
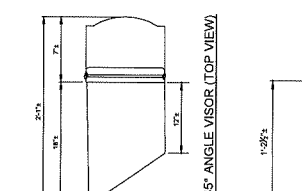
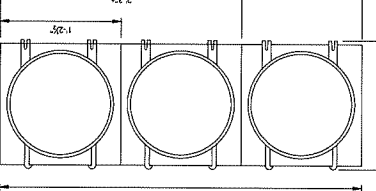
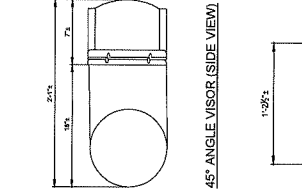
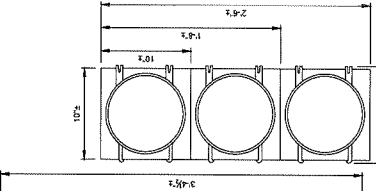
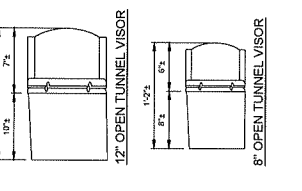
BACKPLATES
 N.T.S.

5 SECTION CLUSTER (TYP.)
 FOR 12" SIGNAL HEAD

4 SECTION BACKPLATE (TYP.)
 FOR 12" SIGNAL HEAD



GEOMETRICALLY PROGRAMMED LOUVER - 12"
 N.T.S.



12" OPEN TUNNEL VISOR

8" OPEN TUNNEL VISOR

8" SIGNAL DIMENSIONS

12" SIGNAL DIMENSIONS

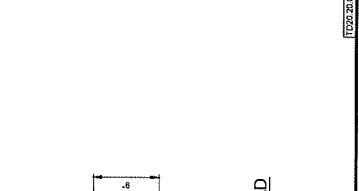
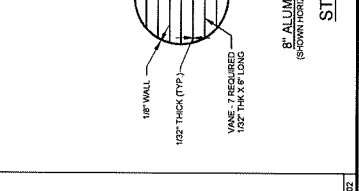
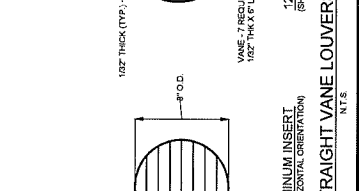
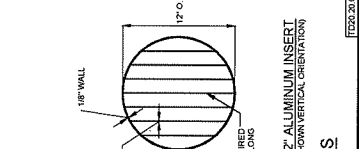
45° ANGLE VISOR (SIDE VIEW)

45° ANGLE VISOR (TOP VIEW)

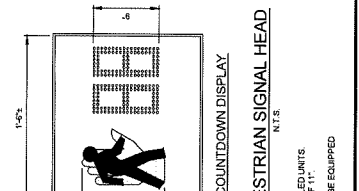
FOUR SECTION 12" SIGNAL DIMENSIONS

FIVE SECTION CLUSTER 12" SIGNAL DIMENSIONS

VEHICULAR SIGNAL HEAD
 N.T.S.



STRAIGHT VANE LOUVERS
 N.T.S.



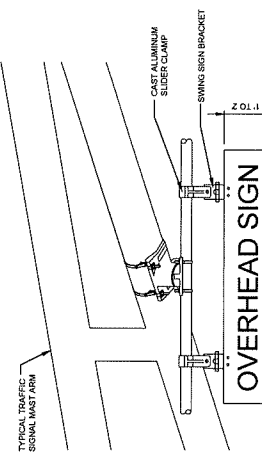
PEDESTRIAN SIGNAL HEAD
 N.T.S.

NOTES:

- PEDESTRIAN SIGNALS SHALL BE LED UNITS. SYMBOL HEIGHT SHALL BE A MINIMUM OF 11".
- ALL PEDESTRIAN SIGNAL HEADS SHALL BE EQUIPPED WITH EGO CONTRA VISORS.

NOTES:

- INSTALLATION OF SLIDER BRACKET SHALL BE THROUGH ONE WALL OF INTO SLIDER THRU-HOLE IN PIPE. ATTACH 3/8" SQUARE HEAD SET SCREW.
- MAST ARM SIGNS EXCEEDING 60 INCHES IN WIDTH SHALL BE BETWEEN THE SWING BRACKETS. THE EDGING SHALL HAVE A 1/2" FLANGE PERPENDICULAR TO THE SIGN FACE AND SHALL FOLLOW THE TOP EDGE OF THE SIGN PANEL AS FOLLOWS:
ALUMINUM EDGING SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL NOT CARRYING THE LEGEND.
DUAL-FACED SIGN PANELS SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL OPPOSING THE FLOW OF TRAFFIC IN THE DIRECTION OF TRAVEL. THE EDGING SHALL BE COVERED WITH THE REFLECTIVE SHEETING IN KIND WITH THE SIGN BORDER OR SIGN BACKGROUND. THE REFLECTIVE SHEETING SHALL BE APPLIED TO THE EDGING PRIOR TO INSTALLING THE EDGING ON THE SIGN PANEL.

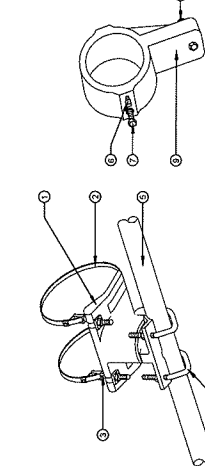


OVERHEAD SIGN
4 TO 6
SEE NOTE 2
N.T.S.

MAST ARM ASSEMBLY BRACKET
N.T.S.

PARTS:

- CLAMP ALUMINUM ALLOY (G55-18)
- 5/8" STAINLESS STEEL STRAP (D) WITH 5/8" BANDBLAMP.
- STAINLESS STEEL CLAMP SCREW WITH BEARING WASHER, 7/16" DIA. X 1 1/2" LONG.
- 5/16" - 18 X 1 1/2" X 2 1/2" X 7/8" U-BOLT WITH 5/16" SPLIT LOCKWASHER & 5/16" - 18 NUT.
- 1/2" ALUMINUM TUBE
- 3/8" SQUARE HEAD SET SCREW
- 5/16" X 1/2" HEX BOLT WITH LOCKWASHER
- 3/8" X 1/2" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT AND 1/2" STAINLESS STEEL WASHER
- CAST ALUMINUM SLIDER CLAMP

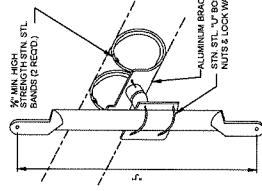


SLIDER CLAMP

NOTES:

- SIGN BRACKET SHALL BE MOUNTED TO THE MAST ARM WITH ROTATIONAL ADJUSTMENT ABOUT BRACKET AXIS VERTICAL AND HORIZONTAL ADJUSTMENT ABOUT MAST ARM AND VERTICAL PLANE.
- THE SIGN BRACKET SHALL BE DESIGNED TO SUPPORT A 35 LB. SIGN WITH A PROJECTED AREA OF 19 SQ. FT.
- ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
- TWO BRACKETS SHALL BE FURNISHED FOR EACH SIGN.

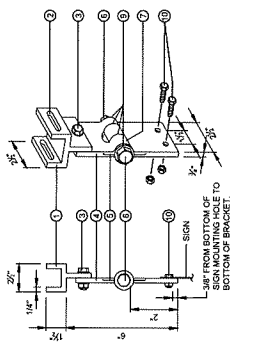
SIGN SIZE	DM - "T"
12" X 24"	12"
18" X 36"	18"
24" X 48"	24"
30" X 54"	30"
36" X 72"	36"



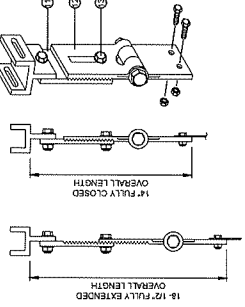
ALUMINUM SIGN BRACKET DETAIL
N.T.S.

PARTS:

- PIVOTAL UPPER BRACKET.
- 1/2" X 1/4" SLOT FOR DOUBLE STRAPPING TO MAST ARM. 1/2" X 1/4" STAINLESS STEEL STRAP WITH HOOK-AND-LOOP (BUCKLE RECOMMENDED).
- 1/2" - 13 X 1/2" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT AND 1/2" STAINLESS STEEL WASHER. SIZES ALLOW UPPER BRACKET TO PIVOT AND ALIGN WITH MAST ARM.
- 6" OVERALL DROP WITH FIXED LENGTH SIGN BRACKET.
- STAINLESS STEEL DAMPENER SPRING (REMOVABLE)
- STAINLESS STEEL HEX LOCK NUT WITH 1/16" STAINLESS STEEL WASHER.
- 1" O.D. AXLE HOUSING.
- 1/2" - 13 X 1/4" STAINLESS STEEL HEX HEAD BOLT WITH 1/16" STAINLESS WASHER.
- OD U-BOLTING.
- SIGN MOUNTING WASHERS, CONCENTRIC 60 DEG. 3/16" - 18 X 1/2" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT, TWO HOLES ON 1/2" CENTERS. PROVIDE POSITIVE LOCK SIGN MOUNTING TO BRACKET.
- 6X6" OVERALL LENGTH UPPER ADJUSTABLE SIGN BRACKET SECTION.
- 6" OVERALL LENGTH LOWER ADJUSTABLE SIGN BRACKET SECTION, INCLUDING AXLE HOUSING & PIVOT POINT.
- 1/2" - 13 X 1/2" STAINLESS STEEL HEX BOLT WITH STAINLESS STEEL HEX LOCK NUT. ADJUST BRACKET TEETH TO LEVEL SIGN.



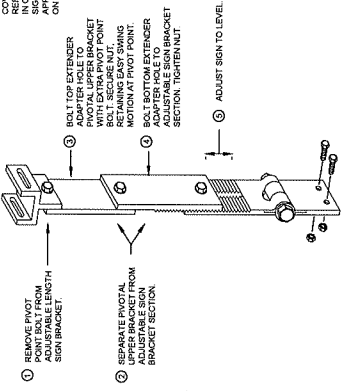
FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET



ADJUSTABLE LENGTH SWING SIGN BRACKET

NOTES:

- EXTENDER ADAPTERS ARE ALL ALUMINUM 6061 T6 ALLOY 3/8" DIA. X 1 1/2" LONG. EACH EXTENDER ADAPTER SHALL INCLUDE ONE PIVOT POINT, 1/2" - 13 X 1/2" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL WASHER, AND 2 WASHERS. EXTENDER ADAPTERS ARE AVAILABLE IN VARIABLE LENGTHS ON REQUEST.
- MAST ARM SIGNS EXCEEDING 60 INCHES IN WIDTH SHALL BE BETWEEN THE SWING BRACKETS. THE EDGING SHALL HAVE A 1/2" FLANGE PERPENDICULAR TO THE SIGN FACE AND SHALL FOLLOW THE TOP EDGE OF THE SIGN PANEL AS FOLLOWS:
SINGLE-FACED SIGN PANELS SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL NOT CARRYING THE LEGEND.
DUAL-FACED SIGN PANELS SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL OPPOSING THE FLOW OF TRAFFIC IN THE DIRECTION OF TRAVEL. THE EDGING SHALL BE COVERED WITH THE REFLECTIVE SHEETING IN KIND WITH THE SIGN BORDER OR SIGN BACKGROUND. THE REFLECTIVE SHEETING SHALL BE APPLIED TO THE EDGING PRIOR TO INSTALLING THE EDGING ON THE SIGN PANEL.



EXTENDER ADAPTERS
FOR ADJUSTABLE LENGTH SWING SIGN BRACKET.
CONTROLLABLE LENGTH AND DEGREE OF MAST ARM RISE.

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANJUN			
Traffic Standard			
Details			

TRAFFIC
Title

TRAFFIC SIGNALS

**OVERHEAD MAST
ARM SWING SIGN
BRACKET**

DESIGNED BY
DRAWN BY
CHECKED BY
DATE
SEPTEMBER, 2018
CONTRACT NUMBER
DRAWING NUMBER
TD20.21
P.28

No.	Date	Revision	Approved
			ENGINEERING DEPARTMENT
			PANYNJ
			Traffic Standard
			Details

Traffic
Title
TRAFFIC SIGNALS
SPAN WIRE MOUNTED
INSTALLATION

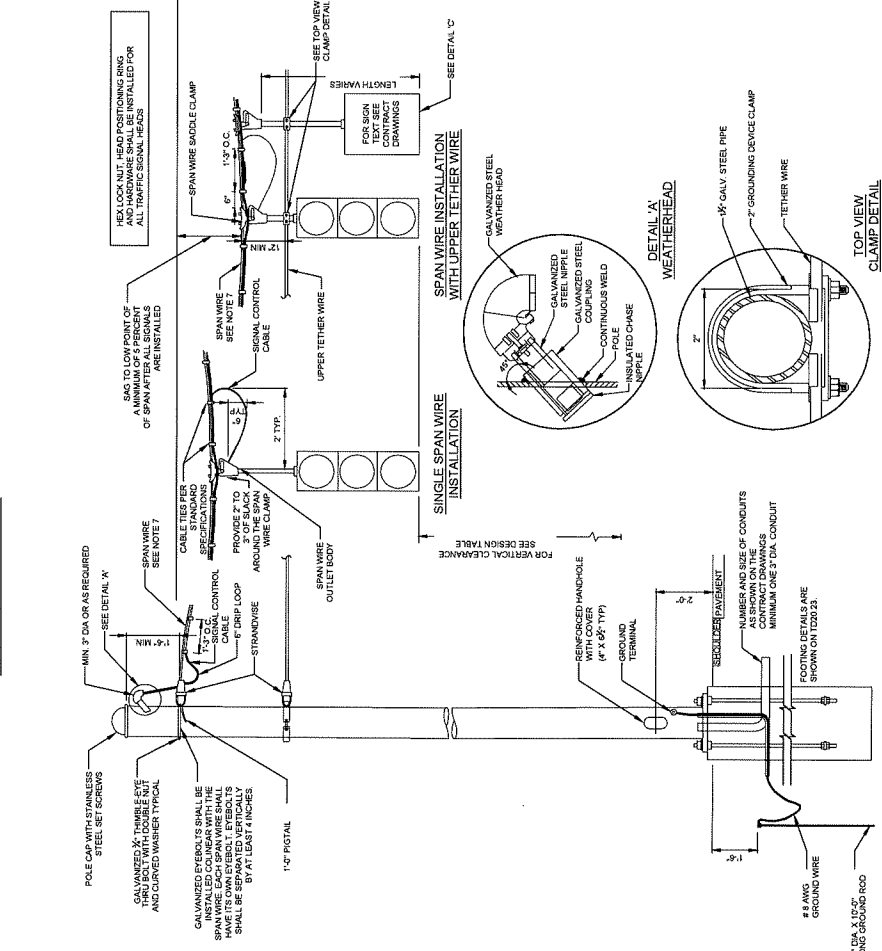
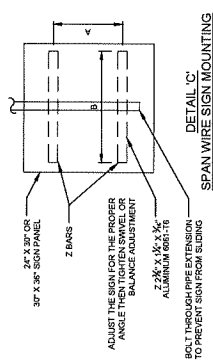
Designed by
Checked by
Date
Contract Number
SEPTEMBER 2018
TD20.22
P&E

- NOTES:**
1. THE BOTTOM OF THE SIGNAL HEADS ON EACH APPROACH SHALL BE ALIGNED.
 2. POLES SHALL BE ADJUSTED BY USE OF THE NUTS VERTICAL WHEN ALL SIGNAL HEADS & SIGNS ARE IN PLACE. THE NUTS SHALL BE SET TO THE HAULT OF DESIGN LOAD DEFLECTION SET WHEN INITIAL SETTING.
 3. SIGNED AND SEALED SHOP DRAWINGS, PREPARED BY A REGISTERED PROFESSIONAL ENGINEER, SHALL BE OBTAINED AND APPROVED FOR ALL SPAN POLES INSTALLED AT PARKING FACILITIES.
 4. ALL HARDWARE TO BE PAINTED YELLOW.
 5. ALL FITTINGS USED WITH SPAN AND TETHER WIRES SHALL DEVELOP THE FULL BREAKING STRENGTH OF THE WIRE. SPAN WIRE DIAMETER SHALL BE SELECTED FROM THE FOLLOWING TABLE FOR DESIGN LOADS SHOWN IN TABLE FOR CALCULATED BY THE POLE FABRICATOR.

6. SPAN WIRE MOUNTING HEIGHT MAY BE ADJUSTED TO PROVIDE THE MINIMUM SAG SHALL BE PROVIDED. THE PERCENT MINIMUM SAG SHALL BE PROVIDED. THE PERCENT MINIMUM SAG SHALL NOT BE LESS THAN 10% TO THE TOP OF THE POLE SHALL NOT BE LESS THAN 10% TO THE TOP OF THE POLE.
7. GALVANIZED THIMBLE EYE BOLTS, MAY BE USED TO CONNECT SPAN WIRES TO THE TOPS OF POLYGONAL THIMBLE EYE BOLTS SHALL BE USED FOR CONNECTING THE DESIGN LOAD OF THE CONNECTING HARDWARE SHALL BE CERTIFIED TO BE NO MORE THAN 70% OF ITS YIELD STRENGTH.

POLE DESIGN LOAD	SPAN WIRE DIA.	SPAN WIRE STRENGTH	TETHER WIRE DIA.	TETHER WIRE STRENGTH
13,200	1/2"	16,500	5/8"	21,000
18,750	5/8"	23,450	3/4"	28,450
19,750	3/4"	25,450	7/8"	33,900

SIGN SIZE	DIMENSION	
	A	B
24 X 30	24"	18"
30 X 36	30"	24"



DESIGN TABLE

SPAN WIRE POLE AND CLEARANCE

POLE HEIGHT	POLE DESIGN LOAD	VERTICAL CLEARANCE
-------------	------------------	--------------------

(DESIGN TABLE TO BE COMPLETED BY DESIGNER)

SPAN WIRE MOUNTED INSTALLATION
NOTES

The Port Authority of New York and New Jersey, New York, New Jersey, and the District of Columbia, is not responsible for the design or construction of any structure or facility shown on these drawings. The contractor shall be responsible for the design and construction of any structure or facility shown on these drawings. The contractor shall be responsible for the design and construction of any structure or facility shown on these drawings. The contractor shall be responsible for the design and construction of any structure or facility shown on these drawings.

FOOTING CAPACITY MOMENT IN TOP OF EARTH	J (2'-6" FOOTING)				K (3'-2" FOOTING)				L (3'-8" FOOTING)				M (4'-0" FOOTING)			
	CODE NO.	CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BASES NO. TYPE	CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BASES NO. TYPE	CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BASES NO. TYPE	CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BASES NO. TYPE	CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BASES NO. TYPE
1	40	1.2	6'-6"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4
2	50	1.2	6'-6"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4	53"	8 #5 1.4
3	60	1.3	7'-0"	14 #5 1.8	6'-0"	14 #5 1.8	6'-0"	14 #5 1.8	6'-0"	14 #5 1.8	6'-0"	14 #5 1.8	6'-0"	14 #5 1.8	6'-0"	14 #5 1.8
4	70	1.4	7'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8
5	80	1.5	8'-0"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8	6'-6"	14 #5 1.8
6	90	1.6	8'-6"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8
7	100	1.7	9'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8	7'-0"	14 #5 1.8
8	120	1.9	10'-0"	14 #5 1.8	8'-3"	14 #5 1.8	8'-3"	14 #5 1.8	8'-3"	14 #5 1.8	8'-3"	14 #5 1.8	8'-3"	14 #5 1.8	8'-3"	14 #5 1.8
9	140	2.0	11'-0"	14 #7 2.7	10'-0"	14 #7 2.7	10'-0"	14 #7 2.7	10'-0"	14 #7 2.7	10'-0"	14 #7 2.7	10'-0"	14 #7 2.7	10'-0"	14 #7 2.7
10	160			28 #5 5.4	10'-0"	28 #5 5.4	10'-0"	28 #5 5.4	10'-0"	28 #5 5.4	10'-0"	28 #5 5.4	10'-0"	28 #5 5.4	10'-0"	28 #5 5.4
11	180			31 #5 6.1	11'-0"	31 #5 6.1	11'-0"	31 #5 6.1	11'-0"	31 #5 6.1	11'-0"	31 #5 6.1	11'-0"	31 #5 6.1	11'-0"	31 #5 6.1
12	200			33 #5 6.8	12'-0"	33 #5 6.8	12'-0"	33 #5 6.8	12'-0"	33 #5 6.8	12'-0"	33 #5 6.8	12'-0"	33 #5 6.8	12'-0"	33 #5 6.8
13	220			34 #5 7.2	12'-0"	34 #5 7.2	12'-0"	34 #5 7.2	12'-0"	34 #5 7.2	12'-0"	34 #5 7.2	12'-0"	34 #5 7.2	12'-0"	34 #5 7.2
14	240			35 #5 7.6	12'-0"	35 #5 7.6	12'-0"	35 #5 7.6	12'-0"	35 #5 7.6	12'-0"	35 #5 7.6	12'-0"	35 #5 7.6	12'-0"	35 #5 7.6
15	270			39 #5 9.5	14'-0"	39 #5 9.5	14'-0"	39 #5 9.5	14'-0"	39 #5 9.5	14'-0"	39 #5 9.5	14'-0"	39 #5 9.5	14'-0"	39 #5 9.5
16	300			42 #5 11.4	14'-0"	42 #5 11.4	14'-0"	42 #5 11.4	14'-0"	42 #5 11.4	14'-0"	42 #5 11.4	14'-0"	42 #5 11.4	14'-0"	42 #5 11.4
17	350					48 #5 14.4	16'-0"									
18	400					72 #5 18.5"	16'-0"									
19	450					78 #5 18.5"	16'-0"									
20	500					84 #5 18.5"	16'-0"									

TABLE 2

DESIGN TABLE

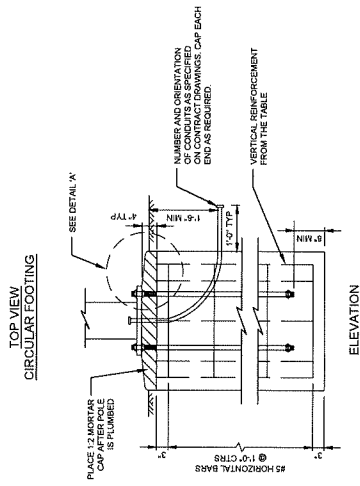
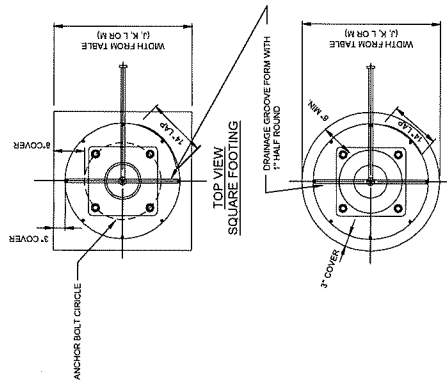
SPAN WIRE POLE FOUNDATIONS

LOCATION	FOOTING CAPACITY (FT-KIPS)	WIDTH

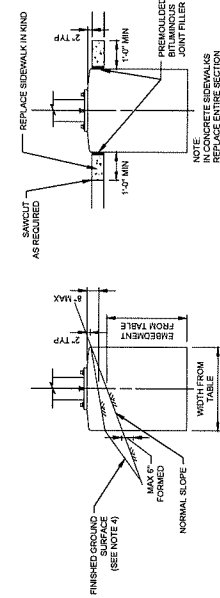
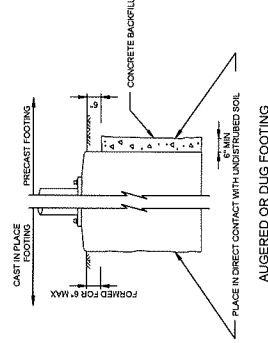
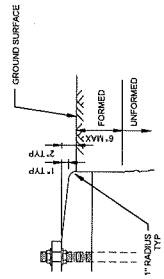
TABLE 1

(TO BE COMPLETED BY DESIGNER)

- NOTES:
- FOOTING CAPACITY AND WIDTH ARE SPECIFIED IN TABLE 1. FOOTING EMBEDMENT SHALL BE DETERMINED FROM TABLE 2 BY THE CONTRACTOR AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.
 - FOOTINGS FOR SPAN WIRE POLES MAY BE EITHER CIRCULAR OR SQUARE.
 - ADJUST THE FINISHED GROUND SURFACE IN THE VICINITY OF THE FOOTING AND SO THAT THE MAXIMUM DISTANCE FROM THE TOP OF FOOTING TO THE FINISHED GROUND AT THE C DOES NOT EXCEED 8 INCHES.
 - THE PANYU GEOTECHNICAL GROUP SHALL BE CONSULTED IF THE FOOTING IS TO BE PLACED ON A SLOPE, UNDER DRAINAGE CONDITIONS, OR ON OTHER UNSUITABLE MATERIALS.



NOTE: ANCHOR BOLTS SHOWN ARE FOR REFERENCE ONLY. DRAWINGS SHALL BE PROVIDED.



FOOTINGS IN EMBANKMENTS

FOOTINGS IN SIDEWALKS

METHODS FOR PLACING FOOTINGS

SPAN WIRE TRAFFIC SIGNAL
POLE FOUNDATION

N.T.S.

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT
PANYU
Traffic Standard
Details

TRAFFIC
T16

TRAFFIC SIGNALS
SPAN WIRE
TRAFFIC SIGNAL POLE
FOUNDATION

Designed by
Drawn by
Checked by
Date: SEPTEMBER, 2018
Contract Number
Drawing Number TD20.23
PAGE

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No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

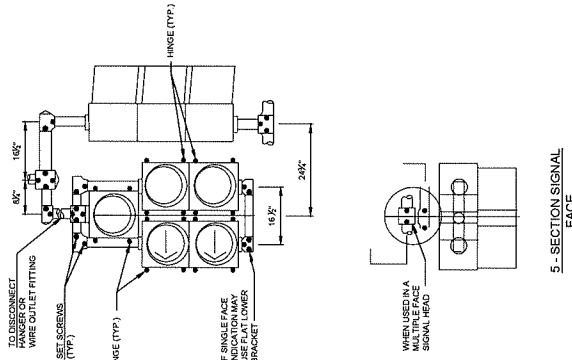
TRAFFIC
Title

TRAFFIC SIGNALS

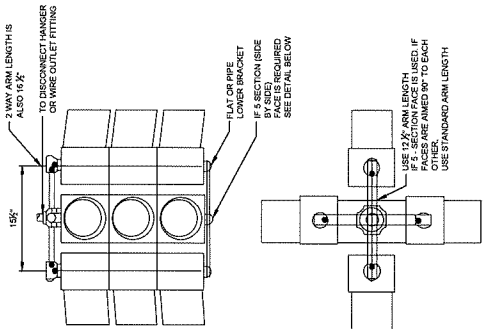
TRAFFIC SIGNAL ASSEMBLY

Designed by _____
Drawn by _____
Checked by _____
Date SEPTEMBER 2018
Contract Number _____
Revision Number TD20.24
PAGE

This work is based on the standards of the International Brotherhood of Teamsters, Local 400, which is a part of the jurisdiction of the New York State Labor Relations Board. All work shall conform to the standards of the International Brotherhood of Teamsters, Local 400, which is a part of the jurisdiction of the New York State Labor Relations Board. This work is the property of the Port Authority of New York and New Jersey and shall remain the property of the Port Authority of New York and New Jersey. This work is not to be used for any other purpose without the written consent of the Port Authority of New York and New Jersey. The Port Authority of New York and New Jersey is not responsible for any errors or omissions in this work. This work is provided as a guide only and does not constitute a contract. The Port Authority of New York and New Jersey is not liable for any damages, including consequential damages, arising out of the use of this work. This work is provided as a guide only and does not constitute a contract. The Port Authority of New York and New Jersey is not liable for any damages, including consequential damages, arising out of the use of this work.

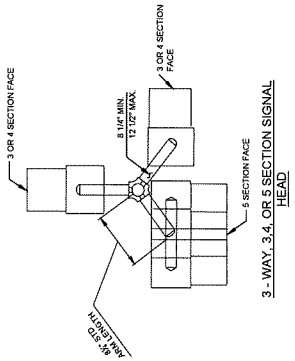


5 - SECTION SIGNAL FACE



4 - WAY 3 SECTION SIGNAL HEAD

TRAFFIC SIGNAL ASSEMBLIES
N.T.S.

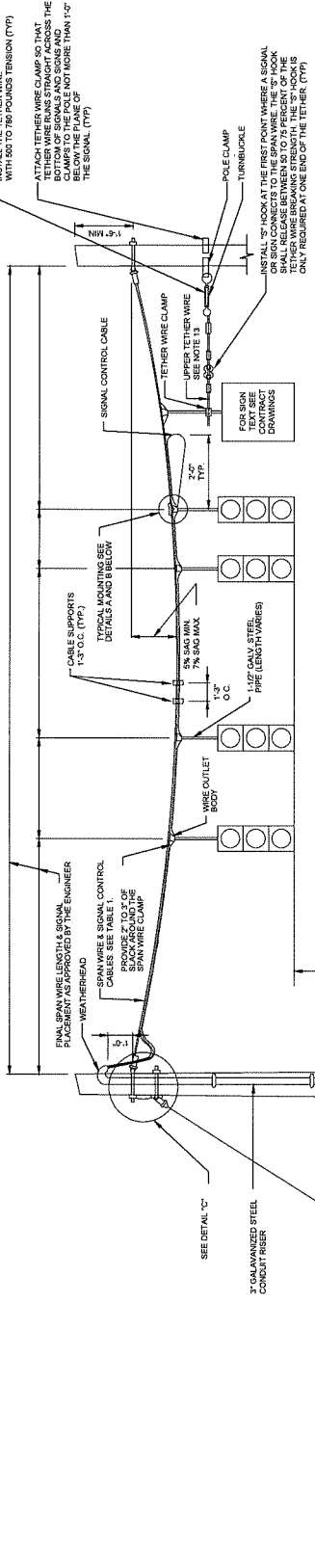


3 - WAY, 3, 4, OR 5 SECTION SIGNAL HEAD

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			
TRAFFIC			
TRF			
TRAFFIC SIGNALS			

TEMPORARY
SPAN WIRE SIGNAL
INSTALLATION
(1 OF 2)

Designed by
Drawn by
Checked by
Date
Contract
Number
Drawing
Number
SEPTEMBER 2012
TD20.25
FR



DESIGN TABLE
TEMPORARY WOOD POLE

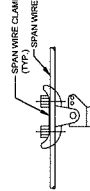
LOCATION	POLE DIA (IN)	POLE HEIGHT ABOVE GROUND (FT)	MIN. VERTICAL CLEARANCE (FT)	GUY WIRE DIA (IN)	SPAN WIRE DIA (IN)

TABLE 1
(TO BE COMPLETED BY DESIGNER)

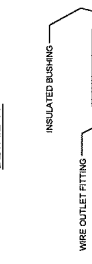
NOTES:

1. DETAILS SHOWN ARE TYPICAL ONLY AND NOT INTENDED TO INDICATE THE PRODUCTS TO BE USED.
2. SIGNAL HEADS AND SIGNALS ARE SHOWN FOR EXAMPLE ONLY. NUMBERS OF SECTIONS, SPAN WIRE DIA, NUMBER OF SECTIONS, SIZE OF SECTIONS, SIGNAL INDICATIONS AND ARRANGEMENT OF SECTIONS ARE SPECIFIED ON CONTRACT DRAWINGS.
3. SIGNAL HEADS ARE TO BE FINISHED WITH A CONVENTIONAL WIRE OUTLET BODY.
4. SIGNAL HEADS SHALL BE CAPED.
5. UNUSED HOLES SHALL BE CAPED.
6. SIGNAL HEADS SHALL BE ASSEMBLED TO BALANCE AND HANG VERTICALLY.
7. THREADS ON FITTINGS ARE NATIONAL PIPE STRAIGHT THREADS.
8. POLE HEIGHT AND SPAN WIRE MOUNTING HEIGHT SHALL BE DETERMINED BY THE CONTRACTOR TO PROVIDE THE SPECIFIED WIRE SAG AND CLEARANCES.
9. DETAILS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN DETAILS FOR APPROVAL.
10. SPAN WIRE SHALL BE INSTALLED ON THE INSULATED BUSHING.
11. THE POLES SHALL BE DOUGLAS FIR OR SOUTHERN PINE AFTER INSTALLATION. THE POLES SHALL BE CUT FROM THE TOP OF THEIR PROPER HEIGHT, WITH A 15° SLANT ROOF.
12. ALL SIGNAL FACES SHALL BE FINISHED WITH THE INDUSTRY STANDARD SIGNAL HEADS AND SIGNALS IN POSITION.
13. ALL FITTINGS USED WITH SPAN AND TETHER WIRES SHALL BE ON THE FULL BREAKING STRENGTH OF THE WIRE, EXCEPT 3" HOOKS INSTALLED ON TETHER WIRES.
14. IF GUY WIRE CANNOT BE INSTALLED PER CONSTRAINTS THEN POLE MUST BE DESIGNED TO SUPPORT LOAD.

DETAIL 'C'



DETAIL 'A'



DETAIL 'B'



ELEVATION
N.T.S.

TEMPORARY SPAN WIRE SIGNAL
INSTALLATION
N.T.S.

TEMPORARY SPAN WIRE SIGNAL INSTALLATION (1 OF 2)

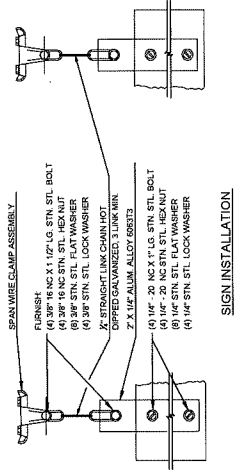
No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANNYJ			
Traffic Standard			
Details			
TRAFFIC			

TRAFFIC SIGNALS

TEMPORARY
SPAN WIRE SIGNAL
INSTALLATION
(2 OF 2)

Drawn by
Checked by
Date
September 2018
Number

TD20.26
P&E

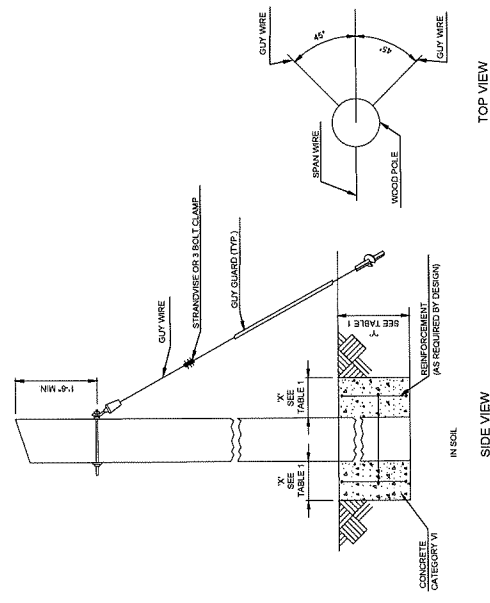
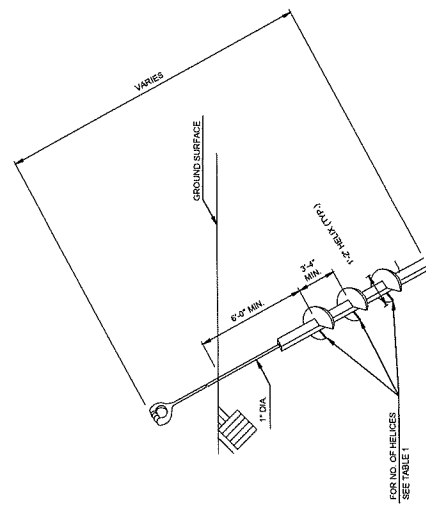


TEMPORARY WOOD POLE FOUNDATION
DESIGN TABLE

LOCATION	X (FT.)	Y (FT.)	NUMBER OF HELICES

TABLE 1
(TO BE COMPLETED BY DESIGNER)

- NOTES:**
1. PROVIDE GALVANIZED HELICAL ANCHOR SYSTEM AS MANUFACTURED BY CHANCE CO. OR APPROVED EQUAL.
 2. INSTALL HELICAL ANCHOR SYSTEM IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 3. SUBMIT CATALOG CUT FOR ACCEPTANCE PRIOR TO INSTALLATION.
- SPECIFICATIONS:**
1. MINIMUM DEPTH TO UPPER MOST HELIX = 6".
 2. MINIMUM SPACING OF HELICES = 3'-4".
 3. MINIMUM HELIX DIAMETER = 1'-2".
 4. MINIMUM SHAFT AREA = 2.26 SQ. IN.

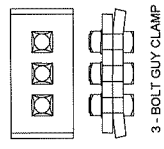


TOP VIEW

DESIGN TABLE
SPAN WIRE

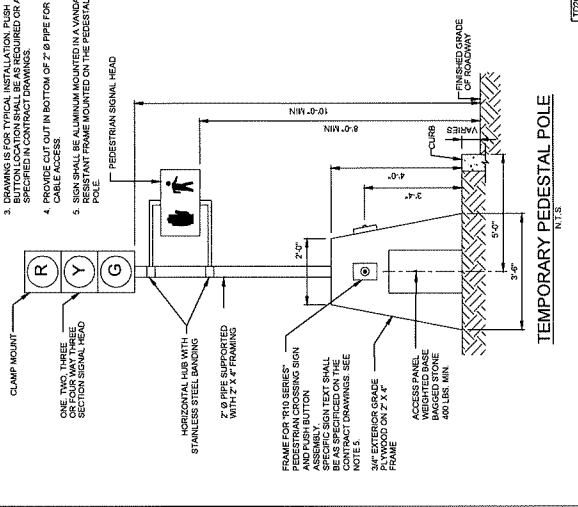
WIRE DIAMETER IN.	BREAKING STRENGTH LBS.
5/16"	6,000
3/8"	11,500
1/2"	25,000

TABLE 2

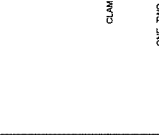


TEMPORARY SPAN WIRE SIGNAL
INSTALLATION
N.T.S.

- NOTES:**
1. DETAILS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN DETAILS FOR APPROVAL.
 2. ALTERNATIVE MOUNTING DESIGN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
 3. DRAWING IS FOR TYPICAL INSTALLATION. PUSH BUTTON LOCATION SHALL BE AS REQUIRED OR AS SPECIFIED IN CONTRACT DRAWINGS.
 4. PROVIDE CUT OUT IN BOTTOM OF 2" Ø PIPE FOR CABLE ACCESS.
 5. SIGN SHALL BE ALUMINUM MOUNTED IN A VERTICAL POSITION ON THE PEDESTAL POLE.



- NOTES:**
1. DETAILS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN DETAILS FOR APPROVAL.
 2. ALTERNATIVE MOUNTING DESIGN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

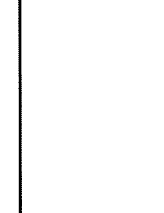
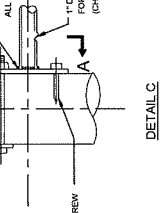
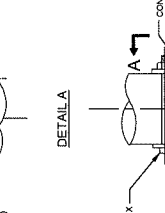
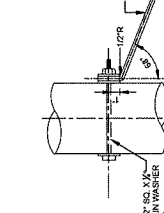
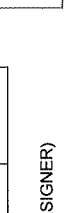
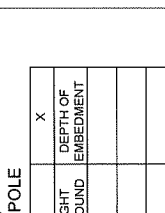


DESIGN TABLE

TEMPORARY WOOD POLE

LOCATION	POLE DIAMETER	POLE HEIGHT ABOVE GROUND	DEPTH OF EMBEDMENT

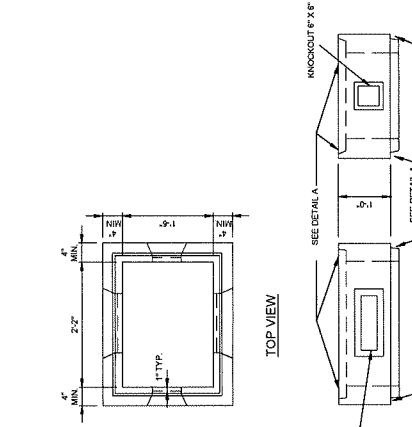
TABLE 1
(TO BE COMPLETED BY DESIGNER)



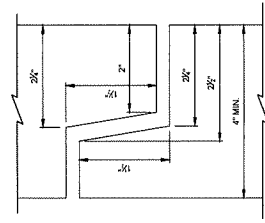
No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			
TRAFFIC			
Title			
TRAFFIC SIGNALS			

PULL BOX FRAME,
COVER, AND LOOP
DETECTOR SPLICE BOX

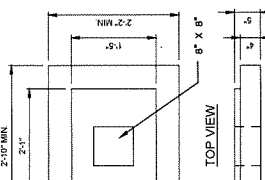
Drawn by
Checked by
Date
Contract Number
Drawing Number
TD20.28
PIE



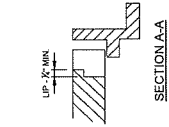
EXTENSION FOR RECTANGULAR PULLBOX
MINIMUM VERTICAL & HORIZONTAL
REINFORCEMENT 0.12 IN/FT (SEE NOTE 9)



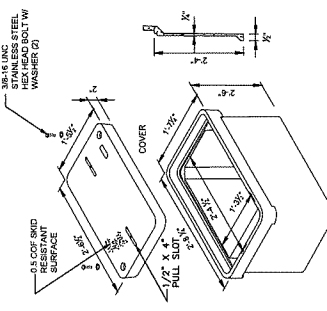
RECTANGULAR PULLBOX BASE
MINIMUM VERTICAL & HORIZONTAL
REINFORCEMENT 0.12 IN/FT (SEE NOTE 9)



WIRE HANGER DETAIL

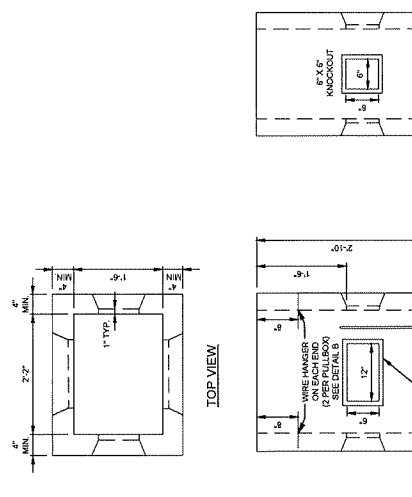


SECTION A-A
LIFTING NOTCH OR EAK

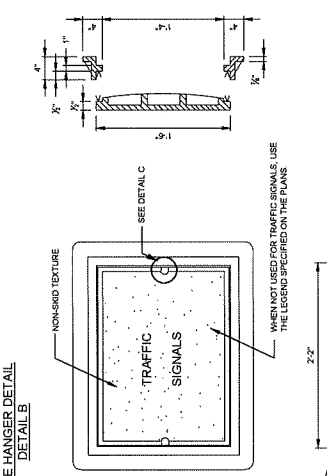


LOOP DETECTOR SPLICE BOX
MINIMUM VERTICAL & HORIZONTAL
REINFORCEMENT 0.12 IN/FT (SEE NOTE 9)

NOTES:
(APPLIES TO TD20.28.02)
1. LOADINGS FOR COVERS SHALL COMPLY WITH ALL TEST PROVISIONS OF THE STANDARD SPECIFICATIONS FOR TRAFFIC SIGNALS. THE TEST LOAD IS 25,000 LBS. WITH A TEST LOAD OF 25,750 LBS. OVER A 10" X 8" PLATE.
2. METHODS FOR CUTTING HOLES SHALL BE ACCOMPLISHED BY USING EITHER A MASONRY HOLE SAW OR KNOCKOUT PLANCH DRIVER IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
3. SPLICE BOX SHALL BE A QUARTZ MATERIAL OR APPROVED EQUAL.
4. SPLICE BOX COVER SHALL BE GROUNDED.



REINFORCED CONCRETE RECTANGULAR PULLBOX
MINIMUM VERTICAL & HORIZONTAL
REINFORCEMENT 0.12 IN/FT (SEE NOTE 9)



CAST IRON FRAME AND COVER FOR RECTANGULAR PULLBOX
APPROXIMATE WEIGHT 90 LBS.

- NOTES:
(APPLIES TO TD20.28.01)
- CONCRETE CATEGORY VI SHALL BE FURNISHED MINORITICALLY.
 - STANDARD KNOCKOUT LOCATIONS ARE SHOWN FOR EACH PULLBOX. THE NUMBER AND SIZE CONDUIT OPENINGS THAT ARE REQUIRED FOR THAT PARTICULAR INSTALLATION.
 - FRAMES AND COVERS SHALL BE HEAVY DUTY TO SUPPORT AN H20 WHEEL LOADING.
 - A NON-SKID TEXTURE SHALL BE CAST INTO THE TOP SURFACE OF THE COVER.
 - PULLBOX BASES ARE REQUIRED ONLY FOR PULLBOXES PLACED IN THE CENTER THIRD OF THE PULLBOX. BASES, WHEN REQUIRED, MAY BE CAST AT AN INTERIOR WITH THE PULLBOX.
 - A ROUGH FINISH IS ACCEPTABLE FOR PULLBOX KNOCKOUTS.
 - THE CONTRACTOR MAY ELECT TO FURNISH PULLBOXES PRECAST TO GREATER DEPTH, IN ONE FOOT INCREMENTS, INSTEAD OF USING EXTENSIONAL.
 - STANDARD KNOCKOUT LOCATIONS ARE SHOWN FOR EACH PULLBOX. THE NUMBER AND SIZE CONDUIT OPENINGS THAT ARE REQUIRED FOR THAT PARTICULAR INSTALLATION.
 - STEEL REINFORCEMENT SHALL BE PLACED WITHIN THE CENTER THIRD OF THE WALL. MINIMUM COVER SHALL BE 1".
 - 1" X 4" 10" G. COPPER CLAD GROUND ROD.
 - THE TOP OF THE PULLBOX COVER SHALL BE SET FLUSH WITH THE SURROUNDING GRADE.
 - PULL BOX COVERS SHALL BE BONDED AND GROUNDED.

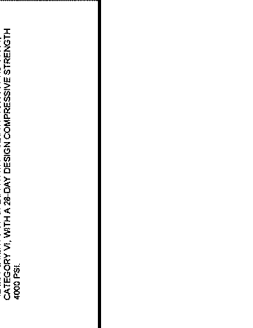
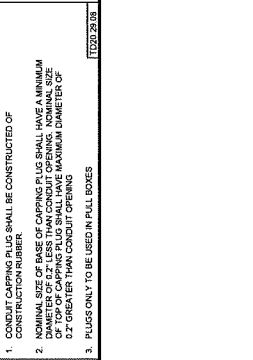
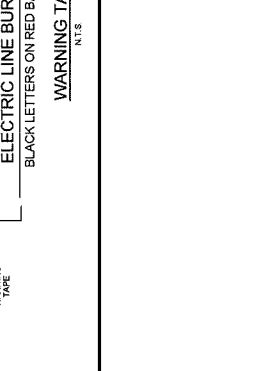
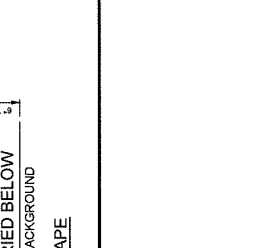
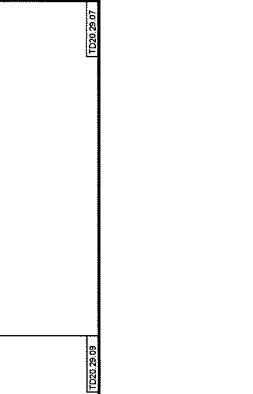
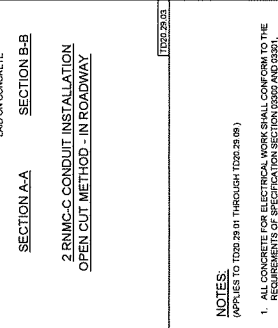
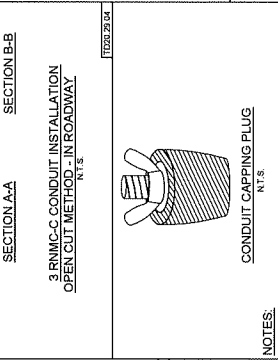
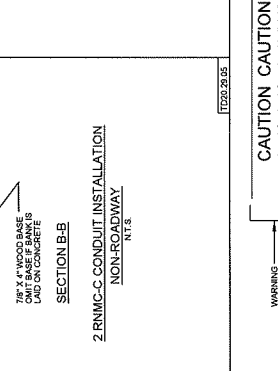
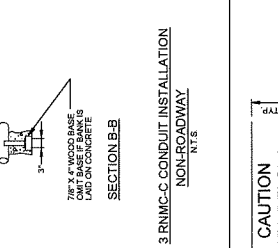
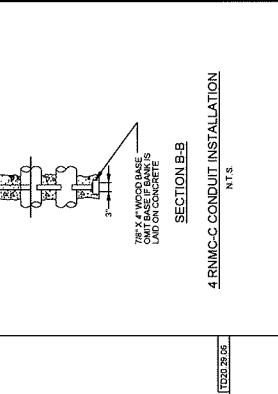
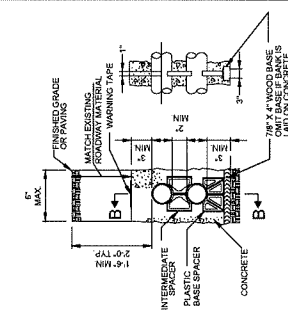
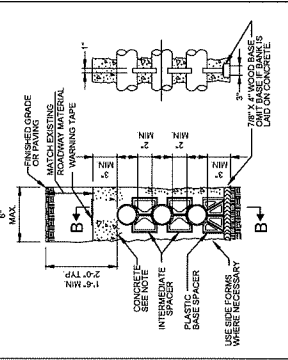
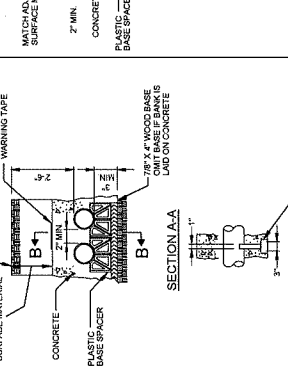
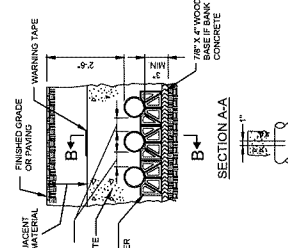
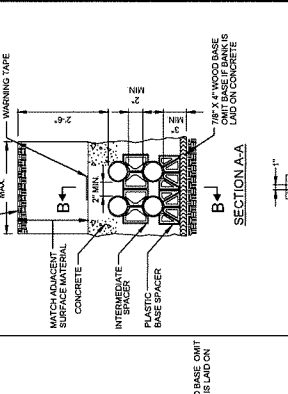
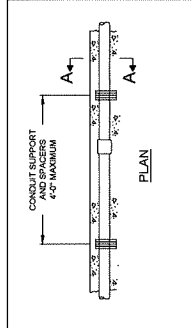
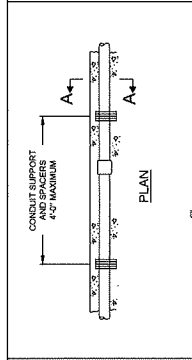
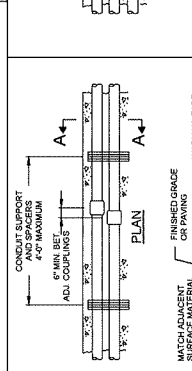
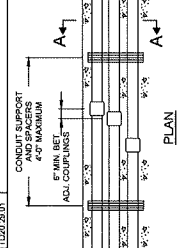
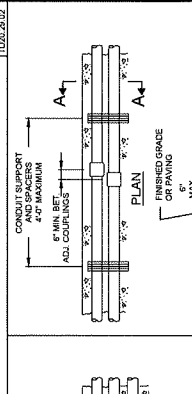
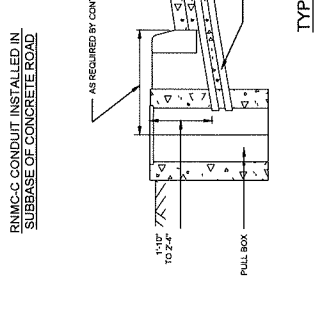
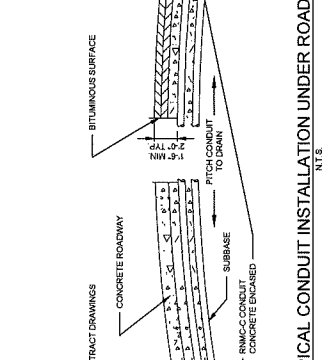
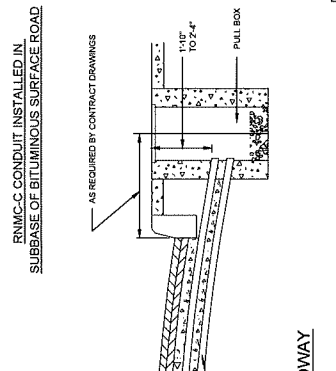
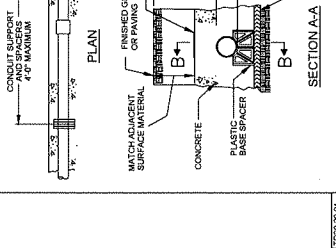
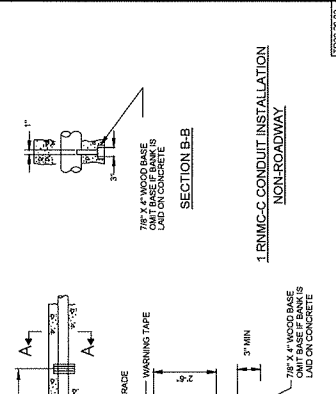
PULL BOX, FRAME AND COVER
N.T.S.

CAST IRON FRAME AND COVER FOR RECTANGULAR PULLBOX
APPROXIMATE WEIGHT 90 LBS.

LOOP DETECTOR SPLICE BOX
N.T.S.

TD20.28.02

TD20.28.01



NOTES:
(APPLIES TO TD20.29.01 THROUGH TD20.29.09)
1. ALL CONCRETE FOR ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 05050 AND 05011, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.
2. NOMINAL SIZE OF BASE OF CAPPING PLUS SHALL HAVE A MINIMUM DIAMETER OF 0.2\"/>

NOTES:
1. CAPPING PLUS SHALL BE CONSTRUCTED OF CONSTRUCTION IN UNITS.
2. NOMINAL SIZE OF BASE OF CAPPING PLUS SHALL HAVE A MINIMUM DIAMETER OF 0.2\"/>

NOTES:
1. CAPPING PLUS SHALL BE CONSTRUCTED OF CONSTRUCTION IN UNITS.
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1. CAPPING PLUS SHALL BE CONSTRUCTED OF CONSTRUCTION IN UNITS.
2. NOMINAL SIZE OF BASE OF CAPPING PLUS SHALL HAVE A MINIMUM DIAMETER OF 0.2\"/>

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT
PANYNJ
Traffic Standard
Details

TRAFFIC
TRAFFIC SIGNALS
**CONDUIT
INSTALLATION**

DESIGNED BY
CHECKED BY
DATE
SEPTEMBER 2018
DRAWING NUMBER
TD20.29

TRAFFIC
TRAFFIC SIGNALS
**CONDUIT
INSTALLATION**

TRAFFIC
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**CONDUIT
INSTALLATION**

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INSTALLATION**

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TRAFFIC SIGNALS
**CONDUIT
INSTALLATION**

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

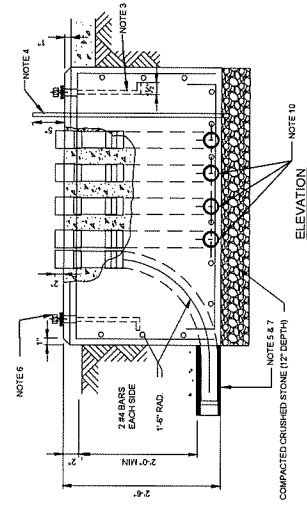
TRAFFIC
Type

CABINET
FOUNDATIONS
(P, P-SME, SME)

Designed by
Drawn by
Checked by
Date
Contract Number
Drawing Number

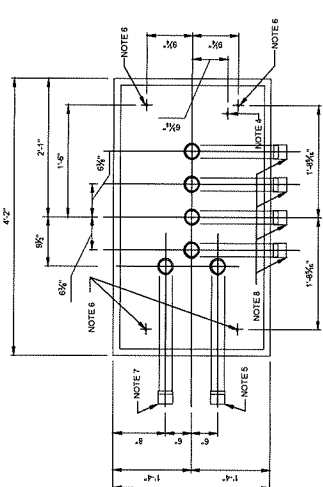
SEPTEMBER 2018
TD20.30

- NOTES:**
(APPLIES TO TD20.30.01 THROUGH TD20.30.04)
- CONCRETE SHALL BE FOUNDED MONOLITHICALLY.
 - ALL CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS HAVE A 2" STUB ABOVE THE FOUNDATION.
 - J-BOLTS SHALL BE INSERTED 1/2" ±, 1/2" INTO 3" COUPLINGS. 12" HOOK BOLT TOP 6" SHALL BE GALVANIZED PER ASTM A-151.
 - 3/4" X 10'-0" LG. GROUND ROD.
 - RIGID GALVANIZED STEEL CONDUIT (SERVICE CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION, SIZE, AND NUMBER.
 - 3/4" DIA. ANCHOR BOLTS WITH 1" OF THREAD COUPLINGS, STN. STL. HEX HEAD CAP SCREWS 1/2" LONG x 3/4" DIA. STN. STL. LOCK WASHERS AND STN. STL. FLAT WASHERS ALL THREAD TO BE 3/4" LONG x 3/4" DIA.
 - RIGID NON-METALLIC CONDUIT (INTERCONNECT CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. IF NOT SPECIFIED 2" DIA. RIGID NON-METALLIC CONDUIT TO BE INSTALLED.
 - RIGID GALVANIZED STEEL CONDUIT (ALL SHALL CONNECT TO PVC-H CONDUIT WITH THE APPROPRIATE ADAPTER). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. ANY CONDUITS NOT DESIGNATED FOR USE ON THE CONTRACT DRAWINGS SHALL BE EXTENDED BEYOND THE FOUNDATION A MINIMUM OF 12" AND CAPPED.
 - ALL REINFORCEMENT STEEL SHALL BE EPOXY COATED CONFORMING TO ASTM A775. REPAIR OF EPOXY SHALL BE IN ACCORDANCE WITH ASTM A775.
 - RIGID METALLIC CONDUIT (ALL SHALL CONNECT TO RING CONNECT WITH THE APPROPRIATE ADAPTER). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. ANY CONDUITS NOT DESIGNATED FOR USE ON THE CONTRACT DRAWINGS SHALL BE EXTENDED BEYOND THE FOUNDATION A MINIMUM OF 12" AND CAPPED.
 - DEVELOPMENT LENGTH AND SPLICES OF BAR REINFORCEMENT SHALL CONFORM TO CLASS B, UNLESS OTHERWISE NOTED.
 - ALL REINFORCEMENT SHALL BE 60,000 PSI YIELD STRENGTH. ALL REINFORCEMENT SHALL BE FRESHENED TREATMENT OF ALL EXPOSED CONCRETE SURFACES SHALL MATCH THE EXISTING CONCRETE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
 - JOINT SEALANT SHALL CONFORM TO SPECIFICATION SECTION 02525 "PAVEMENT JOINT SEALANTS".
 - CONCRETE PAD FOR ACCESS TO CONTROLLER CABINET. PAD SHALL BE INSTALLED ON THE SAME SIDE AS THE CABINET DOOR AND SLOPE 1/4" PER FOOT AWAY FROM CABINET.
 - DRAIN. 1" DIAMETER RIGID METALLIC CONDUIT (PITCH AWAY FROM FOUNDATION).
 - 2" RIGID GALVANIZED STEEL CONDUIT.
 - 2" X 2" X 1/4" GALVANIZED TEE FITTING.



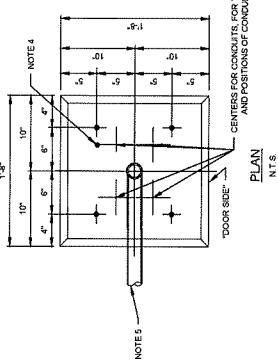
FOUNDATION TYPE "P"
N.T.S.

TD20.30.01



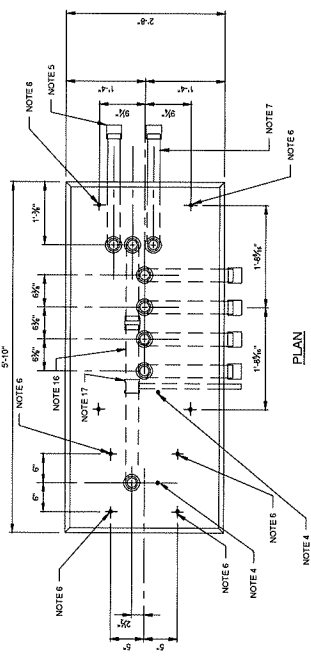
FOUNDATION TYPE "P"
N.T.S.

TD20.30.01



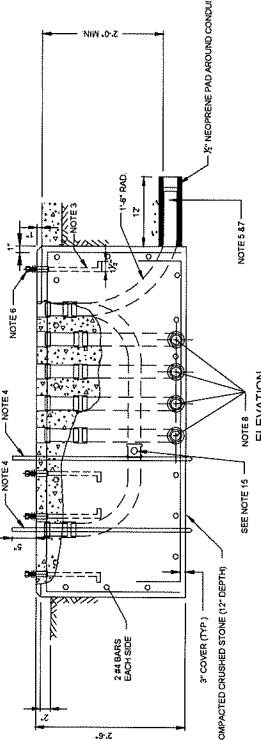
FOUNDATION TYPE "SME"
N.T.S.

TD20.30.02



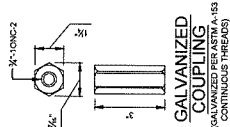
FOUNDATION TYPE "P-SME"
N.T.S.

TD20.30.03



FOUNDATION TYPE "P-SME"
N.T.S.

TD20.30.03



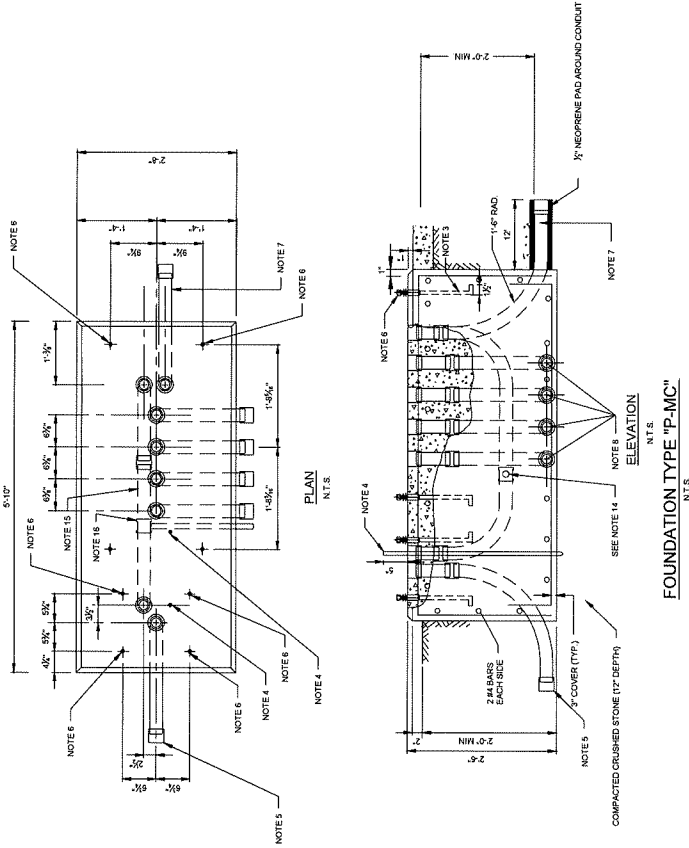
GALVANIZED COUPLING
N.T.S.

TD20.30.02

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

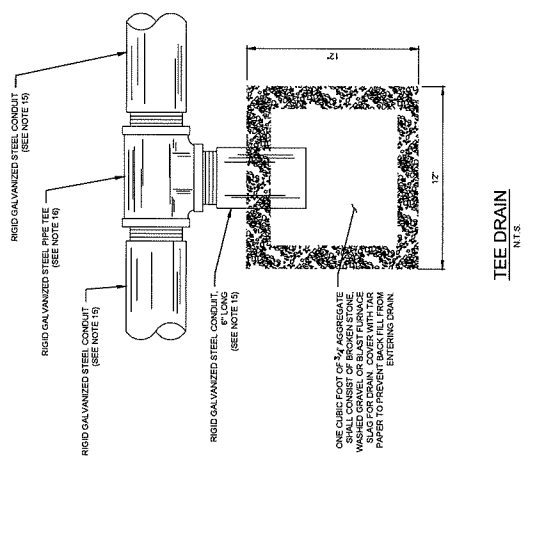
Traffic Title	TRAFFIC SIGNALS
Cabinet Foundation	P-MC AND TEE DRAIN
Designed by	
Drawn by	
Checked by	SEPTEMBER 2018
Date	
Contract Number	
Quantity Number	TD20.31

The Port Authority of New York and New Jersey, its Board of Transportation, and its various agencies, including the New York State Thruway Authority, are not responsible for the design of any structure or equipment which may be used in connection with the operation of the Port Authority's facilities. The Port Authority is not responsible for the design of any structure or equipment which may be used in connection with the operation of the Port Authority's facilities. The Port Authority is not responsible for the design of any structure or equipment which may be used in connection with the operation of the Port Authority's facilities.



FOUNDATION TYPE "P-MC"
N.T.S.

- NOTES:**
- (APPLIES TO TD20.31.01 THROUGH TD20.31.02)
 - CONCRETE SHALL BE POURED MONOLITHICALLY.
 - ALL CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS HAVE A 2" STUB ABOVE THE FOUNDATION.
 - J-BOLTS SHALL BE INSERTED 1/2" X 1/2" INTO 3" COUPLING. 12" HOOK BOLT TOP 6" SHALL BE GALVANIZED PER ASTM A-153.
 - 1/2" X 1/2" LG. GROUND ROD.
 - RIGID GALVANIZED STEEL CONDUIT (SERVICE CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION, SIZE, AND NUMBER.
 - 3/4" DIA ANCHOR BOLTS ANCHOR BOLTS WITH 1" OF THREAD COUPLINGS STN. STL. HEX HEAD CAP SCREWS 1/2" LG. ASTM A193, GRADE 88, STN. STL. LOCK WASHERS AND STN. STL. FLAT WASHERS ALL THREAD TO BE 3/4" LONG CL. 2711.
 - RIGID NONMETALLIC CONDUIT (INTERCONNECT CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE IF NOT SPECIFIED 2" DIA. RIGID NONMETALLIC CONDUIT TO BE INSTALLED.
 - CONCRETE SHALL BE INSTALLED MONOLITHICALLY TO THE TOP OF THE FOUNDATION WITH THE APPROPRIATE ADAPTER. SEE CONTRACT DRAWINGS FOR DIRECTION, SIZE, AND NUMBER. ALL JOINTS SHALL BE REINFORCED WITH 2" DIA. RIGID GALVANIZED STEEL CONDUIT. CONTRACT DRAWINGS SHALL BE EXTENDED BEYOND THE FOUNDATION A MINIMUM OF 12" AND GAPPED.
 - ALL REINFORCEMENT STEEL SHALL BE EPOXY COATED CONFORMING TO ASTM A775. REPAIR OF EPOXY COATING DUE TO DAMAGE FROM FABRICATION, SHIPPING, HANDLING, MINOR ADJUSTMENTS AND INSTALLATION SHALL BE RESPONSIBLE WITHIN 90 DAYS.
 - JOINT SEALANT SHALL CONFORM TO SPECIFICATION 02279 "PAVEMENT JOINT SEALING".
 - ALL INSTALLED CONCRETE BASES AND FOUNDATIONS ARE TO RECEIVE BROOK FINISH AND FINISH OF THE EXISTING CONCRETE SURFACES SHALL MATCH THE EXISTING CONCRETE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
 - JOINT SEALANT SHALL CONFORM TO SPECIFICATION 02279 "PAVEMENT JOINT SEALING".
 - CONCRETE PAD FOR ACCESS TO CONTROLLER CABINET. PAD SHALL BE INSTALLED ON THE SAME SIDE AS THE CABINET DOOR AND SLOPE 1/8" AWAY FROM CABINET.
 - DRAIN: 1" DIAMETER RIGID METALLIC CONDUIT (PITCH AWAY FROM FOUNDATION).
 - 2" RIGID GALVANIZED STEEL CONDUIT.
 - 2" X 2" GALVANIZED TEE FITTING.



TEE DRAIN
N.T.S.

No.	Date	Revision	Approved

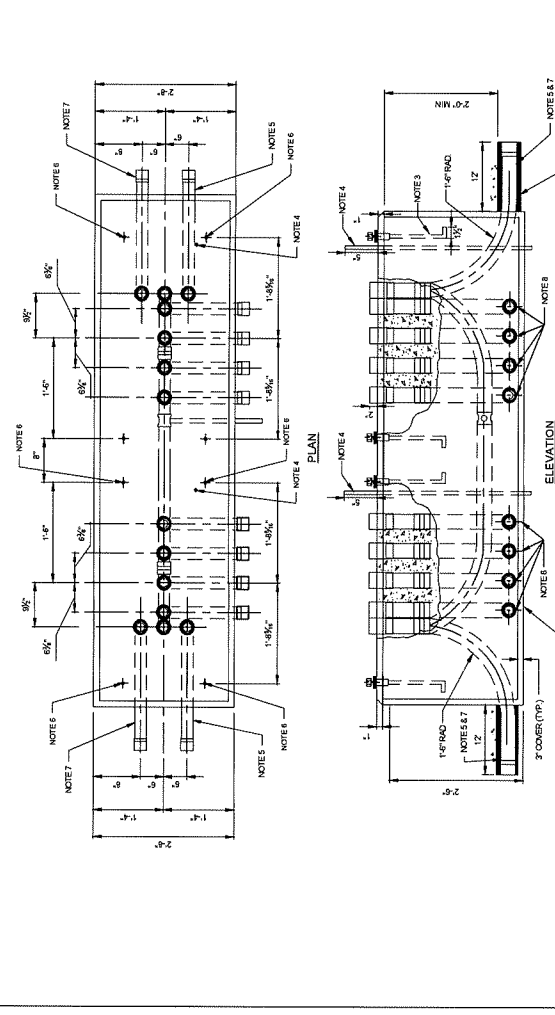
ENGINEERING DEPARTMENT
PANKY
Traffic Standard
Details

TRAFFIC
Title
TRAFFIC SIGNALS

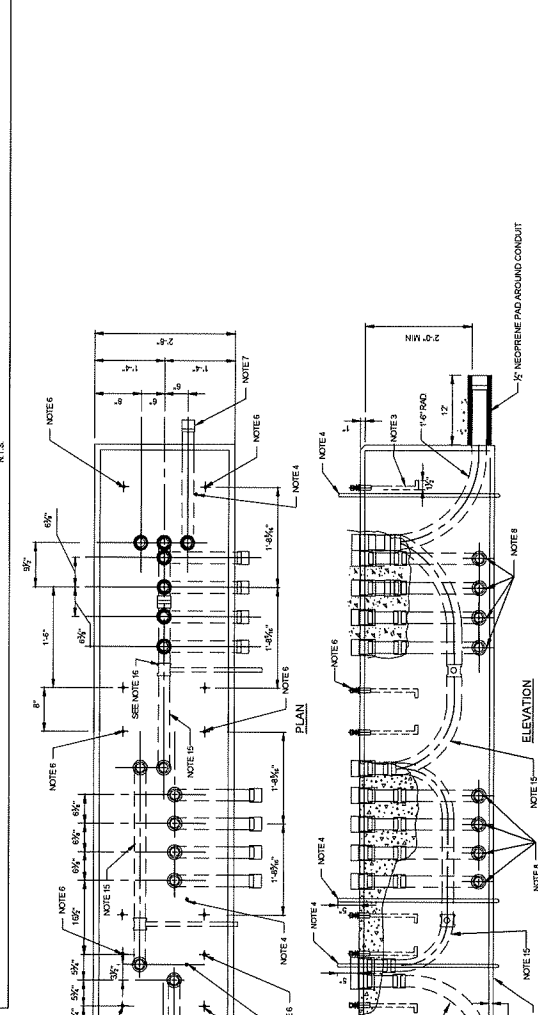
CABINET FOUNDATIONS
(2-P & 2P-MC)

Designed by
Checked by
Drawn by
Date
Contract Number
SEPTEMBER 2010

TD20.32
Drawing Number
PDF



FOUNDATION TYPE "2-P"
NTS



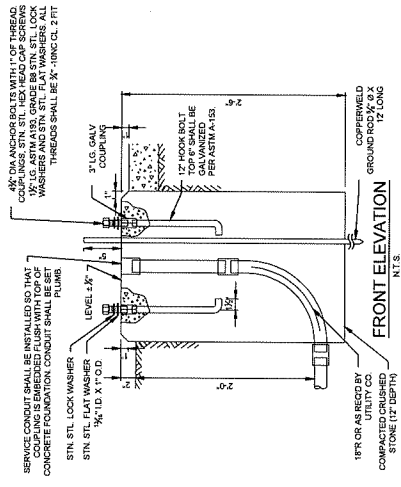
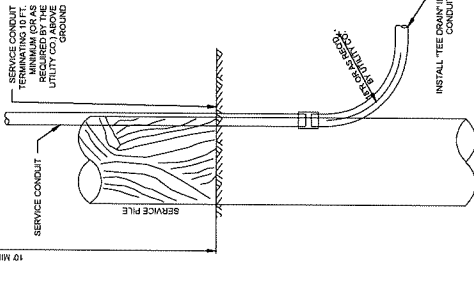
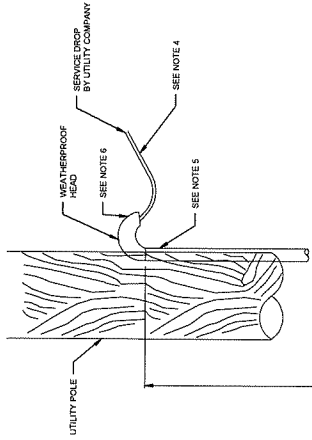
FOUNDATION TYPE "2P-MC"
NTS

- NOTES:**
(APPLIES TO TD20.32.01 THROUGH TD20.32.02)
- CONCRETE SHALL BE POURED MONOLITHICALLY.
 - ALL CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS HAVE A 2" STUB ABOVE THE FOUNDATION.
 - IRIGLS SHALL BE INSERTED 1/2" X 1/2" INTO 2" COUPLING. 12" HIGH BOLT TOP 6" SHALL BE GALVANIZED PER ASTM A-193.
 - 3/4" X 10'-0" LG. GROUND ROD.
 - RIGID GALVANIZED STEEL CONDUIT (SERVICE CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION, SIZE, AND NUMBER.
 - 3/4" DIA ANCHOR BOLTS ANCHOR BOLTS WITH 1" OF THREAD COUPLINGS. STN. STL. HEY HEAD CAP-SCREENS 3/4" LG. ASTM A-193. GRADE 88. STN. STL. LOCK WASHERS AND STN. STL. FLAT WASHERS. ALL THREAD TO BE X 1/4" LONG CL. 2 FT.
 - RIGID METALLIC CONDUIT (INTERCONNECT CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. IF NOT SPECIFIED 2" RIGID METALLIC CONDUIT TO BE INSTALLED.
 - CONTRACT DRAWINGS FOR DIRECTION AND SIZE. CONTRACT DRAWINGS SHALL BE EXTENDED BEYOND THE FOUNDATION A MINIMUM OF 12" AND CAPPED.
 - ALL INSTALLED CONCRETE PADS AND FOUNDATIONS ARE TO RECEIVE BROOM FINISH. FINISH AND TREATMENT OF ALL EXPOSED CONCRETE FORMED SURFACES SHALL MATCH THE EXISTING CONCRETE, UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS.
 - REINFORCEMENT BARS AND SPLICES OF BAR REINFORCEMENT SHALL CONFORM TO CLASS B, UNLESS OTHERWISE NOTED.
 - ALL INSTALLED CONCRETE PADS AND FOUNDATIONS ARE TO RECEIVE BROOM FINISH. FINISH AND TREATMENT OF ALL EXPOSED CONCRETE FORMED SURFACES SHALL MATCH THE EXISTING CONCRETE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
 - JOINT SEALANT SHALL CONFORM TO SPECIFICATION SECTION 0279 PAVEMENT JOINT SEALING.
 - CONCRETE PAD FOR ACCESS TO CABINET. PAD SHALL BE INSTALLED ON THE SAME SIDE AS THE CABINET DOOR AND SLOPE 1/20% AWAY FROM CABINET.
 - DRAIN: 1" DIAMETER RIGID METALLIC CONDUIT (PITCH AWAY FROM FOUNDATION).
 - 2" RIGID GALVANIZED STEEL CONDUIT.
 - 2X2X1/2" GALVANIZED TEE FITTING.

TRAFFIC SIGNALS

SEPTEMBER 2010

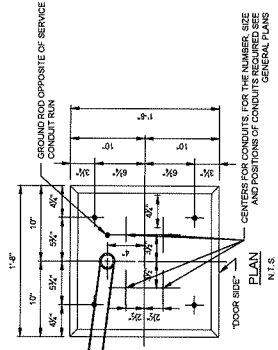
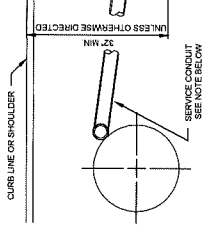
TD20.32



CONDUIT RISER AT UTILITY POLE
N.T.S.

FOUNDATION
TYPE "MCF"
N.T.S.

- NOTES:
- CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS ARE EMBEDDED FLUSH AND FLUSH WITH TOP OF CONCRETE FOUNDATION.
 - JOINT MUST BE INSERTED 1" INTO 3" COUPLING.
 - ALL FOUNDATIONS SHALL BE POURED MONOLITHIC.
 - FURNISH AND INSTALL SERVICE ENTRANCE CONDUCTORS AND SERVICE ENTRIES TO CONDUIT IN ACCORDANCE WITH UTILITY COMPANY. ALLOW POINT OF CONNECTION BY CONDUCTORS TO ALLOW POINT OF CONNECTION BY UTILITY COMPANY. FOR CONDUIT SIZES SEE ENGINEERING DEPARTMENT INSTRUCTIONS.
 - FURNISH AND INSTALL ALL MATERIALS ACCORDING TO UTILITY CO. ELECTRICAL SERVICE INSTALLATION AND SERVICE DEPARTMENT INSTRUCTIONS.
 - FURNISH AND INSTALL WEATHER HEAD AT 14 FEET ABOVE GROUND MIN OR AS DIRECTED BY THE ENGINEER.
 - COORDINATE ELECTRICAL SERVICE LAYOUT WITH ENGINEER PRIOR TO INSTALLATION.



CENTERS FOR CONDUITS FOR THE NUMBER, SIZE AND POSITIONS OF CONDUITS TO BE USED IN GENERAL PLANS
N.T.S.

No.	Date	Revision	Approved
			ENGINEERING DEPARTMENT
			PANYNJ
			Traffic Standard
			Details

TRAFFIC
Title

TRAFFIC SIGNALS

CONDUIT RISER AT
UTILITY POLE AND
CABINET FOUNDATION
MCF

DESIGNED BY
DRAWN BY
CHECKED BY
DATE
SEPTEMBER 2018

CONTRACT
NUMBER

Drawing
Number
TD20.33
RFB

THE PORT AUTHORITY OF NY AND NJ ENGINEERING DEPARTMENT HAS REVIEWED THIS DRAWING FOR CONFORMANCE WITH THE PORT AUTHORITY'S DESIGN STANDARDS AND SPECIFICATIONS. THE PORT AUTHORITY'S DESIGN STANDARDS AND SPECIFICATIONS ARE THE BASIS FOR THE DESIGN OF THIS DRAWING. THE PORT AUTHORITY'S DESIGN STANDARDS AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. THE PORT AUTHORITY'S DESIGN STANDARDS AND SPECIFICATIONS ARE THE BASIS FOR THE DESIGN OF THIS DRAWING. THE PORT AUTHORITY'S DESIGN STANDARDS AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. THE PORT AUTHORITY'S DESIGN STANDARDS AND SPECIFICATIONS ARE THE BASIS FOR THE DESIGN OF THIS DRAWING. THE PORT AUTHORITY'S DESIGN STANDARDS AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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ENGINEERING DEPARTMENT

PANNUNJ

Traffic Standard

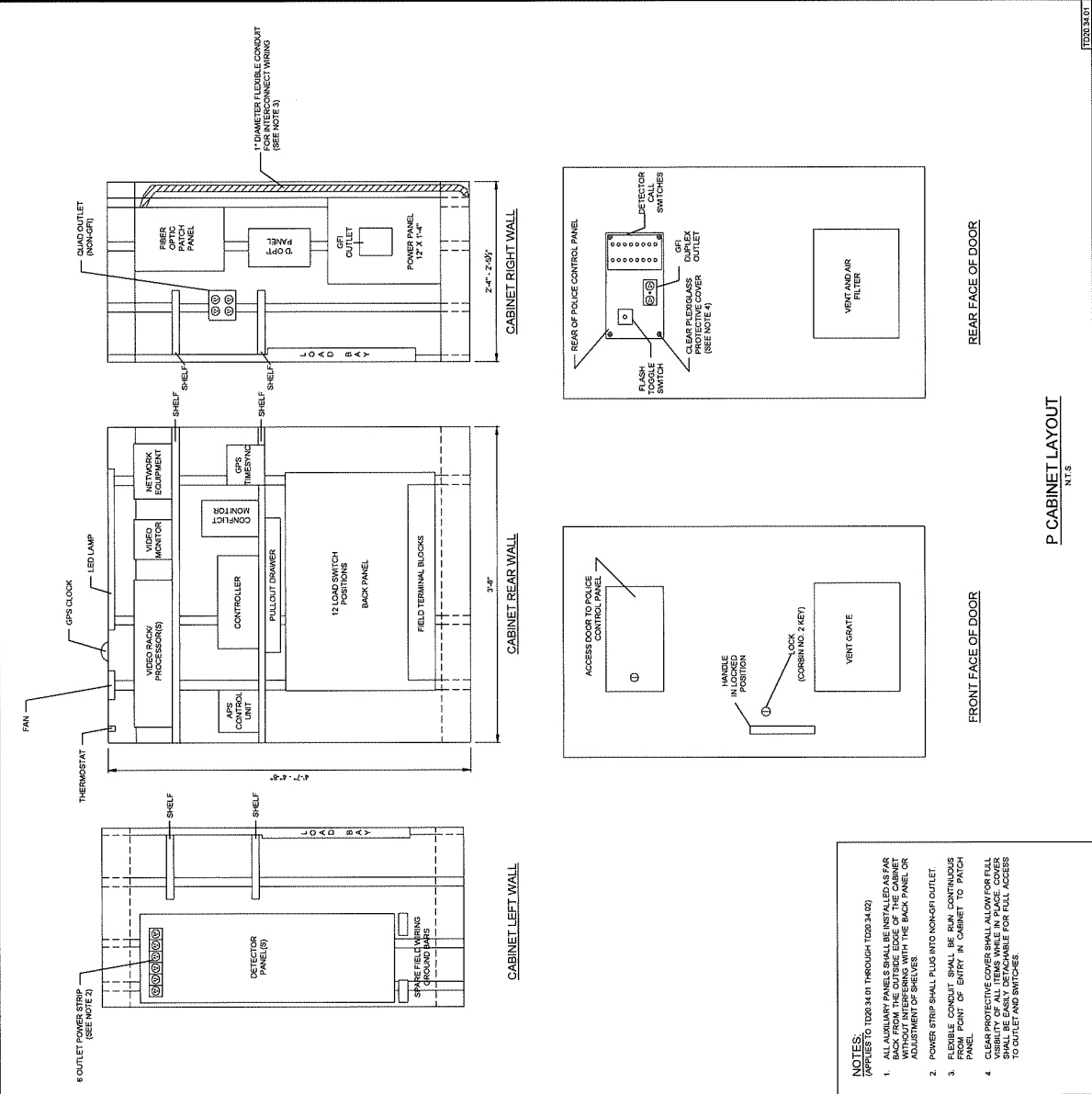
Details

TRAFFIC

TRAFFIC SIGNALS

P CABINET LAYOUT

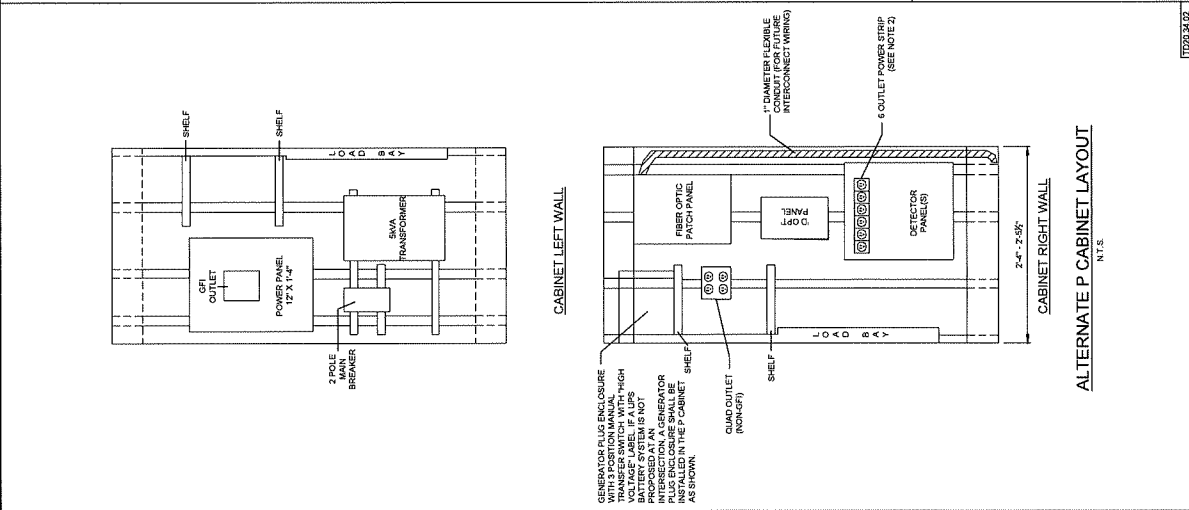
Drawn by
Checked by
Date
Cabinet Number
Drawing Number
PSE



P CABINET LAYOUT

N.T.S.

TD20.34.01



- NOTES:**
APPLIES TO TD20.34.01 THROUGH TD20.34.02
- ALL AUXILIARY PANELS SHALL BE INSTALLED AS FAR BACK FROM THE OUTSIDE EDGE OF THE CABINET AS POSSIBLE TO ALLOW FOR THE ADJUSTMENT OF SHELVES.
 - POWER STRIP SHALL PLUS INTO NON-GFI OUTLET.
 - FLEXIBLE CONDUIT SHALL BE RUN CONTINUOUS FROM POINT OF ENTRY IN CABINET TO PATCH PANEL.
 - CLEAR PROTECTIVE COVER SHALL ALLOW FOR FULL ACCESS TO ALL COMPONENTS. PROTECTIVE COVER SHALL BE EARLY DETACHABLE FOR FULL ACCESS TO OUTLET AND SWITCHES.

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

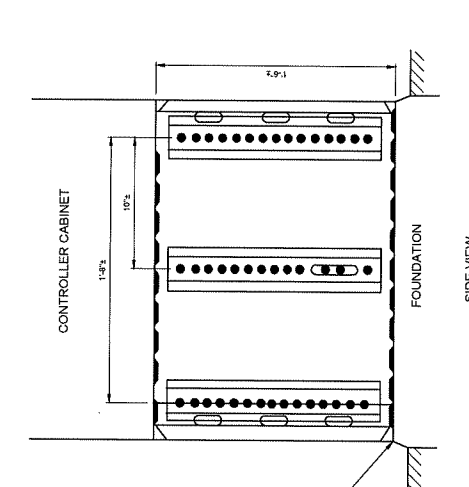
TRAFFIC
Title
TRAFFIC SIGNALS

CONTROLLER CABINET
SKIRT FOR UPS

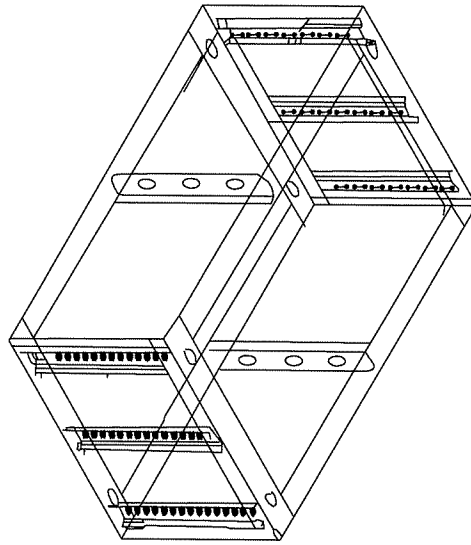
The Port Authority of New York and New Jersey, hereinafter referred to as "the Authority," is a public body corporate and politic, organized under the laws of the State of New York and New Jersey, and is a member of the United States Postal Service. The Authority is a public utility and is subject to the jurisdiction of the Federal Energy Regulatory Commission and the Federal Communications Commission. The Authority is also a member of the International Brotherhood of Teamsters, Local 400, and the International Brotherhood of Electrical Workers, Local 1000. The Authority is a public body corporate and politic, organized under the laws of the State of New York and New Jersey, and is a member of the United States Postal Service. The Authority is a public utility and is subject to the jurisdiction of the Federal Energy Regulatory Commission and the Federal Communications Commission. The Authority is also a member of the International Brotherhood of Teamsters, Local 400, and the International Brotherhood of Electrical Workers, Local 1000.

Designed by _____
Drawn by _____
Checked by _____
Date SEPTEMBER 2018

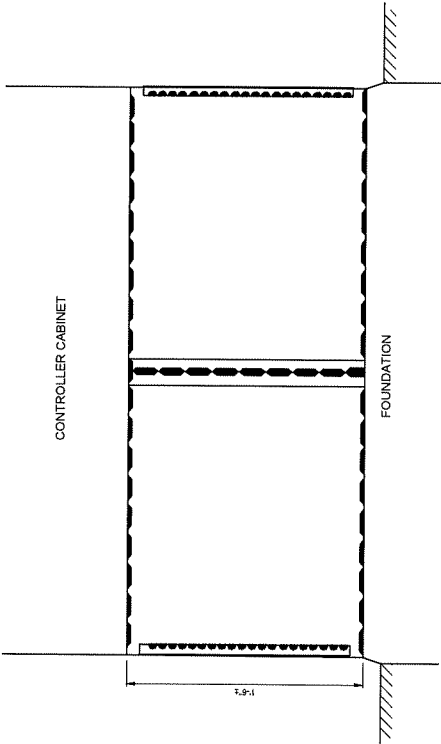
Contract Number
Drawing Number **TD20.35**
REV



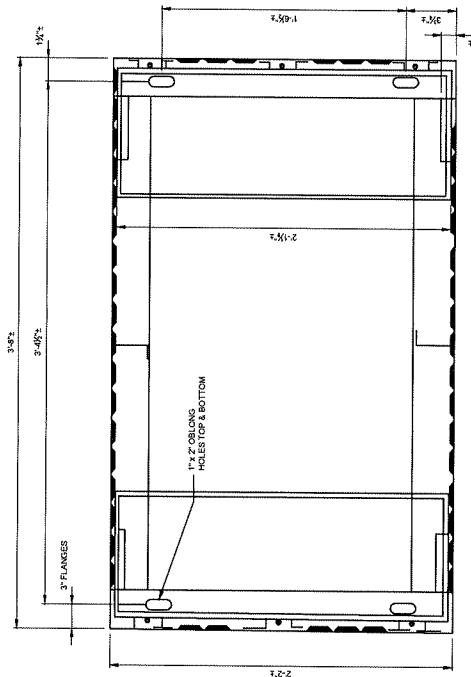
SIDE VIEW



UL LISTED - E216745



FRONT VIEW

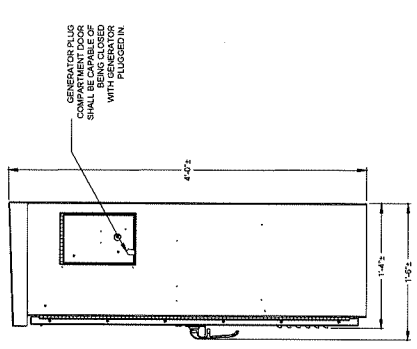


TOP VIEW

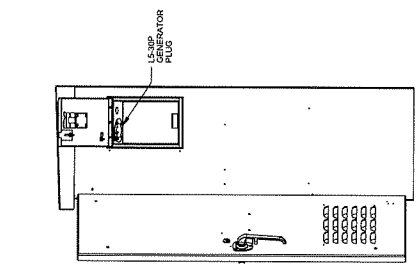
CONTROLLER CABINET SKIRT
N.Y.C.

No.	Date	Revision	Approved
			ENGINEERING DEPARTMENT
			PANYNJ
			Traffic Standard
			Details

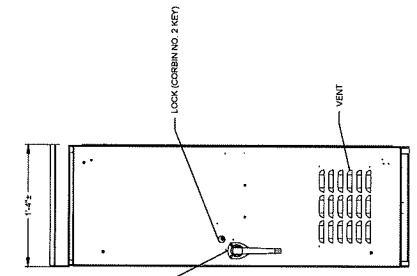
TRAFFIC
Title
TRAFFIC SIGNALS
DESIGNED BY
DRAWN BY
CHECKED BY
DATE
SEPTEMBER 2018
CONTRACT
NUMBER
DRAWING
NUMBER
TD20.36
PAGE



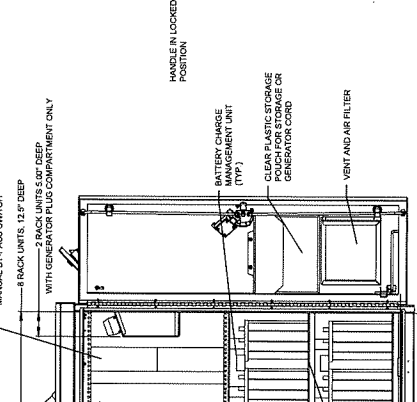
SIDE VIEW (DOORS OPEN)



FRONT VIEW



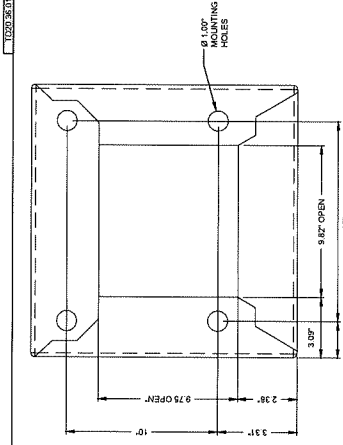
SIDE VIEW (DOORS OPEN)



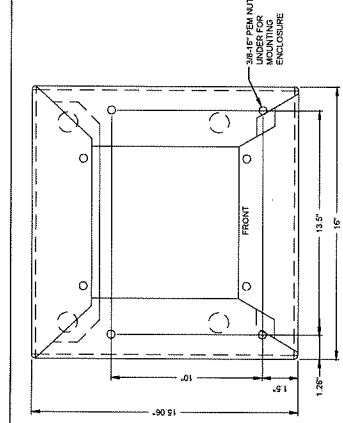
FRONT VIEW (DOOR OPEN)

- NOTES:**
- FOR UPS EQUIPMENT INFORMATION, SEE CONTRACT SPECIFICATIONS.
 - FOR BATTERY INFORMATION, SEE CONTRACT SPECIFICATIONS.
 - FOR WEATHERPROOF ACCESS DOOR FOR CABINET, SEE SPECIFICATION 344155C.

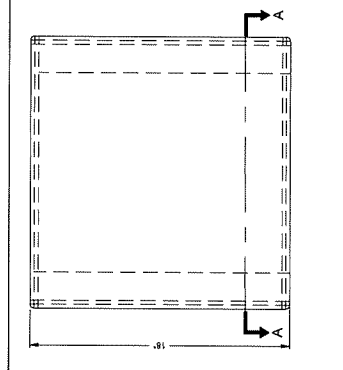
ALUMINUM SIDEMOUNT ENCLOSURE (SME) FOR UNINTERRUPTIBLE POWER SOURCE (UPS)



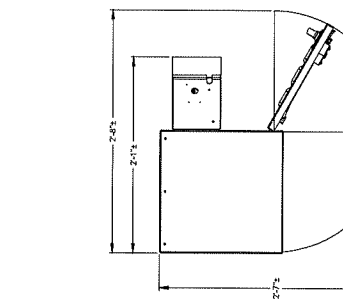
SECTION A-A
MOUNTING HOLE PATTERN
N.T.S.



TOP VIEW
N.T.S.



FRONT VIEW (DOORS OPEN)
N.T.S.



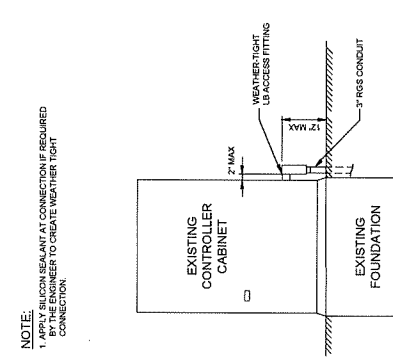
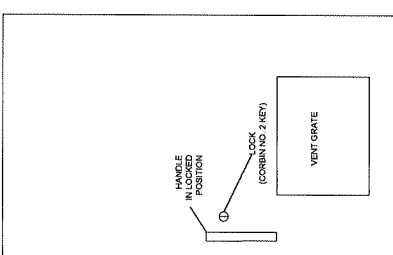
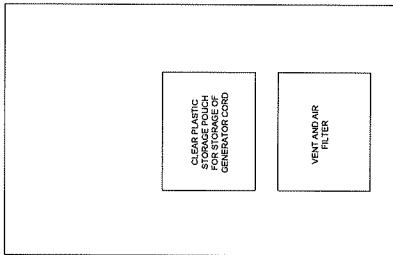
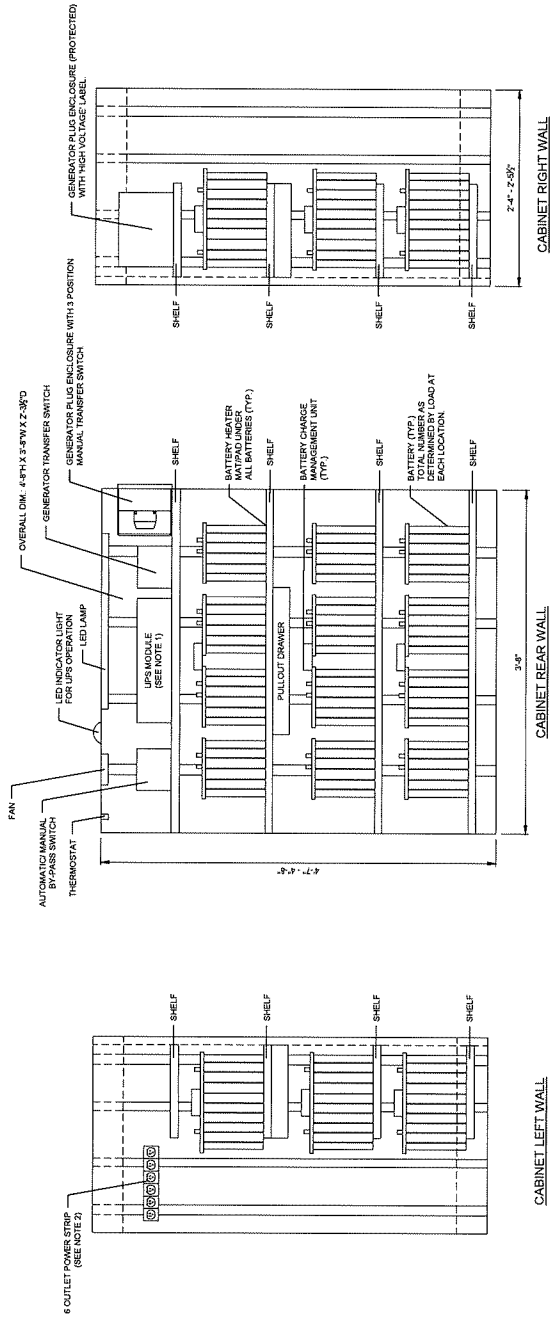
SIDE VIEW (DOORS OPEN)
N.T.S.

- NOTES:**
- WEATHERPROOF ACCESS DOOR FOR CABINET MOUNTING SHALL BE INCLUDED.

No.	Date	Revision	Approved
			ENGINEERING DEPARTMENT
			PANYU
			Traffic Standard
			Details

TRAFFIC SIGNALS	
Type	
ABOVE-GROUND CONTROLLER CABINET CONNECTION DETAIL AND UPS P. CABINET LAYOUT	
Designed by	
Drawn by	
Checked by	SEPTEMBER, 2018
Date	
Contract Number	
Drawing Number	TD20.37
Page	37

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NOTE:
1. APPLY SILICON SEALANT AT CONNECTION IF REQUIRED BY THE ENGINEER TO CREATE WEATHER TIGHT CONNECTION.

- NOTES:**
- FOR UPS EQUIPMENT INFORMATION, SEE CONTRACT SPECIFICATIONS.
 - CONNECTIONS TO THE MAINS SUPPLY RECEPTACLE LOCATED ON THE AUTOMATIC TRANSFER SWITCH.
 - CABINET SHALL CONTAIN A PERMANENT VANDAL-PROOF GENERATOR SECURITY BOLT. SEE SPECIFICATION-UP-USE.

P. CABINET FOR UNINTERRUPTIBLE POWER SOURCE (UPS)
N.T.S.

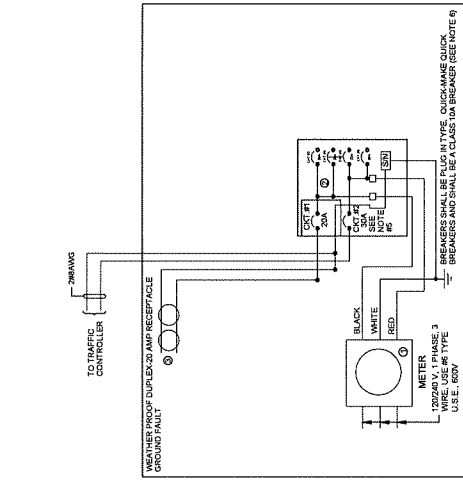
1003.37.01

1003.37.02

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			
TRAFFIC			

TRAFFIC SIGNALS
METER CABINET

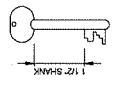
Designed by _____
Checked by _____
Date: SEPTEMBER, 2018
Contract Number _____
Drawing Number **TD20.38**
Page



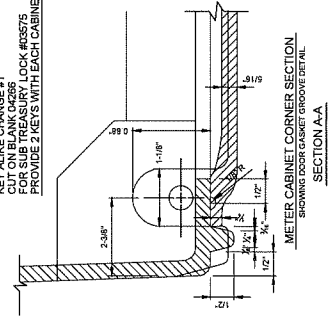
NOTE: ALL WIRE SHALL BE #18 AWG 900 VOLT OR AS OTHERWISE SHOWN.

SCHEMATIC WIRING DIAGRAM: T201Z4D VOLT

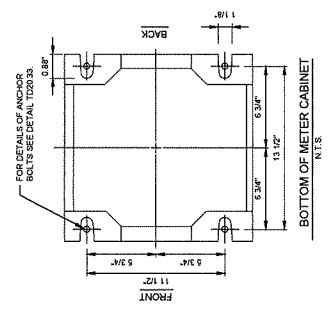
- NOTES:**
1. METER SOCKET-INSTALL BY UTILITY COMPANY ON REQUEST.
 2. AIR CIRCUIT LOAD CENTER WITH ENCLOSURE COMPLETE WITH 1.50A & 5.00A CIRCUIT BREAKERS.
 3. WEATHERPROOF, 20A DUPLEX RECEPTICAL GROUND-FAULT.
 4. IF METER IS NOT REQUIRED, INSTALL 1" I.D. FROM REDUCER COUPLING TO MAIN REARER PANEL.
 5. A 40 AMP BREAKER SHALL BE INSTALLED WITH EIGHT PHASE CONTROLLER ASSEMBLES.
 6. THE TOTAL NUMBER OF CIRCUIT BREAKERS SHALL NOT EXCEED SIX.



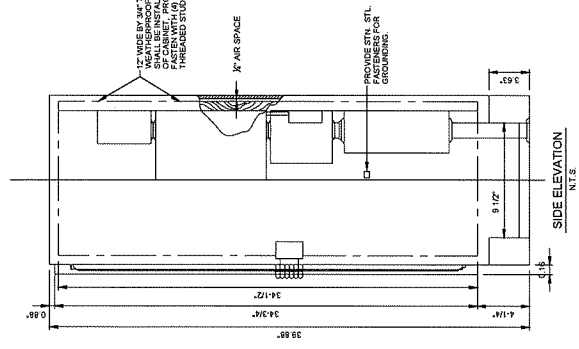
KEY ALIKE CHANGE #1
CUT ON BLANK 04266
FOR SUB TREASURY LOCK #0575
PROVIDE 2 KEYS WITH EACH CABINET



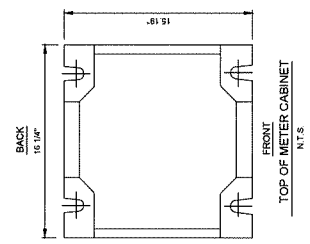
METER CABINET CORNER SECTION
SECTION A-A
N.T.S.



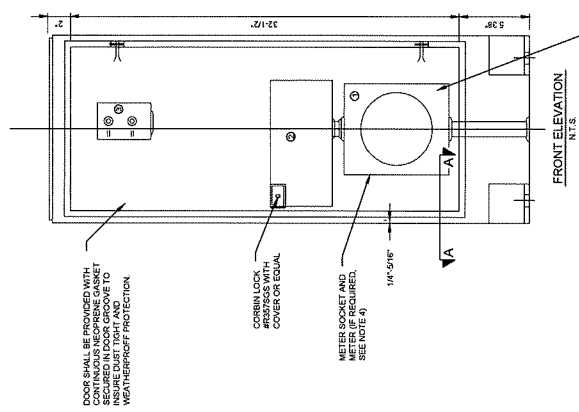
BOTTOM OF METER CABINET
N.T.S.



SIDE ELEVATION
N.T.S.



TOP OF METER CABINET
N.T.S.



FRONT ELEVATION
N.T.S.

ALUMINUM METER CABINET
N.T.S.

DOORS SHALL BE PROVEN WITH CONTINUOUS INSURINE GASKET SECURED IN DOOR GROOVE TO WEATHERPROOF PROTECTION

CORNER LOCK #88755 WITH COVER ON EQUAL

METER SOCKET AND METER IF REQUIRED, SEE NOTE 4)

1/4\" 5/16\"

MOUNT METER IN ACCORDANCE WITH UTILITY COMPANY GUIDELINES

This drawing is the property of the Port Authority of New York and New Jersey. It is to be used only for the project and location specified hereon. It is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Port Authority of New York and New Jersey. The Port Authority of New York and New Jersey is not responsible for any errors or omissions in this drawing. The user of this drawing is advised to verify all dimensions and specifications with the manufacturer of the equipment shown hereon. The Port Authority of New York and New Jersey is not responsible for any damage or injury resulting from the use of this drawing. The user of this drawing is advised to verify all dimensions and specifications with the manufacturer of the equipment shown hereon. The Port Authority of New York and New Jersey is not responsible for any damage or injury resulting from the use of this drawing.

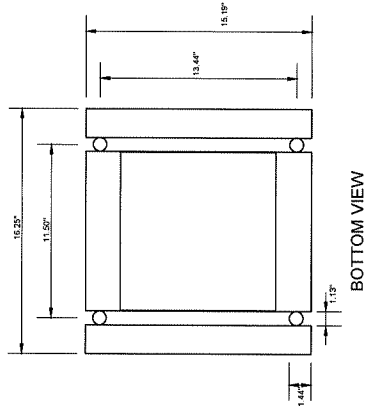
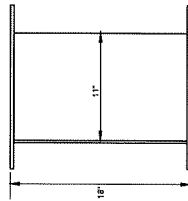
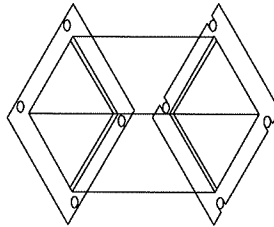
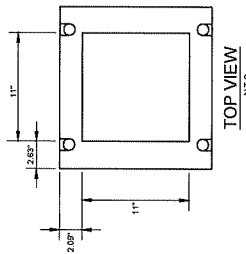
No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

TRAFFIC
Title

TRAFFIC SIGNALS
METER CABINET SKIRT

This drawing shall be used in accordance with the provisions of the New York State and New Jersey Traffic Signal Standards. It is the responsibility of the user to ensure that the drawing is used in accordance with the applicable standards and specifications. The user shall be responsible for any errors or omissions in the drawing and for any consequences arising therefrom. The user shall also be responsible for obtaining any necessary permits and approvals for the use of this drawing.

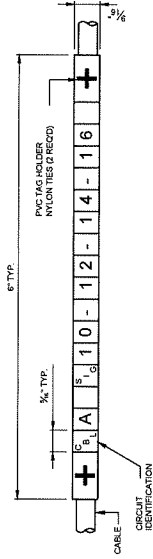
Designed by _____
 Drawn by _____
 Checked by _____
 Date SEPTEMBER 2018
 Contract Number _____
 Drawing Number **TD20.39**
 P&J



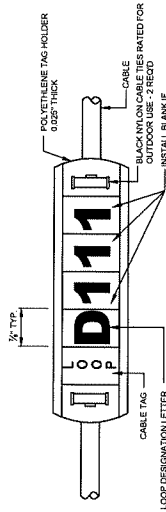
ALUMINUM METER CABINET SKIRT
N.T.S.

NOTE: METER CABINET SKIRTS SHALL BE FURNISHED AND INSTALLED AT ALL METER CABINET LOCATIONS.

CIRCUIT IDENTIFICATION:
 CABLE
 RED - PEDESTRIAN
 POLYESTER
 (TAG LETTERS SHALL BE BLACK ON YELLOW)

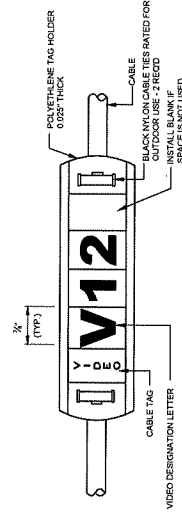


**TRAFFIC SIGNAL
CABLE IDENTIFICATION TAG DETAIL**
 N.T.S.



**LOOP DETECTOR
CABLE IDENTIFICATION TAG DETAIL**
 (TAG LETTERS SHALL BE BLACK ON YELLOW)
 N.T.S.

LOOP DESIGNATION LETTERS:
 1ST COLUMN - DETECTOR TYPE
 2ND COLUMN - PHASE
 3RD COLUMN - CHANNEL



**VIDEO DETECTOR
CABLE IDENTIFICATION TAG DETAIL**
 (TAG LETTERS SHALL BE BLACK ON YELLOW)
 N.T.S.

VIDEO DESIGNATION LETTERS:
 1ST COLUMN - DETECTOR TYPE
 2ND COLUMN - PHASE
 3RD COLUMN - CHANNEL

NOTE: VIDEO DESIGNATION NUMBER SHALL BE LABELED
 IN ACCORDANCE TO CONTRACT DRAWINGS

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard Details			

TRAFFIC
 Title: TRAFFIC SIGNALS
 CABLE IDENTIFICATION TAG

Designed by _____
 Drawn by _____
 Checked by _____
 Date: SEPTEMBER 2018
 Contract Number _____

Drawing Number: **TD20 41**
 P12

100% K.T.U.S.

100% K.T.U.S.

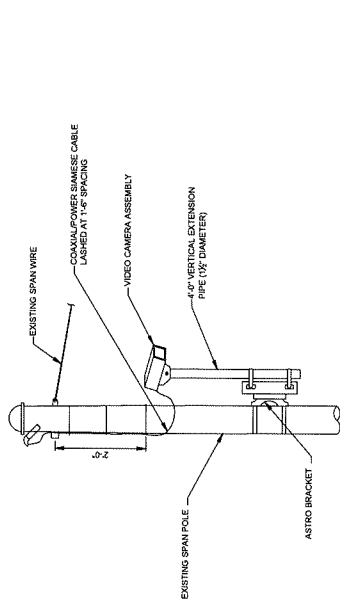
No.	Date	Revision	Approved
1			

ENGINEERING DEPARTMENT
PANYNJ
Traffic Standard
Details

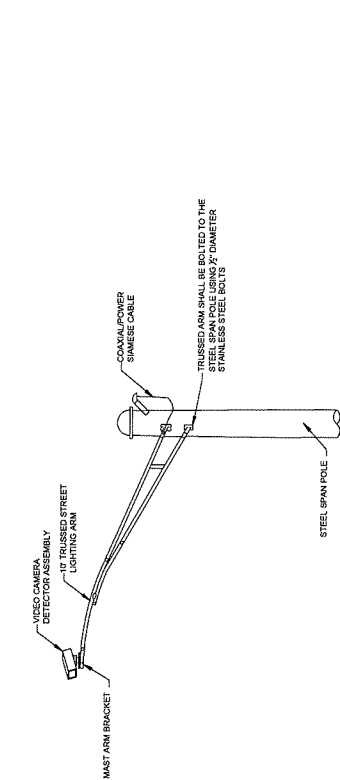
TRAFFIC SIGNALS
VIDEO CAMERA
MOUNTING DETAILS

Designed by
Drawn by
Checked by
Date
Contract
Number
Drawing
Number
PDC

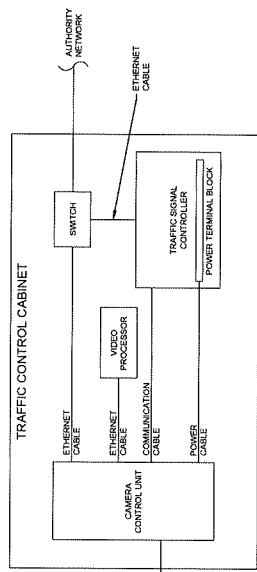
SEPTEMBER 2018
TD20.42



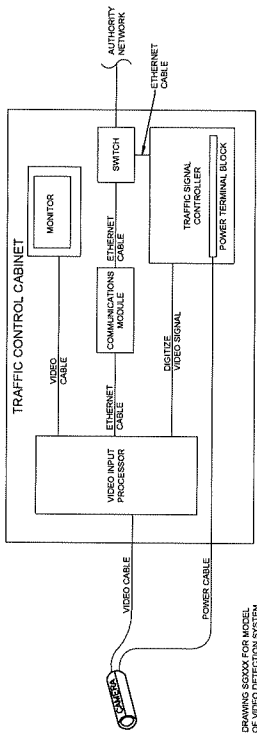
CAMERA MOUNTING ON SPAN WIRE SIGNAL POLE



CAMERA MOUNTING ON ROADWAY LIGHTING MAST ARM

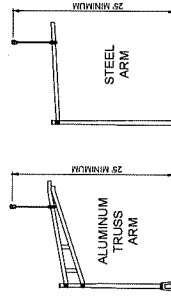


VANTAGENEXT OPERATIONAL BLOCK DIAGRAM



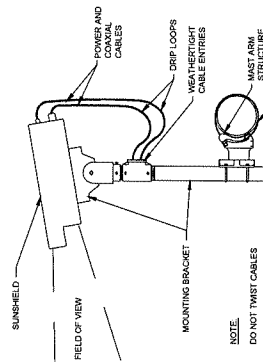
RZ-4 OPERATIONAL BLOCK DIAGRAM

- NOTES:
1. REFER TO CONTRACT DRAWINGS R204 FOR INSTALLATION AND MANUFACTURER OF VIDEO DETECTION SYSTEM APPROVAL.
 2. REFER TO MANUFACTURER'S INSTALLATION DETAILS AND DETECTION ZONE SETUPS.
 3. CONTINUOUS WIRE SHALL BE INSTALLED FROM CAMERA TO CONTROLLER. NO SPLICES ALLOWED.
 4. VANTAGENEXT INSTALLATIONS TO HAVE COMBINED POWER AND COMMUNICATIONS CABLE.



POLE MOUNTING DETAILS ARE FOR ILLUSTRATIVE PURPOSES ONLY. FINAL MOUNTING LOCATIONS TO BE DETERMINED DURING INSTALLATION.

TYPICAL MAST ARM MOUNTING DETAIL



CAMERA MOUNTING ON TRAFFIC SIGNAL MAST ARM

NOTE:
DO NOT TWIST CABLES

VIDEO CAMERA MOUNTING DETAILS
NTS

NTS

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

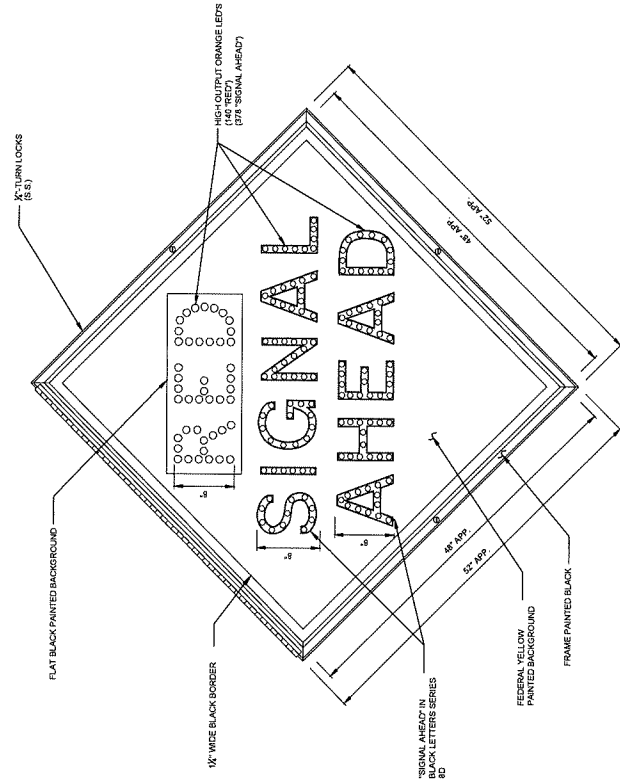
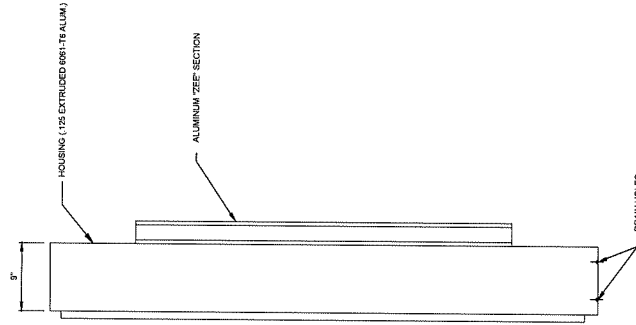
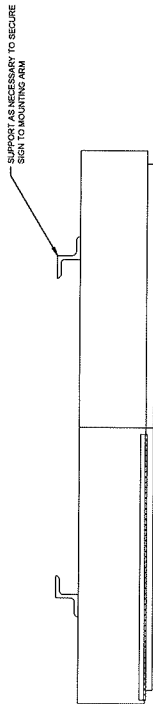
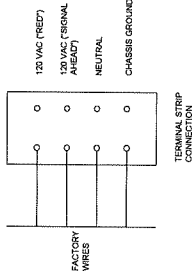
TRAFFIC
Title

TRAFFIC SIGNALS

RED SIGNAL AHEAD SIGN

DESIGNED BY
DRAWN BY
CHECKED BY
DATE
CONTRACT NUMBER
DRAWING NUMBER

SEPTEMBER 2018
TD20.43



RED SIGNAL AHEAD SIGN

NOTES:

1. SIGNALS CONTAINING BLUE SIGNAL MESSAGES MUST BE FLASHED IMMEDIATELY DURING FLASH OPERATION. FLASHING OPERATION TO BEGIN PRIOR TO TERMINATION OF MESSAGE. THE LEGEND "RED" IS PORTLAND ORANGE. THE LEGEND "SIGNAL AHEAD" IS LUMINOUS WHITE.
2. MINIMUM OF 2 LAMPS REQUIRED FOR EACH LINE OF LEGEND.
3. SIGN CASE SHALL BE FULLY GASKETED AND WATER TIGHT.
4. HINGE AND ALL HARDWARE SHALL BE STAINLESS STEEL.
5. FOR INSTALLATION ON STEEL MAST ARM SEE CONTRACT DRAWING SOXXX.

Attachment E

A 1/30/07

DIVISION 26

SECTION 265522

**VEHICULAR TRAFFIC SIGNAL HEADS
AND MOUNTING HARDWARE**

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for vehicular traffic signal heads, including flashing signals, optically programmable units and light emitting diode (LED) signals.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	<u>American Society for Testing and Materials (ASTM)</u>
ASTM B 85	Specification for Aluminum-Alloy Die Castings.
	<u>Federal Communications Commission (FCC)</u>
Title 47	Telecommunication.
	<u>Federal Highway Administration (FHWA)</u>
MUTCD	Manual on Uniform Traffic Control Devices.
	<u>Institute of Transportation Engineers (ITE)</u>
ITE ST-017B	Equipment and Material Standards of the Institute of Transportation Engineers.
	Vehicle Traffic Control Signal Heads –Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules.
ITE ST-052	Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement.
	<u>National Electrical Manufacturers Association (NEMA)</u>
NEMA TS 2	Traffic Controller Assemblies with NTCIP Requirements.
NEMA 250	Enclosures for Electrical Equipment (1,000 Volts Maximum).
	<u>The Port Authority of New York and New Jersey (PA)</u>
	Traffic Signal Design and Drawing Preparation Guidelines.
	<u>Underwriters Laboratories, Inc. (UL)</u>
UL 94VO	Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
	<u>US Department of Defense Military Standards</u>
MIL-STD-883	Test Method Standard Microcircuits.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Vehicular traffic signal heads shall conform to requirements specified in this Section. Where specific requirements are not listed herein, the vehicular traffic signal heads shall, as a minimum, conform to the requirements of the standards and publications listed in 1.02.
- B. The units furnished as Work of this Section shall be of the size, number of indicators, colors and faces shown on the Contract Drawings, constructed to standard similar dimension sections or combination head arrangements with lenses, aluminum alloy housings, mounting brackets and hardware, aluminum reflectors, lamps, visors, strobes, safety chains and, where shown on the Contract Drawings, with backplates.
- C. Polycarbonate housings and visors in the quantities shown shall be furnished only if specified on the Contract Drawings.
- D. Vehicular traffic signal heads shall consist of readily available and proven equipment, fully consistent with their intended design and operation as specified herein. Special or custom-built components may be used only upon written approval from the Engineer.
- E. Use modular type construction with assemblies, sub-assemblies and modules that are available from a second source of supply wherever possible.
- F. All assemblies, sub-assemblies and modules shall be readily accessible for removal, testing or replacement without removal of other modules, assemblies or components. Components shall be located so that there is visibility and access for the use of hand tools and standard test probes where maintenance is required. Test points shall be provided to facilitate troubleshooting.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. The vehicular traffic signal head equipment shall operate over an ambient temperature range from minus 40 degrees F to plus 165 degrees F (minus 40 degrees C to 74 degrees C). Operation of the vehicular traffic signal head equipment shall not be degraded by rain, snow, fog or normally encountered ambient humidity conditions.
- B. The equipment shall be protected against the intrusion of dust and moisture to protect all internal components.
- C. The equipment shall operate without degradation or damage under ambient shock (thermal and mechanical), vibration, lightning and electromagnetic/electrical interference at the construction site.

1.05 QUALITY ASSURANCE

- A. Verify that all LED vehicular traffic signal heads have undergone Design Qualification (DQ) testing prior to shipment as specified herein and ITE ST-017B. Failure of any LED signal to meet requirements of the DQ tests shall be cause for rejection. If any equipment has been damaged or if, for any reason, the equipment does not comply with the requirements or test standards specified, the Contractor shall repair or replace the equipment at his own expense. Provide DQ process and test results documentation to the Engineer.

- B. Ensure that all LED vehicular traffic signal heads undergo the following production Quality Assurance (QA) testing prior to shipment in accordance with ITE ST-017B. Failure of any LED signal to meet requirements of the QA tests shall be cause for rejection. If any equipment has been damaged or if, for any reason, the equipment does not comply with the requirements or test standards specified, the Contractor shall repair or replace the equipment at his own expense. Provide QA process and test results documentation to the Engineer.
 - 1. Signal Burn-in.
 - 2. Maintained Minimum Luminous Intensity.
 - 3. Power Factor.
 - 4. Current.
 - 5. Visual Inspection.
- C. After delivery of equipment, the Engineer may perform a construction site inspection of the equipment. If any equipment has been damaged or if, for any reason, the equipment does not comply with the requirements or testing hereof, the Contractor shall repair or replace the equipment at his own expense, even though the equipment had been inspected for shipment. After such satisfactory replacement and/or repair and the Engineer's subsequent written approval, the equipment may be installed.
- D. After installation, test the equipment in the presence of the Engineer to show compliance with the requirements of this Section and with the Contract Drawings. Continue testing until the results are satisfactory to the Engineer. If any equipment has been damaged or if, for any reason, the equipment does not comply with this Section, the Contractor shall repair or replace the equipment at his own expense. Provide installation process and test results documentation to the Engineer. Perform any repairs, construction and modifications required to comply with the Specifications and the Contract Drawings.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered to the construction site in original unopened containers or bundles with labels, which clearly identify the manufacturer and product name, including storage requirements and instructions.
- B. Properly store and handle all materials delivered to prevent deterioration or damage due to moisture, temperature change, contaminants and other causes.

1.07 SPARE EQUIPMENT

For items with no second source of supply, provide replacement assemblies in quantities as shown on the Contract Drawings.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

- A. Head Housing and Door: Virgin metal die cast aluminum alloy conforming to ASTM B 85 of one of the following alloys:
 - 1. S12A (A14130).

2. S12B (A04130).
 3. SC84A (A13800).
 4. SC84B (A03800).
 5. SG100B (A03600).
- B. Backplates: 1/8-inch thick minimum, black Acrylonitrile Butadiene Styrene (ABS), ultraviolet (UV) stabilized plastic sheet with hair cell finish on the front side, smooth finish on the back side and 3-inch corner radii. Vacuum formed backplates shall have a 5/8-inch flange on all sides providing rigidity and structural integrity. Backplates shall be designed to precisely fit manufacturer's signal head and supplied with necessary mounting hardware.
- C. Polycarbonate housings and visors shall be molded, ultraviolet and heat stabilized, flame retardant, unaffected by the heat of the lamp used and permanently colored.
- D. All bolts, nuts, washers and lock washers supplied shall be stainless steel.

2.02 CONSTRUCTION FEATURES

- A. General
1. Design signal head equipment for operation from line voltage at 120 plus or minus 3 VAC RMS nominal and over a voltage range from 80 VAC RMS to 135 VAC RMS, 60 Hz plus or minus 3 Hz, AC line power. Variations in operating line voltage shall have no visible effect on luminous intensity and shall not vary by more than 10 percent over the entire operating voltage range.
 2. Signal heads, bracket arms and mounting attachments shall receive three coats of paint, each of which shall be baked after application. The first or primer coat shall be a non-lead or chromium containing paint for aluminum surfaces. The second and third coats shall be Federal Yellow matching Color No. 13538 conforming to Federal Standard No. 595B, except for the underside of visor, which shall be flat black enamel. Each coat shall be baked on separately. All metal surfaces to be painted shall be suitably cleaned of all foreign deposits, oil and grease, and then neutralized for priming. Paint separate parts before assembly. Do not paint stainless steel housing latching assembly.
 3. Unless specified otherwise, equipment shall be fabricated in accordance with ITE ST-017B.
 4. Identify all wire terminations and terminal block connections. At mast arm installations, bring separate continuous #14 AWG, 19 strand wires from the terminal block of the signal head to the traffic signal controller cabinet without splicing. At overhead span installations, secure separate continuous traffic signal cables to the span wire and terminate on the traffic signal head terminal block. Terminate cables with insulated spade terminals conforming to NEMA TS 2.
- B. Vehicular Traffic Signal Heads
1. Shall be of the size, number of indicators, color and faces as shown on the Contract Drawings.
 2. The Vehicular Traffic Signal Heads shall be of the type Optically Programmable or LED as specified herein and as shown on the Contract Drawings.

3. The housing for each signal face shall be of unitized sectional construction and shall consist of as many sections as necessary to provide the signal indications shown on the Contract Drawings. Rigidly and securely fasten sections together into a weather tight signal face. Adjustable traffic signal heads shall consist of two or more signal faces fastened to and supported by a pipe assembly and suitable entrance fittings. No special tools shall be required to fasten the signal heads together.
 - a. Arrange each housing with openings in the top and bottom so that it may be rotated about a vertical axis between waterproof supporting brackets or trunnions and shall be capable of being securely fastened at increments of not more than five degrees of rotation, designed to accommodate standard 1-1/2-inch pipe brackets.
 - b. The top and bottom of each housing shall have integral cast locking rings or other provisions to provide positive interlocking and indexing. The top and bottom housing coupler shall be free of sharp edges and protrusions that might damage conductor cable insulation and shall provide sufficient space for the entrance of the required signal cable. Provide tees or crosses equipped with pipe plug knobs or caps at the top and bottom of the housings that can be removed to assist in wiring. As an alternative, flat arms or spiders will be acceptable for use on the bottom of adjustable signals. One-section beacons may be supplied without bottom bracket arms.
 - c. Each signal face shall be locked by engagement of serrations in the end signal sections engaging with similar serrations in the mounting bracket assembly. The serrations shall be recessed and integral with the signal section. All signal brackets shall be designed for use with a tabbed lock ring to lock the signal face in position.
 - d. Housing construction shall permit the assembly of 12-inch signal sections with 8-inch signal sections of the same manufacturer. The assembly shall permit the joining of 8-inch sections to 12-inch sections, either above or below for vertical mounted signals and either to the right or left for horizontally mounted signals.
4. Provide neoprene gaskets between the body of the housing and the doors. The door shall be hinged and forced tightly against the gasket and the housing by a simple stainless steel locking mechanism.
 - a. Cast hinge lugs integral with the door. All other exterior hardware such as hinge pins, lens or clips shall be stainless steel. The locking device shall operate without the use of tools.
 - b. Arrange hinges to allow convenient re-lamping. On the outside of the door, there shall be a rim encircling the lens opening to prevent any light leakage between optical systems.
 - c. Each door shall contain four Number 10-24 tapped holes equally spaced and straddling the vertical centerline through bosses on the door to accommodate visor clip connections on the outside and lens clip connections on the inside of the door.

5. Provide each completed vehicular traffic signal head with a barrier type terminal block, equipped with connectors for the lamp receptacle leads and screw terminals for the field wires, located within the bottom section of the signal unit. The terminal board for standard three-section units shall be a four-position, eight-terminal, barrier-type strip. Attach the white, red; orange and green color-coded section leads to one side of each terminal strip leaving the opposite terminals for field wires. All wires shall be stranded 18 AWG minimum with an insulation rating of 221 degrees F (105 degrees C). Greater than three-section head clusters shall be designed accordingly.
6. The visors shall be separate and removable from the doors, held in place by stainless steel fastenings attached to the door in such a manner as to prevent the possibility of any light leakage between the door and the visor hood, which might be discernible from the side. Fabricate visors of sheet aluminum, not less than 0.050 inches thick, and equip with bayonet slots or other provisions to permit snap-on attachment and rotation of the visor.
 - a. Visors shall be either the standard open type or the type shown on the Contract Drawings. Paint the inside of the visors flat black to minimize light reflection to the sides of the signal.
 - b. Visors shall tilt down from the horizontal a minimum of 3-1/2 degrees and shall be 10 inches nominally in length for 12-inch diameter lenses and 8 inches nominally in length for 8-inch diameter lenses.
7. Directional Louvers
 - a. Furnish and install directional louvers in signal visors where shown on the Contract Drawings.
 - b. Directional louvers shall be so constructed as to have a snug fit in the signal visors. The outside cylinder shall be constructed of 0.030-inch nominal thickness, or thicker, sheet steel and the vanes shall be constructed of 0.016-inch nominal thickness, or thicker, sheet steel or the cylinder and vanes shall be constructed of 5052-H32 aluminum alloy of equivalent thickness. Dimensions of louvers and arrangements of vanes shall be as shown on the Contract Drawings.
 - c. The entire surface of louvers used in front of signal lenses shall be painted a flat black to minimize light reflection to the sides of the signals.
8. Provide removable black ABS, UV-stabilized plastic backplates at locations and of configuration shown on the Contract Drawings, 1/8-inch minimum thickness. Backplates shall attach to the signal head in such a manner so as not to obstruct the signal housing door opening. The backplates shall be designed to precisely fit manufacturer's signal head and shall be supplied with necessary hardware.
9. The housing assembly shall accommodate the installation and/or replacement of either Optically Programmable or LED vehicular traffic signal head as specified herein.

10. Polycarbonate housings and visors in the quantities shown shall be furnished only if specified on the Contract Drawings.
 - a. The polycarbonate housing shall be one piece molded or shall be fabricated from two or more pieces joined into a single piece. The housing thickness shall be a minimum of 0.090 inches thick. All sections shall be identical and interchangeable with each other and shall be so designed that they interlock with each other forming a weatherproof assembly. Hinges or lugs shall be located inside each section for attaching the reflector assembly. Each signal section shall be dust-tight.
 - b. The polycarbonate-housing door of each section shall be a one-piece unit with an opening of sufficient diameter to accommodate the lens. On one side of the door, at top and bottom, there shall be a hinge so as to ensure perfect alignment of the door. On the opposite side of the door, there shall be a wingnut assembly-locking device to ensure even gasket pressure. Twelve-inch signal sections shall be secured with two wingnut assemblies. Hinge pins and locking device shall be stainless steel.
 - c. Each polycarbonate signal face shall be provided with polycarbonate or metal visor. Polycarbonate visors shall be a minimum of 0.100-inch thick, formed from sheet polycarbonate or assembled from one or more injection, rotational or blow molded polycarbonate sections of black homogeneous colored material with a lusterless finish. Sections shall be joined using thermal, chemical or ultrasonic bonding.
 - d. Polycarbonate signal faces that require backplates shall be provided with ABS backplates, a minimum of 1/8-inch thick.
- C. Optically Programmable Vehicular Signal Heads
 1. Optically programmable vehicular signal heads, if any, shall be located as shown on the Contract Drawings. Such units shall permit the visibility zone of the indication to be determined optically without hoods or louvers. The projected indication may be selectively visible or veiled anywhere within 15 degrees of the optical axis. No indication shall result from external illumination nor shall one light unit illuminate a second.
 2. The optical system shall be comprised of the lamp, a lamp collar, an optical limiter/diffuser and the objective lens.
 - a. Lamp shall be a nominal 150 watts, 120 VAC, three prong, sealed beam having an integral reflector with stippled cover and an average rated life of at least 7,000 hours, coupled to the diffusing element with a collar including a specular inner surface. The diffusing element may be discrete or integral with the convex surface of the optical limiter/diffuser.
 - b. The optical limiter/diffuser shall provide an accessible imaging surface at focus on the optical axis for objects 900 to 1,200-feet distance, and shall permit an effective veiling mask to be variously applied as determined by the desired visibility zone. Provide the optical limiter/diffuser with positive indexing means, composed of heat resistant glass or polycarbonate.
 - c. The objective lens shall be a high resolution, planar incremental lens hermetically sealed within a flat laminate of weather resistant acrylic, or approved equal. The lens shall be symmetrical in outline and able to be rotated to any 90-degree orientation about the optical axis without displacing the primary image.

- d. The optical system shall accommodate projection of diverse, selected signal displays to separate portions of the roadway such that only one display will be apparent to any viewer.
 - 3. Mount the signals to standard 1-1/2 inch pipe fittings as a single section, as a multiple section face, or in combination with other signals, as shown on the Contract Drawings. Provide the signal sections with an adjustable connection that permits incremental tilting from 0 to 10 degrees above or below the horizontal while maintaining a common vertical axis through couplers and mounting. Terminal connection shall permit external adjustment about the mounting axis in 5-degree increments. Construct the signal such that it can be installed with ordinary tools and serviced with no tools.
 - a. Visor, backplate and adapter attachments shall conform and readily fasten to mounting surfaces without affecting the water and light integrity of the signal.
 - b. Arrange the programmed signal heads for rigid mounting to maintain optical orientation with the roadway. Where span wires are used, securely tether to the lower span wire.
 - 4. The lamp fixture shall be comprised of a separately accessible housing and integral lamp support, an indexed ceramic socket and a self-aligning, quick-release lamp retainer. Provide electrical connection between the case and lamp housing with an interlock assembly that disconnects the lamp housing when opened. Each signal head shall include a covered terminal block for screw attachment of field wires.
 - 5. Provide each signal section with integral means for regulating its intensity between limits as a function of individual background illumination. Lamp intensity shall not be less than 97 percent of uncontrolled intensity at 1,000 ft-c. and shall reduce to 15 plus or minus 2 percent of maximum at less than one ft-c. over the applied voltage and ambient temperature range. Response shall be proportional and essentially instantaneous to any detectable increase in illumination from darkness to 1,000 ft-c. and damped for any decrease from 1,000 ft-c.
 - a. The intensity controller shall be comprised of an integrated, directional light sensing and regulating device interposed between the lamp and field wires; responsive over an applied voltage of 105 VAC RMS to 135 VAC RMS, 60 Hz plus or minus 3 Hz, AC line power, and may provide phase-controlled output voltage but shall also have a nominal open circuit terminal impedance of 1,500 ohms.
 - b. The light intensity mechanism shall not produce electrical noise or interference sufficient to adversely affect the operation of solid-state electronic equipment used in the traffic signal controllers and associated auxiliary equipment and shall not cause false tripping of the conflict monitors.
- D. LED Vehicular Traffic Signal
- 1. General
 - a. LED vehicular traffic signal shall not require special tools for installation when used as a retrofit replacement for existing traffic signal lamps.
 - b. LED vehicular traffic signal shall fit into new or existing traffic housings built in accordance with ITE ST-017B without any modification to the housing.
 - c. LED vehicular traffic signal shall be weather tight, shall fit securely in the housing and shall connect directly to existing electrical wiring.

- d. Installation of a retrofit replacement LED vehicular traffic signal into the existing signal housing shall require only the removal of the existing optical unit components, i.e., lens, lamps, gaskets and reflector.
 - e. Each retrofit kit shall include all necessary components to complete conversion, including a one-piece gasket.
2. LED Signal Lens
- a. The LED signal lens may be a replaceable part, without the need to replace the complete LED signal.
 - b. The LED signal lens may be tinted with the appropriate color to enhance on/off contrast. The material used to tint the lens shall not affect the luminous intensity or chromaticity and shall be uniform across the face of the lens.
 - c. The LED signal lens shall be polycarbonate and shall withstand ultraviolet light (direct sunlight) exposure for a minimum time period of five years without exhibiting evidence of deterioration.
3. LED Signal Construction
- a. The LED signal shall be a single, self-contained device, not requiring on-site assembly, for installation into the existing traffic signal housing.
 - b. All LEDs shall be rated for 100,000 hours or more at 77 degrees F (25 degrees C) and 20 milliamps.
 - c. All internal LED and electronic components shall be adequately supported to withstand mechanical shock and vibration from high winds and other sources.
 - d. The signal enclosure shall be made of UL 94VO flame-retardant materials. The lens is excluded from this requirement.
 - e. The LED signal shall have a prominent and permanent vertical indexing indicator for correct indexing and orientation inside the signal housing.
 - f. Each individual LED signal shall be identified for warranty purposes with the manufacturer's name, serial number and operating characteristics, such as rated voltage and power consumption.
 - g. The LED arrow signal pattern shall conform to ITE ST-017B Vehicle Traffic Control Signal Heads – Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules for color, size and shape. The LED arrow signal shall not require a specific orientation or have a variance in light output, pattern or visibility for any orientation.
 - h. The LED ball signal shall conform to ITE ST-017B and Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement for color, size and shape.
 - i. The beam color, beam intensity and radiation pattern shall conform to the requirements for maintained minimum luminous intensity for LED signal and chromaticity as specified in ITE ST-017B Vehicle Traffic Control Signal Heads – Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules and ITE ST-052 Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement.
 - j. Red LEDs shall be AlInGaP (Aluminum Indium Gallium Phosphorus) and shall be ultra bright type. ALGaAs LEDs are not permitted.
 - k. Green LEDs shall be GaN (Gallium Nitride) and shall be ultra bright type.

- l. Yellow LEDs shall be AlInGaP (Aluminum Indium Gallium Phosphorus) and shall be ultra bright type. ALGaAs LEDs are not permitted.
4. Environmental Requirements
 - a. LED signal shall satisfy all the environmental requirements specified in 1.04.
 - b. LED signal, when properly installed with gasket, shall be protected against dust and moisture intrusion per requirements of NEMA 250 Type 4 enclosures to protect all internal LED, electronic and electrical components.
5. Luminous Intensity
 - a. The Maintained Minimum Luminous Intensity shall be in accordance with ITE ST-017B Vehicle Traffic Control Signal Heads – Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules and ITE ST-052 Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement.
6. Chromaticity
 - a. The measured chromaticity coordinates of the LED signal shall conform to the chromaticity requirement of ITE ST-017B Vehicle Traffic Control Signal Heads – Part 3: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Modules and ITE ST-052 Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement.
7. Electrical
 - a. The LED signal shall operate from a 60 plus or minus 3 Hz AC line over a voltage range of 80 VAC RMS to 135 VAC RMS. The current drawn shall be sufficient to ensure compatibility and proper triggering and operation of load switches and conflict monitors in the signal controller units.
 - b. Nominal operating voltage for all measurements shall be 120 plus or minus 3 VAC RMS.
 - c. The 8-inch nominal and 12-inch nominal LED ball shall consume no more than 20 watts and 30 watts respectively. The 8-inch nominal and 12-inch nominal LED arrow shall not consume more than 15 watts and 20 watts respectively.
 - d. The forward current, as measured through each LED, shall not exceed 60 percent of the LED manufacturer's maximum current rating when operating at 77 degrees F (25 degrees C).
 - e. The LEDs shall emit no visible light when subjected to a 120 VAC, 4-milliamp leakages current from a NEMA-rated solid-state load switch (load switch in the off state).
 - f. The LEDs shall be wired in series parallel strings. The failure of any one LED, and its associated string of LEDs, shall not cause the loss of more than 20 percent of the light output of the complete LED signal.
 - g. The LED circuitry shall prevent flicker at less than 100 Hz over the voltage range specified above.
 - h. The LED circuitry shall include voltage surge protection against high-repetition noise transients and low-repetition noise transients as stated in NEMA TS 2.
 - i. The LED signal, including its circuitry, shall meet FCC Title 47, Subpart B, Section 15 regulations concerning the emission of noise.
 - j. The LED signal shall provide a power factor of 0.90 or greater over the operating voltage range and temperature range specified above.

8. Total harmonic distortion (current and voltage) induced in an AC power line by an LED signal shall not exceed 20 percent over the operating voltage range and temperature range specified above.
9. Design Qualification Testing

Complete and document the Design Qualification testing described below. Carry out all Design Qualification testing after a burn-in (module energized for a minimum of 24 hours at 100 percent duty cycle and at an ambient temperature of 140 degrees F (60 degrees C)). Signals submitted for test shall be representative of typical production units.

- a. The LED signal shall be measured for chromaticity per the requirements of this Section and ITE ST-017B using a spectroradiometer at an ambient temperature of 77 degrees F (25 degrees C).
- b. The LED signal shall be measured for power factor per the requirements of this Section by an independent testing laboratory.
- c. The LED signal shall be measured for total harmonic distortion per the requirements of this Section by an independent testing laboratory.
- d. The LED signal shall be tested for electronic noise per the requirements of this Section with reference to Class A emission limits referenced in FCC Title 47, Subpart B, Section 15 by an independent testing laboratory.
- e. The LED signal shall be tested for compatibility with controller unit, conflict monitor and load switches. These tests are to be conducted in accordance with ITE ST-017B.
- f. The LED signal shall be tested for transient immunity (e.g., early electronic component mortality failures, component reliability problems) using NEMA TS 2 by an independent testing laboratory.
- g. Mechanical vibration testing shall be performed on the LED signal, by an independent testing laboratory, in accordance with MIL-STD-883, Test Method 2007, using three 4-minute cycles along each x, y, and z axis, at a force of 2.5 Gs, with a frequency sweep from 2 Hz to 120 Hz. The loosening of the lens or of any internal components or any other physical damage shall be cause for rejection.
- h. The maintained minimum luminous intensity testing shall be in accordance with ITE ST-017B.

E. Electrical Connections

Wire the traffic signal heads to implement the signal operations shown on the Contract Drawings. At mast arm installations, separate continuous #14 AWG, 19 strand wires shall be brought from the terminal block of the signal head to the base of pole and spliced to the traffic signal cable. At overhead span installations, separate continuous traffic signal cables shall be secured to the span wire and terminated on the traffic signal head terminal block.

F. Mechanical Connections

Furnish safety chain and bolted connections securing the signal heads to the mast arm on all installations. The safety chain shall be a minimum of 1/4 inch hot-dip galvanized coil proof straight link chain with 5/16 inch stainless steel bolts, nuts, flat and lock washers.

PART 3. EXECUTION

3.01 PREPARATION

- A. Before manufacture or procurement of equipment, submit Catalog Cuts and Shop Drawings outlining the construction and operation details of all equipment for prior Engineer approval as specified in 1.08. No equipment shall be procured until the Engineer has given written approval.
- B. Related equipment to be removed and not required for relocation under the Contract, if any, as shown on the Contract Drawings, shall remain the property of the Authority and shall be delivered to a location in the Port District as designated by the Engineer. Removed equipment, if any, shall not be used in a new installation unless specifically called for on the Contract Drawings.

3.02 INSTALLATION

- A. Install signal head equipment in accordance with the guidelines specified in the FHWA Manual on Uniform Traffic Control Devices and as shown on the Contract Drawings.
- B. Arrange signal heads for mounting on span wire, mast arms, post tops or vertical pole bracket mounts as shown on the Contract Drawings.
 - 1. For span wire mounting, furnish the signal heads with a span wire clamp and wire outlet fitting, with span wire clamp comprised of a shoe, lock bar, and two "U" bolts, equipped with a balance adjuster. Assemble the heads so that they hang plumb and include means for adjusting the signal heads to the proper vertical alignment, including circuit disconnect hangers, extension pipes and swivel balancer assemblies. In addition to the upper suspension fitting, provide signal heads with similar mounting attachments for securing the signal to an upper or lower span or tether wire as called for on the Contract Drawings.
 - 2. Furnish signal heads for Vertical, Horizontal and Mid-mast arm mounting with a mount consisting of upper and lower horizontal arms attaching to the top and bottom of the signal head housing. The horizontal arm shall attach to a vertical member that in turn clamps to the mast arm. The mast arm mount shall have provision for adjusting the vertical, angular and rotational positioning of the head in relation to the mast arm so that it is plumb, in line with other signal heads and properly oriented in relation to traffic, including the use of extension pipes, plumbizers, and swivel balancers. Safety chains securing the signal heads to the mast arm are required. Conceal wiring within the mounting assembly.
 - 3. Furnish post top mounted signal heads with a post top type slip fitter mount that is designed for use with a tabbed serrated lock ring to lock the signal face in position.
 - 4. Furnish vertical pole bracket mount signal heads with upper and lower horizontal brackets equipped with pole plates for attachment to the pole with stainless steel straps.
- C. Until the installed signal heads are placed into operation, they shall be bagged with an opaque or other approved material. The material shall be adequately secured to the signal heads in an orderly and neat manner.

- D. After installation of equipment, the Engineer may perform a site inspection of the equipment. If any equipment has been damaged or if, for any reason, the equipment does not comply with the requirements or testing hereof, the Contractor shall repair or replace the equipment at his own expense, even though the equipment had been inspected previously. After such satisfactory replacement and/or repair and Engineer's subsequent written approval, the equipment may be tested as per 1.05 D.

3.03 FIELD TESTS

Perform initial installation test in accordance with 1.05 D.

END OF SECTION

SECTION 265522

VEHICULAR TRAFFIC SIGNAL HEADS AND MOUNTING HARDWARE

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

- A. Submit the following to the Engineer within forty-five (45) days after acceptance of Proposal:
1. A list of manufacturers of equipment to be furnished for the Work of this Section.
 2. Detailed drawing(s) for signal head equipment, backplates, visors, lens, mounting brackets and hardware including recommended mounting instructions. The submittal shall include the environmental tolerance provisions of the proposed equipment, including the material that the housing, backplates, visors, lens, mounting brackets and hardware were fabricated from. Include within this documentation electrical schematic wiring diagrams for the equipment, defining terminal identification number assignment.
 3. Five complete sets and one reproducible master set of all test process and results. This shall include but not limited to the Quality Assurance (QA) process and test results documentation, Design Qualification (DQ) process and test results documentation and installation process and test results documentation.
 4. A complete set of reproducible Mylar Shop Drawings for the signal head equipment, from which clear prints can be made.
 5. Five complete sets and one reproducible master set of operations and maintenance instructions including preventive and corrective maintenance.

END OF APPENDIX "A"

PAGE: 1
SECTION 265522

**VEHICULAR TRAFFIC SIGNAL HEADS
AND MOUNTING HARDWARE**

INSTRUCTIONS TO ENGINEER/ARCHITECT

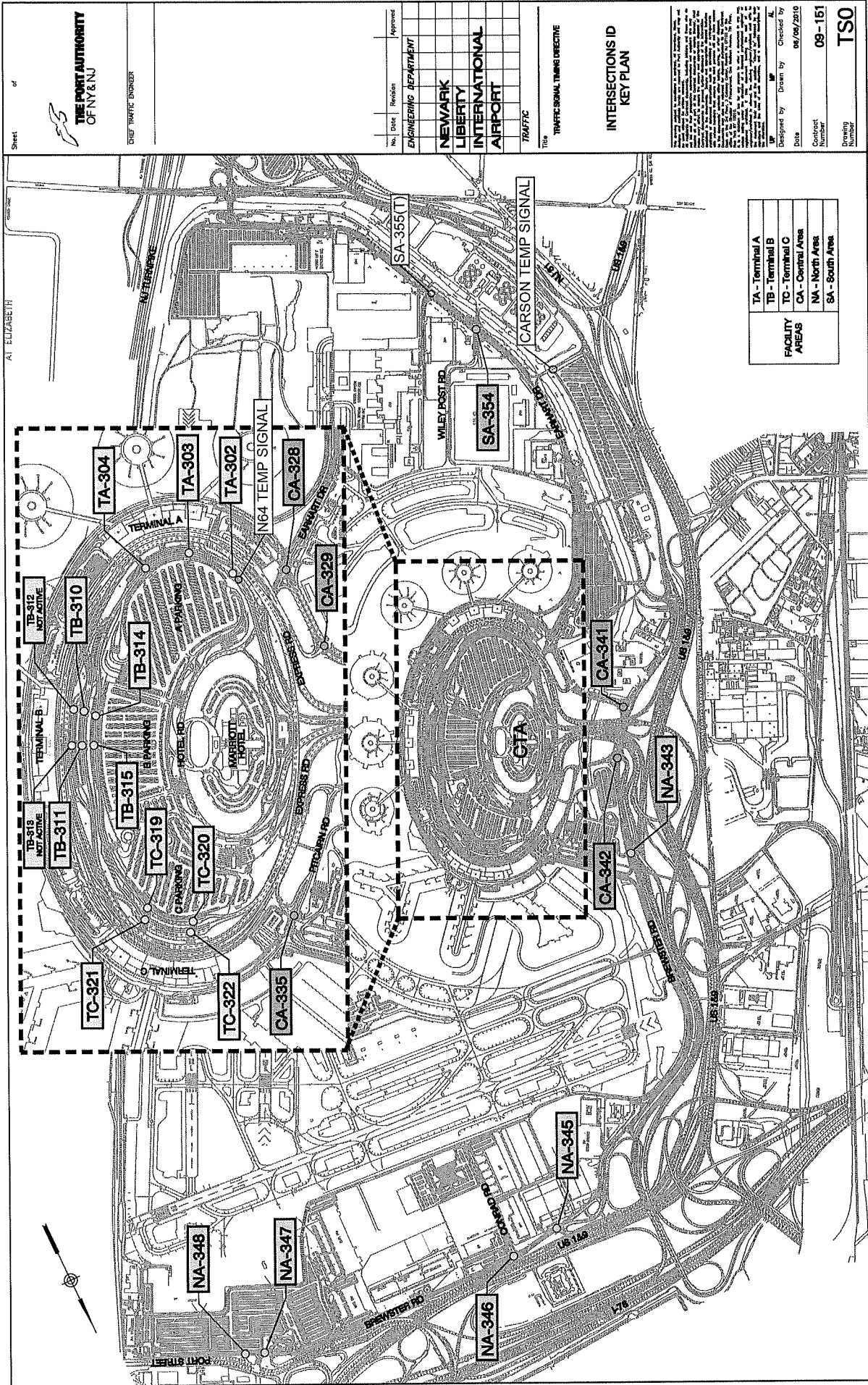
A. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

- 1.03 B Specify the size, number of indicators, colors and faces. Specify sections or combination head arrangements, glass or polycarbonate lenses, aluminum alloy housings, mounting brackets, aluminum reflectors, lamps, visors and backplates.
- 1.03 C Specify the size, number and location of polycarbonate housings and visors.
- 1.07 A Specify replacement assemblies.
- 2.02 B.1 Specify the size, number of indicators, color and faces.
- 2.02 B.2 Specify the Optically Programmable or LED Vehicular Traffic Signal Heads.
- 2.02 B.3 Show the number of traffic signal head sections to provide the signal indications shown.
- 2.02 B.6.a Specify visor type.
- 2.02 B.7.a Specify the location and direction of directional louvers.
- 2.02 B.7.b Specify the dimension and arrangement of directional louvers.
- 2.02 B.8 Specify locations and configuration of backplates.
- 2.02 B.10 Specify the size, number and location of polycarbonate housings and visors.
- 2.02 C.1 Show locations of optically programmable vehicular signal heads.
- 2.02 C.3 Show the mounting of the signals to standard 1-1/2 inch pipe fittings.
- 2.02 E.1 Show the wiring of the traffic signal heads to implement the signal operations. Specify the cable size and number of conductors.
- 3.01 B Specify equipment to be removed and not required for relocation. Specify removed equipment, if any, that shall be used in a new installation.
- 3.02 B Specify mounting of Vehicular Traffic Signal Heads on span wire, mast arms, post tops and vertical pole bracket mounts.
- 3.02 B.1 Specify an upper or lower span or tether wire if needed.

END OF INSTRUCTIONS

ATTACHMENT F



Sheet _____ of _____
THE PORT AUTHORITY
 OF NY & NJ
 CHIEF TRAFFIC ENGINEER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT
NEWARK LIBERTY INTERNATIONAL AIRPORT
 TRAFFIC

Title: **TRAFFIC SIGNAL TIMING DIRECTIVE**

INTERSECTIONS ID KEY PLAN

Designed by: _____
 Drawn by: _____
 Checked by: _____
 Date: 06/08/2010
 Contract Number: 09-151
 Drawing Number: **TS0**

FACILITY AREAS	TA - Terminal A
	TB - Terminal B
	TC - Terminal C
	CA - Central Area
	NA - North Area
	SA - South Area

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STANDARD CONTRACT TERMS AND CONDITIONS

PART I GENERAL DEFINITIONS

To avoid undue repetition, the following terms, as used in this Agreement, shall be construed as follows:

Authority or Port Authority - shall mean the Port Authority of New York and New Jersey.

Contract, Document or Agreement - shall mean the writings setting forth the scope, terms, conditions and Specifications for the procurement of Goods and/or Services, as defined hereunder and shall include, but not be limited to: Invitation for Bid (IFB), Request for Quotation (RFQ), Request for Proposal (RFP), Purchase Order (PO), Cover Sheet, executed Signature Sheet, AND PRICING SHEETS with Contract prices inserted," "STANDARD CONTRACT TERMS AND CONDITIONS," and, if included, attachments, endorsements, schedules, exhibits, or drawings, the Authority's acceptance and any written addenda issued by an authorized member of the Procurement Department.

Days or Calendar Days - shall mean consecutive calendar days, Saturdays, Sundays, and Holidays, included.

Week - unless otherwise specified, shall mean seven (7) consecutive calendar days, Saturdays, Sundays, and Holidays.

Month - unless otherwise specified, shall mean a calendar month.

Holiday(s) – means any holiday which is observed at the Site, as further detailed in the section of these Standard Contract Terms and Conditions entitled "Holidays."

Director - shall mean the Director of the Department which operates the facility of the Port Authority at which the services hereunder are to be performed, for the time being, or his/her successor in duties for the purpose of this Contract, or one of his/her authorized representatives for the purpose of this Contract.

Manager - shall mean the Manager of the Facility for the time being, or his successor in duties for the purpose of this Contract, or his duly authorized representative for the purpose of this Contract.

No person shall be deemed a representative of the Director or Manager except to the extent specifically authorized in an express written notice to the Contractor signed by the Director or Manager, as the case may be. Further, no person shall be deemed a successor in duties of the Director unless the Contractor is so notified in writing signed by the Authority's Procurement Department. No person shall be deemed a successor in duties of the Manager unless the Contractor is so notified in a writing signed by the Director.

Minority Business Enterprise (MBE) - means a business entity which is at least fifty-one percent (51%) owned and controlled by one or more members of one or more minority groups, or, in the case of a publicly held corporation, at least fifty-one percent (51%) of the stock of which is owned by one or more minority groups, and whose management and daily business operations are controlled by one or more such individuals who are citizens or permanent resident aliens.

"Minority Group" means any of the following racial or ethnic groups:

- (a) Black persons having origins in any of the Black African racial groups not of Hispanic origin;
- (b) Hispanic persons of Mexican, Puerto Rican, Dominican, Cuban, Central or South American culture or origin, regardless of race;
- (c) Asian and Pacific Islander persons having origins in any of the original peoples of the Far East, Southeast Asia, The Indian Subcontinent, or the Pacific Islands;

- (d) Native American or Alaskan native persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.

Site of the Work - or words of similar import shall mean the Facility and all buildings and properties associated therewith as described in this Contract.

Small Business Enterprise (SBE) - The criteria for a Small Business Enterprise are:

- o The principal place of business must be located in New York or New Jersey;
- o The firm must have been in business for at least three years with activity;
- o Average gross income limitations by industry as established by the Port Authority.

Subcontractor - shall mean anyone who performs work (other than or in addition to the furnishing of materials, plant or equipment) in connection with the services to be provided hereunder, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of contract with the Contractor), but shall not include any person who furnished merely his own personal labor or his own personal services. "Subcontractor", however, shall exclude the Contractor or any subsidiary or parent of the Contractor or any person, firm or corporation which has a substantial interest in the Contractor or in which the Contractor or the parent or the subsidiary of the Contractor, or an officer or principal of the Contractor or of the parent of the subsidiary of the Contractor has a substantial interest, provided, however, that for the purpose of the clause hereof entitled "Assignments and Subcontracts" the exclusion in this paragraph shall not apply to anyone but the Contractor itself.

Women-owned Business Enterprise (WBE) - shall mean a business enterprise which is at least fifty-one percent (51%) owned by one or more women, or, in the case of a publicly held corporation, at least fifty-one percent (51%) of the stock of which is owned by one or more women and whose management and daily business operations are controlled by one or more women who are citizens or permanent or resident aliens.

Work - shall mean all services, equipment and materials (including materials and equipment, if any, furnished by the Authority) and other facilities and all other things necessary or proper for, or incidental to the services to be performed or goods to be furnished in connection with the service to be provided hereunder.

PART II GENERAL PROVISIONS

1. Facility Rules and Regulations of The Port Authority

- a. The Contractor shall observe and obey (and compel its officers, employees, guests, invitees, and those doing business with it, to observe and obey) the facility Rules and Regulations of the Port Authority now in effect, and such further reasonable Rules and Regulations which may from time to time during the term of this Agreement be promulgated by the Port Authority for reasons of safety, health, preservation of property or maintenance of a good and orderly appearance and efficient operation of the Facility. The Port Authority agrees that, except in case of emergency, it shall give notice to the Contractor of every Rule and Regulation hereafter adopted by it at least five days before the Contractor shall be required to comply therewith.
- b. A copy of the facility Rules and Regulations of the Port Authority shall be available for review by the Contractor at the Office of the Secretary of the Port Authority.

2. Contractor Not An Agent

This Agreement does not constitute the Contractor the agent or representative of the Port Authority for any purpose whatsoever except as may be specifically provided in this Agreement. It is hereby specifically acknowledged and understood that the Contractor, in performing its services hereunder, is and shall be at all times an independent Contractor and the officers, agents and employees of the Contractor shall not be or be

deemed to be agents, servants, employees or "special employees" of the Port Authority.

3. Contractor's Warranties

The Contractor represents and warrants:

- a. That it is financially solvent, that it is experienced in and competent to perform the requirements of this Contract, that the facts stated or shown in any papers submitted or referred to in connection with the solicitation are true, and, if the Contractor be a corporation, that it is authorized to perform this Contract;
- b. That it has carefully examined and analyzed the provisions and requirements of this Contract, and that from its own investigations it has satisfied itself as to the nature of all things needed for the performance of this Contract, the general and local conditions and all other matters which in any way affect this Contract or its performance, and that the time available to it for such examination, analysis, inspection and investigation was adequate;
- c. That the Contract is feasible of performance in accordance with all its provisions and requirements and that it can and will perform it in strict accordance with such provisions and requirements;
- d. That no Commissioner, officer, agent or employee of the Port Authority is personally interested directly or indirectly in this Contract or the compensation to be paid hereunder;
- e. That, except only for those representations, statements or promises expressly contained in this Contract, no representation, statement or promise, oral or in writing, of any kind whatsoever by the Port Authority, its Commissioners, officers, agents, employees or consultants has induced the Contractor to enter into this Contract or has been relied upon by the Contractor, including any with reference to: (1) the meaning, correctness, suitability, or completeness of any provisions or requirements of this Contract; (2) the nature, quantity, quality or size of the materials, equipment, labor and other facilities needed for the performance of this Contract; (3) the general or local conditions which may in any way affect this Contract or its performance; (4) the price of the Contract; or (5) any other matters, whether similar to or different from those referred to in (1) through (4) immediately above, affecting or having any connection with this Contract, the bidding thereon, any discussions thereof, the performance thereof or those employed therein or connected or concerned therewith.

Moreover, the Contractor accepts the conditions at the Site of the Work as they may eventually be found to exist and warrants and represents that it can and will perform the Contract under such conditions and that all materials, equipment, labor and other facilities required because of any unforeseen conditions (physical or otherwise) shall be wholly at its own cost and expense, anything in this Contract to the contrary notwithstanding.

Nothing in the Specifications or any other part of the Contract is intended as or shall constitute a representation by the Port Authority as to the feasibility of performance of this Contract or any part thereof.

The Contractor further represents and warrants that it was given ample opportunity and time and by means of this paragraph was requested by the Port Authority to review thoroughly all documents forming this Contract prior to opening of Bids on this Contract in order that it might request inclusion in this Contract of any statement, representation, promise or provision which it desired or on which it wished to place reliance; that it did so review said documents, that either every such statement, representation, promise or provision has been included in this Contract or else, if omitted, that it expressly relinquishes the benefit of any such omitted statement, representation, promise or provision and is willing to perform this Contract without claiming reliance thereon or making any other claim on account of such omission.

The Contractor further recognizes that the provisions of this numbered clause (though not only such provisions) are essential to the Port Authority's consent to enter into this Contract and that without such provisions, the Authority would not have entered into this Contract.

4. Personal Non-Liability

Neither the Commissioners of the Port Authority nor any of them, nor any officer, agent or employee thereof,

shall be charged personally by the Contractor with any liability, or held personally liable to the Contractor under any term or provision of this Agreement, or because of its execution or attempted execution, or because of any breach, or attempted or alleged breach, thereof.

5. Non-Discrimination Requirements

The Contractor shall take all necessary and reasonable steps to ensure non-discrimination in the performance and administration of all aspects of this Contract.

- A. Contractor hereby agrees that no person on the ground of race, color, national origin, creed/religion, sex, age or handicap/disability shall be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the furnishing of goods or services or in the selection and retention of subcontractors and/or vendors under this Contract. Contractor shall also ascertain and comply with all applicable federal, state and local laws, ordinances, rules, regulations, and orders that pertain to equal employment opportunity, affirmative action, and non-discrimination in employment.
- B. Contractor agrees that these “Non-Discrimination Requirements” are a binding part of this Contract. Without limiting the generality of any other term or provision of this Contract, in the event the Authority, or a state or federal agency finds that the Contractor or any of its subcontractors or vendors has not complied with these “Non-Discrimination Requirements”, the Authority may cancel, terminate or suspend this Contract in accordance with Section 14 of these Standard Terms and Conditions entitled “Default, Revocation, or Suspension of Contract.”
- C. Contractor agrees to cooperate fully with the Authority’s investigation of allegations of discrimination. Cooperation includes, but is not limited to, allowing the Authority to question employees during the investigation of allegations of discrimination, and complying with directives that the Authority or the State or Federal government deem essential to ensure compliance with these “Non-Discrimination Requirements.”

6. Rights and Remedies of the Port Authority

The Port Authority shall have the following rights in the event the Contractor is deemed guilty of a breach of any term whatsoever of this Contract:

- a. The right to take over and complete the Work or any part thereof as agent for and at the expense of the Contractor, either directly or through others.
- b. The right to cancel this Contract as to any or all of the Work yet to be performed.
- c. The right to specific performance, an injunction or any appropriate equitable remedy.
- d. The right to money damages.

For the purpose of this Contract, breach shall include but not be limited to the following, whether or not the time has yet arrived for performance of an obligation under this Contract: a statement by the Contractor to any representative of the Port Authority indicating that the Contractor cannot or will not perform any one or more of its obligations under this Contract; any act or omission of the Contractor or any other occurrence which makes it improbable at the time that it will be able to perform any one or more of its obligations under this Contract; any suspension of or failure to proceed with any part of the Work by the Contractor which makes it improbable at the time that it will be able to perform any one or more of its obligations under this Contract.

The enumeration in this numbered clause or elsewhere in this Contract of specific rights and remedies of the Port Authority shall not be deemed to limit any other rights or remedies which the Authority would have in the absence of such enumeration; and no exercise by the Authority of any right or remedy shall operate as a waiver of any other of its rights or remedies not inconsistent therewith or to estop it from exercising such other rights or remedies.

7. Rights and Remedies of the Contractor

Inasmuch as the Contractor can be adequately compensated by money damages for any breach of this Contract

which may be committed by the Port Authority, the Contractor expressly agrees that no default, act or omission of the Port Authority shall constitute a material breach of this Contract, entitling the Contractor to cancel or rescind this Contract or to suspend or abandon performance.

8. Submission To Jurisdiction

The Contractor hereby irrevocably submits itself to the jurisdiction of the Courts of the State of New York and New Jersey, in regard to any controversy arising out of, connected with, or in any way concerning this Contract.

The Contractor agrees that the service of process on the Contractor in relation to such jurisdiction may be made, at the option of the Port Authority, either by registered or certified mail addressed to it at the address of the Contractor indicated on the signature sheet, or by actual personal delivery to the Contractor, if the Contractor is an individual, to any partner if the Contractor be a partnership or to any officer, director or managing or general agent if the Contractor be a corporation.

Such service shall be deemed to be sufficient when jurisdiction would not lie because of the lack of basis to serve process in the manner otherwise provided by law. In any case, however, process may be served as stated above whether or not it might otherwise have been served in a different manner.

9. Harmony

- a. The Contractor shall not employ any persons or use any labor, or use or have any equipment, or permit any condition to exist which shall or may cause or be conducive to any labor complaints, troubles, disputes or controversies at the Facility which interfere or are likely to interfere with the operation of the Port Authority or with the operations of lessees, licensees or other users of the Facility or with the operations of the Contractor under this Contract.

The Contractor shall immediately give notice to the Port Authority (to be followed by written notices and reports) of any and all impending or existing labor complaints, troubles, disputes or controversies and the progress thereof. The Contractor shall use its best efforts to resolve any such complaint, trouble, dispute or controversy. If any type of strike, boycott, picketing, work stoppage, slowdown or other labor activity is directed against the Contractor at the Facility or against any operations of the Contractor under this Contract, whether or not caused by the employees of the Contractor, and if any of the foregoing, in the opinion of the Port Authority, results or is likely to result in any curtailment or diminution of the services to be performed hereunder or to interfere with or affect the operations of the Port Authority, or to interfere with or affect the operations of lessees, licensees, or other users of the Facility or in the event of any other cessation or stoppage of operations by the Contractor hereunder for any reason whatsoever, the Port Authority shall have the right at any time during the continuance thereof to suspend the operations of the Contractor under this Contract, and during the period of the suspension the Contractor shall not perform its services hereunder and the Port Authority shall have the right during said period to itself or by any third person or persons selected by it to perform said services of the Contractor using the equipment which is used by the Contractor in its operations hereunder as the Port Authority deems necessary and without cost to the Port Authority. During such time of suspension, the Contractor shall not be entitled to any compensation. Any flat fees, including management fees, shall be prorated. Prior to the exercise of such right by the Port Authority, it shall give the Contractor notice thereof, which notice may be oral. No exercise by the Port Authority of the rights granted to it in the above subparagraph shall be or be deemed to be a waiver of any rights of termination or revocation contained in this Contract or a waiver of any rights or remedies which may be available to the Port Authority under this Contract or otherwise.

- b. During the time that the Contractor is performing the Contract, other persons may be engaged in other operations on or about the worksite including Facility operations, pedestrian, bus and vehicular traffic and other Contractors performing at the worksite, all of which shall remain uninterrupted.

The Contractor shall so plan and conduct its operations as to work in harmony with others engaged at the site and not to delay, endanger or interfere with the operation of others (whether or not specifically mentioned above), all to the best interests of the Port Authority and the public as may be directed by the Port Authority.

10. Claims of Third Persons

The Contractor undertakes to pay all claims lawfully made against it by subcontractors, suppliers and workers, and all claims lawfully made against it by other third persons arising out of or in connection with or because of the performance of this Contract and to cause all subcontractors to pay all such claims lawfully made against them.

11. No Third Party Rights

Nothing contained in this Contract is intended for the benefit of third persons, except to the extent that the Contract specifically provides otherwise by use of the words "benefit" or "direct right of action."

12. Provisions of Law Deemed Inserted

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

13. Costs Assumed By The Contractor

It is expressly understood and agreed that all costs of the Contractor of whatever kind or nature and whether imposed directly upon the Contractor under the terms and provisions hereof or in any other manner whatsoever because of the requirements of the operation of the service or otherwise under this Agreement shall be borne by the Contractor or without compensation or reimbursement from the Port Authority, except as specifically set forth in this Agreement. The entire and complete cost and expense of the Contractor's services and operations hereunder shall be borne solely by the Contractor and under no circumstances shall the Port Authority be liable to any third party (including the Contractor's employees) for any such costs and expenses incurred by the Contractor and under no circumstances shall the Port Authority be liable to the Contractor for the same, except as specifically set forth in this Section.

14. Default, Revocation or Suspension of Contract

a. If one or more of the following events shall occur:

1. If fire or other cause shall destroy all or a substantial part of the Facility.
2. If any governmental agency shall condemn or take a temporary or permanent interest in all or a substantial part of the Facility, or all of a part of the Port Authority's interest herein;

then upon the occurrence of such event or at any time thereafter during the continuance thereof, the Port Authority shall have the right on twenty-four (24) hours written notice to the Contractor to revoke this Contract, such revocation to be effective upon the date and time specified in such notice.

In such event this Contract shall cease and expire on the effective date of revocation as if said date were the date of the expiration of this Contract. Such revocation shall not, however, relieve the Contractor of any liabilities or obligations hereunder which shall have accrued on or prior to the effective date of revocation.

b. If one or more of the following events shall occur:

1. The Contractor shall become insolvent, or shall take the benefit of any present or future insolvency statute, or shall make a general assignment for the benefit of creditors, or file a voluntary petition in bankruptcy or a petition or answer seeking an arrangement or its reorganization or the readjustment of its indebtedness under the federal bankruptcy laws or under any other law or statute of the United States or of any State thereof, or consent to the appointment of a receiver, trustee, or liquidator of all or substantially all its property; or
2. By order or decree of a court the Contractor shall be adjudged bankrupt or an order shall be made approving a petition filed by any of the creditors, or, if the Contractor is a corporation, by any of the stockholders of the Contractor, seeking its reorganization or the readjustment of its indebtedness under the federal bankruptcy laws or under any law or statute of the United States or of any State thereof; or
3. A petition under any part of the federal bankruptcy laws or an action under any present or future insolvency law or statute shall be filed against the Contractor and shall not be dismissed within thirty (30) days after the filing thereof; or
4. The interest of the Contractor under this Contract shall be transferred to, passed to or devolve upon, by operation of law or otherwise, any other person, firm or corporation, or
5. The Contractor, if a corporation, shall, without the prior written approval of the Port Authority, become a surviving or merged corporation in a merger, a constituent corporation in a consolidation, or a corporation in dissolution; or
6. If the Contractor is a partnership, and the said partnership shall be dissolved as the result of any act or omission of its copartners or any of them, or by operation of law or the order or decree of any court having jurisdiction, or for any other reason whatsoever; or
7. By or pursuant to, or under authority of any legislative act, resolution or rule, or any order or decree of any court or governmental board, agency or officer having jurisdiction, a receiver, trustee, or liquidator shall take possession or control of all or substantially all of the property of the Contractor and such possession or control of all or substantially all of the property of the Contractor and shall continue in effect for a period of fifteen (15) days;

then upon the occurrence of any such event or at any time thereafter during the continuance thereof, the Port Authority shall have the right upon five (5) days notice to the Contractor to terminate this Contract and the rights of the Contractor hereunder; termination to be effective upon the date and time specified in such notice as if said date were the date of the expiration of this Contract. Termination shall not relieve the Contractor of any liabilities or obligations hereunder which have accrued on or prior to the effective date of termination.

c. If any of the following shall occur:

1. The Contractor shall cease, abandon any part of the service, desert, stop or discontinue its services in the premises for any reason whatsoever and regardless of the fault of the Contractor; or
2. The Contractor shall fail to keep, perform and observe each and every other promise, covenant and agreement set forth in this Contract on its part to be kept, performed or observed, within five (5) days after receipt of notice of default thereunder from the Port Authority (except where fulfillment of its obligations requires activity over a greater period of time, and the Contractor shall have commenced to perform whatever may be required for fulfillment within five (5) days after receipt of notice and continues such performance without interruption except for causes beyond its control);

then upon the occurrence of any such event or during the continuance thereof, the Port Authority shall have the right on twenty four (24) hours notice to the Contractor to terminate this Contract and the rights of the Contractor hereunder, termination to be effective upon the date and time specified in such notice. Termination shall not relieve the Contractor of any liabilities which shall have accrued

on or prior to the effective date of termination.

- d. If any of the events enumerated in this Section shall occur prior to commencement date of this Contract the Port Authority upon the occurrence of any such event or any time thereafter during the continuance thereof by twenty-four (24) hours notice may terminate or suspend this Contract and the rights of the Contractor hereunder, such termination or suspension to be effective upon the date specified in such notice.
- e. No payment by the Port Authority of any monies to the Contractor for any period or periods after default of any of the terms, covenants or conditions hereof to be performed, kept and observed by the Contractor and no act or thing done or omitted to be done by the Port Authority shall be deemed to be a waiver of the right of the Port Authority to terminate this Contract or of any other right or remedies to which the Port Authority may be entitled because of any breach thereof. No waiver by the Port Authority of any default on the part of the Contractor in the performance of any of the terms, covenants and conditions hereof to be performed, kept or observed by the Contractor shall be or be construed to be a waiver by the Port Authority of any other subsequent default in the performance of any of the said terms, covenants and conditions.
- f. In addition to all other rights of revocation or termination hereunder and notwithstanding any other provision of this Contract the Port Authority may terminate this Contract and the rights of the Contractor hereunder without cause at any time upon five (5) days written notice to the Contractor and in such event this Contract shall cease and expire on the date set forth in the notice of termination as fully and completely as though such dates were the original expiration date hereof and if such effective date of termination is other than the last day of the month, the amount of the compensation due to the Contractor from the Port Authority shall be prorated when applicable on a daily basis. Such cancellation shall be without prejudice to the rights and obligations of the parties arising out of portions already performed but no allowance shall be made for anticipated profits.
- g. Any right of termination contained in this paragraph, shall be in addition to and not in lieu of any and all rights and remedies that the Port Authority shall have at law or in equity consequent upon the Contractor's breach of this Contract and shall be without prejudice to any and all such other rights and remedies. It is hereby specifically agreed and understood that the exercise by the Port Authority of any right of termination set forth in this paragraph shall not be or be deemed to be an exercise by the Port Authority of an election of remedies so as to preclude the Port Authority from any right to money damages it may have for the period prior to the effective date of termination to the original expiration date of the Contract, and this provision shall be deemed to survive the termination of this Contract as aforesaid.
- h. If (1) the Contractor fails to perform any of its obligations under this Contract or any other agreement between the Port Authority and the Contractor (including its obligation to the Port Authority to pay any claim lawfully made against it by any supplier, subcontractor or worker or other person which arises out of or in connection with the performance of this Contract or any other agreement with the Port Authority) or (2) any claim (just or unjust) which arises out of or in connection with this Contract or any other agreement between the Port Authority and the Contractor is made against the Port Authority or (3) any subcontractor under this Contract or any other agreement between the Port Authority and the Contractor fails to pay any claims lawfully made against it by any supplier, subcontractor, worker or other third person which arises out of or in connection with this Contract or any other agreement between the Port Authority and the Contractor or if in the opinion of the Port Authority any of the aforesaid contingencies is likely to arise, then the Port Authority shall have the right, in its discretion, to withhold out of any payment (final or otherwise) such sums as the Port Authority may deem ample to protect it against delay or loss or to assure the payment of just claims of third persons, and to apply such sums in such manner as the Port Authority may deem proper to secure such protection or satisfy such claims. All sums so applied shall be deducted from the

Contractor's compensation. Omission by the Port Authority to withhold out of any payment, final or otherwise, a sum for any of the above contingencies, even though such contingency has occurred at the time of such payment, shall not be deemed to indicate that the Port Authority does not intend to exercise its right with respect to such contingency. Neither the above provisions for rights of the Port Authority to withhold and apply monies nor any exercise or attempted exercise of, or omission to exercise, such rights by the Port Authority shall create any obligation of any kind to such supplier, subcontractors, worker or other third persons. If, however, the payment of any amount due the Contractor shall be improperly delayed, the Port Authority shall pay the Contractor interest thereon at the rate of 6% per annum for the period of the delay, it being agreed that such interest shall be in lieu of and in liquidation of any damages to the Contractor because of such delay.

- i. If the Port Authority has paid any sum or has incurred any obligation or expense which the Contractor has agreed to pay or reimburse the Port Authority, or if the Port Authority is required or elects to pay any sum or sums or incurs any obligations or expense by reason of the failure, neglect or refusal of the Contractor to perform or fulfill any one or more of the conditions, covenants, or agreements contained in this Contract, or as a result of an act of omission of the Contractor contrary to the said conditions, covenants and agreements, the Contractor shall pay to the Port Authority the sum or sums so paid or expense so incurred, including all interests, costs and damages, promptly upon the receipt of the Port Authority's statement therefore. The Port Authority may, however, in its discretion, elect to deduct said sum or sums from any payment payable by it to the Contractor.
- j. If the Port Authority pays any installment to the Contractor without reducing said installment as provided in this Contract, it may reduce any succeeding installment by the proper amount, or it may bill the Contractor for the amount by which the installment paid should have been reduced and the Contractor shall pay to the Port Authority any such amount promptly upon receipt of the Port Authority's statement therefore.
- k. The Port Authority shall also have the rights set forth above in the event the Contractor shall become insolvent or bankrupt or if his affairs are placed in the hands of a receiver, trustee or assignee for the benefit of creditors.

15. Sales or Compensating Use Taxes

Purchases of services and tangible personal property by the Port Authority in the States of New York and New Jersey are generally exempt from state and local sales and compensating use taxes, and from most federal excises (Taxes). Therefore, the Port Authority's purchase of the Contractor's services under this Contract is exempt from Taxes. Accordingly, the Contractor must not include Taxes in the price charged to the Port Authority for the Contractor's services under this Contract. The Contractor certifies that there are no such taxes included in the prices for this Contract. The Contractor shall retain a copy of this Contract to substantiate the exempt sale.

The compensation set forth in this Agreement is the complete compensation to the Contractor, and the Port Authority will not separately reimburse the Contractor for any taxes unless specifically set forth in this Agreement.

16. No Estoppel or Waiver

The Port Authority shall not be precluded or estopped by any payment, final or otherwise, issued or made under this Contract, from showing at any time the true amount and character of the services performed, or from showing that any such payment is incorrect or was improperly issued or made; and the Port Authority shall not be precluded or estopped, notwithstanding any such payment, from recovering from the Contractor any damages which it may sustain by reason of any failure on its part to comply strictly with this Contract, and any moneys which may be paid to it or for its account in excess of those to which it is lawfully entitled.

No cancellation, rescission or annulment hereof, in whole or as to any part of the services to be provided hereunder, or because of any breach hereof, shall be deemed a waiver of any money damages to which the Port Authority may be entitled because of such breach. Moreover, no waiver by the Authority of any breach of this Contract shall be deemed to be a waiver of any other or any subsequent breach.

17. Records and Reports

The Contractor shall set up, keep and maintain (and shall cause its subcontractors to set up, keep and maintain) in accordance with generally accepted accounting practice during the term of this Agreement and any extensions thereof and for three years after the expiration, termination or revocation thereof, records, payroll records and books of account (including, but not limited to, records of original entry and daily forms, payroll runs, cancelled checks, time records, union agreements, contracts with health, pension and other third party benefit providers) recording all transactions of the Contractor (and its subcontractors), at, through or in any way connected with or related to the operations of the Contractor (and its subcontractors) hereunder, including but not limited to all matters relating to the charges payable to the Contractor hereunder, all wages and supplemental benefits paid or provided to or for its employees (and its subcontractors' employees) and such additional information as the Port Authority may from time to time and at any time require, and also including, if appropriate, recording the actual number of hours of service provided under the Contract, and keeping separate records thereof which records and books of account shall be kept at all times within the Port District. The Contractor shall permit (and cause its subcontractors to permit) in ordinary business hours during the term of this Agreement including any extensions thereof and for three years thereafter the examination and audit by the officers, employees and representatives of the Port Authority of such records and books of account and also any records and books of account of any company which is owned or controlled by the Contractor, or which owns or controls the Contractor if said company performs services similar to those performed by the Contractor anywhere in the Port District. However, if within the aforesaid three year period the Port Authority has notified the Contractor in writing of a pending claim by the Port Authority under or in connection with this Contract to which any of the aforesaid records and documents of the Contractor or of its subcontractors relate either directly or indirectly, then the period of such right of access shall be extended to the expiration of six years from the date of final payment with respect to the records and documents involved.

Upon request of the Port Authority, the Contractor shall furnish or provide access to the federal Form I-9 (Employment Eligibility Verification) for each individual performing work under this Contract. This includes citizens and noncitizens.

The Contractor (and its subcontractors) shall, at its own expense, install, maintain and use such equipment and devices for recording the labor hours of the service as shall be appropriate to its business and necessary or desirable to keep accurate records of the same and as the general manager or the Facility Manager may from time to time require, and the Contractor (and its subcontractors) shall at all reasonable times allow inspection by the agents and employees of the Port Authority of all such equipment or devices.

- a. The Contractor hereby further agrees to furnish to the Port Authority from time to time such written reports in connection with its operations hereunder as the Port Authority may deem necessary or desirable. The format of all forms, schedules and reports furnished by the Contractor to the Port Authority shall be subject to the continuing approval of the Port Authority.
- b. No provision in this Contract giving the Port Authority a right of access to records and documents is intended to impair or affect any right of access to records and documents which they would have in the absence of such provision. Additional record keeping may be required under other sections of this Contract.

18. General Obligations

- a. Except where expressly required or permitted herein to be oral, all notices, requests, consents and approvals required to be given to or by either party shall be in writing and all such notices, requests,

consents and approvals shall be personally delivered to the other party during regular business hours or forwarded to such party by United States certified mail, return receipt requested, addressed to the other party at its address hereinbefore or hereafter provided. Until further notice the Contractor hereby designates the address shown on the bottom of the Contractors Signature Sheet as their address to which such notices, requests, consents, or approvals may be forwarded. All notices, requests, consents, or approvals of the Contractor shall be forwarded to the Manager at the Facility.

- b. The Contractor shall comply with the provisions of all present and future federal, state and municipal laws, rules, regulations, requirements, ordinances, orders and directions which pertain to its operations under this Contract and which affect the Contract or the performance thereof and those engaged therein as if the said Contract were being performed for a private corporation, except where stricter requirements are contained in the Contract in which case the Contract shall control. The Contractor shall procure for itself all licenses, certificates, permits or other authorization from all governmental authorities, if any, having jurisdiction over the Contractor's operations hereunder which may be necessary for the Contractor's operations. The Contractor's obligation to comply with governmental requirements are not to be construed as a submission by the Port Authority to the application to itself of such requirements.
- c. The Contractor shall pay all taxes, license, certification, permit and examination fees and excises which may be assessed on its property or operations hereunder or income therefrom, and shall make all applications, reports and returns required in connection therewith.
- d. The Contractor shall, in conducting its operations hereunder, take all necessary precautions to protect the general environment and to prevent environmental pollution, contamination, damage to property and personal injury. In the event the Contractor encounters material reasonably believed to be asbestos, polychlorinated biphenyl (PCB) or any other hazardous material, in conducting its operations hereunder, the Contractor shall immediately stop Work in the area affected and report the condition in writing to the Manager. Work in the affected area shall not thereafter be resumed by the Contractor except upon the issuance of a written order to that effect from the Manager.
- e. The Contractor shall promptly observe, comply with and execute the provisions of any and all present and future rules and regulations, requirements, standard orders and directions of the American Insurance Association, the Insurance Services Office, National Fire Protection Association, and any other body or organization exercising similar functions which may pertain or apply to the Contractor's operations hereunder.

The Contractor shall not do or permit to be done any act which:

- 1. will invalidate or be in conflict with any fire insurance policies covering the Facility or any part thereof or upon the contents of any building thereon; or
 - 2. will increase the rate of any fire insurance, extended coverage or rental insurance on the Facility or any part thereof or upon the contents of any building thereon; or
 - 3. in the opinion of the Port Authority will constitute a hazardous condition, so as to increase the risk normally attendant upon the operations contemplated by this Contract; or
 - 4. may cause or produce in the premises, or upon the Facility any unusual, noxious or objectionable smoke, gases, vapors, odors; or
 - 5. may interfere with the effectiveness or accessibility of the drainage and sewerage system, fire protection system, sprinkler system, alarm system, fire hydrants and hoses, if any, installed or located or to be installed or located in or on the Facility; or
 - 6. shall constitute a nuisance in or on the Facility or which may result in the creation, commission or maintenance of a nuisance in or on the Facility.
- f. If by reason of the Contractor's failure to comply with the provisions of this Section and provided the Port Authority has given the Contractor five (5) days written notice of its failure and the Contractor shall not have cured said failure within said five (5) days, any fire insurance, extended coverage or rental insurance rate on the Facility or any part thereof or upon the contents of any building thereon shall at any time be higher than it otherwise would be, then the Contractor shall on demand pay the Port Authority that part of all fire insurance, extended coverage or rental insurance premiums paid or payable by the Port

- Authority which shall have been charged because of such violations by the Contractor.
- g. The Contractor shall conduct its operations hereunder so as not to endanger, unreasonably interfere with, or delay the operations or activities of any tenants or occupants on the premises or the Facility and, moreover, shall use the same degree of care in performance on the premises as would be required by law of the Port Authority and shall conduct operations hereunder in a courteous, efficient and safe manner.
 - h. The Contractor shall provide such equipment and medical facilities as may be necessary to supply first aid service in case of accidents to its personnel who may be injured in the furnishing of service hereunder. The Contractor shall maintain standing arrangements for the removal and hospital treatment of any of its personnel who may be injured.

19. Assignments and Subcontracting

- a. The Contractor shall not sell, transfer, mortgage, pledge, subcontract or assign this Contract or any part thereof or any of the rights granted hereunder or any moneys due or to become due to it hereunder or enter into any contract requiring or permitting the doing of anything hereunder by an independent Contractor, without the prior written approval of the Port Authority, and any such sale, transfer, mortgage, pledge, subcontract, assignment or contract without such prior written approval shall be void as to the Port Authority.
- b. All subcontractors who provide permanent personnel to the Contractor for work under this Contract shall be given written notice to comply with all requirements of the Contract. The Contractor shall be responsible and liable for the performance and acts of each subcontractor.
- c. All persons to whom the Contractor sublets services shall be deemed to be its agents and no subletting or approval thereof shall be deemed to release this Contractor from its obligations under this Contract or to impose any obligations on the Port Authority to such subcontractor or to give the subcontractor any rights against the Port Authority.

20. Indemnification and Risks Assumed By The Contractor

To the extent permitted by law, the Contractor shall indemnify and hold harmless the Port Authority, its Commissioners, Directors, agents, servants, officers, representatives and employees from and against all claims and demands, just or unjust, of third persons (including Contractor's agents, servants, officers, representatives and employees) arising out of or in any way connected to or alleged to arise out of or alleged to be in any way connected with the Contract and all other services and activities of the Contractor under this Contract and for all expenses incurred by it and by them in the defense, settlement or satisfaction thereof, including without limitation thereto, claims and demands for death, for personal injury or for property damage, direct or consequential, whether they arise out of or are in any way connected to the Contractor's operations or to its performance of work under this Contract, or arise out of the acts, omissions or negligence of the Contractor, the Port Authority, its Commissioners, Directors, agents, servants, officers, representatives or employees, third persons (including Contractor's agents, servants, officers, representatives and employees), or from the acts of God or the public enemy, or otherwise, including claims and demands of any local jurisdiction against the Port Authority in connection with this Contract.

The Contractor assumes the following risks, whether such risks arise out of or are in any way connected to the Contractor's operations or to its performance of work under this Contract, or arise out of acts or omissions (negligent or not) of the Contractor, the Port Authority or third persons (including agents, servants, officers, representatives, Commissioners, Directors and employees of the Port Authority and the Contractor) or from any other cause, excepting only risks occasioned solely by affirmative willful acts of the Port Authority done subsequent to the opening of proposals on this Contract, and shall to the extent permitted by law indemnify the Port Authority for all loss or damage incurred in connection with such risks:

- a. The risk of any and all loss or damage to Port Authority property, equipment (including but not limited to automotive and/or mobile equipment), materials and possessions, on or off the premises, the loss or damage of which shall arise out of the Contractor's operations hereunder. The Contractor shall if so directed by the Port Authority, repair, replace or rebuild to the satisfaction of the Port Authority, any and

all parts of the premises or the Facility which may be damaged or destroyed by the acts or omissions (negligent or not) of the Contractor, its officers, agents, or employees and if the Contractor shall fail so to repair, replace, or rebuild with due diligence the Port Authority may, at its option, perform any of the foregoing work and the Contractor shall pay to the Port Authority the cost thereof.

- b. The risk of any and all loss or damage of the Contractor's property, equipment (including but not limited to automotive and/or mobile equipment) materials and possessions on the Facility.
- c. The risk of claims, whether made against the Contractor or the Port Authority, for any and all loss or damages occurring to any property, equipment (including but not limited to automotive and/or mobile equipment), materials and possessions of the Contractor's agents, employees, materialmen and others performing work hereunder.
- d. The risk of claims for injuries, damage or loss of any kind whether just or unjust of third persons (including agents, servants, officers, representatives, Commissioners, Directors and employees of the Port Authority and the Contractor) arising or alleged to arise out of or in connection with the Contractor's operations or its performance of work hereunder, whether such claims are made against the Contractor or the Port Authority.

If so directed, the Contractor shall at its own expense defend any suit based upon any such claim or demand, even if such suit, claim or demand is groundless, false or fraudulent, and in handling such shall not, without obtaining express advance permission from the General Counsel of the Port Authority, raise any defense involving in any way the jurisdiction of the tribunal over the person of the Port Authority, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority or the provision of any statutes respecting suits against the Port Authority.

Neither the requirements of the Port Authority under this Contract, nor of the Port Authority of the methods of performance hereunder nor the failure of the Port Authority to call attention to improper or inadequate methods or to require a change in the method of performance hereunder nor the failure of the Port Authority to direct the Contractor to take any particular precaution or other action or to refrain from doing any particular thing shall relieve the Contractor of its liability for injuries to persons or damage to property or environmental impairment arising out of its operations.

21. Approval of Methods

Neither the approval of the Port Authority of the methods of furnishing services hereunder nor the failure of the Port Authority to call attention to improper or inadequate methods or to require a change in the method of furnishing services hereunder, nor the failure of the Port Authority to direct the Contractor to take any particular precautions or to refrain from doing any particular thing shall relieve the Contractor of its liability for any injuries to persons or damage to property or environmental impairment arising out of its operations.

22. Safety and Cleanliness

- a. The Contractor shall, in the furnishing of services hereunder, exercise every precaution to prevent injury to person or damage to property or environmental impairment and avoid inconvenience to the occupants of or any visitors to the Facility. The Contractor shall, without limiting the generality hereof, place such personnel, erect such barricades and railings, give such warnings, display such lights, signals or signs, place such cones and exercise precautions as may be necessary, proper or desirable.
- b. The Contractor shall in case of unsafe floor conditions due to construction, wetness, spillage, sickness and all other types of hazardous conditions proceed to rope off the unsafe area and place appropriate warnings signs to prevent accidents from occurring. The Contractor shall clean said area to the satisfaction of the Manager.

- c. The Contractor shall at all times maintain in a clean and orderly condition and appearance any and all facilities provided by the Port Authority for the Contractor's operations, and all fixtures, sink closets, equipment, and other personal property of the Port Authority which are located in said facilities.

23. Accident Reports

The Contractor shall promptly report in writing to the Manager of the Facility and to the Manager, Claims of the Port Authority all accidents whatsoever arising out of or in connection with its operations hereunder and which result in death or injury to persons or damage to property, setting forth such details thereof as the Port Authority may desire. In addition, if death or serious injury or serious damage is caused, such accidents shall be immediately reported by telephone to the aforesaid representatives of the Port Authority.

24. Trash Removal

The Contractor shall remove daily from the Facility by means provided by the Contractor all garbage, debris and other waste material (solid or liquid) arising out of or in connection with its operations hereunder, and any such garbage, debris and other waste material not immediately removed shall be temporarily stored in a clear and sanitary condition, approved by the Facility Manager and shall be kept covered except when filling or emptying them. The Contractor shall exercise care in removing such garbage, debris and other waste materials from the Facility. The manner of such storage and removal shall always be subject in all respects to the continual approval of the Port Authority. No equipment or facilities of the Port Authority shall be used in such removal unless with its prior consent in writing. No such garbage, debris or other waste materials shall be or be permitted to be thrown, discharged or disposed into or upon the waters at or bounding the Facility.

25. Lost and Found Property

The Contractor shall instruct its personnel that all items of personal property found by the Contractor's employees at the Site must be turned in to the Port Authority and a receipt will be issued therefor.

26. Property of the Contractor

- a. All property of the Contractor at the Site by virtue of this Contract shall be removed on or before the expiration or sooner termination or revocation of this Contract.
- b. If the Contractor shall fail to remove its property upon the expiration, termination or revocation of this Contract the Port Authority may, at its option, dispose of such property as waste or as agent for the Contractor and at the risk and expense of the Contractor, remove such property to a public warehouse, or may retain the same in its own possession, and in either event after the expiration of thirty (30) days may sell the same in accordance with any method deemed appropriate; the proceeds of any such sale shall be applied first, to the expenses of sale and second, to any sums owed by the Contractor to the Port Authority; any balance remaining shall be paid to the Contractor. Any excess of the total cost of removal, storage and sale and other costs incurred by the Port Authority as a result of such failure of performance by the Contractor over the proceeds of sale shall be paid by the Contractor to the Port Authority upon demand.

27. Modification of Contract

This Contract may not be changed except in writing signed by the Port Authority and the Contractor. The Contractor agrees that no representation or warranties shall be binding upon the Port Authority unless expressed in writing in this Contract.

28. Invalid Clauses

If any provision of this Contract shall be such as to destroy its mutuality or to render it invalid or illegal, then, if it shall not appear to have been so material that without it the Contract would not have been made by the parties, it shall not be deemed to form part thereof but the balance of the Contract shall remain in full force and effect.

29. Approval of Materials, Supplies and Equipment

Only Port Authority approved materials, supplies, and equipment are to be used by the Contractor in performing the Work hereunder. Inclusion of chemical containing materials or supplies on the Port Authority Approved Products List – Environmental Protection Supplies constitutes approval. The list may be revised from time to time and at any time by the Port Authority and it shall be incumbent upon the Contractor to obtain the most current list from the Manager of the Facility.

At anytime during the Solicitation, pre-performance or performance periods, the Contractor may propose the use of an alternate product or products to those on the Approved Products List – Environmental Protection Supplies, which product(s) shall be subject to review and approval by the Port Authority. Any alternate product so approved by the Port Authority may be used by the Contractor in performing the Services hereunder. Until such approval is given, only products on the Approved Products List – Environmental Protection Supplies may be used.

30. Intellectual Property

The right to use all patented materials, appliances, processes of manufacture or types of construction, trade and service marks, copyrights and trade secrets, collectively hereinafter referred to as “Intellectual Property Rights”, in the performance of the work, shall be obtained by the Contractor without separate or additional compensation. Where the services under this Agreement require the Contractor to provide materials, equipment or software for the use of the Port Authority or its employees or agents, the Port Authority shall be provided with the Intellectual Property Rights required for such use without further compensation than is provided for under this Agreement.

The Contractor shall indemnify the Port Authority against and save it harmless from all loss and expense incurred as a result of any claims in the nature of Intellectual Property Rights infringement arising out of the Contractor’s or Port Authority’s use, in accordance with the above immediately preceding paragraph, of any Intellectual Property. The Contractor, if requested, shall conduct all negotiations with respect to and defend such claims. If the Contractor or the Port Authority, its employees or agents be enjoined either temporarily or permanently from the use of any subject matter as to which the Contractor is to indemnify the Port Authority against infringement, then the Port Authority may, without limiting any other rights it may have, require the Contractor to supply temporary or permanent replacement facilities approved by the Manager, and if the Contractor fails to do so the Contractor shall, at its expense, remove all such enjoined facilities and refund the cost thereof to the Port Authority or take such steps as may be necessary to insure compliance by the Contractor and the Port Authority with said injunction, to the satisfaction of the Port Authority.

In addition, the Contractor shall promptly and fully inform the Director in writing of any intellectual property rights disputes, whether existing or potential, of which it has knowledge, relating to any idea, design, method, material, equipment or any other matter related to the subject matter of this Agreement or coming to its attention in connection with this Agreement.

31. Contract Records and Documents – Passwords and Codes

When the performance of the contract services requires the Contractor to produce, compile or maintain records, data, drawings, or documents of any kind, regardless of the media utilized, then all such records, drawings, data and documents which are produced, prepared or compiled in connection with this contract, shall become the property of the Port Authority, and the Port Authority shall have the right to use or permit the use of them and any ideas or methods represented by them for any purpose and at any time without other compensation than that specifically provided herein.

When in the performance of the contract services the Contractor utilizes passwords or codes for any purpose, at any time during or after the performance of such services, upon written request by the Authority, the Contractor shall make available to the designated Authority representative all such passwords and codes.

32. Designated Secure Areas

Services under the Contract may be required in designated secure areas, as the same may be designated by the Manager from time to time ("Secure Areas"). The Port Authority shall require the observance of certain security procedures with respect to Secure Areas, which may include the escort to, at, and/or from said high security areas by security personnel designated by the Contractor or any subcontractor's personnel required to work therein. All personnel that require access to designated secure areas who are not under positive escort by an authorized individual will be required to undergo background screening and personal identity verification.

Forty-eight (48) hours prior to the proposed performance of any work in a Secure Area, the Contractor shall notify the Manager. The Contractor shall conform to the procedures as may be established by the Manager from time to time and at any time for access to Secure Areas and the escorting of personnel hereunder. Prior to the start of work, the Contractor shall request a description from the Manager of the Secure Areas which will be in effect on the commencement date. The description of Secure Areas may be changed from time to time and at any time by the Manager during the term of the Contract.

33. Notification of Security Requirements

The Authority has the responsibility of ensuring safe, reliable and secure transportation facilities, systems, and projects to maintain the well-being and economic competitiveness of the region. Therefore, the Authority reserves the right to deny access to certain documents, sensitive security construction sites and facilities (including rental spaces) to any person that declines to abide by Port Authority security procedures and protocols, any person with a criminal record with respect to certain crimes or who may otherwise pose a threat to the construction site or facility security. The Authority reserves the right to impose multiple layers of security requirements on the Contractor, its staff and subcontractors and their staffs depending upon the level of security required, or may make any amendments with respect to such requirements as determined by the Authority.

These security requirements may include but are not limited to the following:

- Execution of Port Authority Approved Non-Disclosure and Confidentiality Agreements

At the direction of the Port Authority, the Contractor shall be required to have its principals, staff and/or subcontractor(s) and their staff, execute Port Authority approved non-disclosure and confidentiality agreements.

- Contractor/ Subcontractor identity checks and background screening

The Port Authority's designated background screening provider may require inspection of not less than two forms of valid/current government issued identification (at least one having an official photograph) to verify staff's name and residence; screening of federal, state, and/or local criminal justice agency information databases and files; screening of any terrorist identification files; access identification, to include some form of biometric security methodology such as fingerprint, facial or iris scanning.

The Contractor may be required to have its staff, and any subcontractor's staff, material-men, visitors or others over whom the Contractor/ subcontractor has control, authorize the Port Authority or its designee to perform background checks, and a personal identity verification check. Such authorization shall be in a form acceptable to the Port Authority. The Contractor and subcontractors may also be required to use an organization designated by the Port Authority to perform the background checks.

In accordance with the Port Authority's Information Security Handbook, background screening is required when a person has an established need to know or has access to any one of the following types of information or physical locations:

- 1) Confidential Privileged Information

- 2) Confidential Information related to a security project and/or task
- 3) Secure Area of an Authority or PATH facility
- 4) Mission critical system

The Contractor shall perform background checks through the Port Authority's personnel assurance program provider. The Secure Worker Access Consortium (S.W.A.C.) is the only Port Authority approved provider to be used to conduct background screening and personal identity verification, except as otherwise required by federal law and/or regulation (such as Security Identification Display Area (SIDA), the federal regulatory requirements for personnel performing Work at aviation facilities). Information about S.W.A.C., instructions, corporate enrollment, online applications, and location of processing centers is located at <http://www.secureworker.com>, or S.W.A.C. may be contacted directly at (877) 522-7922 for more information and the latest pricing. The cost for said background checks for staff that pass and are granted a credential may be reimbursable to the Contractor (and its subcontractors) as an out-of-pocket expense as provided herein. Costs for background checks for staff that are rejected for a credential for any reason are not reimbursable.

- Issuance of Photo Identification Credential

No person shall be permitted on or about the Port Authority construction sites or facilities (including rental spaces) without a facility-specific photo identification credential approved by the Port Authority. If the Port Authority requires facility-specific identification credentials for the Contractor and the subcontractor's staff, the Port Authority will supply such identification at no cost to the Contractor or its subcontractors. Such facility-specific identification credential shall remain the property of the Port Authority and shall be returned to the Port Authority at the completion or upon request prior to completion of the individual's assignment at the specific facility. It is the responsibility of the appropriate Contractor or subcontractors to immediately report to the Port Authority the loss of any staff member's individual facility-specific identification credential. The Contractor or subcontractor will be billed for the cost of the replacement identification credential. Contractor's and subcontractor's staff shall display Identification badges in a conspicuous and clearly visible manner, when entering, working or leaving an Port Authority construction site or facility.

Employees may be required to produce not less than two forms of valid/current government issued identification having an official photograph and an original, unlaminated social security card for identity and SSN verification.

Where applicable, for sensitive security construction sites or facilities, successful completion of the application, screening and identify verification for all employees of the Contractor and subcontractor shall be completed prior to being provided a Photo Identification credential by the personnel assurance program provider.

If any questions should arise as to when a Personnel Assurance Program background check is required, the Port Authority Manager or contract administrator should be contacted for assistance.

- Access control, inspection, and monitoring by security guards

The Authority may provide for Authority construction site or facility (including rental spaces) access control, inspection and monitoring by Port Authority Police or Authority retained contractor security guards. However, this provision shall not relieve the Contractor of its responsibility to secure its equipment and work and that of its subconsultant/subcontractor's and service suppliers at the Authority construction site or facility (including rental spaces). In addition, the Contractor, subcontractor or service provider is not permitted to take photographs, digital images, electronic copying and/or electronic transmission or video recordings or make sketches on any other medium at the Authority construction sites or facilities (including rental spaces), except when necessary to perform the Work under this Contract, without prior written permission from the Authority. Upon request, any photograph, digital images, video recording or sketches made of the Authority construction site or facility shall be submitted to the Authority to determine compliance with this paragraph, which submission shall be conclusive and binding on the submitting entity.

- Compliance with the Port Authority Information Security Handbook

The Contract may require access to Port Authority information considered Protected Information (“PI”) as defined in the Port Authority Information Security Handbook (“Handbook”), dated October 15, 2008, revised as of April 2, 2018, and as may be further amended. The Handbook and its requirements are hereby incorporated into this agreement and will govern the possession, distribution and use of PI if at any point during the lifecycle of the project or solicitation it becomes necessary for the Contractor to have access to PI. Protecting sensitive information requires the application of uniform safeguarding measures to prevent unauthorized disclosure and to control any authorized disclosure of this information within the Port Authority or when released by the Port Authority to outside entities. The Handbook can be obtained at: <http://www.panynj.gov/business-opportunities/pdf/Corporate-Information-Security-Handbook.pdf>.

- **Audits for Compliance with Security Requirements**

The Port Authority may conduct random or scheduled examinations of business practices under this section entitled “NOTIFICATION OF SECURITY REQUIREMENTS” and the Handbook in order to assess the extent of compliance with security requirements, Protected Information procedures, protocols and practices, which may include, but not be limited to, verification of background check status, confirmation of completion of specified training, and/or a site visit to view material storage locations and protocols.

34. Construction In Progress

The Contractor recognizes that construction may be in progress at the Facility and may continue throughout the term of this Contract. Notwithstanding, the Contractor shall at all times during the term hereof maintain the same standards of performance and cleanliness as prevails in non-affected areas as required by the standards hereunder.

35. Permit-Required Confined Space Work

Prior to commencement of any work, the Contractor shall request and obtain from the Port Authority a description of all spaces at the facility which are permit-required confined spaces requiring issuance of an OSHA permit.

Prior to the commencement of any work in a permit-required confined space at a Port Authority facility requiring issuance of an OSHA permit, the Contractor shall contact the Manager to obtain an Authority Contractor Permit-Required Confined Space Notification form. The notification form must be filled out and submitted prior to commencing permit-required confined space work. All confined space work shall be performed in accordance with all applicable OSHA requirements. The Contractor shall provide its employees with a copy of its own company permit and shall furnish the Port Authority with a copy of the permit upon completion of the work. The Contractor must supply all equipment required for working in a confined space.

36. Signs

Except with the prior written approval of the Port Authority, the Contractor shall not erect, maintain or display any signs or posters or any advertising on or about the Facility.

37. Vending Machines, Food Preparation

The Contractor shall not install, maintain or operate on the Facility, or on any other Port Authority property, any vending machines without the prior written approval of the Port Authority. No foods or beverages shall be prepared or consumed at the Facility by any of the Contractor's employees except in areas as may be specifically designated by the Port Authority for such purpose.

38. Confidential Information/Non-Publication

a. As used herein, confidential information shall mean all information disclosed to the Contractor or the personnel provided by the Contractor hereunder which relates to the Authority's and/or PATH's past, present, and future research, development and business activities including, but not limited to, software and

documentation licensed to the Authority or proprietary to the Authority and/or PATH and all associated software, source code procedures and documentation. Confidential information shall also mean any other tangible or intangible information or materials including but not limited to computer identification numbers, access codes, passwords, and reports obtained and/or used during the performance of the Contractor's Services under this Contract.

b. Protected Information shall mean and include collectively, as per *The Port Authority of New York & New Jersey Information Security Handbook (October 15, 2008, revised as of April 2, 2018, and as may be further amended)*, Confidential Information, Confidential Proprietary Information, Confidential Privileged Information and information that is labeled, marked or otherwise identified by or on behalf of the Authority so as to reasonably connote that such information is confidential, privileged, sensitive or proprietary in nature. Confidential Information shall also include all work product that contains or is derived from any of the foregoing, whether in whole or in part, regardless of whether prepared by the Authority or a third-party or when the Authority receives such information from others and agrees to treat such information as Confidential.

c. The Contractor shall hold all such Protected Information in trust and confidence for the Authority, and agrees that the Contractor and the personnel provided by the Contractor hereunder shall not, during or after the termination or expiration of this Contract, disclose to any person, firm or corporation, nor use for its own business or benefit, any information obtained by it under or in connection with the supplying of services contemplated by this Contract. The Contractor and the personnel provided by the Contractor hereunder shall not violate in any manner any patent, copyright, trade secret or other proprietary right of the Authority or third persons in connection with their services hereunder, either before or after termination or expiration of this Contract. The Contractor and the personnel provided by the Contractor hereunder shall not willfully or otherwise perform any dishonest or fraudulent acts, breach any security procedures, or damage or destroy any hardware, software or documentation, proprietary or otherwise, in connection with their services hereunder. The Contractor shall promptly and fully inform the Director in writing of any patent, copyright, trade secret or other intellectual property rights or disputes, whether existing or potential, of which the Contractor has knowledge, relating to any idea, design, method, material, equipment or other matter related to this Contract or coming to the Contractor's attention in connection with this Contract.

d. The Contractor shall not issue nor permit to be issued any press release, advertisement, or literature of any kind, which refers to the Port Authority or to the fact that goods have been, are being or will be provided to it and/or that services have been, are being or will be performed for it in connection with this Agreement, unless the vendor first obtains the written approval of the Port Authority. Such approval may be withheld if for any reason the Port Authority believes that the publication of such information would be harmful to the public interest or is in any way undesirable.

39. Time is of the Essence

Time is of the essence in the Contractor's performance of this Contract inasmuch as the Work to be performed will affect the operation of public facilities.

40. Holidays

The following Holidays will be observed at the Site:

New Year's Day	Labor Day
Martin Luther King Jr. Day	Columbus Day
Presidents Day	Veterans Day
Memorial Day	Thanksgiving Day

Independence Day

Day After Thanksgiving

Christmas Day

This list is subject to periodic revision and the Contractor shall be responsible for obtaining all updated lists from the office of the Manager. If any such Holiday falls on a Sunday then the next day shall be considered the Holiday and/or if any such Holiday falls on a Saturday then the preceding day shall be considered the Holiday.

41. Personnel Standards

In addition to any specific personnel requirements that may be required under the clause entitled "Personnel Requirements" in the Specifications, the Contractor (and any Subcontractor) shall furnish competent and adequately trained personnel to perform the Work hereunder. If, in the opinion of the Manager, any employee so assigned is performing his/her functions unsatisfactorily, he/she shall be replaced by the Contractor for Work under this Contract within twenty-four (24) hours following the Contractor's receipt of the Manager's request for such replacement.

All Contractor's employees performing Work hereunder shall have the ability to communicate in the English language to the extent necessary to comprehend directions given by either the Contractor's supervisory staff or by the Manager's staff. Any employee operating a motor vehicle must have a valid driver's license.

The Contractor shall verify that employees working under this Contract in the United States are legally present in the United States and authorized to work by means of the federally required I-9 program

42. General Uniform Requirements for Contractor's Personnel

In addition to any specific uniform requirements that may be required by the Specifications, uniforms must be worn at all times during which the Services are being performed hereunder. The Contractor agrees that his/her employees will present a neat, clean and orderly appearance at all times. Uniforms shall include the Contractor's identification badge with picture ID bearing the employee's name. All uniforms, colors, types and styles shall be subject to the prior approval of the Manager. The Contractor will also be responsible for ensuring that its employees are wearing shoes appropriate for the tasks performed. The Manager shall have the right to require removal of any employee who shall fail to wear the proper uniform and shoes, and the exercise of this right shall not limit the obligation of the Contractor to perform the Services or to furnish any required number of employees at a specific location at the Site as specified.

43. Labor, Equipment and Materials Supplied by the Contractor

The Contractor shall, at all times during the performance of this Contract, furnish all necessary labor, supervision, equipment and materials necessary for the prompt and efficient performance of the Work, whether such materials and equipment are actually employed in the furnishing of the Work or whether incidental thereto.

All materials used by the Contractor in furnishing Work hereunder shall be of such quality as to accomplish the purposes of this Contract and the Services to be furnished hereunder in such manner so as not to damage any part of the Site.

The Port Authority by its officers, employees and representatives shall have the right at all times to examine the supplies, materials and equipment used by the Contractor, to observe the operations of the Contractor, its agents, servants and employees and to do any act or thing which the Port Authority may be obligated or have the right to do under this Contract or otherwise.

All equipment, materials and supplies used in the performance of this Contract required hereunder shall be used in accordance with their manufacturer's instructions.

Materials and supplies to be provided by the Contractor hereunder shall comply with OSHA and all applicable regulations.

44. Contractor's Vehicles – Parking - Licenses

At the discretion of the Manager, the Port Authority may permit the Contractor during the effective period of this Contract to park vehicle(s) used by it in its operations hereunder in such location as may from time to time or at any time be designated by the Manager. The Contractor shall comply with such existing rules, regulations and procedures as are now in force and such reasonable future rules, regulations and procedures as may hereafter be adopted by the Port Authority for the safety and convenience of persons who park automotive vehicles in any parking area at the Site or for the safety and proper persons who park automotive vehicles in any parking area at the Site or for the safety and proper identification of such vehicles, and the Contractor shall also comply with any and all directions pertaining to such parking which may be given from time to time and at any time by the Manager. Any vehicle used by the Contractor hereunder shall be marked or placarded, identifying it as the Contractor's vehicle.

45. Manager's Authority

In the performance of the Work hereunder, the Contractor shall conform to all orders, directions and requirements of the Manager and shall perform the Work hereunder to the satisfaction of the Manager at such times and places, by such methods and in such manner and sequence as he/she may require, and the Contract shall at all stages be subject to his/her inspection. The Manager shall determine the amount, quality, acceptability and fitness of all parts of the Work and shall interpret the Specifications and any orders for Extra Work. The Contractor shall employ no equipment, materials, methods or staff or personnel to which the Manager objects. Upon request, the Manager shall confirm in writing any oral order, direction, requirement or determination.

The Manager shall have the authority to decide all questions in connection with the Services to be performed hereunder. The exercise by the Manager of the powers and authorities vested in him/her by this section shall be binding and final upon the Port Authority and the Contractor.

46. Price Preference

If this solicitation has not been set aside for the purposes of making an award based on bids solicited from Port Authority certified Minority Business, Women Business or Small Business Enterprises as indicated by the bidder pre-requisites in Part II hereof, for awards of contracts, not exceeding \$1,000,000, for:

- (a) Services, a price preference of 5% is available for New York or New Jersey Small Business Enterprises (SBE); or
- (b) Services (excluding Janitorial/Cleaning Services), a price preference of 10% is available for New York or New Jersey Minority or Women Business Enterprises (MBE/WBE),

certified by the Port Authority by the day before the bid opening.

If the Bidder is a Port Authority certified MBE, WBE or SBE, enter the applicable date(s) certification was obtained in the space provided on the Signature Sheet attached hereto.

47. MBE/WBE Good Faith Participation

The Contractor shall use every good-faith effort to provide for participation by Port Authority Certified Minority Business Enterprises (MBEs) and Port Authority Certified Women-owned Business Enterprises (WBEs) in all purchasing and subcontracting opportunities associated with this Contract, including purchase of equipment, supplies and labor services. If this Contract contains participation goals, the Contractor shall use good faith efforts to achieve the goals.

Good faith efforts to include and facilitate participation by MBE/WBEs shall include, but not be limited to the following:

- A. Dividing the services and materials to be procured into smaller portions, where feasible.
- B. Giving reasonable advance notice of specific contracting, subcontracting and purchasing opportunities to such MBE/WBEs as may be appropriate.

- C. Soliciting services and materials from a Port Authority certified MBE/WBE. To access the Port Authority's Directory of MBE/WBE Port Authority certified firms go to <http://www.panynj.gov/business-opportunities/sd-mwsdbe-profile.html>.
- D. Ensuring that provision is made to provide progress payments to MBE/WBEs as defined in the prompt payment provision below.
- E. Observance of reasonable commercial standards of fair dealing in the respective trade or business.

48. Code of Ethics for Port Authority Vendors

The Port Authority has adopted a Code of Ethics for Port Authority Vendors (the "Code"). The Code is hereby made a part of this Agreement. The Code can be found at <https://www.panynj.gov/business-opportunities/become-vendor.html>.

PART III CONTRACTOR'S INTEGRITY PROVISIONS

1. Certification of No Investigation (criminal or civil anti-trust), Indictment, Conviction, Debarment, Suspension, Disqualification and Disclosure of Other Information

By bidding on this Contract, each Bidder and each person signing on behalf of any Bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, that the Bidder and each parent and/or affiliate of the Bidder has not

- a. been indicted or convicted in any jurisdiction;
- b. been suspended, debarred, found not responsible or otherwise disqualified from entering into any contract with any governmental agency or been denied a government contract for failure to meet standards related to the integrity of the Bidder;
- c. received a less than satisfactory rating on a public or government contract;
- d. had a contract terminated by any governmental agency for breach of contract or for any cause based in whole or in part on an indictment or conviction;
- e. ever used a name, trade name or abbreviated name, or an Employer Identification Number different from those inserted in the Bid;
- f. had any business or professional license suspended or revoked or, within the five years prior to bid opening, had any sanction imposed in excess of fifty thousand dollars (\$50,000) as a result of any judicial or administrative proceeding with respect to any license held or with respect to any violation of a federal, state or local environmental law, rule or regulation;
- g. had any sanction imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust regardless of the dollar amount of the sanctions or the date of their imposition; and
- h. been, and is not currently, the subject of a criminal investigation by any federal, state or local prosecuting or investigative agency and/or a civil anti-trust investigation by any federal, state or local prosecuting or investigative agency, including an inspector general of a governmental agency or public authority.

2. Non-Collusive Bidding, and Code of Ethics Certification, Certification of No Solicitation Based On Commission, Percentage, Brokerage, Contingent or Other Fees

By bidding on this Contract, each Bidder and each person signing on behalf of any Bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, that

- a. the prices in its bid have been arrived at independently without collusion, consultation, communication or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;
- b. the prices quoted in its bid have not been and will not be knowingly disclosed directly or indirectly by the Bidder prior to the official opening of such bid to any other bidder or to any competitor;

- c. no attempt has been made and none will be made by the Bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition;
- d. this organization has not made any offers or agreements or taken any other action with respect to any Authority employee or former employee or immediate family member of either which would constitute a breach of ethical standards under the Code of Ethics dated March 11, 2014, or as may be revised, (a copy of which is available upon request) nor does this organization have any knowledge of any act on the part of an Authority employee or former Authority employee relating either directly or indirectly to this organization which constitutes a breach of the ethical standards set forth in said Code;
- e. no person or selling agency other than a bona fide employee or bona fide established commercial or selling agency maintained by the Bidder for the purpose of securing business, has been employed or retained by the Bidder to solicit or secure this Contract on the understanding that a commission, percentage, brokerage, contingent, or other fee would be paid to such person or selling agency; and
- f. the Bidder has not offered, promised or given, demanded or accepted, any undue advantage, directly or indirectly, to or from a public official or employee, political candidate, party or party official, or any private sector employee (including a person who directs or works for a private sector enterprise in any capacity), in order to obtain, retain, or direct business or to secure any other improper advantage in connection with this Contract.
- g. no person or organization has been retained, employed or designated on behalf of the Bidder to impact any Port Authority determination with respect to (i) the solicitation, evaluation or award of this Contract, or (ii) the preparation of specifications or request for submissions in connection with this Contract.

The foregoing certifications in this Part III, Sections 1 and 2, shall be deemed to have been made by the Bidder as follows:

- * if the Bidder is a corporation, such certification shall be deemed to have been made not only with respect to the Bidder itself, but also with respect to each parent, affiliate, director, and officer of the Bidder, as well as, to the best of the certifier's knowledge and belief, each stockholder of the Bidder with an ownership interest in excess of 10%;
- * if the Bidder is a partnership, such certification shall be deemed to have been made not only with respect to the Bidder itself, but also with respect to each partner.

Moreover, the foregoing certifications, if made by a corporate Bidder, shall be deemed to have been authorized by the Board of Directors of the Bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of such certification as the act and deed of the corporation.

In any case where the Bidder cannot make the foregoing certifications, the Bidder shall so state and shall furnish with the signed bid a signed statement which sets forth in detail the reasons therefor. If the Bidder is uncertain as to whether it can make the foregoing certifications, it shall so indicate in a signed statement furnished with its bid, setting forth in such statement the reasons for its uncertainty. With respect to the foregoing certification in paragraph "2g", if the Bidder cannot make the certification, it shall provide, in writing, with the signed bid: (i) a list of the name(s), address(es), telephone number(s), and place(s) of principal employment of each such individual or organization; and (ii) a statement as to whether such individual or organization has a "financial interest" in this Contract, as described in the Procurement Disclosure Policy of the Authority (a copy of which is available upon request to the Chief Procurement Officer of the Procurement Department of the Authority). Such disclosure is to be updated as necessary. As a result of such disclosure, the Port Authority shall take appropriate action up to and including a finding of non-responsibility.

Failure to make the required disclosures shall lead to administrative actions up to and including a finding of non-responsiveness or non-responsibility.

Notwithstanding that the Bidder may be able to make the foregoing certifications at the time the bid is submitted, the Bidder shall immediately notify the Authority in writing during the period of irrevocability of bids and the term of the Contract, if Bidder is awarded the Contract, of any change of circumstances which might under this clause make it unable to make the foregoing certifications, might render any portion of the certifications previously made invalid, or require disclosure. The foregoing certifications or signed statement shall be deemed to have been made by the Bidder with full knowledge that they would become a part of the records of the Authority and that the Authority will rely on their truth and accuracy in awarding and continuing this Contract. In the event that the Authority should determine at any time prior or subsequent to the award of this Contract that the Bidder has falsely certified as to any material item in the foregoing certifications, has failed to immediately notify the Port Authority of any change in circumstances which might make it unable to make the foregoing certifications, might render any portion of the certifications previously made invalid, or require disclosure, or has willfully or fraudulently furnished a signed statement which is false in any material respect, or has not fully and accurately represented any circumstance with respect to any item in the foregoing certifications required to be disclosed, the Authority may determine that the Bidder is not a responsible Bidder with respect to its bid on the Contract or with respect to future bids on Authority contracts and may exercise such other remedies as are provided to it by the Contract with respect to these matters. In addition, Bidders are advised that knowingly providing a false certification or statement pursuant hereto may be the basis for prosecution for offering a false instrument for filing (see e.g. New York Penal Law, Section 175.30 et seq.). Bidders are also advised that the inability to make such certification will not in and of itself disqualify a Bidder, and that in each instance the Authority will evaluate the reasons therefor provided by the Bidder. Under certain circumstances the Bidder may be required as a condition of Contract award to enter into a Monitoring Agreement under which it will be required to take certain specified actions, including compensating an independent Monitor to be selected by the Port Authority, said Monitor to be charged with, among other things, auditing the actions of the Bidder to determine whether its business practices and relationships indicate a level of integrity sufficient to permit it to continue business with the Port Authority.

3. Bidder Eligibility for Award of Contracts - Determination by an Agency of the State of New York or New Jersey Concerning Eligibility to Receive Public Contracts

Bidders are advised that the Authority has adopted a policy to the effect that in awarding its contracts it will honor any determination by an agency of the State of New York or New Jersey that a Bidder is not eligible to bid on or be awarded public contracts because the Bidder has been determined to have engaged in illegal or dishonest conduct or to have violated prevailing rate of wage legislation.

The policy permits a Bidder whose ineligibility has been so determined by an agency of the State of New York or New Jersey to submit a bid on a Port Authority contract and then to establish that it is eligible to be awarded a contract on which it has bid because (i) the state agency determination relied upon does not apply to the Bidder, or (ii) the state agency determination relied upon was made without affording the Bidder the notice and hearing to which the Bidder was entitled by the requirements of due process of law, or (iii) the state agency determination was clearly erroneous or (iv) the state determination relied upon was not based on a finding of conduct demonstrating a lack of integrity or violation of a prevailing rate of wage law.

The full text of the resolution adopting the policy may be found in the Minutes of the Authority's Board of Commissioners meeting of September 9, 1993.

4. Contractor Responsibility, Suspension of Work and Termination

During the term of this Contract, the Contractor shall at all times during the Contract term remain responsible. The Contractor agrees, if requested by the Port Authority to present evidence of its continuing legal authority to do business in the States of New Jersey or New York, integrity, experience, ability, prior performance, and organizational and financial capacity.

The Port Authority, in its sole discretion, reserves the right to suspend any or all activities under this Contract, at any time, when it discovers information that calls into question the responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as the Port Authority issues a written notice authorizing a resumption of performance under the Contract.

Upon written notice to the Contractor, and an opportunity to be heard with appropriate Port Authority officials or staff, the Contract may be terminated by Port Authority at the Contractor's expense where the Contractor is determined by the Port Authority to be non-responsible. In such event, the Port Authority or its designee may complete the contractual requirements in any manner he or she may deem advisable and pursue available legal or equitable remedies for breach, including recovery of costs from Contractor associated with such termination.

5. No Gifts, Gratuities, Offers of Employment, Etc.

At all times, the Contractor shall not offer, give or agree to give anything of value either to a Port Authority employee, agent, job shopper, consultant, construction manager or other person or firm representing the Port Authority, or to a member of the immediate family (i.e., a spouse, child, parent, brother or sister) of any of the foregoing, in connection with the performance by such employee, agent, job shopper, consultant, construction manager or other person or firm representing the Port Authority of duties involving transactions with the Contractor on behalf of the Port Authority, whether or not such duties are related to this Contract or any other Port Authority contract or matter. Any such conduct shall be deemed a material breach of this Contract.

As used herein "anything of value" shall include but not be limited to any (a) favors, such as meals, entertainment, transportation (other than that contemplated by the Contract or any other Port Authority contract), etc. which might tend to obligate the Port Authority employee to the Contractor, and (b) gift, gratuity, money, goods, equipment, services, lodging, discounts not available to the general public, offers or promises of employment, loans or the cancellation thereof, preferential treatment or business opportunity. Such term shall not include compensation contemplated by this Contract or any other Port Authority contract. Where used herein, the term "Port Authority" shall be deemed to include all subsidiaries of the Port Authority.

The Contractor shall insure that no gratuities of any kind or nature whatsoever shall be solicited or accepted by it and by its personnel for any reason whatsoever from the passengers, tenants, customers or other persons using the Facility and shall so instruct its personnel. The Contractor shall include the provisions of this clause in each subcontract entered into under this Contract.

6. Obligation to Report

In the event that the Contractor becomes aware of the occurrence of any conduct that is prohibited by the section entitled "No Gifts, Gratuities, Offers of Employment, Etc.", or if the Contractor knows or should reasonably know that a principal, employee, or agent of the Contractor or of its subcontractor(s) has committed a violation of federal, New York or New Jersey law addressing or governing: antitrust, public contracting, false claims, fraud, extortion, bribery, bid rigging, embezzlement, prevailing wage or minority, woman, small or disadvantaged business enterprises, it shall report such information to the Port Authority's Office of Inspector General within three (3) business days of obtaining such knowledge. (See "<http://www.panynj.gov/inspector-general>" for information about how to report information to the Office of Inspector General). Failing to report such conduct may be grounds for a finding of non-responsibility. The Contractor shall not take any Retaliatory Action against any of its employees for reporting such conduct.

In addition, during the term of this Contract, the Contractor shall not make an offer of employment or use confidential information in a manner proscribed by the Code of Ethics and Financial Disclosure dated March 11, 2014, or as may be revised (a copy of which is available upon request to the Office of the Secretary of the Port Authority).

The Contractor shall include the provisions of this clause in each subcontract entered into under this Contract.

7. Conflict of Interest

During the term of this Contract, the Contractor shall not participate in any way in the preparation, negotiation or award of any contract (other than a contract for its own services to the Authority) to which it is contemplated the Port Authority may become a party, or participate in any way in the review or resolution of a claim in connection with such a contract if the Contractor has a substantial financial interest in the contractor or potential contractor of the Port Authority or if the Contractor has an arrangement for future employment or for any other business relationship with said contractor or potential contractor, nor shall the Contractor at any time take any other action which might be viewed as or give the appearance of conflict of interest on its part. If the possibility of such an arrangement for future employment or for another business arrangement has been or is the subject of a previous or current discussion, or if the Contractor has reason to believe such an arrangement may be the subject of future discussion, or if the Contractor has any financial interest, substantial or not, in a contractor or potential contractor of the Authority, and the Contractor's participation in the preparation, negotiation or award of any contract with such a contractor or the review or resolution of a claim in connection with such a contract is contemplated or if the Contractor has reason to believe that any other situation exists which might be viewed as or give the appearance of a conflict of interest, the Contractor shall immediately inform the Chief Procurement Officer in writing of such situation giving the full details thereof. Unless the Contractor receives the specific written approval of the Chief Procurement Officer, the Contractor shall not take the contemplated action which might be viewed as or give the appearance of a conflict of interest. The Chief Procurement Officer may require the Contractor to submit a mitigation plan addressing and mitigating any disclosed or undisclosed conflict, which is subject to the approval of the Chief Procurement Officer and shall become a requirement, as though fully set forth in this Contract. In the event the Chief Procurement Officer shall determine that the performance by the Contractor of a portion of its Services under this Agreement is precluded by the provisions of this numbered paragraph, or a portion of the Contractor's said Services is determined by the Chief Procurement Officer to be no longer appropriate because of such preclusion, then the Chief Procurement Officer shall have full authority on behalf of both parties to order that such portion of the Contractor's Services not be performed by the Contractor, reserving the right, however, to have the Services performed by others and any lump sum compensation payable hereunder which is applicable to the deleted work shall be equitably adjusted by the parties. The Contractor's execution of this document shall constitute a representation by the Contractor that at the time of such execution the Contractor knows of no circumstances, present or anticipated, which come within the provisions of this paragraph or which might otherwise be viewed as or give the appearance of a conflict of interest on the Contractor's part. The Contractor acknowledges that the Authority may preclude it from involvement in certain disposition/privatization initiatives or transactions that result from the findings of its evaluations hereunder or from participation in any contract, which results, directly or indirectly, from the Services provided by the Contractor hereunder. The Port Authority's determination regarding any questions of conflict of interest shall be final.

8. Integrity Monitor

In the event that the Authority hires an Integrity Monitor in connection with the Work under this Contract, the Contractor and any subcontractors shall cooperate fully with the Monitor and the Authority, which includes, but is not limited to, providing complete access to all personnel and records in any way related to the Work performed pursuant to this Contract. Any failure to cooperate may result in the termination of this Contract. The Contractor shall include the provisions of this clause in each subcontract entered into under this Contract.

9. Right to Audit

Notwithstanding anything to the contrary, the Authority, including its Inspector General, Audit Department and Integrity Monitor, or its designee(s) each shall have the right to audit all of the records of the Contractor with respect to the Work and the Contract, including, without limitation, records pertaining to any compensation paid, payable, or to be paid under the Contract. The Contractor shall not be entitled to any reimbursement or other compensation for costs associated with such audit, investigation, or certification. The Contractor shall include the provisions of this clause in each subcontract entered into under this Contract.

The Contractor agrees to pay for the cost of any audit or investigation conducted by the Authority, in which any criminal activity, ethics violations, or professional misconduct by the Contractor or any of its employees, or subcontractors or any of its employees, are discovered. The Contractor shall further agree that should it fail or refuse to pay for any such audit or investigation, the Authority is authorized to deduct from any sum owing the Contractor an amount equal to the cost of such audit and the damages resulting therefrom. The determination of the value of any such costs and decision to withhold any such payments are at the sole discretion of the Authority (including its Inspector General).

10. Definitions

As used in this section, the following terms shall mean:

Affiliate - Two or more firms are affiliates if a parent owns more than fifty percent of the voting stock of each of the firms, or a common shareholder or group of shareholders owns more than fifty percent of the voting stock of each of the firms, or if the firms have a common proprietor or general partner.

Agency or Governmental Agency - Any federal, state, city or other local agency, including departments, offices, public authorities and corporations, boards of education and higher education, public development corporations, local development corporations, the Port Authority of New York and New Jersey and its wholly owned subsidiaries and others.

Investigation - Any inquiries made by any federal, state or local criminal prosecuting and/or law enforcement agency and any inquiries concerning civil anti-trust investigations made by any federal, state or local governmental agency. Except for inquiries concerning civil anti-trust investigations, the term does not include inquiries made by any civil government agency concerning compliance with any regulation, the nature of which does not carry criminal penalties, nor does it include any background investigations for employment, or Federal, State, and local inquiries into tax returns.

Officer - Any individual who serves as chief executive officer, chief financial officer, or chief operating officer of the Bidder by whatever titles known.

Parent - An individual, partnership, joint venture or corporation which owns more than 50% of the voting stock of the Bidder.

Retaliatory Action- Any adverse action taken by, or at the direction of, the Contractor, against any of its employees for reporting any information as set forth in the clause entitled "Obligation to Report," above.

If the solicitation is a Request for Proposal:

Bid - shall mean Proposal;

Bidder - shall mean Proposer;

Bidding - shall mean submitting a Proposal.

In a Contract resulting from the taking of bids:

Bid - shall mean bid;

Bidder - shall mean Bidder; except and until the Contract has been awarded, then it shall mean Contractor;

Bidding - shall mean executing this Contract.

In a Contract resulting from the taking of Proposals:

Bid - shall mean Proposal;

Bidder - shall mean Proposer; except and until the Contract has been awarded, then it shall mean Contractor;

Bidding - shall mean executing this Contract.