

## REQUEST FOR QUOTATION

<b>Vendor No., Name &amp; Address (Insert):</b>    <b>Port Authority Procurement Contact</b> John Santiago/212-435-4613/john.santiago@panynj.gov	<b>Collective/Bid#</b> <b>Bid Due Date</b> <b>53441</b> <b>06/21/2018</b>  Bids must be received no later than 11:00 AM on the above Bid Due Date.
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Quantity	Description	Unit Price	Total
	Supply and Deliver 84C Aluminum Splice Bar Assembly (22" long) with Huck Bolts, per attached PATH Specification and Drawing.  Material to be manufactured in accordance with the attached "Port Authority Trans-Hudson Corporation Division 5, Section C05653, Bi-metallic Composite Contact Rail and End Approaches (Rev. 4-12-2018)" and Drawing 84C-01 "84C Contact Rail".  Quote FOB delivered price, per Pair, for delivery between 8:00am and 2:00pm, Monday through Friday, to:  Port Authority Trans-Hudson Corp. 120 Academy Street Jersey City NJ 07302  A price preference of 10 % is available for NY/NJ Minority and Women Business Enterprises (M/WBE) or 5% for NY/NJ Small Business Enterprises (SBE) certified by the Port Authority of New York and New Jersey by the day before bid opening for awards not exceeding \$1,000,000. My firm was certified as a _____ on _____.		
	<b>PLEASE QUOTE FULLY DELIVERED PRICES</b>	<b>PAYMENT TERMS</b>	<b>Total Delivered Price</b>

**This Quotation is subject to the terms and conditions set forth on the back pages hereof. Bidder is advised to read these before**

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

Signed \_\_\_\_\_

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

Telephone number \_\_\_\_\_ Date \_\_\_\_\_

Fax Number \_\_\_\_\_

Federal Taxpayer ID \_\_\_\_\_

Bidder  
 Must  
 Sign  
 In  
 Two  
 Places

**NOTICE TO BIDDERS:** Unless the following term of assurance that the above offer is irrevocable is signed, the offer submitted herein shall not be deemed to be complete.

The foregoing offer shall be irrevocable for 90 days after the date on which The PORT AUTHORITY TRANS-HUDSON CORPORATION opens this proposal.

Signed \_\_\_\_\_ Date \_\_\_\_\_

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

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Vendor No.	Collective/Bid#    Bid Due Date 53441            06/21/2018
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Quantity	Description	Unit Price	Total
	<p>This is a Formal Bid Invitation</p> <p><b>Bid Submission Instructions:</b></p> <p>Sealed Bids must be submitted to and received at the following address by the due date and time listed on this Request for Quotation, where they will be publicly opened and read:</p> <p>The Port Authority of NY &amp; NJ                      Attn: Bid Custodian                      Procurement Department                      4 World Trade Center                      150 Greenwich Street, 21st Floor                      New York, NY 10007</p> <p>Clearly mark the outside of your envelope/package with "BID ENCLOSED", the Collective/Bid Number and Due Date, and your complete company name and address.</p> <p>Bids are only accepted Monday through Friday, excluding Port Authority holidays, between the hours of 8 A.M. &amp; 5 P.M., via regular mail, express delivery service or hand delivery. Express carrier deliveries by commercial vehicles can be made via vendors approved by Silverstein Properties, the 4 World Trade Center (4WTC) Property Manager, through the Vehicle Security Center (VSC). Presently, UPS is the only delivery vendor with approved recurring delivery times. There is extensive security at the World Trade Center Site.</p>		
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Quantity	Description	Unit Price	Total
	<p>Individuals must present a valid government-issued photo ID to enter 4 WTC. Individuals without packages or carrying small packages or boxes that can be conveyed by hand or on a hand truck may enter through the lobby. All envelopes, packages and boxes may be subject to additional security screening.</p> <p>There is no parking available at 4 WTC/150 Greenwich Street, and parking in the surrounding area is extremely limited. The Port Authority assumes no responsibility for delays, including, but not limited to delays caused by any delivery service, building access procedure or security requirement.</p> <p>A valid government-issued photo ID is required to gain access into the building to attend the bid opening or hand deliver a bid. Bids that are not received by the bid custodian by the scheduled bid opening date will be considered late.</p> <p>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 <a href="http://www.panynj.gov/business-opportunities/bid-proposaladvertisements.htm">http://www.panynj.gov/business-opportunities/bid-proposaladvertisements.htm</a> and download any addenda that might have been issued in connection with this solicitation.</p>		
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Firm Name \_\_\_\_\_

## REQUEST FOR QUOTATION

Vendor No.	Collective/Bid#    Bid Due Date 53441      06/21/2018
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Quantity	Description	Unit Price	Total
350 Pairs	84C Aluminum Splice Bar Assembly, 350 pairs, 22inches long, with huck bolts. Manufacture in accordance with attached PATH specification and drawing.  Lead time: _____  Source/location of material: _____		
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Signed \_\_\_\_\_ Date \_\_\_\_\_

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

PA280/9-03

## TERMS AND CONDITIONS

1. For the purposes of this Request For Quotations (RFQ), the terms "Authority," "Port Authority," or "PA" mean the Port Authority of New York and New Jersey and/or the Port Authority Trans Hudson Corporation ("PATH,") as applicable.
2. The Port Authority reserves the right to request information relating to seller's responsibility, experience and capability to perform the work.
3. Prices must be quoted in United States Dollars. All figures inserted will be interpreted as being quoted in United States Dollars. Unless otherwise specified, unit prices shall be quoted to two (2) decimal places.
4. Unless otherwise provided, complete shipment of all items must be in one delivery FOB delivery point freight included. Payment will not be made on partial deliveries unless authorized in advance by the PA and any discount, if applicable, will be taken on the total order.
5. Inspection and acceptance will be conducted at the delivery point, unless otherwise provided. Any risk of loss will be the seller's responsibility until such delivery and acceptance is made, unless loss results from negligence of the Authority.
6. PA payment terms are net 30 days. Cash discounts for prompt payment of invoices may be quoted, but will not be considered in determining award.
7. Separate unit and total FOB delivered prices must be shown. In the event of a discrepancy between unit prices and total prices, unit prices will govern.
8. Sales to the PA and to PATH are currently exempt from New York and New Jersey State and local taxes and generally from federal taxation. The seller certifies that there are no federal, state, municipal or any other taxes included in the prices shown hereon.
9. The PA shall have the absolute right to reject any or all quotes or to accept any quote in whole or part and to waive defects in quotes.
10. Unless "no substitute" or "no approved equal" is indicated, seller may offer alternate manufacturer/brands, which shall be subject to Port Authority approval. Please indicate details of product being offered with its quote. Brand name or equal descriptions are used as a means to define the performance or other salient characteristics of procurements. In the subject RFQ, even if the phrase "or approved equal" is inadvertently omitted, it is implied after any brand name.
11. Acceptance of seller's offer will be only in writing, authorized by the PA. No changes shall be made to any agreement resulting from this RFQ, except in writing, authorized by the PA.
12. If the seller fails to perform in accordance with the terms of this RFQ, or the terms of any agreement resulting from this RFQ, the PA may obtain the goods or services from another contractor and charge the seller the difference in price, if any, a reletting cost of \$100, per order included in this RFQ, plus any other damages to the PA.
13. The PA may cancel this RFQ at any time, when it is in the PA's best interest, via an addendum. The PA may terminate any agreement resulting from this RFQ, in accordance with terms and conditions of that agreement, in which case the successful seller ("Vendor") shall be paid for items received and accepted, including shipping costs, if applicable, up to the time of termination, unless otherwise provided for in that agreement. The Vendor shall promptly submit its final invoice to the PA to be paid to the Vendor.
14. Upon request, sellers are encouraged to extend the terms and conditions of any agreement resulting from this RFQ with the PA to other government and quasi-government entities by separate agreement.
15. By signing this RFQ, the seller certifies to all relevant statements on Form PA 3764A (copy can be obtained at <http://www.panynj.gov/business-opportunities/become-vendor.html>), including but not limited to those relating to the submission of bids. As set forth on PA 3764A, the PA has adopted a policy that it will honor a determination by

an agency of the State of New York or New Jersey that a seller is not eligible to bid on or be awarded public contracts because the seller has been determined to have engaged in illegal or dishonest conduct or to have violated prevailing wage legislation. The terms and conditions of PA 3764A will apply to any agreement resulting from this RFQ.

16. The Vendor may subcontract the services or use a supplier for the furnishing of materials required hereunder to such persons or entities as the PA, may, from time to time, expressly approve in writing. All further subcontracting shall also be subject to such approval by the PA. All persons to whom the Vendor subcontracts services shall be deemed to be its agents and no subcontracting or approval thereof shall be deemed to release the Vendor from its obligations under any agreement resulting from this RFQ.

17. The Vendor may not assign any subsequent agreement resulting from this RFQ without written consent of the PA.

18. The Vendor shall not issue nor permit to be issued any press release, advertisement, or literature of any kind, which refers to the Port Authority or that goods will be, are being or have been provided to it and/or that services will be, are being or have been performed for it in connection with this RFQ or any subsequent 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.

19. Notwithstanding anything to the contrary, the seller acknowledges that the Port Authority's obligations, if any, under this RFQ, or any agreement resulting from this RFQ, are subject to the provisions of its Public Records Access Policy, and any amendments thereto, and any disclosure made pursuant thereto is not a violation of this RFQ. The Port Authority Public Records Access Policy can be found at <http://corpinfo.panynj.gov/documents/Access-to-Port-Authority-Public-Records/>, and is incorporated herein.

20. Neither the Commissioners of the Port Authority, nor Directors of PATH, nor any of them, nor any officer, agent or employee thereof, shall be charged personally by any seller with any liability, or held personally liable to any Contractor under any term or provision of this RFQ (or any agreement resulting from this RFQ), or because of its execution or attempted execution, or because of any breach, or attempted or alleged breach, thereof.

21. MBE/WBE GOOD FAITH PARTICIPATION - The Vendor 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 any agreement resulting from this RFQ, including the purchase of equipment, supplies and labor. If the agreement resulting from this RFQ is valued at or above one million dollars (\$1,000,000), Vendor shall comply with the terms and conditions of PA Form 4235, as may be revised. A copy can be obtained at <http://www.panynj.gov/business-opportunities/become-vendor.html>

22. 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 within this RFQ, a price preference of 10% is available for NY/NJ Minority and Women Business Enterprises (M/WBEs) or 5% for NY/NJ Small Business Enterprises(SBEs) certified by the Port Authority (PA) by the day before bid opening for awards not exceeding one million dollars (\$1,000,000.)

23. Non-Discrimination Requirements - The Vendor shall take all necessary and reasonable steps to ensure non-discrimination in the performance and administration of all aspects of any agreement resulting from this RFQ.

A. Vendor 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 any agreement resulting from this RFQ. Vendor 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. Vendor agrees that these "Non-Discrimination Requirements" are a binding part of any agreement resulting from this RFQ. Without limiting the generality of any other term or provision of this RFQ or any agreement resulting from this RFQ, in the event the Authority, or a state or federal agency finds that the Vendor or any of its subcontractors or vendors has not complied with these "Non-Discrimination Requirements," the Authority may cancel, terminate or suspend this RFQ or any agreement resulting from this RFQ.
- C. Vendor 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."

24. To the extent permitted by law, the Vendor 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 Vendor'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 any subsequent agreement resulting from this RFQ and all other services and activities of the Vendor under any subsequent agreement resulting from this RFQ and for all expenses incurred by it and by them in the defense, settlement or satisfaction thereof. The Vendor assumes the following risks, whether such risks arise out of or are in any way connected to the Vendor's operations or to its performance of work under any agreement resulting from this RFQ, or arise out of acts or omissions (negligent or not) of the Vendor, the Port Authority or third persons (including agents, servants, officers, representatives, Commissioners, Directors and employees of the Port Authority and the Vendor) or from any other cause, excepting only risks occasioned solely by affirmative willful acts of the Port Authority done subsequent to the opening of bids/quotes on this RFQ, 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 or Vendor property, equipment, materials and possessions, and those of Vendor's agents, employees, materialmen or others performing work under any agreement resulting from this RFQ, on or off the premises, the loss or damage of which shall arise out of the Vendor's operations under any agreement resulting from this RFQ; and (b) the risk of claims, whether made against the Vendor or the Port Authority, including those, whether just or unjust, of third persons (including agents, servants, officers, representatives, Commissioners, Directors and employees of the Port Authority and the Vendor), for any and all injuries, loss or damages occurring to any property, equipment, materials and possessions of the Contractor's agents, employees, materialmen and others performing work under any agreement resulting from this RFQ.

25. Seller's attention is directed to the Port Authority's "Code of Ethics for Port Authority Vendors" (the "Code"). Vendors must certify in writing that they will comply with every aspect of this Code. The seller should submit an executed Compliance Certification with their Quotation. The Compliance Certification, once executed, will be a material and integral part of any agreement resulting from this solicitation. The Code and the Compliance Certification can be found on the Port Authority's website at <https://www.panynj.gov/business-opportunities/become-vendor.html>. Violations of the law or of the Code may subject a Vendor or a Vendor's Employees to civil or criminal penalties. In addition, in the case of violation of any provision of the law or the Code, the Port Authority may pursue any available remedy, including, but not limited to, determining that a Vendor is in material breach of its contract and/or that, in the future, the Port Authority will have no further commercial dealings with the Vendor.

26. The PA has transitioned to an all electronic method of paying its vendors and contractors via an Automated Clearing House (ACH) funds transfer. The Vendor must complete the Port Authority's "Authorization Agreement For Direct Deposits And Direct Payments (ACH Credits)" form, which is available at <http://www.panynj.gov/business-opportunities/become-vendor.html>, in order to receive payment. To avoid delays in payments for commodities and services provided, vendors and contractors must be enrolled in ACH. The Authorization Agreement shall remain in full force and effect until the Port Authority has received written notification from the Vendor 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 initiative may be directed to the ACH Enrollments contact line at 201 216-6002 or emailed to [ACHENROLLMENT@PANYNJ.GOV](mailto:ACHENROLLMENT@PANYNJ.GOV).

27. 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>.

*The Port Authority of New York and New Jersey (Port Authority), in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.*

*Additionally, all bidders (including proposers, and respondents, as applicable) are notified that the Port Authority will ensure that, with respect to any contract/agreement entered into pursuant to this advertisement, disadvantaged business enterprises, minority business enterprises and woman-owned business enterprises, as applicable, will be afforded full and fair opportunity to submit bids, proposals and responses, as applicable, in response to this invitation, and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.*



DIVISION 5

SECTION C05653

BI-METALLIC COMPOSITE CONTACT RAIL AND END APPROACHES

Rev 4-12-2018

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This Section specifies furnishing all labor, materials, and equipment for the manufacture, fabrication, testing, and delivery of bi-metallic composite contact rail and end approaches for the Port Authority Trans-Hudson Corporation.
- B. Bi-metallic composite contact rail and end approaches shall be manufactured from steel base rail of 84C Section clad with equal amounts of aluminum extrusion on each side of the web, as shown in the Contract Drawings and as specified.

1.02 REFERENCES

- A. The following is a list of publications referred to in this Section:
  - 1. American National Standards Institute ANSI/ASQC Standard C-1, Specification of General Requirements for a Quality Manual, latest revision.
  - 2. American Society for Testing and Materials (ASTM), latest versions:
    - a. ASTM B317-07 Standard Specification for Aluminum-Alloy Extruded Bar, Rod, Tube, Pipe, Structural Profiles, and Profiles for Electrical Purposes (Bus Conductor)

1.03 SUBMITTALS

- A. Before the start of manufacturing bi-metallic composite contact rail and end approaches, submit to the Engineer for approval Shop Drawings and other data including design calculations and catalogue cuts required by the Specifications or necessary to adequately perform the work.

- B. Shop Drawings shall show the general arrangement and such details as are necessary to provide a comprehensive description of the Bi-metallic composite contact rail and end approaches.
- C. Catalogue cuts shall describe the bi-metallic composite contact rail interface and butt end coating materials.
- D. Furnish Shop Drawings on sheets measuring 22 inches by 34 inches. On each drawing provide a blank area of 5 square-inches located adjacent to the title block. The title block shall display the following:
  - 1. Contract number and name.
  - 2. Number and title of drawing.
  - 3. Date of drawing or revision date and number.
  - 4. Name of Contractor submitting drawing.
- E. Furnish design calculations and other required data on standard 8-1/2 by 11-inch sheets printed on one side only. Each sheet shall bear the information required by paragraph D above except that the 5-square-inch blank space will not be required.
- F. Before the start of manufacturing bi-metallic composite contact rail and end approaches, submit to the Engineer for approval not less than two identical samples of the bi-metallic composite contact rail, measuring a minimum of 1 foot long. Label each sample indicating:
  - 1. Purchase Order number.
  - 2. Name of Vendor.
  - 3. Material or equipment represented.
  - 4. Source.
  - 5. Name of producer and brand.
  - 6. Reference specification section and article numbers.
  - 7. Mill certification for the steel base rail.
  - 8. Foundry certification for the aluminum extrusions.

1.04 QUALITY CONTROL

- A. Establish a Quality Control Program regulating methods, procedures, and processes to ensure compliance with standards of quality required by this Specification. The Quality Control Program will be subject to audit for conformance. The program shall be in accordance with the current ANSI/ASQC Standard C-1.
- B. Records of all inspection and testing by the manufacturer shall be kept complete and available to the Engineer for review during the performance of the work and for longer periods required by this Specification.
- C. If the bi-metallic composite contact rail and end approaches manufacturer does not normally prepare materials in its own plant(s) it is acceptable to have proprietary materials prepared at another non-owned facility. This facility shall be subject to the same Quality Assurance procedures and systems the manufacturer uses in its own facilities and shall be subject to audit by the Engineer.
- D. The bi-metallic composite contact rail and end approaches manufacturer will be permitted to conduct testing in-house if the manufacturer's laboratory and testing facility is certified to National Institute of Standards and Technology (NIST) standards.
- E. Products and materials incorporated into the bi-metallic composite contact rail and end approaches will be subject to inspection by the Engineer at the Vendor's facilities, the place of manufacture, the shipping point, and at the shipping destination.
- F. The Vendor shall notify PATH and the Port Authority Materials Engineering Division a minimum of 14 days prior to the start of fabrication of bi-metallic composite contact rail and end approaches to make arrangements for inspections. Notification shall include the name and address of the fabrication facility and the name and telephone number of the individual at the facility to be contacted. PATH contact information is as follows:
  - 1. PATH – Leong Chan, 1 PATH Plaza, 7<sup>th</sup> Floor, Jersey City, NJ, 07306 with phone number 201-216-7068
  - 2. Port Authority Materials Engineering Division – Luis Payano, Port Authority Technical Center, 241 Erie Street, Room 234, Jersey City, NJ, 07310 with phone number 201-216-2996
- G. Inspection and testing by the Engineer will be performed in such a manner as not to unduly delay the work.

- H. Give the Engineer sufficient notice of when any testing is proposed to have the option of witnessing the tests. Provide the Engineer free entry at all times to the place of manufacture while work on this Order is being performed.
- I. Whether or not the Engineer inspects or tests any materials, the Vendor will not be relieved from any responsibility regarding defects or other failures to meet the requirements of the specifications, nor will such inspection or testing be considered as a guarantee of acceptance of any material which may be delivered later.

## PART 2 – PRODUCTS

### 2.01 BI-METALLIC COMPOSITE CONTACT RAIL

- A. Bi-metallic composite contact rail and end approaches shall consist of 84C section steel base rail with aluminum extrusions fastened on both sides of the web manufactured by Atlantic Track & Turnout Co., 270 Broad Street, Bloomfield, New Jersey 07003, or approved equal.
- B. 84C steel base rail and aluminum extrusions shall be fastened together at intervals not to exceed 18 inches
- C. The bi-metallic composite contact rail fastening system shall maintain the aluminum extrusions and the steel base rail in intimate, stable electrical contact over a temperature range of –25 degrees F to 220 degrees F. Thermal expansion or contraction within this temperature range shall not exceed yield points of any of the composite rail or fastener components.
- D. If the bi-metallic composite contact rail fastening system is to be a tension lock type, it shall be Huck Bolt and Collar, all galvanized, or approved equal.

### 2.02 STEEL BASE RAIL

- A. Steel base rail for bi-metallic composite contact rail and end approaches shall be 84C section manufactured by Steel of West Virginia, Inc., 17th Street and 2nd Avenue, Huntington, West Virginia 25703, or approved equal.
- B. 84C Section steel base rail shall be new No. 1 rail free of all injurious imperfections.
- C. Chemical composition of steel base rail shall be:

PORT AUTHORITY TRANS-HUDSON CORPORATION

1. Carbon: 0.64 to 0.77 percent
  2. Manganese: 0.60 to 0.90 percent
  3. Phosphorus: 0.04 percent, maximum
  4. Sulphur: 0.05 percent, maximum
  5. Silicon: 0.10 to 0.35 percent
  6. Copper: 0.50 percent, maximum
- D. Brinell hardness of steel base rail shall be 220 or higher.
- E. Marking and stamping on the web of steel base rail will not be allowed.
- F. Control cooling of steel base rail will not be required.
- G. Steel base rail shall be free of shatter cracks
- H. Steel base rails shall be 39 feet in length when measured at a temperature of 60 degrees F with a tolerance of plus 1/2-inch.
- I. Steel base rail shall have an upsweep limited to 3/4-inch in 39 feet with no down sweep allowed and a deviation from straightness of less than 1/8-inch in 10 feet.
- J. All rails after finishing shall be smooth on heads and bases, straight in line and in surface, without twists, kinks or waves.

2.03 ALUMINUM EXTRUSION

- A. Aluminum extrusion shall be of uniform dimension and shall be a high mechanical strength/high electrical conductivity 6101-T6 alloy conforming to ASTM B317.
- B. Aluminum extrusions shall be so formed as to:
1. Discourage water ingress to the interface between the aluminum extrusion and the steel base rail.
  2. Permit intimate contact with web of the steel base rail or with the fillets of the head and the base of the steel base rail and assure a positive electrical connection for current flow between the steel base and aluminum extrusion.

3. Permit standard rail tongs to grasp the head of the composite rail for lifting the composite rail without damage to the aluminum extrusion.
4. Provide adequate cross sectional area to meet the specified electrical requirements.

#### 2.04 ELECTRICAL REQUIREMENTS

- A. Composite contact rail shall be a low-resistance conductor with a resistance not greater than 0.002 ohms per 1,000 feet at 20 degrees C. The current distribution between the steel and the aluminum shall be inversely proportional to their respective resistivities.
- B. Composite contact rail shall be able to withstand a fault current of 200,000 amps DC for 100 milliseconds with no mechanical or thermal damage.
- C. Composite contact rail shall be capable of carrying a minimum of 5,000 amps continuous current without exceeding a temperature rise of 40 degrees C above 40 degrees C ambient in still air.

#### 2.05 END APPROACHES

- A. Contact rail end approach shall consist of sections of the steel base rail as shown in the Contract Drawings and as specified, cut and welded to provide a smooth transition for the collector shoe onto the composite contact rail.
- B. End approaches shall be supplied in 7-foot 6-inch lengths, or to length shown on the Contract Drawings.
- C. The mating end of each end approach shall be drilled as shown in the Contract Drawings.
- D. The mating end of each end approach shall be provided with sufficient lengths of aluminum extrusion fastened to the web to allow the attachment of a splice joint assembly.

#### 2.06 RUST INHIBITING COATINGS

- A. Bi-metallic composite contact rail interface coating shall be NO-OX-ID Type A-Special manufactured by Sanchem, Inc., 1600 S. Canal Street, Chicago, Illinois 60616, or approved equal.

- B. Bi-metallic composite contact rail butt end butt coating shall be NO-OX-ID Type A manufactured by Sanchem, Inc., 1600 S. Canal Street, Chicago, Illinois 60616, or approved equal.

### PART 3 – EXECUTION

#### 3.01 STEEL BASE RAIL

- A. Steel base rail shall be sandblasted its entire length on both sides prior to application of aluminum extrusions. The surfaces of the steel base rail that mate with the aluminum extrusion shall be cleaned to a bright finish, free of all rust and scale. This operation must be performed no more than 12 hours prior to assembly.
- B. All steel base rail interface surfaces shall be liberally coated with NO-OX-ID Type A-Special oxide inhibiting compound.

#### 3.02 PUNCHING AND DRILLING

- A. Bi-metallic composite contact rail and end approaches shall be drilled and punched as shown in the Contract Drawings and as specified.
- B. Punching of fastener holes in the steel base rail and aluminum extrusions, except for the splice plate holes at each end of each composite contact rail length, will be permitted under the following conditions:
  - 1. The manufacturer shall demonstrate that the punching operation will have no detrimental effect on aluminum extrusion to steel base rail contact resistance.
  - 2. The manufacturer shall demonstrate that the punching operation will cause no detrimental deformation of the aluminum extrusion at the interface with the steel base rail that will interfere with proper functioning of any part of the fastening system or encourage ingress of water.
- C. Splice plate holes at the end of each composite contact rail length shall be drilled after assembly of the aluminum extrusions to the base rail to assure exact alignment of the holes.
- D. The manufacturer shall prove exact alignment of the splice plate holes by pushing through each hole a mandrill of diameter no more than 0.005 inches smaller than the hole diameter and certify that this test was successful on all rail lengths shipped.

- E. Punching or drilling of the composite rail sections after assembly of the aluminum extrusion to the base rail will not be permitted.

### 3.03 BUTT END COATING

- A. After completion of drilling the splice plate holes, completely fill holes and coat the bi-metallic composite contact rail butt ends with NO-OX-ID Type A oxide inhibiting compound.

### 3.04 TESTING

- A. Prior to shipment of any bi-metallic composite contact rail test two pieces of fully assembled contact rail, each piece not less than 4 feet in length, to demonstrate adequacy and stability of electrical contact between the aluminum extrusions and the steel base rail.
- B. The test procedure on each test piece of bi-metallic composite contact rail shall be as follows:
  - 1. At a constant ambient temperature accurately measure the electrical resistance of the full length of the test piece.
  - 2. Lower the rail temperature to -25 degrees F for 30 minutes and measure the electrical resistance of the test piece.
  - 3. Raise the rail temperature to 220 degrees F for 30 minutes and measure the electrical resistance of the test piece.
  - 4. Separate chambers shall be used for the extreme temperature conditions. The air temperature of the two chambers shall be held at each of the extreme temperatures by means of circulation and sufficient hot or cold-chamber thermal capacity so that the ambient temperature shall reach the specified temperature within 2 minutes after specimens have been transferred to the appropriate chamber.
  - 5. This procedure shall be repeated for a minimum of 10 cycles.
- C. If any measurement of electrical resistance on either of the two test pieces does not conform to the specified electrical requirements adjusted for temperature the Contractor shall provide two additional test pieces and perform the full test procedure on each of them.
- D. If a second measurement of electrical resistance on any test piece does not conform to the specified electrical requirements adjusted for temperature the entire lot of manufactured bi-metallic composite contact rail will be rejected.



- E. Submit to the Engineer for approval a written proposal for modifying the design or manufacturing process to meet the specified requirements.
- F. Prior to shipment of any modified bi-metallic composite contact rail test two pieces of fully assembled contact rail, each piece not less than 4 feet in length, in accordance with the above test procedure
- G. Three certified copies of all tests, including original data calculations and interpretation of results, shall be furnished to the Engineer.

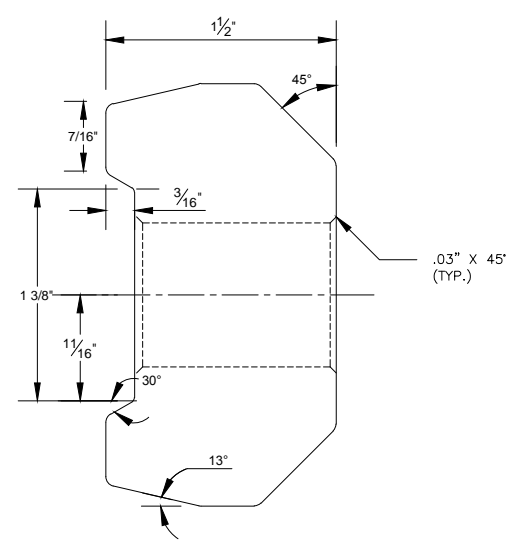
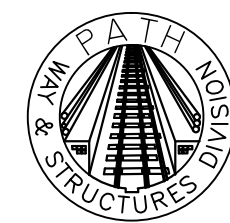
### 3.05 MARKING

- A. Each length of composite contact rail and each end approach shall have the manufacturer identification and date of manufacture (month and year) permanently die stamped on the outer face of the aluminum extrusion outside of the splice joint area.

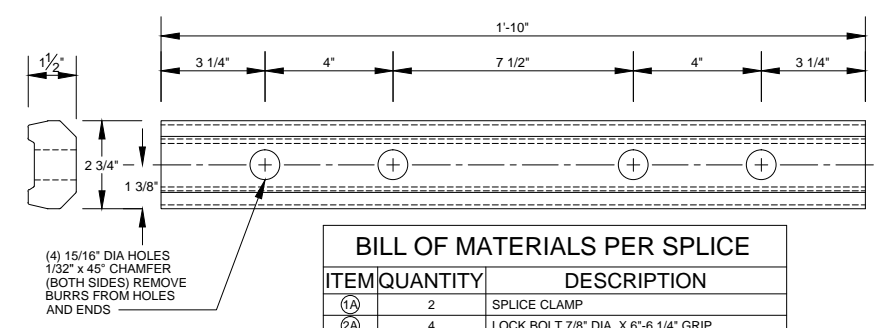
### 3.06 DELIVERY, HANDLING AND STORAGE

- A. Composite contact rails shall be loaded with heads up with all Huck collars facing the same direction and with a minimum of five 2-inch x 6-inch common stock wood separators placed between tiers. The wood separators shall be placed 5 feet from the each end, at the center, and the equidistant between the center and end separators of each composite contact rail length.
- B. Composite contact rail shall be delivered to 120 Academy Street, Jersey City, NJ, 07302 in the same condition as when loaded at the manufacturer's plant. PATH requires a minimum of 48 hours prior notice of delivery by calling Mr. Bill Wisowaty at 201-216-7094.
- C. End approaches shall be banded with 1-inch steel banding on wooden pallets with separators between tiers. Pallets shall have only two tiers.
- D. End approaches and splice clamps shall be delivered to 120 Academy Street, Jersey City, NJ, 07302 in the same condition as when loaded at the manufacturer's plant. PATH requires a minimum of 48 hours prior notice of delivery by calling Mr. Bill Wisowaty at 201-216-7094.

END OF SECTION C05653

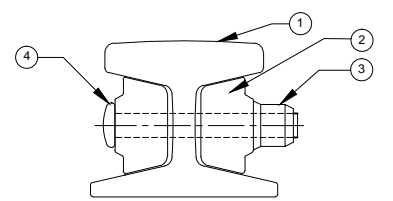


**SPLICE JOINT BAR - END VIEW**  
 N.T.S.

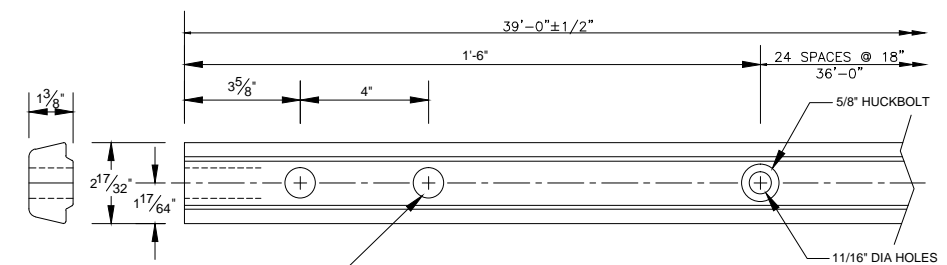


BILL OF MATERIALS PER SPLICE		
ITEM	QUANTITY	DESCRIPTION
1A	2	SPLICE CLAMP
2A	4	LOCK BOLT 7/8" DIA. X 6"-6 1/4" GRIP
3A	4	FLANGED COLLAR

**SPLICE CLAMP FOR 84C TRANSDUCER**  
 N.T.S.

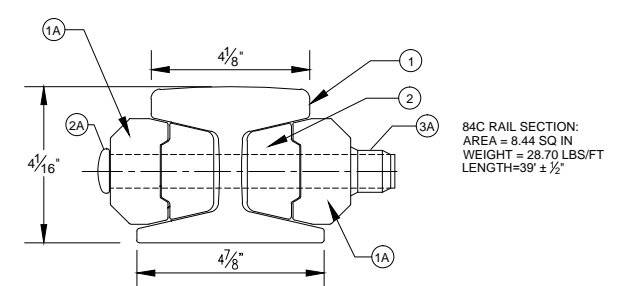


**84C STEEL SECTION ASSEMBLY**  
 N.T.S.

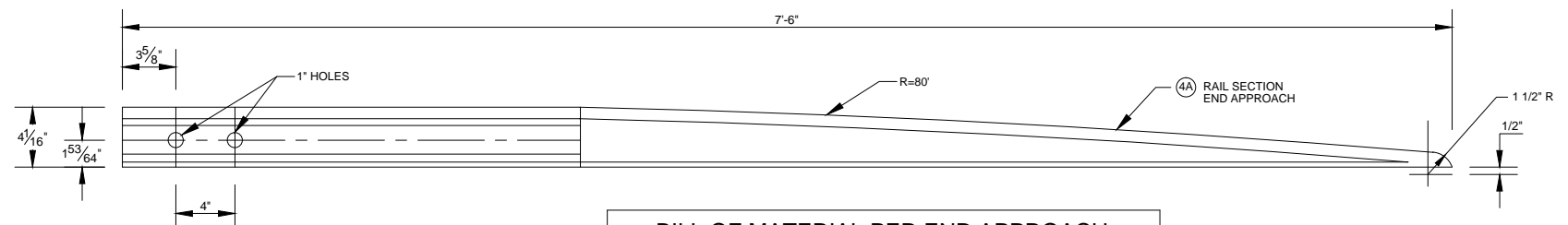


BILL OF MATERIALS PER RAIL SECTION		
ITEM	QUANTITY	DESCRIPTION
1	1	RAIL SECTION (39' +/-)
2	2	ALUMINUM TRANSDUCER
3	25	5/8 HUCKBOLT COLLAR
4	25	5/8 HUCKBOLT

**84C TRANSDUCER**  
 N.T.S.



**84C STEEL SECTION WITH TRANSDUCER SPLICE EXTRUSION (JOINT BAR)**  
 N.T.S.



BILL OF MATERIAL PER END APPROACH		
ITEM	QUANTITY	DESCRIPTION
1A	2	SPLICE CLAMP
2A	4	LOCK BOLT 7/8" DIA X 6"-6 1/4" GRIP
3A	4	FLANGED COLLAR
4A	1	RAIL SECTION END APPROACH

**84C CONTACT RAIL END APPROACH**  
 N.T.S.

No.	Date	Revision	Approved

WAY AND STRUCTURES			
PATH			

TRACK DEPARTMENT

Title  
 PATH STANDARD DRAWING

**84C CONTACT RAIL**

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent. All recipients of Contract documents, including bidders and those who do not bid and their prospective subcontractors and suppliers who may receive all or a part of the Contract documents or copies thereof, shall make every effort to ensure the secure and appropriate disposal of the Contract documents to prevent further disclosure of the information contained in the documents. Secure and appropriate disposal includes methods of document destruction such as shredding or arrangements with refuse handlers that ensure that third persons will not have access to the documents' contents either before, during, or after disposal. Documents may also be retained for disposal purposes to the Contract Desk, 2 Montgomery Street - 1st Floor, Jersey City, NJ 07302 or the office of the Chief Procurement Officer, 4 World Trade Center, 21st Floor, New York, NY 10007. It is a violation of law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer or registered architect. If this document bearing the seal of an engineer/architect is altered, the altering engineer/architect shall affix to the document their seal and the notation "altered by" followed by their signature and the date of such alteration, and a specific description of the alteration.

Designed by LC  
 Drawn by LC  
 Checked by JB

Date 04/12/2018

Contract Number  
 Drawing Number **84C-01**