

REQUEST FOR QUOTATION

Vendor No., Name and Address: Port Authority Procurement Contact: John Santiago/212-435-4613/john.santiago@panynj.gov	<table style="width: 100%;"> <tr> <td style="width: 50%;">Collective/Bid#</td> <td style="width: 50%;">Bid Due Date</td> </tr> <tr> <td>48266</td> <td>01/13/2017</td> </tr> </table> <p>Bids must be received no later than 11:00 AM on the above Bid Due Date.</p> <p>Deliver Goods/Services To: PATH Harrison Stockroom Foot of Cape May St., Harrison, NJ 07029 USA</p>	Collective/Bid#	Bid Due Date	48266	01/13/2017
Collective/Bid#	Bid Due Date				
48266	01/13/2017				

Quantity	Description	Unit Price	Total
	28-INCH CLASS "A" WROUGHT STEEL WHEELS FOR PATH PA-5 TRANSIT RAILCARS PER ATTACHED PATH SPECIFICATION S-0002-T REV. 2 AND DRAWINGS. NOTE THE PREREQUISITES IN THE SPECIFICATIONS. QUOTE FULLY-DELIVERED PRICES IN UNITED STATES DOLLARS. PLEASE FOLLOW BID SUBMISSION INSTRUCTIONS. SUBMIT THIS ENTIRE SOLICITATION PACKAGE AS YOUR BID. ATTACHING YOUR COMPANY'S TERMS & CONDITIONS MAY CAUSE YOUR BID TO BE DEEMED NON-RESPONSIVE AND/OR DELAY AN AWARD TO BE ISSUED. PROVIDE TWO (2) COPIES OF ANY SUPPORTING DOCUMENTATION THAT MAY AID IN THE EVALUATION OF YOUR BID. ADVISE MATERIAL TO BE OFFERED: MANUFACTURER: _____ PLANT LOCATION: _____ MAKE/MODEL/PART NUMBER: _____ LEAD TIME A.R.O.: _____ 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 (PA) by the day before bid opening for awards not exceeding \$1,000,000. My firm was certified as a _____ on _____.		
	PLEASE QUOTE FULLY DELIVERED PRICES	PAYMENT TERMS	Total Delivered Price

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

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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Quantity	Description	Unit Price	Total
	<p>This is a Formal Bid Invitation</p> <p>Bid Submission Instructions:</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 & 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. & 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.</p>		
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	<p>There is extensive security at the World Trade Center Site. 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 http://www.panynj.gov/business-opportunities/bid-proposaladvertisements.html and download any addenda that might have been issued in connection with this solicitation.</p>		
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Quantity	Description	Unit Price		Total
500 EA	1180002 Wheel, PATH PA-5 Railcar, 28-inch class A, wrought steel, multiple wear wheels per attached specifications S-0002-T Rev. 2, and KHI drawing 1P103810-3031-G.			
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TERMS AND CONDITIONS

1. The Port Authority (PA) reserves the right to request information relating to seller's responsibility, experience and capability to perform the work.
2. Unless otherwise provided, complete shipment of all items must be in one delivery FOB delivery point. Payment will not be made on partial deliveries unless authorized in advance by the party to be charged and the discount, if any, will be taken on the total order.
3. PA payment terms are net 30 days. Cash discounts for prompt payment of invoices may be taken but will not be considered in determining award, except in the case of tie bids.
4. Separate unit and total FOB delivered prices must be shown.
5. 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.
6. The PA shall have the absolute right to reject any or all proposals or to accept any proposal in whole or part and to waive defects in proposals.
7. Unless the phrase "no substitute" is indicated, bidder may offer alternate manufacturer / brands, which shall be subject to Port Authority approval. Please indicate details of product being offered with bid.
8. Acceptance of seller's offer will be only by Purchase Order Form signed by the PA. No change shall be made in the agreement except in writing.
9. If the seller fails to perform in accordance with the terms of this purchase order, 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, plus any other damages to the PA.
10. Upon request, sellers are encouraged to extend the terms and conditions of any terms agreement with the PA to other government and quasi-government entities by separate agreement.
11. By signing this quotation or bid, the seller certifies to all statements on Form PA 3764A regarding non-collusive bidding; compliance with the PA Code of Ethics; and the existence of investigations, indictments, convictions, suspensions, terminations, debarments and other stated occurrences to assist the PA in determining whether there are integrity issues which would prevent award of the contract to the seller. The PA has adopted a policy set forth in full on PA 3764A, that it will honor a 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 wage legislation. The Terms and Conditions of PA 3764A apply to this order. A copy can be obtained by calling (212) 435-4600 or at <http://www.panynj.gov/business-opportunities/become-vendor.html>
12. The vendor may subcontract the services or use a supplier for the furnishing of materials required hereunder to such persons or entities as the Manager, Purchasing Services may from time to time expressly approve in writing. All further subcontracting shall also be subject to such approval.
13. The successful bidder (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 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.
14. 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 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.

SPEC # : S-0002-T - Rev. 2

SYSTEM: Truck

**PORT AUTHORITY TRANS-HUDSON CORPORATION
CAR EQUIPMENT DIVISION**

ENGINEERING SPECIFICATION

TITLE

**SPECIFICATION FOR 28-INCH, CLASS A, WROUGHT STEEL, MULTIPLE WEAR WHEELS FOR
PATH'S TRANSIT RAILCARS**



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ATTACHMENT 1- KAWASAKI HEAVY INDUSTRIES DWG. NO. 1P103810-3031-G, “MULTIPLE WEAR WHEEL”

1. BIDDER'S PREREQUISITES

Only Bidders who can comply with the following should submit bids as only bids submitted by such Bidders will be considered. It should be noted that a determination that a Bidder meets the prerequisites is no assurance that the Bidder will be deemed qualified in connection with other bid requirements included herein.

- a. Within five (5) years prior to the date of submission of its bid, the Bidder shall have had experience in the manufacturing and delivering of wrought steel wheels for transit railcars. The Bidder may also fulfill this prerequisite if the Bidder can demonstrate to the satisfaction of the Authority, that within the last five (5) years prior to the date of submission of its bid, the persons or entities owning and controlling the Bidder have experience in the manufacturing and delivering of wrought steel wheels for transit railcars.
- b. Wheels shall be manufactured in a facility that has been certified to meet the requirements of the Association of American Railroads Quality Assurance Program for the manufacture of freight and locomotive wheels.
- c. 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 requiring similar services of similar scope to those required under this Contract.
- d. Evidence showing that the above prerequisites are met is to be submitted with the Bid.

2. REFERENCE DRAWINGS AND DOCUMENTS

The following drawings and documents, called Reference Drawings and Documents, were not prepared by PATH or by others for use in connection with this Contract, but they were prepared for other purposes, such as for other contracts or for design purposes for this or other contracts, and are furnished to the Contractor to give him such information as may be in the possession of PATH. Said drawing or document is as follows:

- Kawasaki Heavy Industries Dwg. No. 1P103810-3031-g, 'Multiple Wear Wheel'

An indication on the Reference Drawings or Documents of the existence or nature of any conditions or materials does not constitute a representation as to the conclusions to be drawn therefrom. It is the responsibility of the Contractor to furnish a finished product meeting the requirements of this Specification.

3. GENERAL AGREEMENT

Within six (6) months of the date of the Purchase Order, the Contractor agrees to manufacture and deliver five hundred (500) 28", Class A, wrought steel, multiple wear wheels for PATH's transit railcars all in strict accordance with the specifications. The Contractor further agrees to assume and perform all other duties and obligations imposed upon him by this Contract.

PATH agrees to pay the Contractor and the Contractor agrees to accept from PATH in full consideration for the performance by the Contractor of all his duties and obligations under this Contract in connection with said work, a compensation determined from the work performed computed at the rates quoted in the Request for Quotation, said work to be measured and said amount to be computed in the manner provided in the Request for Quotation and such compensation only, subject only to the express provisions of this Contract specifically setting forth actual, defined additions to or deductions from compensation.

Said work shall be performed in strict accordance with this specification, and the Contractor further agrees to assume and perform all other duties and obligations imposed upon him by this Contract.

The enumeration in this Form of Contract and in the specifications of particular things to be furnished or done at the Contractor's expense, or without cost or expense to PATH or without additional compensation to the Contractor shall not be deemed to imply that only things of a nature similar to those enumerated shall he so furnish and do, but the Contractor shall furnish all materials and perform all work as required, without

other compensation than that specifically provided, whatsoever changes may be made in the specifications, whatsoever materials and work may be required in addition to that required by the specifications in their present form, and whatsoever obstacles or unforeseen conditions may arise or be encountered.

4. PAYMENT

At the time that the wheels are delivered and accepted, the Contractor shall submit an invoice to PATH for the compensation earned by him in connection with said shipment. For all units that PATH has certified as acceptable, PATH, as an aid to the Contractor and to facilitate his performance, will pay to the Contractor, within 30 days after receipt of said invoice, the amount earned for the units covered by said invoice as set forth in the Purchase Order. The invoice shall state the amount earned and shall be accompanied by such information, as the Engineer shall request. Each invoice shall include the Contractor's Federal ID Number. Sales to PATH as the wholly owned subsidiary of the Port Authority of New York and New Jersey, are currently exempt from New York and New Jersey State and local sales and compensating use taxes and generally from federal taxation. The Contractor certifies that there are no such taxes included in his prices. The compensation set forth herein is the complete compensation to the Contractor, and PATH will not separately reimburse the Contractor for any taxes except if specifically set forth in this Agreement.

"Final Payment", as used herein, shall mean the last payment made by PATH to the Contractor for services rendered under this Contract.

The acceptance by the Contractor, or by anyone claiming by or through him, of a Final Payment shall be and shall operate as a release to PATH of all claims and of all liability to the Contractor for all things done or furnished in connection with the work and sale, and for every act and neglect of PATH and others relating to or arising out of such work and sale, 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 or his sureties from any obligations in connection with this Contract.

The Contractor's agreement as provided in the immediately preceding paragraph above shall be deemed to be based upon the consideration forming part of this Contract as a whole and not to be gratuitous; but in any event even if deemed gratuitous and without consideration, such agreement as provided in the immediately preceding paragraph above shall nevertheless be effective. Such release shall include all claims, whether or not they have yet arisen or have yet been asserted and whether or not in litigation and even though still under consideration by PATH or the Engineer. Such release shall be effective notwithstanding any purported reservation of right by the Contractor to preserve such claim. The acceptance of any check designated as "Final Payment" or bearing any similar designation shall be conclusively presumed to demonstrate the intent of the Contractor that such payment was intended to be accepted as final, with the consequences provided in this numbered clause, notwithstanding any purported reservation of rights.

The Contractor agrees that he shall not be entitled to, and hereby waives any right he might otherwise have to, and shall not seek any judgment whether under this Contract or otherwise for any such final payment or for an amount equivalent thereto or based thereon, or for any part thereof, if such judgment would have the effect of varying, setting aside, disregarding or making inapplicable the terms of this numbered clause or have the effect in any way of entitling the Contractor to accept such Final Payment or an amount equivalent thereto or based thereon or any part thereof other than in the same fashion as a voluntary acceptance of a Final Payment subject to all the terms of this Contract including this numbered clause, unless and until the Contractor should obtain a judgment on any claim arising out of or in connection with this Contract (including a claim based on breach of Contract) for an amount not included in said Final Payment. In any case in which interest is allowable on the amount of the Final Payment, such interest shall be at the rate of 6% per annum for the period, if any, in which such interest is due.

5. LIQUIDATED DAMAGES

The Contractor shall deliver all wheels within six (6) months of the commencement date of this contract.

The Contractor's obligations for the performance and completion of the work within the time provided for in

this Contract are the essence of this Contract. The Contractor guarantees that he can and will complete such performance within the time above provided. Inasmuch as the damage and loss to PATH which will result from the failure of the Contractor to complete such performance within the time above provided will include items of loss whose accurate amount will be incapable or very difficult of accurate estimation, the damages to PATH for delay in the case of such failure on the part of the Contractor shall be liquidated in the sum of Two Hundred Dollars (\$200.00) per each calendar day by which the Contractor fails to complete the delivery in accordance with the provisions hereof.

6. SCOPE

This Specification relate generally to the manufacture and delivery of five hundred (500) 28", Class A, wrought steel, multiple wear wheels for PATH's transit railcars.

This specification requires the doing of all things necessary or proper for or incidental to the matter referred to in the immediately preceding paragraph. In addition, all Work not mentioned in the Specification but involved in carrying out their intent and in the complete and proper execution of the matter referred to in the immediately preceding paragraph are required by this Specification; and the Contractor shall perform the same as they were specifically delineated, described and mentioned.

7. WORK REQUIRED BY THE SPECIFICATION

The work shall include the manufacture and delivery of 28", Class A, wrought steel, multiple wear wheels for PATH's transit railcars. Said wheels shall be manufactured in accordance with Association of American Railroads Specification M-107/M208-2012, hereinafter referred to as AAR M-107/208, and Kawasaki Heavy Industries Dwg. No. 1P103810-3031-g entitled "Multiple Wear Wheel" unless stated otherwise.

Wheel material specifications shall also comply with ASTM Specification A-25, latest edition, Sections 4.1 through 4.2. Wheel classification shall be Class A with carbon content of 0.50%-0.55% with rim heat treatment.

All wheel surfaces except inside wheel bore shall be machined to an approximately 500 micro inch maximum finish before shot peening. Machined area shall be free from sharp tool marks and tears. Machine back hub fillet and front rim fillet by removing at least 0.05 inch from original surface of the fillets to blend with the plate.

Rim heat treatment shall be in accordance with AAR M-107/208, Section 6.

Shot peening shall be in accordance with AAR M-107/208, Section 7. Shot shall be SAE No. S550 to S660 hardened steel as specified in SAE recommended practice J827. All unmachined areas shall be free of mill scale after shot peening.

Ultrasonic and magnetic particle inspection shall be in accordance with Section 18 of AAR M-107/208.

Wheel markings shall be on the front hub face in accordance with AAR M-107/208, Sections 17 and Fig. B.5. Design shall be marked "PA". Each wheel shall have its own individual serial number. The serial numbers shall begin with the number 16001 and continue consecutively for the total number of wheels on the Purchase Order.

Certification shall be provided in accordance with AAR M-107/208, Section 19.

Tread contour shall be cylindrical for multiple wear wheels as shown in Figure B.13 of AAR M-107/208.

Groove shall be machined before shot peening of wheel.

Coat only the stamped areas with cosmoline or an approved equal. The remaining areas shall not be coated.

All snap rings shall be manufactured in accordance with Kawasaki Heavy Industries Drawing No. 1P103810-3031-g. Snap ring material shall be 1018 cold rolled steel, 7/16" nominal diameter. Break all sharp corners and bevel both ends as shown in Attachment 1. Use 71 1/2" long rod to form ring.

All wheels, as supplied to PATH, are to be new and unused and manufactured from new and unused material. Previously owned or reconditioned wheels will not be accepted.

8. DELIVERY OF UNITS

The wheels shipped by the manufacturer shall be stacked on a skid four high with the flanges up as shown in Figure 1 of this Specification. The manufacturer shall ensure that all wheels are packaged for shipment in pairs by tape size. The tape size of two wheels shall be matched to within 61 tape size. The wheels shall be secured on the skid with four studs and a length of hard wood through the bore of the four wheels. Each skid shall be shrink wrapped and sealed in plastic. The wheels shall be delivered on an open flatbed truck that will make them accessible for side loading and unloading.

The Contractor shall deliver all shipments to PATH's premises in Harrison, New Jersey at the Car Equipment Division facility. Units are to be delivered between the hours of 7:00 a.m. and 2:00 p.m. PATH will unload the units from the trucks. The loading and unloading of the units shall be under the driver's direction.

9. INSPECTIONS AND TESTS

All wheels shall be subject to mill inspection and acceptance by PATH's designated inspection agency at the wheel manufacturer's facility. The vendor is to notify PATH of his manufacturing schedule so that PATH may witness such manufacturing. The vendor is to notify PATH at (973) 350-3961 to coordinate the inspection.

After delivery a final inspection of the wheels will be made by the Engineer at PATH's Car Equipment Division facility in Harrison, NJ. If any units have been damaged or for any reason do not comply with the requirements hereof, the Contractor will be notified in writing and shall replace the units at his own cost and expense. After such replacement, if found satisfactory by the Engineer, all units will be approved and payment shall be made therefor as provided in the clause hereof entitled "Payment". The place of delivery shall be as follows:

Port Authority Trans Hudson Corp.
Harrison Car Maintenance Facility
Foot of Cape May Street
Harrison, NJ 07029
Attn.: Joseph Gerbasio
Phone: (973) 350-3945

All work, processes of manufacture involved in or related to the performance of the work shall be at all times and places subject to the inspection of the Engineer, acting personally or through a designated inspector. The Engineer shall be the judge of the quality and suitability of the work or methods of repair for the purposes for which they are used. Should they fail to meet his approval they shall be forthwith reconstructed, made good, replaced or corrected, as the case may be, by the Contractor at his own expense. The fact that the inspectors have accepted the material and workmanship shall not relieve the Contractor from his obligation to supply other material and workmanship when so ordered by the Engineer. The Contractor, at his own expense, shall furnish such facilities and give such assistance for inspection as the Engineer may direct. In the case of materials required by the Specifications to be inspected in the factory or plant, and in the case of any other items which the Engineer may designate, the Contractor shall secure for the Engineer and his Inspectors free access to all parts of such factories or plants and shall furnish to the Engineer three copies of purchase orders, two copies of mill shipping statements and four copies of shipping statements. Moreover, in the case of such materials to be factory or plant inspected, the Contractor shall give at least ten days notice to the Engineer of his intention to commence the manufacture or preparation of such materials. The Contractor shall furnish such test specimens, certified test data, samples or other materials as may be required to determine the acceptability of the materials.

The Engineer shall be given notice to witness the tests at least five (5) working days in advance of the date on which such tests will be conducted.

10. GUARANTEE

The Contractor shall unconditionally guarantee that the wheels as supplied are free from defects and have satisfied all quality requirements in accordance with the provisions of AAR M-107/208 and this specification.

Wheels that show material defects subsequent to original inspection and acceptance at the manufacturer's works, or elsewhere, shall be rejected and replaced by the Contractor at no cost to PATH.

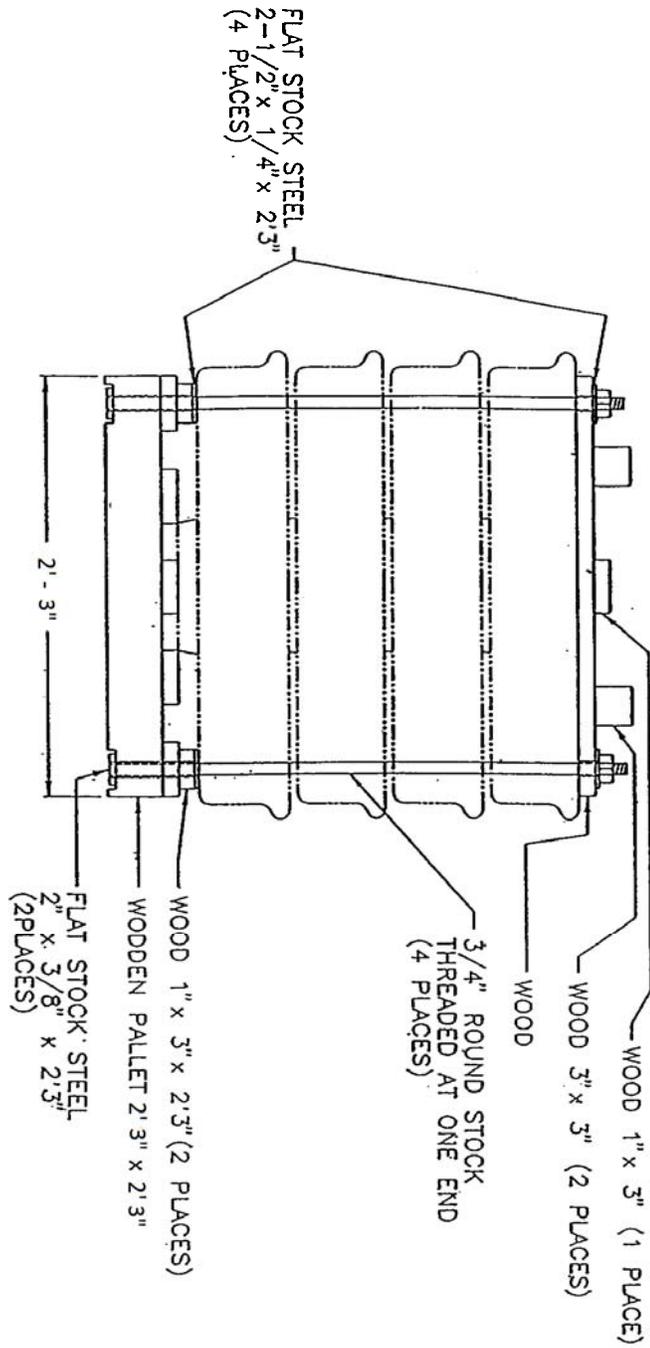
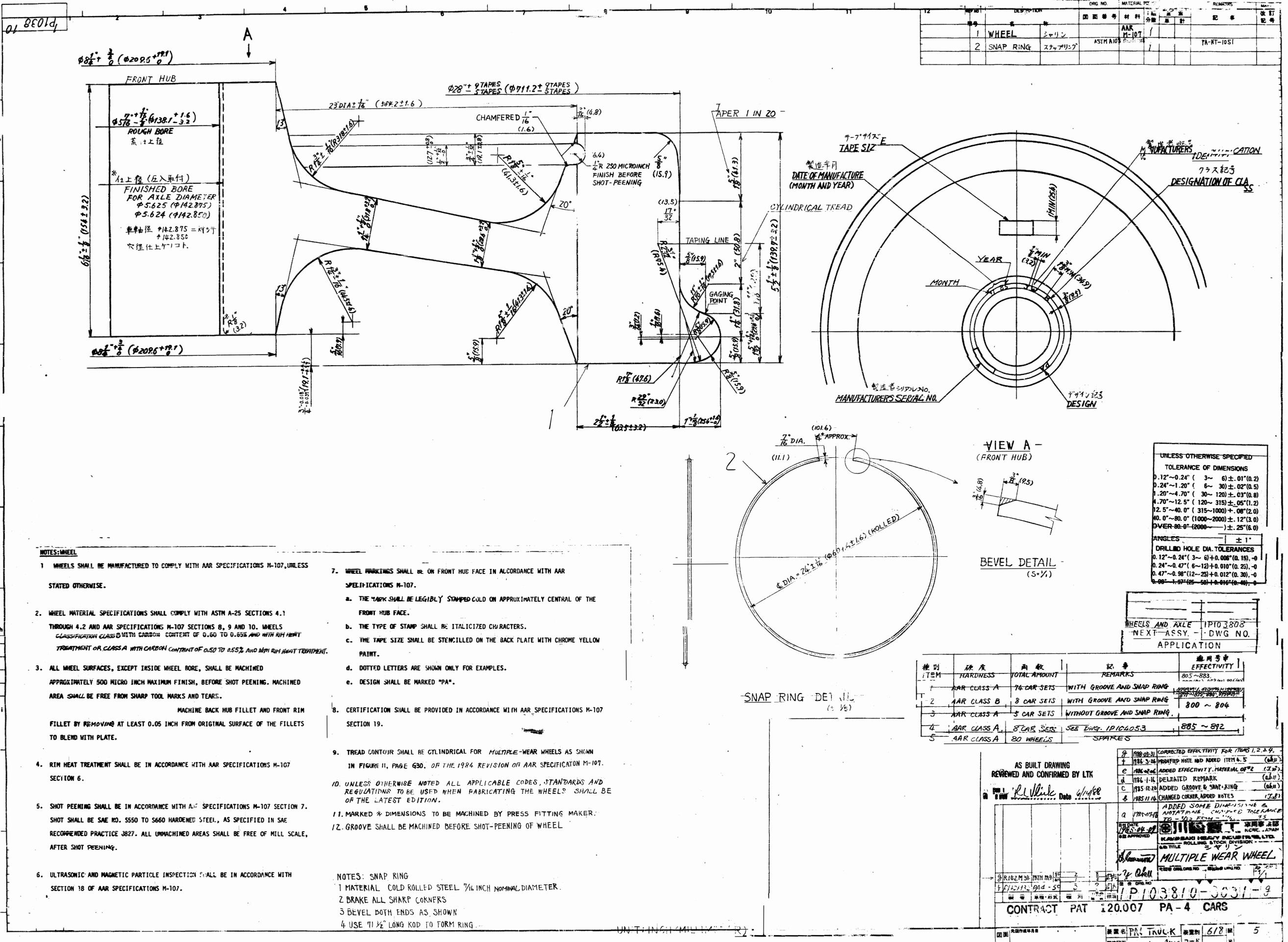


FIGURE 1
PACKAGING OF PATH WHEELS
PA-5, 28" WHEELS



NO.	DESCRIPTION	国番号	材料	分	計	備考	改訂
1	WHEEL	シャリン	AAK M-107				
2	SNAP RING	スナップリング	ASTM A107				TA-NT-1051

NOTES: WHEEL

- WHEELS SHALL BE MANUFACTURED TO COMPLY WITH AAR SPECIFICATIONS M-107, UNLESS STATED OTHERWISE.
- WHEEL MATERIAL SPECIFICATIONS SHALL COMPLY WITH ASTM A-25 SECTIONS 4.1 THROUGH 4.2 AND AAR SPECIFICATIONS M-107 SECTIONS 8, 9 AND 10. WHEELS CLASSIFICATION CLASS B WITH CARBON CONTENT OF 0.60 TO 0.65% AND WITH RIM HEAT TREATMENT OR CLASS A WITH CARBON CONTENT OF 0.50 TO 0.55% AND WITH RIM HEAT TREATMENT.
- ALL WHEEL SURFACES, EXCEPT INSIDE WHEEL BORE, SHALL BE MACHINED APPROXIMATELY 500 MICRO INCH MAXIMUM FINISH, BEFORE SHOT PEENING. MACHINED AREA SHALL BE FREE FROM SHARP TOOL MARKS AND TEARS.
MACHINE BACK HUB FILLET AND FRONT RIM FILLET BY REMOVING AT LEAST 0.05 INCH FROM ORIGINAL SURFACE OF THE FILLETS TO BLEND WITH PLATE.
- RIM HEAT TREATMENT SHALL BE IN ACCORDANCE WITH AAR SPECIFICATIONS M-107 SECTION 6.
- SHOT PEENING SHALL BE IN ACCORDANCE WITH AAR SPECIFICATIONS M-107 SECTION 7. SHOT SHALL BE SAE NO. S550 TO S660 HARDENED STEEL, AS SPECIFIED IN SAE RECOMMENDED PRACTICE J827. ALL UNMACHINED AREAS SHALL BE FREE OF MILL SCALE, AFTER SHOT PEENING.
- ULTRASONIC AND MAGNETIC PARTICLE INSPECTION SHALL BE IN ACCORDANCE WITH SECTION 18 OF AAR SPECIFICATIONS M-107.
- WHEEL MARKINGS SHALL BE ON FRONT HUB FACE IN ACCORDANCE WITH AAR SPECIFICATIONS M-107.
 - THE MARK SHALL BE LEGIBLY STAMPED GOLD ON APPROXIMATELY CENTRAL OF THE FRONT HUB FACE.
 - THE TYPE OF STAMP SHALL BE ITALICIZED CHARACTERS.
 - THE TAPE SIZE SHALL BE STENCILLED ON THE BACK PLATE WITH CHROME YELLOW PAINT.
 - DOTTED LETTERS ARE SHOWN ONLY FOR EXAMPLES.
 - DESIGN SHALL BE MARKED "PA".
- CERTIFICATION SHALL BE PROVIDED IN ACCORDANCE WITH AAR SPECIFICATIONS M-107 SECTION 19.
- TREAD CONTOUR SHALL BE CYLINDRICAL FOR MULTIPLE-WEAR WHEELS AS SHOWN IN FIGURE 11, PAGE 630, OF THE 1984 REVISION OF AAR SPECIFICATION M-107.
- UNLESS OTHERWISE NOTED ALL APPLICABLE CODES, STANDARDS AND REGULATIONS TO BE USED WHEN FABRICATING THE WHEELS SHALL BE OF THE LATEST EDITION.
- MARKED * DIMENSIONS TO BE MACHINED BY PRESS FITTING MAKER.
- GROOVE SHALL BE MACHINED BEFORE SHOT-PEENING OF WHEEL.

- NOTES: SNAP RING
- MATERIAL COLD ROLLED STEEL 7/16 INCH NOMINAL DIAMETER.
 - BRAKE ALL SHARP CORNERS
 - BEVEL BOTH ENDS AS SHOWN
 - USE 7/16" LONG ROD TO FORM RING.

UNLESS OTHERWISE SPECIFIED

TOLERANCE OF DIMENSIONS

0.12"~0.24"	(3~6)	±0.01" (0.2)
0.24"~1.20"	(6~30)	±0.02" (0.5)
1.20"~4.70"	(30~120)	±0.03" (0.8)
4.70"~12.5"	(120~315)	±0.05" (1.2)
12.5"~40.0"	(315~1000)	±0.08" (2.0)
40.0"~80.0"	(1000~2000)	±0.12" (3.0)
OVER 80.0"	(2000~)	±0.25" (6.0)

ANGLES ±1°

DRILLED HOLE DIA. TOLERANCES

0.12"~0.24"	(3~6)	+0.006" (0.15), -0
0.24"~0.47"	(6~12)	+0.010" (0.25), -0
0.47"~0.98"	(12~25)	+0.012" (0.30), -0
0.98"~1.97"	(25~50)	+0.016" (0.40), -0

WHEELS AND AXLE 1P103808
NEXT ASSY. - DWG NO.
APPLICATION

類別	硬度	両数	記号	適用号中
ITEM	HARDNESS	TOTAL AMOUNT	REMARKS	EFFECTIVITY
1	AAR CLASS A	74 CAR SETS	WITH GROOVE AND SNAP RING	805~883
2	AAR CLASS B	8 CAR SETS	WITH GROOVE AND SNAP RING	800~804
3	AAR CLASS A	3 CAR SETS	WITHOUT GROOVE AND SNAP RING	
4	AAR CLASS A	8 CAR SETS	SEE DWG. 1P104053	885~892
5	AAR CLASS A	80 WHEELS	SPAKES	

AS BUILT DRAWING
REVIEWED AND CONFIRMED BY LTK

DATE: 4/1/88

REVISIONS:

9	1988-03-31	CORRECTED EFFECTIVITY FOR ITEMS 1, 2, & 4.
8	1988-03-24	MODIFIED NOTE AND ADDED ITEM 4.5 (0.15)
7	1988-02-06	ADDED EFFECTIVITY, MATERIAL OF 2 (0.15)
6	1988-01-14	DELETED REMARK (0.15)
5	1985-12-20	ADDED GROOVE & SNAP RING (0.15)
4	1985-11-16	CHANGED ORDER, ADDED NOTES (0.15)

ADDED SOME DIMENSIONS & ANNOTATIONS TO CLARIFY TOLERANCE RANGE TO -0.02 FROM 0.00.

DATE: 1988-04-01

BY: [Signature]

FOR APPROVAL: [Signature]

REVISIONS: [Signature]

DATE: 4/1/88

1P103810-3031-9

CONTRACT PAT 120.007 PA-4 CARS

図面: 6/18

検査: 6/18

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