THE PORT AUTHORITY OF NY & NJ
PROCUREMENT DEPARTMENT
4 WORLD TRADE CENTER
150 GREENWICH STREET, 21ST FL.
NEW YORK, NY 10007

3/29/2016

ADDENDUM # 4

To prospective Proposer(s) on RFP # 45178 for Design, Fabricate and Deliver Four (4) Switching Locomotives for PATH

Proposals now due 4/12/2016, no later than 2:00PM

Proposals originally due 3/8/2016, no later than 2:00PM

I. CHANGES/MODIFICATIONS

The following changes/modifications are hereby made to the solicitation documents:

1. In PATH Locomotive Specification, 13.5.1, Space and Equipment Mounting Requirements, delete last sentence and replace with the following:

"In the Attachment K, requirements for the PA5 mechanical and electrical aspects for the ATC system to be installed." (Attachment K is included with this Addendum # 4.)

2. In PATH Locomotive Specification, 17.7.1.4 and 17.8, delete all references to "twelve point trainline" and replace with "27-pin arrangement".

3. In PATH Locomotive Specification, 2.1.4, Operating Physical Environment, in the second to last paragraph, delete the last sentence, "The Contractor shall survey the locations of all third rail installations as part of the clearance study defined in this section".

4. In PATH Locomotive Specification, on page 24, 2.2, in the paragraph beginning with "Maximum length of locomotive shall be determined by vehicle going around a 110-foot radius…" change "110-foot radius" to "115-foot radius".

5. In PATH Locomotive Specification, 15.15.3.1, Wire Harness, in the fourth sentence, change "Wire entrances shall be no more than 8 inches" to "Wire entrances shall be no less than 8 inches".

6. In Attachment E, Section 13, Insurance Procured by the Contractor, seventh paragraph, last sentence, delete in its entirety and replace with the following, "In the event of a claim and upon request by the Port Authority, the Contractor shall furnish to the General Manager, Risk Financing, a certified copy of each policy, including the premiums."

7. In Attachment E, Section 13, Insurance Procured by the Contractor, ninth paragraph, first sentence, delete in its entirety and replace with the following, "Renewal certificates of insurance or policies shall be delivered to the Facility Contractor Administrator, Port Authority within fifteen (15) days after the expiration date of each expiring policy."

8. In Exhibit A, Federal Transit Administration, Required Contract Provisions, delete Appendices A1 – A5 in their entirety and replace with the attached revised Appendices A1 – A5.

9. In Attachment C, Path Locomotive Specifications, Section 5.2, Coupler, delete "75 lbs." on Page 75, and replace with "150 lbs."

10. In Attachment C, section 5.1, first paragraph, last sentence, delete in its entirety and replace with the following, "The Locomotive shall mechanically couple to PATH's PA5 cars by means of a compromise coupler (supplied by PATH), but not required to operate the brake system on that car."

11. In Attachment C, section 8.2.2.2, delete the last sentence in the first paragraph in its entirety and replace it with the following, "Key shall be pin-in-head star screwdiver as currently used by PATH, or PATH approved equal."

12. In Attachment C, section 2.2, second "Parameter" paragraph, after "Wheel Diameter New" add the following, "in accordance with MWL Brasil attached drawing number EP-2121 Rev. C, or PATH approved equal."

II. PROPOSER'S QUESTIONS AND ANSWERS

The following information is available in response to questions submitted by prospective Bidders. The responses should not be deemed to answer all questions, which have been submitted by Bidders to the Port Authority. It addresses only those questions, which the Port Authority has deemed to require additional information and/or clarification. The fact that information has not been supplied with respect to any questions asked by a Bidders does not mean or imply, nor should it be deemed to mean or imply, any meaning, construction, or implication with respect to the terms.

The Port Authority makes no representations, warranties or guarantees that the information contained herein is accurate, complete or timely or that such information accurately represents the conditions that would be encountered during the performance of the Contract. The furnishing of such information by the Port Authority shall not create or be deemed to create any obligation or liability upon it for any reason whatsoever and each Bidder, by submitting its Bid, expressly agrees that it has not relied upon the foregoing information, and that it shall not hold the Port Authority liable or responsible therefor in any manner whatsoever. Accordingly, nothing contained herein and no representation, statement or promise, of the Port Authority, its Commissioners, officers, agents, representatives, or employees, oral or in writing, shall impair or limit the effect of the warranties of the Bidder required by this Bid or Contract and the Bidder agrees that it shall not hold the Port Authority liable or responsible therefor in any manner whatsoever.
The Questions and Answers numbering sequence will be continued sequentially in any forthcoming Addenda that may be issued.

Q1. Attachment C contains a table of contents on page 2 which includes references to Appendices A and B, Attachment D (Information Technology Provisions), and relevant drawings. Please identify where these documents maybe found.
A1. See Addendum # 3 dated 3-16-16.

Q2. Attachment C, Section 2.2: "Truck maximum wheelbase = 6 feet, 10 inches". Would a different wheelbase that demonstrated the truck can negotiate the PATH minimum curves be acceptable?
A2. No.

Q3. Attachment C, Section 6.2.1: "The cab shall be arranged to permit Locomotive operation by a train operator seated or standing at the control stand". What, if any, are the clearance requirements in the standing position with respect to the operator's seat? Do the 5th percentile female to the 95th percentile male requirements of article 6.1 apply to both the standing and seated positions?
A3. Yes.

Q4. Attachment C, Section 6.6.1: "A deadman's feature shall be incorporated…" Is the deadman button similar to the NYCT work locomotives or is the deadman lever as incorporated into the existing PATH AEG controller throttle handle the only acceptable configuration? Would a freight locomotive vigilance device which monitors operator movement of the controls and queries acknowledgement of the operator be acceptable?
A4. The deadman feature integral to master controller handle is the desired scheme since uniformity of operation across the fleet is required. Per PATH Locomotive Specification section 6.6.8.3, Deadman Control shall be typical of those used on current locomotives..

Q5. Attachment C, Section 9.2.2: "Carbody shall be grounded to all four axels in the locomotive through axle mounted ground brushes". Since this vehicle is getting propulsion power from the diesel engine and not the third rail, are alternate grounding configurations acceptable in lieu of axle ground brushes?
A5. Grounding scheme is to be as specified in Attachment C.

Q6. Attachment C, Section 10.1: "…driving two (2) AC or DC traction motors each". If traction motors are proposed, one motor drives both axles in the front truck and one motor drives both axles in the rear truck. If a transmission is proposed, the transmission has dual outputs with one output in each direction. Each output drives the axles in its respective trucks. Is there a preference?
A6. Propulsion system is to be as specified in Attachment C.

Q7. Attachment C, Section 10.2: "The average radiator cooling airflow exhaust velocity and temperature across all exhaust outlets concurrently shall not exceed 26 MPH and 191 F respectively…". In addition, the requirement for separate fans and non-stacking of the individual heat exchangers limits the options for the designer especially in a narrow-hood locomotive. Is there some flexibility with these requirements?
A7. No.

Q8. Attachment C, Section 10.15: "This system shall be powered by a dedicated diesel engine/generator". Would PATH consider a third-rail powered layover system as an alternate to a whole separate power plant?
A8. No.

Q9. Attachment C, Section 13.5, paragraph 3: "The locomotives shall be equipped with interfaces that will allow its subsequent equipping with a CBTC subsystem". It is our understanding that the air brake system shall be similar to the Wabco RT-2 system which is used on the PATH work cars. Penalty braking has been accomplished by venting brake pipe pressure. From a functional (not space or equipment) perspective, does a CBTC interface imply the trainborne CBTC equipment shall enforce a train control violation of authority by venting brake pipe pressure to initiate a penalty brake application? If so, then it could be considered that a safety control magnet valve and any other associated brake pipe vent valves and piping all that is required to satisfy this requirement.
A9. The understanding is correct as stated above.

Q10. Is PATH considering using consultants to help manage any or all of the technical portions of the procurement? If so, has the consulting firm been decided and could you advise the firm's name?
A10. This is currently under consideration and no firm has been chosen to date.

Q11. General Question – Will PATH accept prior FAI and Testing Documentation completed on a previous project? PATH would certainly have the opportunity to review and comment on said data, however, Contractor would not be required to re-perform testing and qualification unless an item had changed or did not meet PATH's specification.
A11. Subject to PATH review, PATH will accept prior FAI and testing documentation for identical unit/assembly/subassembly used in prior, successful locomotive applications only.

Q12. Attachment C, Section 2.1.5, Exterior Ambient Conditions – Proposer recommends reducing the Summer-Tunnel temperature down to 115°F dry bulb as this temperature is a common derate point for many proposed systems. This temperature exceeds the expected tunnel temperature and can be shown as a service proven temperature performance limit on very similar applications. Please confirm that a max Summer-Tunnel temperature of 115°F dry bulb is acceptable.
A12. Confirmed.

Q13. Attachment C, Section 2.1.5, Exterior Ambient Conditions – Proposer recommends increasing the Winter-Surface temperature up to 0°F dry bulb. This temperature can be shown as a service proven temperature performance limit on very similar applications. Please confirm that a min Winter-Surface temperature of 0°F dry bulb is acceptable.
A13. PATH does not agree with this recommendation.

Q14. Attachment C, Section 2.2, Locomotive Dimension – 2' 11" Clearance from the curve of an inside bench wall to the gauge of running rail results in an extremely tight clearance for a locomotive to operate within, introducing a high likelihood of interference with the inside bench wall. Please confirm that the 2' 11" dimension applies to tangent track only, and please inform proposers of the minimum distance between the gauge of running rail and the inside curve tunnel wall on a 115' and 110' radius curve.
A14. See above "Changes/Modifications" number 4.

Q15. Attachment C, Section 2.5, Performance Requirements – Please provide more information on the grade characteristics. How long is the 5% grade? Is it 5% constant across the entire length?
A15. See attached Grade Chart (8 pages total).

Q16. Attachment C, Section 2.5, Performance Requirements – Proposer suggests a modified approach be taken to determine performance compliance. Proposer suggests PATH supply worst case duty cycle that the locomotive will be expected to perform. Proposer is then capable of showing that the existing locomotive meets the specified duty cycle without derating, through calculation. Can PATH provide a suitable duty cycle for evaluation to allow Proposers to assess performance prior to proposing?
A16. Performance requirements are included in Attachment C, Section 2.1.1.

Q17. Attachment C, Section 3.0, Locomotive Construction and Assembly – Proposer has noted that the locomotive is to meet the requirements of 49 CFR 229.141(b). Proposer's interpretation of PATH's specification is that the design requirements listed in 49 CFR 229.201 – 49 CFR 229.209 are not applicable due to the applicability requirements in 49 CFR 229.203 or because there is some other precedence or waiver that NJ PATH is aware of. Please confirm that this interpretation is correct.
A17. Proposer's interpretation is correct.

Q18. Attachment C, Section 3.7.5, Electrical Interface – This section states that cable entry into enclosures in the engine room shall be no less than 8" above finished floor. Section 15.15.3.1 states that wire entrances shall be no more than 8" from top of roof or bottom of floor. Please clarify which section is correct as these statements conflict.
A18. See above "Changes/Modifications" number 5.

Q19. Attachment C, Section 5.2, Coupler – Proposer recommends the force to move the coupler laterally be increased from 75 lbs. to 200 lbs. Based on service proven experience, 200 lbs. is the minimum force-to-move the coupler achievable with the type of coupler system specified. Please confirm that a 200 lb. force to move the coupler is acceptable.
A19. PATH is willing to accept an increase in the limit from 75 lbs. to 150 lbs. See above "Changes/Modifications" number 9.

Q20. Attachment C, Section 6.4.4, Windshield Washer – Proposer recommends placing the washer reservoir fill outside the locomotive cab to prevent tampering with the washer fluid. Please confirm that a reservoir fill outside the locomotive cab is acceptable.
A20. No, PATH requires that the washer reservoir fill be located inside the cab.

Q21. Attachment C, Section 10.7.2 Battery Enclosure – A service proven design already exists where the battery box is located above floor and is fully vented. Please confirm that an above the floor battery box is acceptable.
A21. This would be acceptable. However, location and configuration are subject to approval by PATH for adequate maintainability.

Q22. Attachment C, Section 10.10.4, Terminals and Leads – In order to meet section 4.3, Truck Assembly; traction motor connections use a connector fitting for easy removal and maintenance. A buss bar connection is not recommended as it interferes with the ease of removal. Please confirm that a connector based connection is acceptable.
A22. PATH requires the buss-bar connections.

Q23. Attachment E, Section 9. Title to Materials - Proposer requests that title and risk of loss for the locomotives transfer upon Delivery to PATH.
A23. Requested change is not amenable. See Attachment E, Section 9, Title to Materials.

Q24. Attachment E, Section 11(a) and (b) Payment – The payment scenarios outlined would create a substantially cash negative situation for the Contractor. Would PATH agree to negotiate or consider suggestions for an alternate milestone payment schedule with a goal of achieving a neutral cash flow?
A24. No.

Q25. Attachment E, Section 13. Insurance Procured by the Contractor – Proposer's understanding is that the Contractor will not be required to perform 'work' on railroad property. Therefore, Proposer is not clear as to why Railroad Protective Liability Insurance is required. Bidder's General Liability Insurance does cover its activities near the railroad tracks. Please advise if this is acceptable in lieu of Railroad Protective Liability Insurance.
A25. Yes.

Q26. Attachment E, Section 13. Insurance Procured by the Contractor – Proposer's policies do not include a provision that the policy may not be canceled, terminated, or modified without thirty (30) days' prior written notice. Contractor will, however, notify the Port of Authority NY and NJ in the event of any changes to its policies. Please advise if this is acceptable.
A26. Yes.

Q27. Attachment E, Section 13. Insurance Procured by the Contractor - Contractor does not provide policies or premiums, it will supply applicable certificates of insurance. Therefore, Proposer requests striking the following text, "Upon request by the Port Authority, the Contractor shall furnish to the General Manager, Risk Financing, a certified copy of each policy, including the premiums."
A27. See above "Changes/Modifications" number 6.

Q28. Attachment E, Section 13. Insurance Procured by the Contractor – Coverage renewal occurs on the date of required renewal, not fifteen (15) days in advance. Therefore, the following change is requested: "Renewal certificates of insurance or policies shall be delivered to the Facility Contractor Administrator, Port Authority within fifteen (15) days after the expiration date of each expiring policy."
A28. See above "Changes/Modifications" number 7.

Q29. Attachment C, Section 1.6.1 Definitions: Would PATH be open to modifying the definition of "Conditional Acceptance" as follows: shall mean acceptance into service of any of the delivered Locomotives by the Project Manager on condition that the Contractor make repairs or other corrective action necessary to remedy any Open Items, such as defect or deficiencies, whereupon such completion of the repairs or corrective actions would lead to the Final Acceptance of the Locomotive. To make it clear, any instance of "acceptance" throughout the RFP is referred to as Conditional Acceptance, unless otherwise specifically noted.
A29. No.

Q30. Attachment C, Section 2.2, PATH has specified a 34" wheel. Does PATH have a preferred wheel to use? If so please provide drawing of wheel and vendor details for the wheels.
A30. Yes, see above Changes/Modifications number 12.

Q31. Attachment C, Section 2.3.1, Does the Max Wheel load take in consideration 4 or 6 axle configurations?
A31. Max Wheel load does not take into account any axle configuration.

Q32. Attachment C, Section 2.5.3, Max speed is noted 25mph. Can the locomotive be capable of achieving higher operating speeds?
A32. Yes, as long as it can be limited to 25 mph under the conditions noted in Attachment C, Section 2.5.3.

Q33. Attachment C, Section 2.5.4, notes that the brake performance shall be compatible with existing PATH work cars. Please provide brake performance ratings for path work cars.
A33. See Attachment C, Section 11.2.

Q34. Attachment C, Section 2.6.3, Push-to-Test feature for LED'S. Is a remote (wireless) design acceptable?
A34. No.

Q35. Attachment C, Section 2.6.3, Is an HMI self-diagnostic system acceptable?
A35. Cannot be determined at this point. Details of the proposed system must be submitted in your proposal.

Q36. Attachment C, Section 3.3.2.4.1, Please provide a copy of PATH approved format for the stress analysis.
A36. Stress analysis requirements are detailed in Attachment C. Contractor shall include all items listed in this section in their stress analysis.

Q37. Attachment C, Section 5.0, By using the specified Wabtec Coupler System, will this system interface with all coupling requirements for all PATH cars?
A37. Yes, see Change/Modification Number 10 above.

Q38. Attachment C, Section 5.0, Please provide braking interface requirements of all rail vehicles to operate brakes.
A38. See drawings P-0012A and P-0012B.

Q39. Attachment C, Section 6.4.1, Please provide details of acceptable seating currently in use by the rail.
A39. Details of operator's seat are defined in Attachment C.

Q40. Attachment C, Section 6.4.9, Is wireless diagnostics acceptable?
A40. No. As per software requirements in Attachment D

Q41. Attachment C, Section 6.4.10, Is a primary disconnect located in battery compartment?
A41. No, as per Attachment C, section 6.4.10.

Q42. Attachment C, Section 6.6.1, Does PATH have a preferred control stand design? If so, please provide details.
A42. This is all described in Attachment C. Contractor shall submit layouts of the cab and panels

Q43. Attachment C, Section 7.1, What is the load requirements for the 37.5 Vdc system?
A43. This should be defined by the builder, based on their design.

Q44. Attachment C, Section 8.2.2.2, Please provide details of PATH approved by Torx key.
A44. See above "Change/Modifications Number 11.

Q45. Attachment C, Section 9.0, Is an engine mounted alternator required or can the electrical system be designed to provide voltage range?
A45. Question is not understood.

Q46. Attachment C, Section 9.0, Is a 24 VDC operating system available?
A46. No.

Q47. If Proposer wants to submit multiple options, ie. AD, DC, Hybrid, how should they be presented? Three separate proposals or three separate pricing sections within one proposal?
A47. See Proposal Submission Requirements of the RFP, Section 8(F), page 12.

Q48. Progress payments. What if we were to build in tandem, requiring more cash outlay, resulting in an accelerated program and delivery date. Would this qualify for progress payments?
A48. No.

Q49. Is there a bonus for finishing significantly early?
A49. No.

Q50. Is there any dollar limit on engineering cost a proposer can submit?
A50. All engineering costs are to be built into the cost of each Locomotive.

Q51. If we can complete in earlier time frame, are there any restrictions on receiving final payments?
A51. As each Locomotive is received and accepted the payment process will be initiated. Final payment will not be made until all 4 Locomotives are delivered and accepted and spare parts are delivered and accepted.

Q52. Specification, Section 1.2, first paragraph, please confirm that EPA Tier 4 Final emissions is required for this procurement.
A52. Yes, tier 4 is required. See Section 10.3 Exhaust.

Q53. Specification, Section 2.2, This section states that the height of the coupler from the top of rail to the centerline of the coupler shall be 2'3". This seems to be an extremely low coupler height for similar equipment. Please confirm that the height from the top of the rail to the centerline of the coupler is 2'3".
A53. Confirmed.

Q54. Attachment C, Section 2.2: "Maximum length, center to center of trucks". Is there some flexibility in the center to center dimension between trucks? Moving the trucks closer to the end sheets opens up space in the underframe for components and lengthens the driveshaft distance which reduces the driveshaft angle. Request that a maximum center to center requirement be eliminated, provided the vehicle is shown to satisfy all clearance considerations during curves.
A54. No change is considered.

Q55. Attachment C, Section 11.3.5: "Locomotive car body piping shall be seamless copper tubing with DOT approved compression type fittings". Is stainless steel piping an acceptable equivalent to copper?
A55. No change is considered. See Locomotive Specification, Section 11.3.5.

Q56. Article 15.16.2: "All electrical terminal points and terminal boards shall have brass studs and connections, each of which shall be locked using a single brass nut with brass flat washer and a plated spring-type lock washer". Some locomotive manufacturers have found that tension clamp terminal boards provide a better termination point for control wiring over studs and nuts. Would PATH consider the use of tension clamp terminal boards?
A56. PATH has no objection to the use of tension clamp terminal boards provided the contractor is consistent across all locations.

Q57. Would the use of a recently proposed truck in a different PATH solicitation for a piece of work equipment be acceptable for use in this Locomotive RFP?
A57. Trucks used for work equipment would not be acceptable for use in this RFP.

This communication should be initialed by you and annexed to your Proposal upon submission.

In case any Proposer fails to conform to these instructions, its Proposal will nevertheless be construed as though this communication had been so physically annexed and initialed.

THE PORT AUTHORITY OF NY & NJ

SELENE ORTEGA, MANAGER
COMMODITIES AND SERVICE DIVISION

PROPOSER'SFIRM NAME: _____

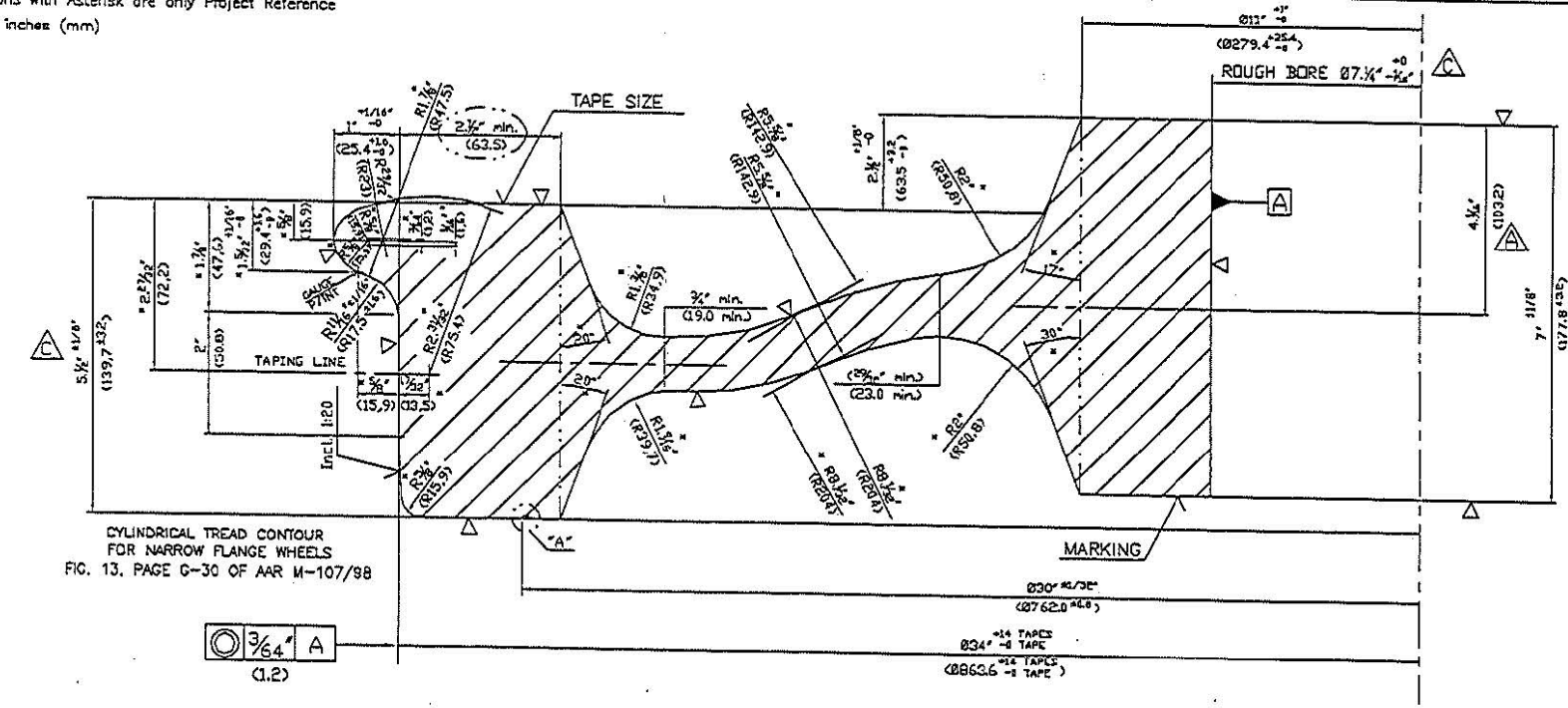
INITIALED: _____

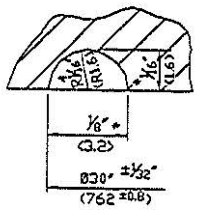
DATE: _____

QUESTIONS CONCERNING THIS ADDENDUM MAY BE ADDRESSED TO RICHARD GREHL, WHO CAN BE REACHED AT (212) 435-4633 OR AT RGREHL@PANYNJ.GOV.

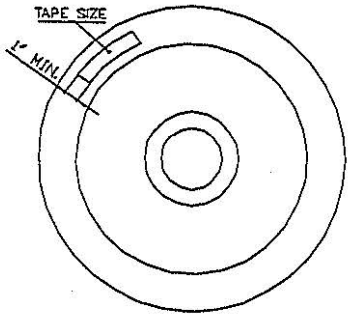
(*) Dimensions with Asterisk are only Project Reference

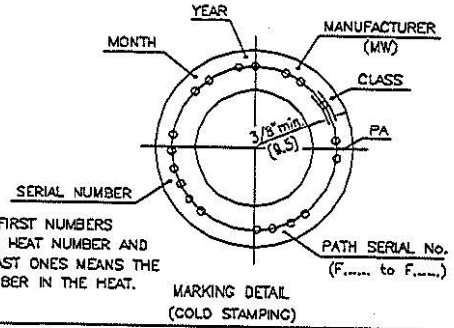
Dimensions: inches (mm)





DETAIL "A"





THE FOUR FIRST NUMBERS MEANS THE HEAT NUMBER AND THE TWO LAST ONES MEANS THE SERIAL NUMBER IN THE HEAT.

MARKING DETAIL (COLD STAMPING)

SPECIFICATIONS

- According to AAR M-107, latest issue.
- Material: class B.
- Heat treatment: tread hardened and tempered.
- Hardness: 277 to 341 HB.
- Roughness: acc. to this drawing.
- Protection: Protective varnish, all surfaces.
- The plate surfaces of all wheels shall be shot peened

ROUGHNESS:

▽ – 250 to 500 µin (6.3 to 12.5 µm)

REV.	DATA	ELAB.	APROV.	DESCRICAO
C	11/08/04	Fábio	Laerte	Modified where indicated (was 5¼" and ±1/16")
B	23/06/04	Aloísio	Laerte	Noise deadening ring eliminated
A	03/06/04	Aloísio	Laerte	Corrected where indicated, was 63.5.

MWL BRASIL

MWL BRASIL RODAS & EIXOS LTDA

PRODUCT: Ø34" SPECIAL WHEEL

CUSTOMER: PATH/USA

ELAB.	Aloísio	21/05/04
VERIF.	L.Gustavo	21/05/04
APROV.	Laerte	21/05/04
ESCALA	———	
DES. N°: EP-2121		REV. C

Anexo27-PQ.07-03/00

ATTACHMENT K
Mechanical Section for ATC

A **Appendix A – Drawings and Specifications**

B **Appendix B – CBTC Specifications**

Kawasaki is the manufacturer of the PATH PA-5 railcar. ATC equipment is being installed on these cars. In order to comply with an FRA mandate, PATH is installing a new CBTC system on some diesel power equipment. The Contractor must install this new ATC equipment on the Vehicle. The onboard ATC system equipment supplied by Siemens will consist of the following:

1. Onboard Control Unit (OBCU)
2. Miscellaneous Interface Unit (MIU)
3. Carborne Interface Unit (CIU)
4. Module of Measurement of Acceleration (MOMA)
5. Train Unit (TU)
6. Carborne Radio Antenna (CRA)
7. Transponder Interrogator Antenna (TIA)
8. Odometer Pulse Generator (OPG)

The Contractor shall furnish and install the brackets and conduits and shall also install the ATC equipment on the Vehicle so that the vehicle is able to interface with the ATC equipment installed on the wayside, relay rooms, bungalows and PTCC under a separate Contract in order to control functions such as speed (apply brakes if going too fast) or to stop the Inspection Car if it is going to pass a red signal or enter a work area

ATC System will:

- Provide train separation or collision avoidance including collision between train operating over grade crossing
- Prevent overspeed derailments, including derailments related to railroad civil engineering speed restriction, slow orders and excessive speed over switches.
- Prevent incursion into established work zones limits.
- Prevent movement of train through a switch in the improper position.

Included in the RFP are the different components and drawings of the ATC equipment being installed on a PATH PA-5 railcar. Contractor must mount the following equipment in the Vehicle:

1. ATC Control Rack
2. ATC Radio Antenna
3. ATC Radio Unit
4. ATC Speed Sensor
5. Transponder Antenna

ATC Control Rack

1. Location – ATC control rack is to be installed in the ATC Locker near the operator of the Locomotive. Fig 2-1 indicates the maximum envelope of ATC control rack and the connector, opening area for maintenance, mounting points from PATH's PA5 car.

2. Weight – Configuration 1s: 160 lbs. + 53 lbs. (Rack)

3. Outline – The maximum envelope for the ATC control rack is 36.00" H, 23.00" W and 12.00" D plus 4.00" for wiring space.
In addition, the extra space beside the rack (23.00" H x 4.50" W x 12.00" D) is available. Thus the actual equipment dimensions will not exceed the maximum envelope in any running condition.

4. Scope of Supply : Provisions made by the Contractor before ATC Installation. The Contractor will provide (1) four mounting tapped holes (1/2-13 UNC) on the mounting bracket, (2) the locker with louvers and access doors, and (3) support bracket with a mounting hole (10mm dia.) on the post in the locker. The bracket has no paint. Refer to Fig 2-1 (2/5).

   ATC Kit in stage of ATC Installation, Siemens: will provide the ATC kit including (1) ATC control electronics and rack, (2) hardware (1/2" bolts, washers), (3) the wires and cables with wire protection and the connectors, (4) the grounding wire with terminal lug and hardware. The grounding terminal will be ¼"-20UNC. Refer to Fig. 2-1. Contractor shall coordinate with Siemens as required.

   The Contractor shall provide ATC kit including the (1) wire protection (Free Dia bush or equivalent), (2) the top support bracket with hardware to support the top of ATC control rack. Refer to Fig. 2-1 (4/5).

5. Scope of Work (ref): The Contractor shall work using ATC kit as follows:
   a. The ATC Control rack shall be placed on the mounting bracket in the locker and be fastened to the holes by means of ½" hex. Head bolts and washers.
   b. The ATC Control Electronics shall be placed into the ATC control rack and be fastened with hardware.
   c. The top support bracket shall be installed to support ATC control rack by means of 3/8"–16 bolts, self locking stop nuts and washers.
   d. The connector of ATC wires already covered by the protection cover (Glass tube or equivalent) shall be connected to the ATC control electronics.
   e. The ground wire with terminal lug shall be connected to the ground pad.
   f. In order to avoid potential damage to the ATC cables in contact with metal edges of the rack access door, the protection material (Free Dia bush or equivalent) will be installed on the metal edge of the access door.
6. Electrical Interface: Refer to Fig 1 and Electrical Section for ATC.

7. Cooling: Forced cooling is required. The Contractor shall furnish and install the louvers for the ventilation inside the locker. See Fig 2-1. Two inlet louvers: 2" h x 9" w , 2 " h x 5" , two outlet louvers: 2 x 2" h x 9" w. The Contractor is not required to provide any fan unit for cooling purposes.

8. Paint/ Finish: N/A

9. Access Door: The Contractor shall provide three separate access doors: (1) the large hinged folding door, (2) the bolted removable panel at the bottom for periodical maintenance, and (3) the small hinged door fastened by bolts for installation and removable of the ATC control rack. In order to accommodate the size and weight of the ATC Control Rack with Electronics assembly, the Contractor shall provide space for and install the ATC Control Electronics described in the following pages to facilitate the installation and removal

   Each small component contained in the ATC control rack will be slid out into the conductor space. In order to remove the entire assembly of the ATC Control Electronics, all of the internal components must be removed from the ATC control rack as the first step. Then the whole rack assembly will be removed to the conductor space. The front access door in the locker does not have any windows to see inside the locker.

10. Special Tool: Not Applicable

11. Special Remarks: Not Applicable

12. Structure/Strength (static and fatigue, vibration): The Contractor shall comply with FRA and AREMA requirements.

13. Environment: On the PA-5 car, the ATC control rack is enclosed by the side car structure and the locker. The locker panel is made of fiber-reinforced plastic (FRP) and melamine aluminum panel behind side (Terminal Block side) The side structure consists of a stainless steel frame and sheets and lined with glass thermal installation. Refer to Fig 2.1. Comply with FRA and AREMA requirements.

14. EMI/EMC: The Contractor is not required to provide EMI shielding in the ATC locker. It is Siemens' responsibility to control EMI environment within their controller.. The Contractor is responsible for EMI of the terminal connectors only. The Contractor shall perform the EMI field test only once and ATC equipment may not be available when Contractor performs that test

ATC Radio Antenna

1. Location: Two antennas (forward facing) are mounted near the top of the car at the front of the A-car. The antennas are installed behind the FRP (**F**iber Reinforced Plastic) End Bonnet. The end bonnet will be provided with thermal insulation of the glass-fiber on the surface. The Contractor shall provides the space for these antenna as a maximum envelope. Refer to Fig. 2-3.

2. Weight : 5lbs (max) x 2 each (including bracket)

3. Outline: 9.96"h x 8.66"w x 8.92"d

4. Scope of Supply: Provision shall be made by the Contractor before ATC installation. The

Contractor shall provide (1) four 1/4"-20 UNC x 5/8" stud bolts for each antenna on the collision post and (2) the maximum space for ATC antenna installation, and (3) wire support in the cab ceiling area.
ATC KIT in stage of ATC installation: Siemens will provide ATC kit including (1) ATC radio antenna with bracket, (2) hardware (1/4"-20-UNC self-locking stop nuts), (3) wire and connectors. Refer to Fig 2-3.

5. Scope of Work (ref): The Contractor shall work using ATC kit as follows;
   (a) The bracket with antenna shall be installed and fastened by self- locking stop nut. Refer to Fig 2-3.
   (b) The wire (ATC kit) shall be connected to the antenna.

6. Electrical Interface: Siemens will determine the connector type and the location on the antenna so that the connector is accessible from the cab ceiling access panel Contractor shall locate the cable connector on the backside of the Radio Antenna (front and top of the antenna are not accessible). Refer to Fig 1 and Electrical Section for ATC.

7. Cooling: Not Applicable

8. Paint /Finish: Not Applicable

9. Access Panel: ATC Radio Antenna is accessible from the hinged access panel on the cab ceiling. No access cover is provided in the end bonnet. Only the backside of ATC radio antenna is visible through the access panel.

10. Special Tool: Not Applicable

11. Special Remarks: In the ceiling space between the FRP end bonnet and the carbody horizontal stainless steel member, four major items of equipment are located: (1) Communication Radio Antenna, (2) ATC radio antennas, (3) MDS radio antenna and (4) the End Route Destination sign. See Fig 2-3. The antennas have 1.43" nominal distance from the car front FRP end bonnet. However, the clearance is almost filled with the fiber-glass insulation. There is no metallic obstacle in the front of the antenna in the path of the radio signal.

12. Structure / Strength: The Contractor shall comply with FRA and AREMA Requirements

13. Environment: The Contractor shall comply with FRA and AREMA Requirements.

ATC Radio Unit

1. Location: refer to Fig 2-4

2. Weight: Interface Weight: is: 20 lbs max

2. Outline : 5.25":h x 19" w x 12":d

4. Scope of Supply: Provision shall be made by the Contractor before ATC installation. The Contractor shall furnish and install a 19 inch rack size bracket with four tapping holes and ground pad hole (7mm dia each) hung from the carline.
   ATC KIT in stage of ATC installation: Siemens will provide ATC kit including (1) ATC radio unit, (2) hardware (1/4"- 20UNC Bolts, washers), (3) connector (plug and sockets) for the wire going to ATC rack, (4) ground wire. Refer to Fig 2-4.

5. Scope of Work (ref): The Contractor shall work using ATC kit as follows;
   (a) The ATC radio unit shall be slid into the bracket from the front side and fastened by bolts, washers. Refer to Fig 2-4.
   (b) The wire and the ground wire shall be connected to the ATC radio unit.

6. Electrical Interface: Verify that there is enough space to connect the connector (plug) with ATC radio unit in front of and right side of the radio unit. Refer to Fig 2-4. Electrical interface is described in Electrical Section for ATC

7. Cooling: Not Applicable

8. Paint /Finish: Not Applicable

9. Access Panel: There is an access panel on the ceiling panel. Verify that the ATC radio unit is accessible from the access panel and will be fit the front opening of the bracket. Refer to Fig 2-4.

10. Special Tool: Not Applicable

11. Special Remarks: Not Applicable

12. Structure/Strength: The Contractor shall comply with FRA and AREMA requirements.

13. Environment: The Contractor shall comply with FRA and AREMA requirements

ATC Speed Sensor (Odometer Pulse Generator)

1. Location: A-car Truck
   A speed sensor for ATC will be furnished by Siemens to be installed by the Contractor on each traction motor, one per axle (four per car).

2. Weight: 1.22 lbs x 4 each (Encoder with 2m cable)

3. Outline: Leonard + Bauer, model number: GEL-247-V1 G-M200-0.

4. Scope of Supply: Provision shall be made by the Contractor before ATC installation. Contractor shall provide (1) one mounting hole, one blanking plate with hardware, bracket, wire clamp on each traction motor, (2) cleat and bracket, (3) four connectors (receptacle and pins) with dust cap on the wire duct. Refer to Fig 1.
   ATC KIT in stage of ATC Installation:
   Siemens will provide ATC kit including (1) two speed sensors with the lead wire (1,750 mm L) and the connector plug. , (2) hardware (M8-20 or equivalent Bolts, washers). Refer to Fig 2-5.

5. Scope of Work (ref): Contractor shall work using ATC kit as follows;
   (a) Install one Speed sensor with lead wire is installed on the mounting hole on the traction motor (each axle) after taking off the blanking plates.
   (b) The lead wires shall be secured by wire clamps on the traction motor.
   (c) The connectors (plug) shall be connected into the receptacle on the wire duct and secured by a cleat closed to the receptacle on the wire duct. The dust caps with chain on the receptacles will be removed by the Contractor in the field modification.

6. Electrical Interface: In the ATC locker, Contractor shall label and cap the wires of the speed sensor cables and shall secure the cables. Refer to Fig 1 and Electrical Section for ATC.

7. Cooling: Not Applicable

8. Paint/Finish: Not Applicable

9. Access panel: Not Applicable

10. Special Tools: Not Applicable

11. Special remarks: Not Applicable

12. Structure / Strength: The pigtailed cable of the Speed sensor will be shaken and vibrated due to the vertical movement of the truck primary spring. Contractor shall ensure that the pigtailed cable will withstand the movement and vibration when the train is in service.

13. Environment: The Contractor shall comply with FRA and AREMA requirements.

\

Transponder Antenna

1. Location A-car, Refer to Fig 2-8 mounted on the truck (No.1 axle).

2. Weight / Center of Gravity: 14.3 lbs

3. Outline: Fig 2-8

4. Scope of Supply: Before ATC installation, the Contractor shall furnish and install one blanking plate on the wire duct. Refer to Fig 1.
   ATC KIT In stage of ATC installation:
   Siemens: will provide ATC kit including (1) transponder antenna with wire support, (2) hardware (Bolts, self-locking stop nuts, washers), (3) grounding wire with hardware, (4) wire (2,370 mm L) with connectors (plugs and sockets). Cross beam and the wire support shall be provided by Contractor.
   Siemens will provide ATC kit including (1) the mounting support for the cross beam with hardware and (2) connectors (receptacles and pins) on the wire duct.

5. Scope of Work (ref): Contractor shall work using ATC kit according to the following requirement;

   (a) The mounting support shall be installed on the wash board.

   (b) The cross beam shall be installed to the mounting support. (Contractor shall design the cross beam.)

   (c) The transponder antenna shall be installed to the cross beam.

   (d) The wire shall be connected to the transponder antenna.

   (e) The blanking plate will be replaced into the connector (receptacle) on the wire duct.

   (f) The wire shall be installed and connected to the receptacle on the wire duct and the antenna, respectively. The wire shall be secured on the wire support of the cross beam and the transponder antenna.

   (g) The ground wire shall be connected to the ground pad. The antenna has four (4) studs, which match with the holes on the cross beam. No height adjustment can be achieved by this antenna bracket. Nominal Height from TOR is 5.12"(new wheel).

6. Electrical Interface/Case grounding: The cable between the carbody cable cleat and the truck cable cleat will be swung due to truck rotation. Refer to Fig 2-8 (2/8). Provide for these cable connectors to be disconnected when de-trucking. Refer to Fig 1 and Electrical Section for ATC.
7. Metal Free Zone: Place no metal under the antenna. The space below the Transponder Antenna must be metal free so that the transponder can be read when the train goes over it.

8. Paint /Finish: Not Applicable

9. Special Tool: Not Applicable

10. Special Remarks: Not Applicable

11. Not Used

12. Structure / Strength: Contractor shall comply with FRA and AREMA requirements.

13. Environment: Contractor shall comply with FRA and AREMA requirements

Vibration: (1) Static load: Vertical: 9.85g, Lateral: 7.35g, Longitudinal: 7.35g,

(2) Fatigue Load: Vertical +/- 5.35g, Lateral: +/- 4.29g, Longitudinal: +/-4.29g.

ELECTRICAL PORTION FOR AUTOMATIC TRAIN CONTROL

Table of Contents

1.4 Acronyms

A	**Amperes**
ADCL	**All Door Closed and Locked**
ATC	**Automatic Train Control**
ATP	**Automatic Train Protection**
BC	**Brake Cylinder**
CMR	**Cab Make-up Relay**
CNC	**Car Network Controller**
DMKS	**MDC Key SW on Console**
DOR	**Door Open Relay**
DS	**Drum Switch**
EMB	**Emergency Brake**
EMV	**Emergency Magnet Valve**
EP	**Emergency Pipe**
EPPS	**Emergency Pipe Pressure**
ER	**Emergency Relay**
FSB	**Full Service Brake**
FWD	**Forward**
ICD	**Interface Control Document**
LS	**Left Side**
LVDN	**Low Voltage Distribution Network**
LVPS	**Low Voltage Power Supply**
M/C	**Master Controller**
MCN	**Master Controller Network**
MDC	**Master Door Controller**
MDS	**Monitoring and Diagnostic System**
MKS(A)	**MDC Key SW Right**
MKS(B)	**MDC Key SW Left**
mA	**Milli-Amperes**
mph	**Miles Per Hour**
mphps	**Miles Per Hour Per Second**
ms	**Millisecond**
MYW	**(*my-w*) MCS-Yard-Wayside**
NEU	**Neutral**
PEHU	**Passenger Emergency Handle Unit**
PVIS	**Passenger Visual *Infotaiment* System**
PTE	**Portable Test Equipment**
REV	**Reverse**
RS	**Right Side**
SFD	**System Functional Description**
SR	**Shutter Relay**
SVGA	**Super Video Graphics Array**
SW	**Switch**
TCN	**Train Command Network**
TDR	**Time Delay Relay**
TEFB	**Tractive Effort Feed-back**
T/L	**Trainline**
TLC	**Trainline Controller**
TLCN	**TLC Network**
TOD	**Train Operator Display**
TP	**Twisted Pair Cable**
TSP	**Twisted Shielded Pair Cable**
V	**Volt**
W	**Watt**
ZLR	**Zone Light Relay**

3. ATC Operating Modes

ATC system operates in one of the following operating modes.

1) Manual Cab Signal (MCS) Mode
2) Yard Mode
3) Wayside Mode
4) Release Mode
5) ATC Bypass Mode

3.1 Operator Interactions with ATC System

The track Inspection Car shall be equipped with the following devices for a train crew to interact with the ATC System. The devices listed below are provided as a part of the Track Inspection Car builder's scope of supply.

ATC Mode Switch

The switch allows a Train Engineer to select an ATC operating mode. ATC Mode Switch has two positions, MCS and, RELEASE.

ATC Bypass Switch

ATC Bypass Switch has two positions, NORMAL and BYPASS. The switch allows a Train Engineer to activate ATC Bypass Mode. In the ATC Bypass Mode, the train does not accept any control commands from ATC, including Emergency Brake application.

Master Controller

Master Controller is a main input device for a Train Engineer to control movements of the train. The activation of the Master Controller determines an "Active" cab. This is also a primary input device for the Train Engineer to apply Emergency Brake to stop the train.

ATC TOD

ATC Train Operator Display is a LCD display device with touch-screen function built in. TOD allows the train crew to interact with ATC system for expanded functions.

Audible Alarm

Audible alarms to warn the Train Engineer of abnormal conditions as described in technical specifications. See Section 6.11 for details.

4. Train Operating Modes

Trainline Controller (TLC) on the active cab car determines operating mode based on status of Console switch positions, Trainline signals and, various network signals including commands from ATC. A selected train operating mode applies to the entire train.

4.1 Train Operating Modes and ATC Operating Modes

ATC Operating Modes described in the earlier sections are one of variables for TLC to determine Train operating mode. Table 1: ATC and Train Operating Modes shows relationship between the ATC Operating Modes and Train Operating Modes.

In general, Train operating modes follow ATC operating modes with a few exceptions as indicated in the table below.

Table 1: ATC and Train Operating Modes

ATC Operating Modes	Train Operating Modes	Remarks
MCS	MCS	Note 1
Yard		
Wayside		
Release	Release	-
ATC Bypass	ATC Bypass	-
Any	Standby	Note 2
Any	Idle	Note 3
Any	EM Brake	Note 4

Note 1: ATC Operating Mode switches among MCS Mode, Yard Mode and, Wayside Mode, with ATC Mode Switch in "MCS" position. Train operating mode maintains "MCS" Mode under any of these three (3) ATC modes.

Note 2: Train Operating Mode is set to "Standby" Mode, when TLC detects M/C Key Switch in the same car is in OFF position.

Note 3: Train Operating Mode is set to "Idle" Mode, when the TLC logic finds a faulty operation.

Note 4: Train Operating Mode is set to "EM Brake" Mode, when TLC detects Emergency Brake application.

4.2 Train Operating Mode Criteria

One of the main functions of TLC is to generate train control commands other than Emergency Brake application. TLC located only on an active cab car (i.e where M/C Key Switch is placed in RUN position successfully) sends out control commands for train movements.

A TLC consists of two independent logics, providing redundancy to the system. Each TLC logic determines Train operating mode independently, based on input variables to each logic as described in Table 2: TLC Operating Mode Criteria. Those variables include ATC operating modes, EMV Trainline status, Master Controller status and, positions of Master Key Switch, Reverser Switch, ATC Mode Switch and, Bypass Switch. Theoretically, when all are operating normally without any fault, the two logics in the TLC should set the same Train operating mode.

The TLC specification is not believed to be necessary interface information so it is not included herein.

Table 2: TLC Operating Mode Criteria

Train Operating Mode	M/C Key Switch	Reverser	M/C Handle	ATC Mode Switch	ATC Bypass Switch	EMV T/L
Standby	OFF	*any*	*any*	*any*	*any*	*any*
Idle	RUN	*Not in any signal combination listed below OR, any fault is detected*				
MCS	RUN	*any*	*any*	*MCS*	*ATC*	*Not in EMB*
Release	RUN	*any*	*any*	*Release*	*ATC*	*Not in EMB*
ATC Bypass	RUN	*any*	*any*	*any*	*Bypass*	*Not in EMB*
Emergency Brake	RUN	*any*	*any*	*any*	*any*	*EMB*

5. Train System Interface Overview

Master Controller Network carries information from Master Controller to TLC and ATC.

An active ATC sends control commands to TLC through TLC Network.

Car Command Network carries information from TLC to Propulsion system and Network Switch Box (NSB). TLC sends out commands on to CCN and, Propulsion systems receive the commands transmitted over CCN.

Train Command Network is a trainline network, connecting to the neighboring cars through NSB and electrical couples. The control command on the Train Command Network is the same as that of Car Command Network.

ATC Network is dedicated for ATC use and carries information between ATC controllers located throughout the train. The network is a trainline and connects ATC to the neighboring cars via electrical coupler pins.

Car Network A, Car Network B and, Train Network, are part of Monitoring and Diagnostic Systems (MDS). These networks are used to exchange information related to monitoring and diagnostics between Car Network Controller (CNC) and onboard equipments, including ATC. ATC connects to Car Network B for the purpose.

MC Network, TLC Network, Car Command Network and, Train Command Network, each has system redundancy through dual channel communications.

Discrete interfaces between ATC and train systems include, Emergency Brake Control Circuits, Door Control Circuits, Cab Switches, etc.

6. Interfacing Circuitries

This section describes ATC functional interface through conceptual electrical schematics. Some of the schematic representations illustrate both trainline connections and local connections. The figure illustrates various interface points of the ATC System to the train system.

- Throughout this section, this symbol represents a terminal connection on the terminal strip. Numbers found next to each symbol indicate the assigned terminal number.

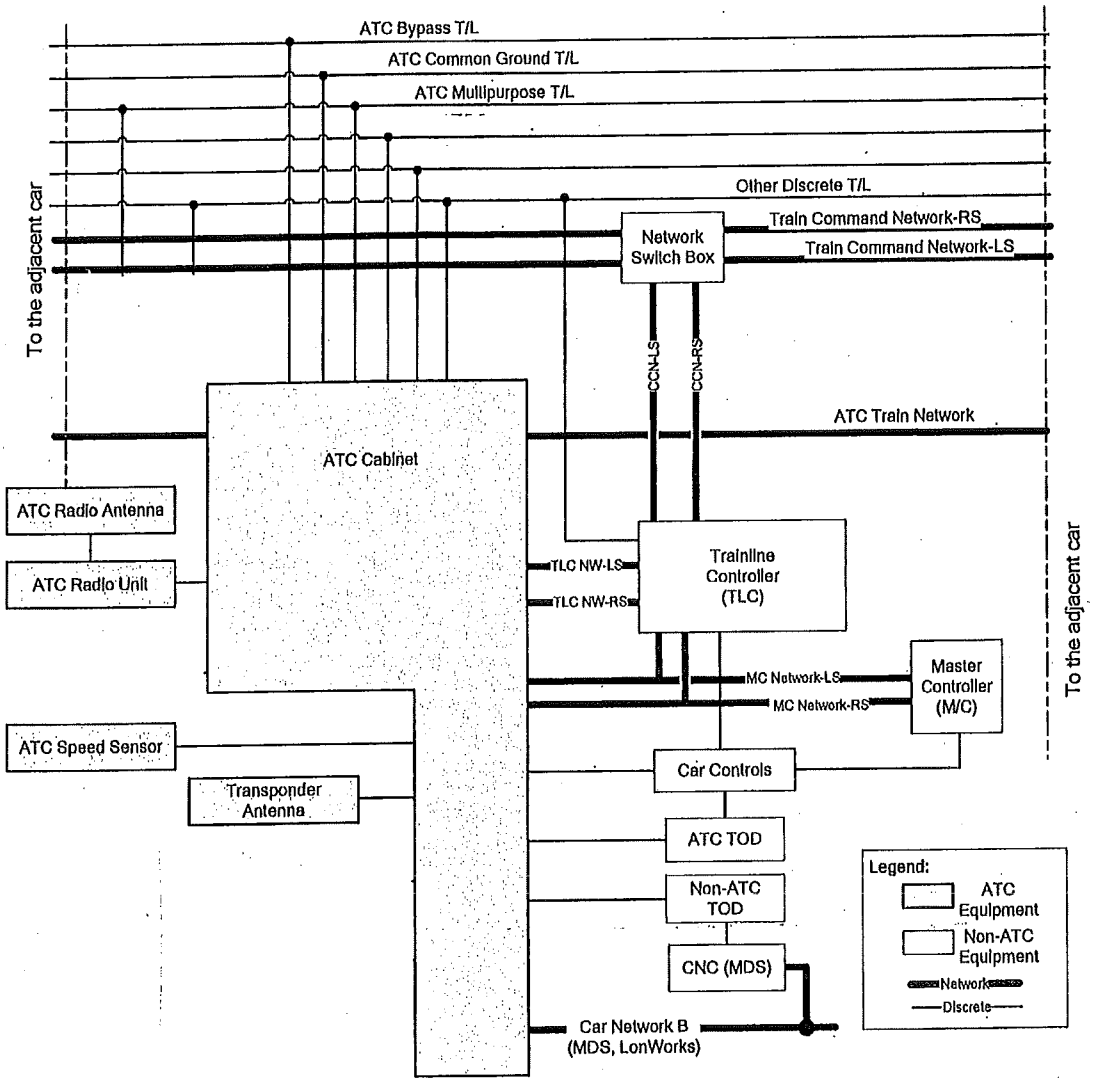


Figure 1 ATC System Interface

6.1 Emergency Brake Controls

ATC manages Emergency Brake applications by inetracting to three major circuits. They are Emergency Magnet Valve (EMV) Trainlines, EMV Circuit and ATC Bypass Circuit.

6.1.1 EMV Trainlines

The Track Inspection Car shall be equipped with a pair of EMV Trainlines, consist of EMV-1 T/L and EMV-2 T/L. The trainlines are de-energized to apply Emergency Brake. ATC, TLC and, Propulsion system interface with EMV-2 Trainline.

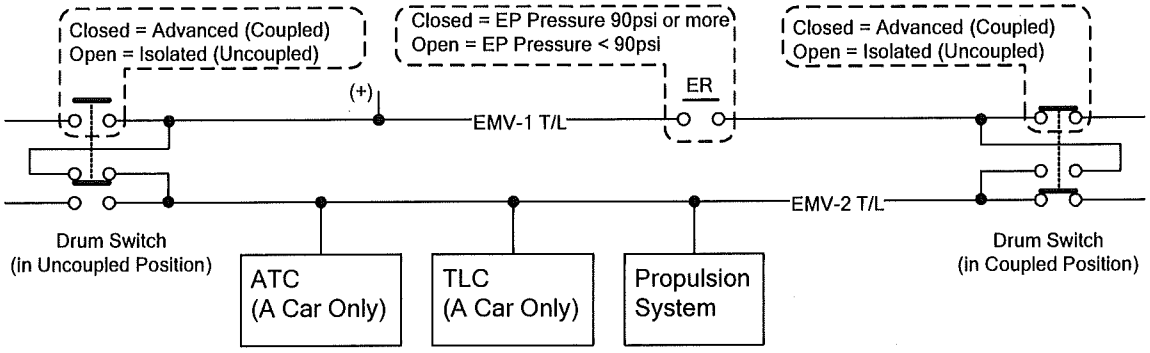


Figure 2: Emergency Brake Trainlines

These trainlines are de-energized while the Emergency Pipe pressure is less than 90 PSI on at least one car within the train consist as shown in Figure 4,and 6. The brake system of each car will maintain the emergency brake application until the trainlines are energized. The ATC shall receive this signal by the isolated input circuit, as shown in Figure 3.

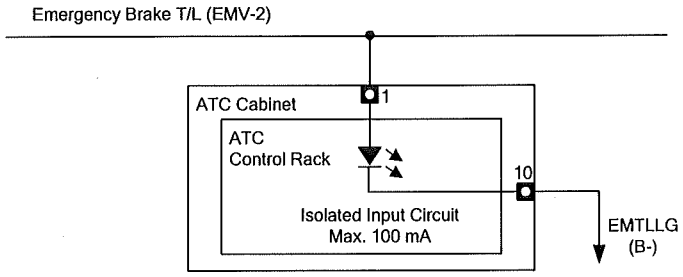


Figure 3: EMV T/L Input Circuit

6.1.2 Emergency Magnet Valve (EMV) Circuit

Figure 4 illustrates Emergency Magnet Valve (EMV) Control Circuit. This is the only electrical circuit that is capable of directly applying Emergency Brake by interrupting electrical feed to EMV and ER, Emergency Relay. Any of Emergency Stop Pushbutton, Master Controller, ATC, PEHU, and, TDR, can initiate emergency brake by opening of an electrical contact.

The EMV is a part of Air Brake System installed on each car. The EMV is an electro-pneumatic device that controls air pressure in Emergency Pipe (EP). It is a pneumatically normally open device. Thus, the air vents out of the Emergency Pipe to atmosphere, when the EMV is de-energized.

In order to charge Emergency Pipe, EMV must be energized to close the air valve. EMV is energized when all electrical contacts in; ATC, Emergency Stop Button, Master Controller (M/C), Passenger Emergency Handle Unit (PEHU) and, Emergency Relay, are closed.

ATC contacts in this figure are simplified electrical representation. For the actual electrical diagram of ATC interface to the EMV Control Circuit, please proceed to the next section.

The Emergency Magnet Valve (EMV) is rated at 472mA maximum at 42.5VDC. The Emergency Relay (ER) is rated at 101mA maximum at 42.5 VDC, and the currents are proportionally lower at the lower voltages. The circuit is protected by a 10A circuit breaker. There is one EMV and one ER on each car.

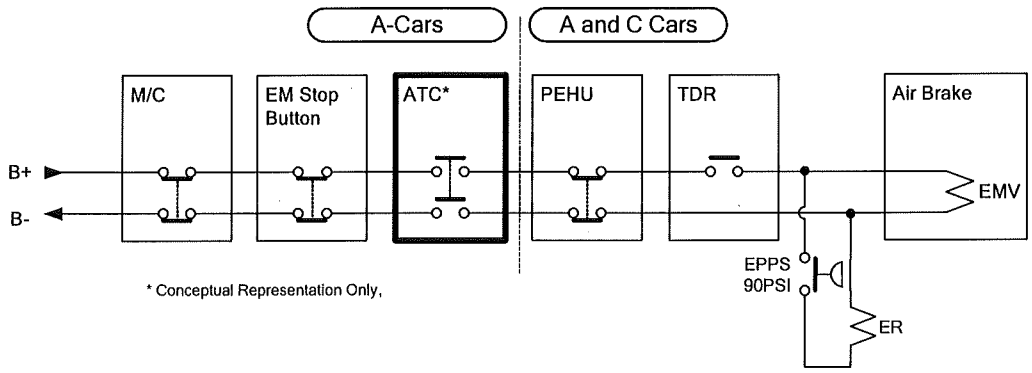


Figure 4: EMV Control Circuit

As seen in the Figure 5, the sequential relations between EMV2 Trainline and TDR are as follows.

(1) Emergency Brake is applied when EMV2 T/L is de-energized.

(2) TDR contacts opens when EMV2 T/L is de-energized.

(3) TDR contact closes automatically 17 seconds, later, regardless of the EMV2 T/L status.

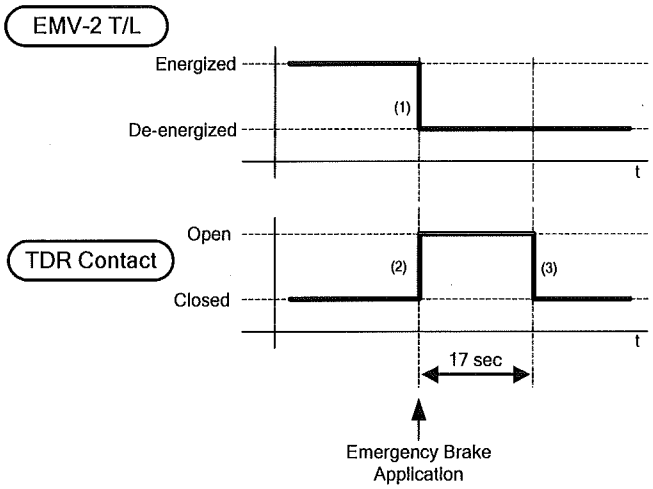


Figure 5: Sequential Relations

6.1.3 Emergency Brake Controls for ATC

Figure 6, shows Emergency Brake Control circuits for Siemens' ATC System. These are conceptual representation of the functions of the controls.

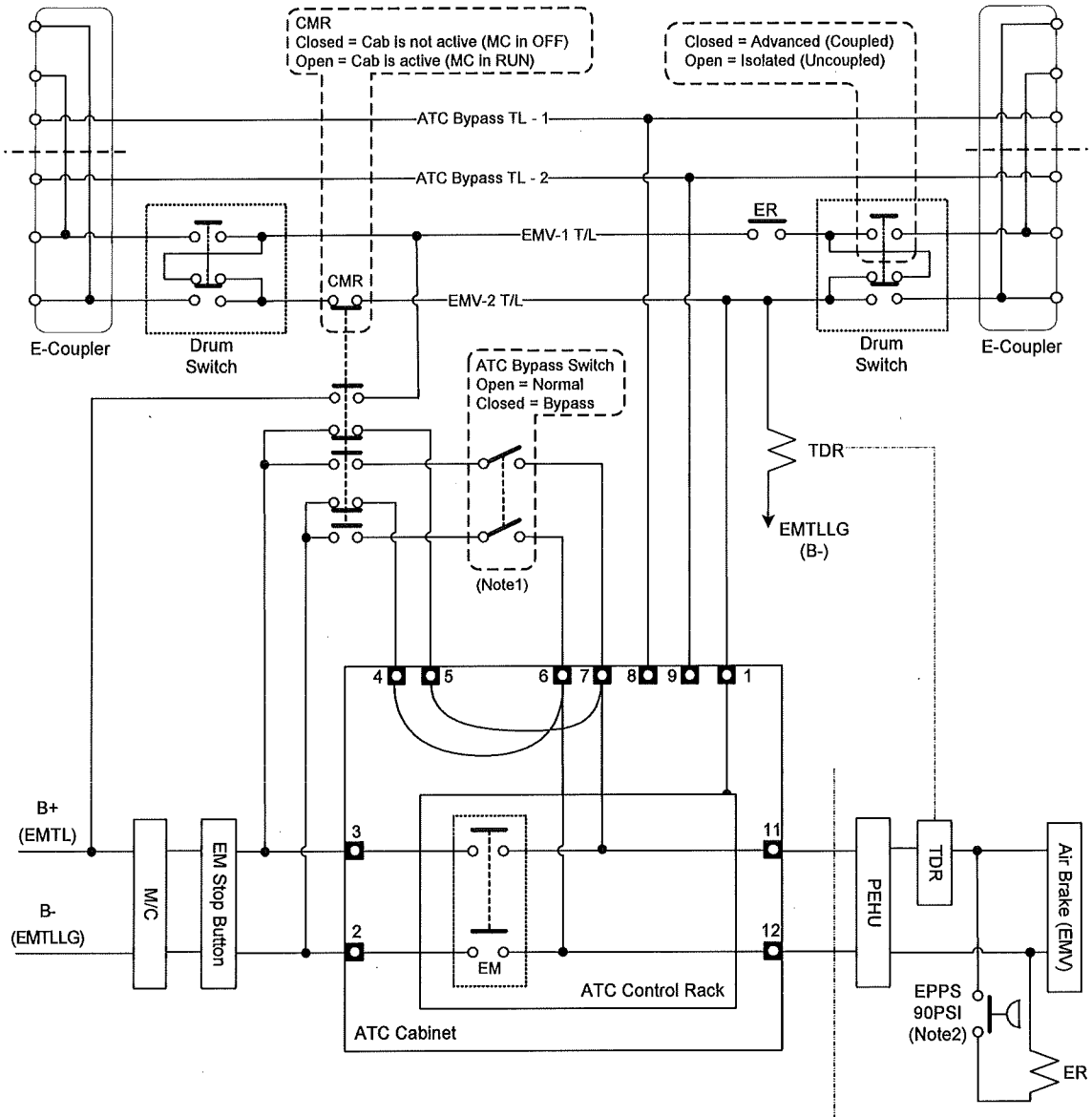
Relation between ATC Bypass Switch position and EM brake application are as follows.

a) In inactive cab

When M/C is not keyed up, EM brake circuit of ATC is bypassed by CMR relay or ATC Active relay contact within the ATC. This allows EMV valve in the inactive cab to be energized, without ATC being active.

b) In Active Cab

- When ATC Bypass Switch is in Normal position, ATC is able to apply EM brake any time.
- When ATC Bypass Switch is in Bypass position, ATC is unable to apply EM brake.



Note 1: For ATC Bypass Switch Postion Signal, refer to Sec. 6.1.4.

Note 2: EPPS Closes: EP Pressure 90 PSI or more
EPPS Opens: EP Pressure < 90 PSI (as shown)

Figure 6: ATC Emergency Brake Controls

6.1.4 ATC Bypass Switch Position Signal

The signal indicates the position of ATC Bypass Switch. The switch is operational on all cab cars at all the times. ATC interfaces to this signal through an isolated circuit.

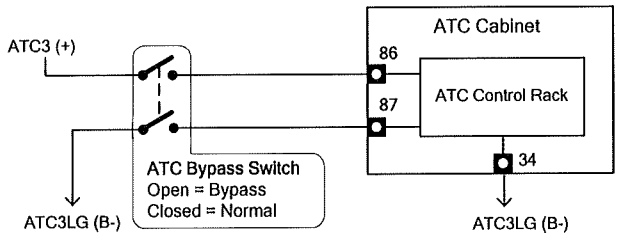


Figure 7: ATC Bypass Switch Position Signal

6.2 Network Connections

6.2.1 ATC Trainline Network

There are four pairs of network trainlines dedicated for the ATC use. Two pairs are placed symmetrical about the vertical center of the electrical coupler. Each Conductor has one set of pin on the E-coupler.

Siemen will provide grounding for network shields to ATC Control Rack.

If the ATC system requires, ATC Network Trainline 2 and ATC Network Trainline 3 may be used as ATC Controlling Car Status Trainlines.

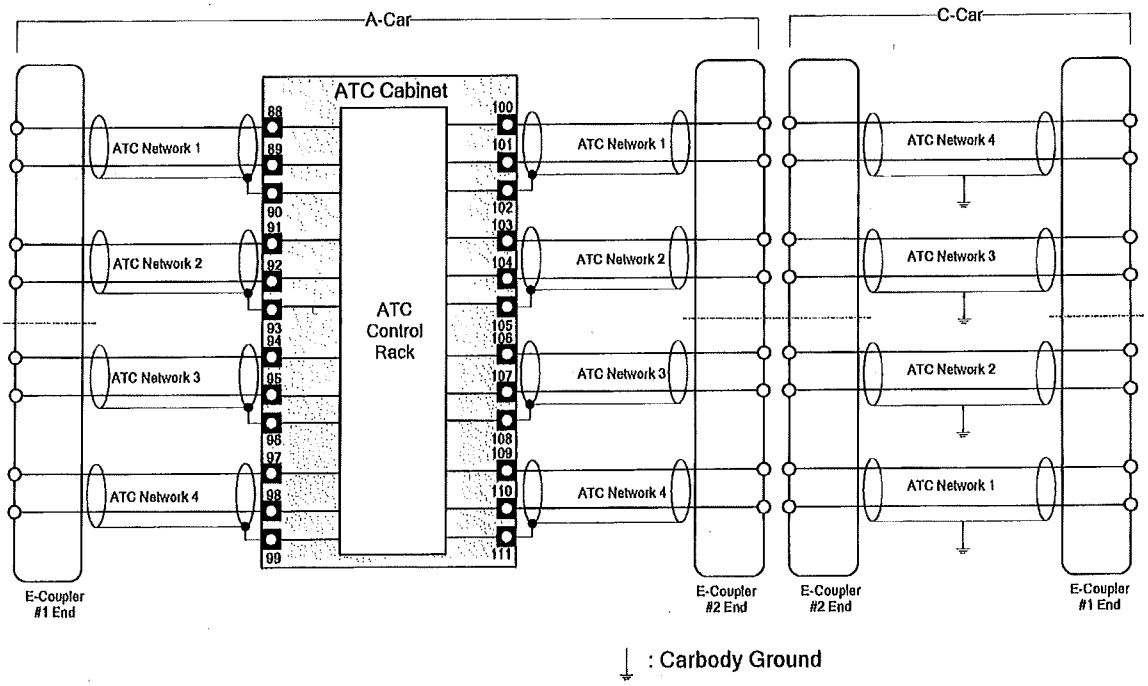


Figure 8: ATC Train Network

6.2.2 Master Controller Network

This is a local interface on each car that the ATC system is located. Please note that cable shield is not grounded in ATC. It is grounded in M/C as shown in Figure 9.

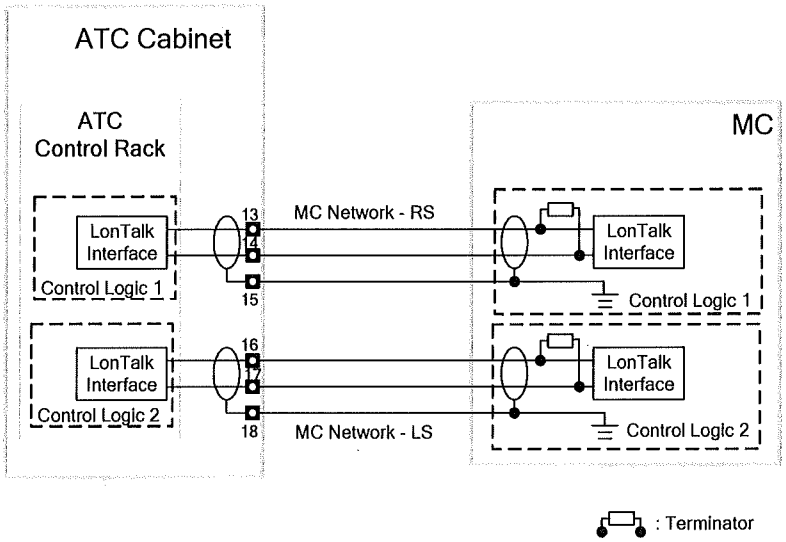


Figure 9: MC Network

6.2.3 Car Network B

This is a local interface on each car that the ATC system is located. Please note that cable shield is not grounded in ATC. It is grounded in CNC (MDS) as shown in the figure. If the ATC System has two control logics, then both control logics shall be connected to the network in parallel.

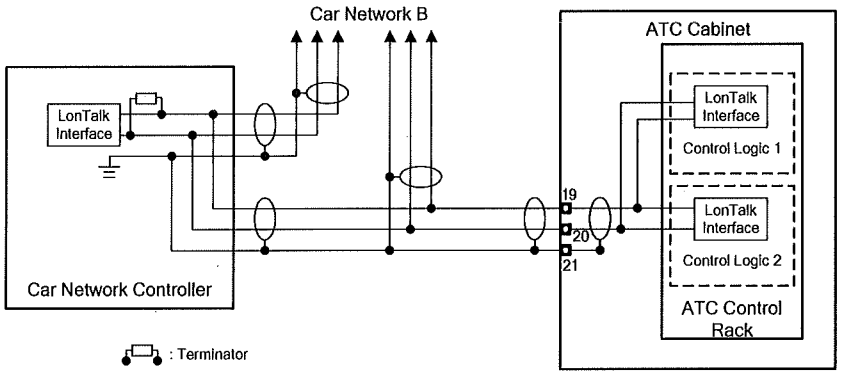


Figure 10: Car Network B Interface

6.2.4 TLC Network

TLC Network is a local interface to the car. Please note that cable shield is not grounded in ATC. It is grounded in TLC.

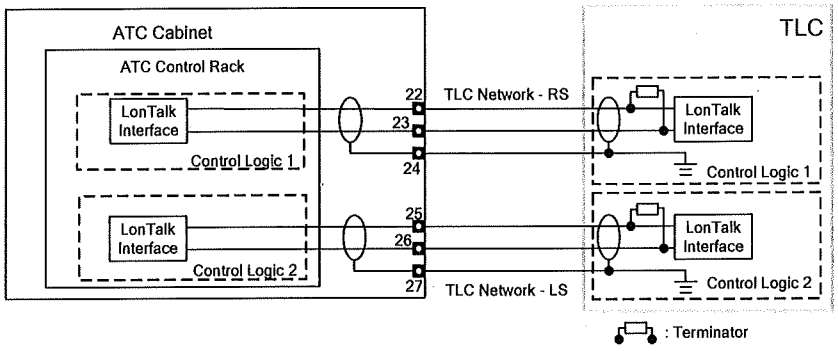


Figure 11: TLC Network Connections

6.3 (Intentionally Blank)

6.4 ATC Control Power

The maximum power consumption of the ATC system is 500W.
The ATC system shall expect the car power supply to be in accordance to the IEEE Standard 1476-200, Table 4, for Class 32 (i.e. Nominal voltage 32v).

6.4.1 For ATC Conponents

Three circuit breakers will be provided for the ATC controls in each cab, i.e. "ATC1", "ATC2 " and "ATC3". Each power circuit has it own dedicated ground return. All three circuit breakers are to remain in ON positions even before ATC is installed on the Track Inspection Car.

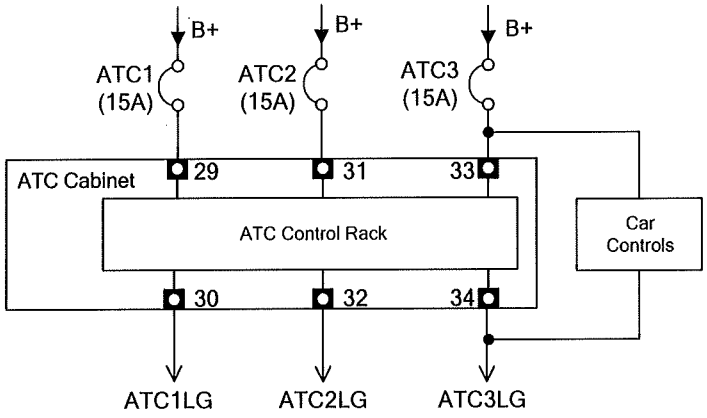


Figure 12: Control Power for ATC Controls

6.4.1.1 Circuit Breaker Functionalities

In general, each of the three circuit breakers has the following functionalities. Individual ATC components shall be allocated to each power circuit accordingly.

C/B ATC1

It provides power to one of two control logics, or to components, whose failures would cause the other logic to become an active ATC.

C/B ATC2

It provides power to the other control logic, or to components, whose failures would cause the logic on CB ATC 1 to become an active ATC.

C/B ATC3

It provides power to the components shared by the two control logics or, whose failures would require ATC Bypass to move the train, manually.

For both configurations, if the ATC system utilizes a serial connection for PTE interface, the electricity to drive a DC-AC inverter to power the PTE shall come from C/B ATC3. See Section 8 for PTE interface information.

6.4.1.2 Component Allocations

The following table summarize the ATC component allocations to individual power circuit breakers.

Table 3:ATC Power Allocations

	C/B ATC1 (15A)	C/B ATC2 (15A)	C/B ATC3 (15A)
1	ATC Logic 1 Components	ATC Logic 2 Components	Shared Interface Components
Total Power	495W		

6.5 ATC Coupler Status

For each end of the car, the coupler status for the ATC system is based on the electrical coupler shutter operation. The shutter is closed on the uncoupled end, and the shutter is open when coupled. Electrical relays actuated by the motion of this coupler shutter are called "SR", or Shutter Relays. One of several Shutter Relays is allocated for ATC interface. Two contacts on the SR are used for ATC Coupler Status signal. This is a local signal and ATC interfaces with this signal through isolated circuits.

When a car is uncoupled, the ATC will detect a energized state for the ATC Coupler Status signal, based on the following logic.*

1) The Coupler becomes uncoupled
2) The Shutter Cover closes
3) The Shutter Cover physically pushes in the Shutter Switch**
4) The Shutter Switch closes an electrical contact
5) The Shutter Relay is energized
6) The electrical contact of the Shutter Relay for the "ATC Coupler Status" signal closes (this is a normally-open contact).
7) The ATC sees an energized signal state.

6.5.1 ATC Coupler Status

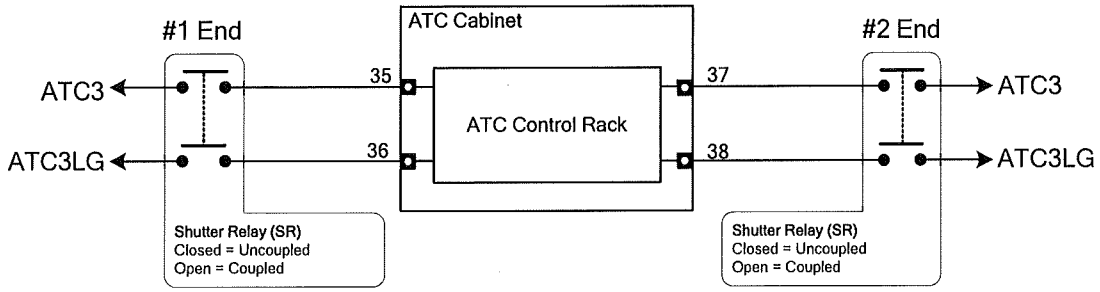


Figure 13: Coupler Status Signal Input Circuit

6.6 Not Used

6.7 Not Used

6.8 Not Used

6.9 Not Used

6.10 Not Used

6.11 Audible Alarm

A two-tone audible alarm shall be provided for the ATC to interface. When the Alarm 1 is HIGH, Alarm 1 will sound. The same applies for Alarm 2. In ATC, the contact rating is 10W max. MCBOUT is energized (23 – 42.5VDC) when the respective cab is keyed-up. ATC interfaces with the Audible Alarm through isolated output circuits.
The two alarm sounds are as follows;

Alarm Sound 1, 1kHz, 0.5 sec On, 0.5 sec Off, for Overspeed
Alarm Sound 2, 1kHz, Continuous, the usage to be defined

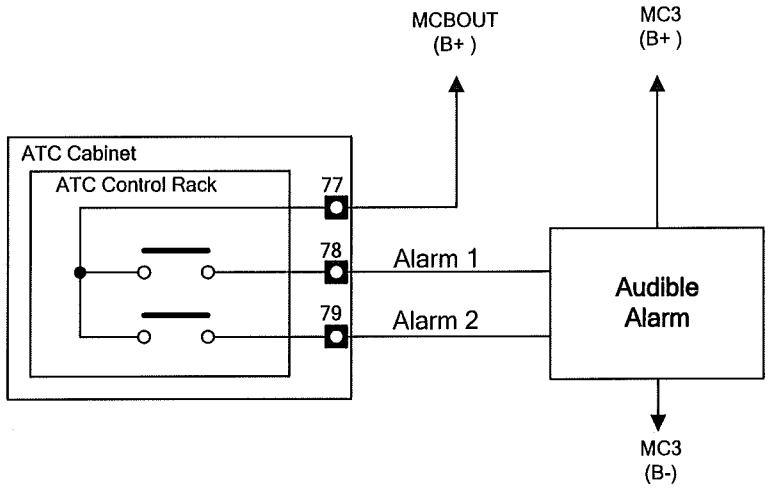


Figure 14: Audible Alarm

6.12 Friction Brake Released T/L

This signal is a summary trainline that indicates all Friction Brake and Parking Brake are released. The signal is available only on the active lead cab car. The trainline is energized and the indicator is lit when, the all friction brakes and parking brakes in the train consist are released.
ATC interfaces to this signal through an isolated circuit.

The TLC on the active lead cab car also monitors the trainline. When TLC receives a powering command from ATC while the Friction Brake Released Trainline is not energized, TLC filters the powering command and set the train in coast mode.

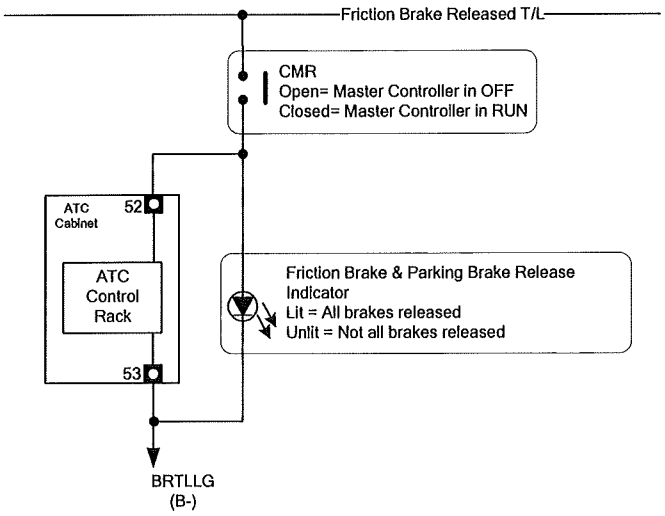


Figure 15: Friction Brake Released Trainline

6.13 Friction Brake Applied T/L

This signal is a summary trainline that indicates any Friction Brake or Parking Brake is applied in the train consist. The signal is available only on the active lead cab car. ATC interfaces with the signal through isolated circuit.

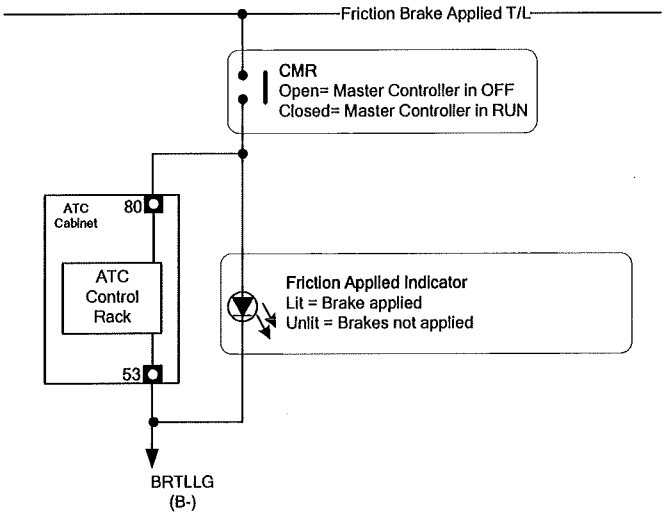


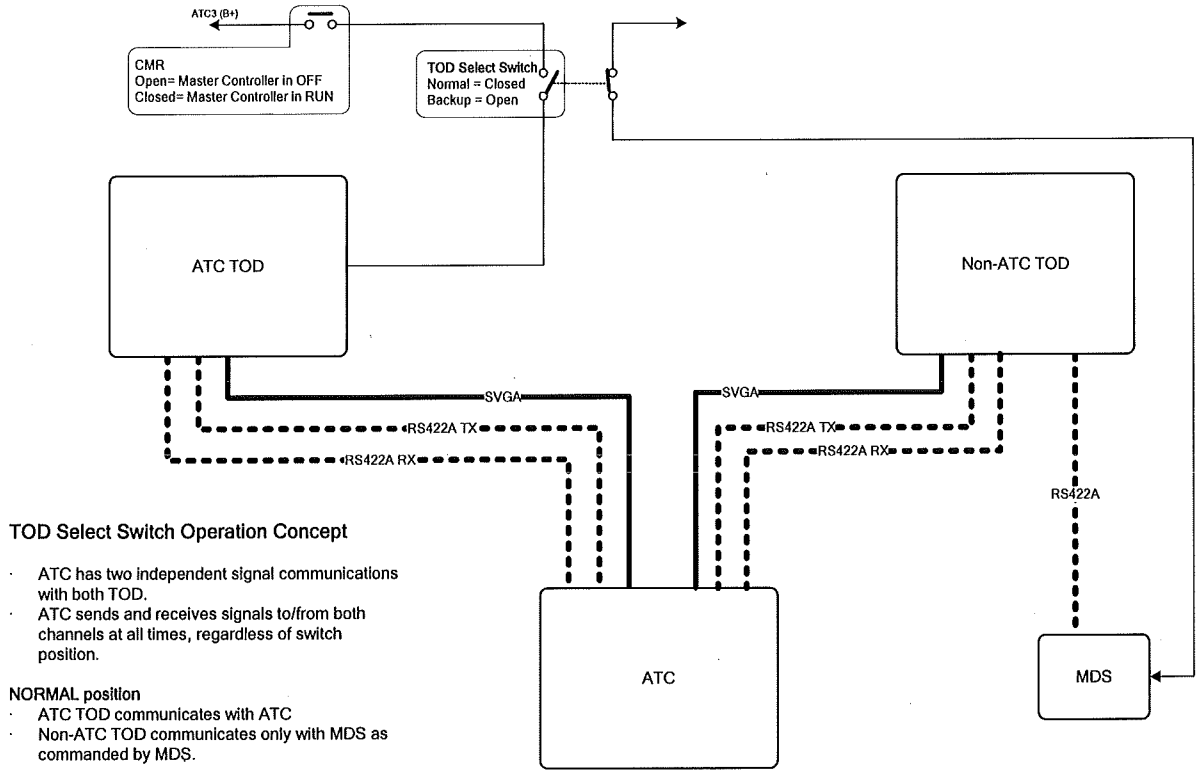
Figure 16: Friction Brake Applied Trainline

6.14 TOD Interface

ATC shall maintain SVGA and RS-422A communications with both ATC TOD and non-ATC TOD individually at all the times. Graphical interface is SVGA. Touch Screen interface is RS-422A. The design does not allow the two TODs to attempt interfacing with ATC simultaneously.

TOD Select Switch has two positions, Normal and Backup. ATC information is normally displayed on the ATC TOD. The operator can display the ATC information on the non-ATC TOD by placing the TOD Select Switch to BACKUP position on the console at any time, especially in the event the ATC TOD shall fail. When the TOD switch on the console is set to the BACKUP position, the control power of the ATC TOD will be switched off.

The train crew can see the MDS information any time by setting TOD Select Switch to a Normal position.



TOD Select Switch Operation Concept

- ATC has two independent signal communications with both TOD.
- ATC sends and receives signals to/from both channels at all times, regardless of switch position.

NORMAL position

- ATC TOD communicates with ATC
- Non-ATC TOD communicates only with MDS as commanded by MDS.

BACKUP position

- ATC TOD shuts down.
- MDS commands non-ATC TOD to switch the input signal source.
- Non-ATC TOD accepts signal from ATC

Figure 17: TOD Interface

TOD Select Switch in NORMAL position,

The non-ATC TOD displays MDS information.
The non-ATC TOD does not send touch screen information to RS-422A for ATC.
ATC TOD is powered. ATC TOD is able to receive and display SVGA information from ATC, and establish RS-422A communications with ATC.

TOD Select Switch in BACKUP position

MDS transmits to non-ATC TOD a command via RS-422A to display SVGA graphics transmitted by ATC and to open RS-422A communication with ATC. ATC TOD power is cut off, disabling all communication with ATC.

Table 4: ATC TOD / Non-ATC TOD

Equipments	Functions / Descriptions
ATC TOD	♦ Touch Screen LCD Display ♦ One (1) SVGA connection ♦ One (1) RS-422A connection SVGA connection is an analog RGB signal that interfaces with an ATC TOD driver to display graphics on the TOD. RS-422A connection to ATC provides a touch screen interface between the LCD display and ATC. ATC TOD transmits touch screen coordinate information to ATC through RS-422A.
Non-ATC TOD	♦ Touch Screen LCD Display ♦ One (1) SVGA connection ♦ Two (2) RS-422A connections SVGA Interface to ATC TOD Driver SVGA connection is an analog RGB signal that interfaces with an ATC TOD driver to display graphics on the TOD. The non-ATC TOD displays graphics on the SVGA connection only when, it receives a command from MDS through RS-422A. MDS sends this command when, MDS detects BAKUP position on TOD Select Switch. RS-422A Interface to ATC The non-ATC TOD transmits touch screen coordinate information to ATC through the RS-422A. The non-ATC TOD transmits the touch screen information to ATC, only when it receives a command from MDS through RS-422A. RS-422A Interface to MDS The non-ATC TOD itself stores screen information for MDS. The non-ATC TOD processes touch screen data within itself. MDS provides the non-ATC TOD with commands to control graphics through the RS-422A interface. There is no SVGA connection between the non-ATC TOD and MDS.

6.15 Load Shedding

ATC is not subject for load shedding under normal train operations. The battery reserve on the Track Inspection Car should be so configured that the battery alone is capable of providing power to ATC for 90min.

7. Interfacing Train System Networks

Table 5 shows the networks interface with the ATC.

Table 5: Interfacing Networks

	Network Name	Type	Nodes	Direction	Purpose
1	**Car Network B**		**ATC and CNC**	**Bidirectional**	**Monitoring and Diagnostic**
2	**M/C Network**	**Lon Talk**	**M/C to ATC**	**One-way**	**Monitoring only**
3	**TLC Network**		**ATC to TLC**	**One-way**	**ATC Commands**

7.1 Car Network B

The electrical interface between the ATC and MDS is shown in Sec. 6.2.3.

7.2 Master Controller Network

The ATC receives the signals from the Master Controller through this network for monitoring purpose only. ATC System must not send any command on to the Master Controller Network. The electrical interface between the ATC and M/C is shown in Sec. 6.2.2.

7.2.1 Network Fault

ATC shall not declare Master Controller network fault to MDS under the following circumstances as they are considered as a part of normal train operations.

a) MC Key in "OFF" position
When the Master Controller Key is placed in OFF position, the power to the LonWorks nodes in the MC is removed. Thus, no data will flow on either sides of the MC network and ATC will not see any data flow on either MCN RS or MCN LS.

b) C/B MC1 is OFF
While the Master Controller is activated (i.e. MC Key in RUN position), when Circuit Breaker "MC1" trips or is placed in OFF position, Master Controller Right Side logic is turned off. Consequently, ATC will not see any data flow on MCN RS, and shall not declare a network fault for MCN RS. "Present Time Packet" sent by MDS on Car Network B provides ATC the status of C/B MC1 on Car Network B.

c) C/B MC2 is OFF
While the Master Controller is activated (i.e. MC Key in RUN position), when Circuit Breaker "MC2" trips or is placed in OFF position, Master Controller Left Side logic is turned off.

Consequently, ATC will not see any data flow on MCN LS, and shall not declare a network fault for MCN LS. "Present Time Packet" sent by MDS on Car Network B provides ATC the status of C/B MC1 on Car Network B.

7.3 TLC Network

This Network sends signals from ATC to TLC. The electrical interface is shown in Sec. 6.2.4.

The following notes provides additional important points of the document:

1) Transmission Requirements
ATC transmits all of its information in a single data packet every 50ms, on both sides of TLC Network, independently. Except for ATC Bypass Mode, ATC shall always send network signal to TLC, even in Wayside Mode.

2) Encoder Values
A range of numerical values for controlling of Tractive Effort (i.e. Encoder Values) is defined in this document.

3) Power/Brake Signal
On TLC Network, the ATC5 data packet contains a set of complementary signals, used to describe that the tractive effort is either in Powering and Braking ranges. ATC shall flag the signal to indicate the "Brake" range, while ATC is commanding an encoder value in the "Coast" range.

8. PTE Interface

All subsystems on the train, including ATC, utilize the interface for PTE communication.

8.1 PTE Connector

ATC shall have one of the following two connection methods.

a) Serial Connection Option

ATC equipped with the serial PTE connection shall have the following connector configuration. Table 6 lists the pin allocations.

Connector Type:	Litton Veam CIR Series or equivalent
Type of Contacts:	11 contacts for AWG18 wire
Contact Plating:	Gold
Insert Configuration:	20-33
Shell Type:	Receptacle with dust cap attached to the equipment enclosure
Key Type:	Standard (12 o'clock)

PTE cable has the mating connector as described in Figure 18.

Table 6: PTE Connector Pin Allocations

Pin	Description
A	SGD (Signal Ground)
B	TX (Transmit)
C	RX (Receive)
D	RTS
E	CTS
F	Shield
H	LON FTT-10
J	LON FTT-10
K	+37.5VDC
L	37.5VDC Return
M	(Spare)

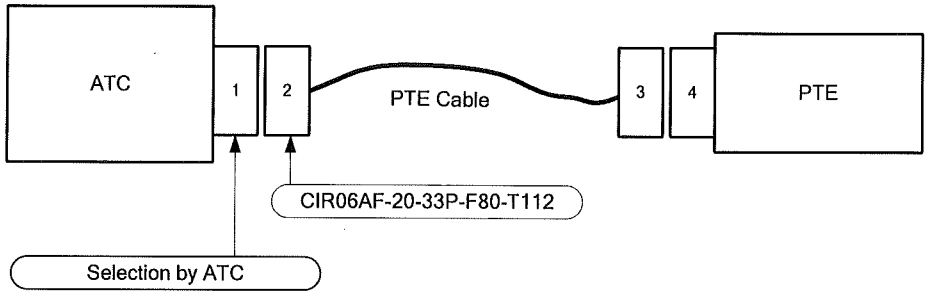


Figure 18: PTE Cable Connector Part Number

Pin K and Pin L provide power to a DC-AC inverter to drive PTE. The power source shall come from C/B ATC3 through the ATC equipment. The inverter is expected be rated at 200W.

b) Ethernet Connection Option

- RJ45 type connector
- PTE is powered through nearby convenience outlet (120VAC).

The Siemens ATC System has an Ethernet connection.

9. Not Used

10. Electrical Cable and Wire Interfaces

Figure 19 shows interconnections between ATC equipment and non-ATC equipment. In this section, three kinds of connections are defined; "Connection in ATC Cabinet", "Intermediate Cable Connections" and "Connections at ATC Equipment".

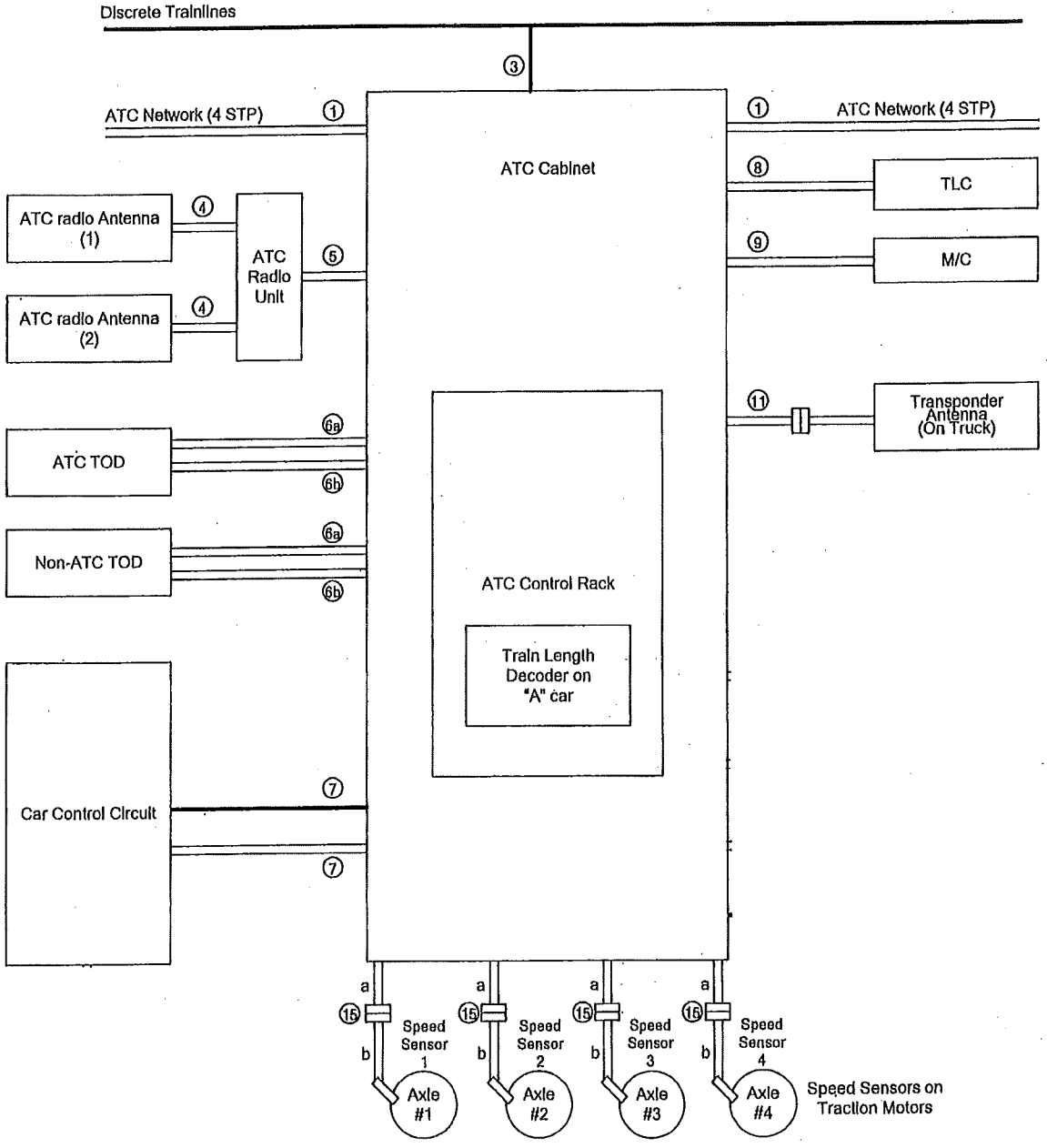


Figure 19: ATC Interconnections

10.1 Interconnection Specifications

Table 7 shows cable types, cable connections and cable Specification.

10.1.1 Interconnection in ATC Cabinet

There are two types of cable/wire terminations in ATC Cubicle. One type is coiled cable termination in ATC cubicle and the other type is termination on terminal block. When ATC is installed, connectors are installed to coiled cable after cutting to proper length, and the wires connected to the terminal block, other wires with connectors are connected to the terminal block. All those connectors are connected to ATC Control Rack Equipment in ATC Cubicle.

10.1.2 Intermediate cable Connection

ATC equipment connects to the carbody system at the intermediate connectors. In general, Siemens will supply the connectors and cables for the ATC equipment side. The Contractor shall supply the necessary cables and connectors on the carbody side.

10.1.3 Interconnection at ATC Equipment

When ATC equipment is installed, cables are supplied by Siemens and connected to the intermediate connector.

10.2 Terminal Block Assignments in ATC Cabinet

Table 8 shows the terminal assignments for the cables and wires connected to the terminal blocks as identified in Section 10.1.

Each terminal accepts up to three wires for ATC connections.

10.3 Connector Pin and Wire Assignments

Table 9 through Table 16 list wire marking and connector pin allocations for interconnections not placed on terminal blocks in the ATC Cabinet.

In this section, "S" is the representative ring mark for cable shield. Although there exist a multiple number of "S" wires, each shield is independent.

Table 7: ATC Interconnection Cables and Connectors

No.	Cables / Wires		Cable Spec	Cable Termination			Remarks
	Type	Number		In ATC Cubicle	Intermediate Connector (Car Side)	Cable to ATC	
①	STP	8 cables	TD-003558	T/B (Note 1)	-	-	ATC Network 4 network cables are connected twice to ATC Control Rack.
②	-	-	-	-	-	-	
③	Discrete	(ICD Sec. 6)	AWG#16	Terminal Block	-	-	Discrete T/L
④	Coaxial	1 cable for each antenna	-	-	-	-	Radio Antenna Will be installed during ATC equipment installation
⑤	STP	6 cables	TD-003558	T/B (Note 1)	-	Coiled	ATC Radio Unit in Cab Ceiling to ATC Cabinet
⑥a	SVGA cable	1 cable	SVGA Cable	Coiled with Connector	AMP 747784-3	-	TODs Before ATC installation, connector on TOD shall be disconnected.
⑥b	STP	2 cable	TD-003558	Coiled	-	-	
⑦	Discrete	(ICD Sec. 6)	(ICD)	Terminal Block	-	-	Car Control Circuit
	STP	1 cable	TD-003558				Car Network B connection for MDS
⑧	STP	2 cables	TD-003558	Terminal Block	-	-	TLC Network
⑨	STP	2 cables	TD-003558	Terminal Block	-	-	M/C Network
⑪	STP	1 cables (See remarks)	TD-005650	Coiled	Amphenol GTCL02R-20-27S(025)(B30)	(Note 2)	Transponder Antenna (Truck) 1. For Transponder 2. Installed on Truck #1, at #1 axle end.
⑮a	Shielded Cable	1 cable (Carbody)	TD-003553	Coiled	Amphenol Connector b: Amphenol GTCL06CF-14SA-7P (025)(B30) Dust caps: Amphenol 10-580902-14Y (4pcs)	(Note 2)	Speed Sensor 1) Carbody cable Twisted pair with overall shield 2) Speed Sensor Cable Cable with overall shield 3) Cable shield grounded on only the speed sensor
⑮b		1 cable (Speed Sensor)	Radox-125				

Note 1: These cables will be coiled in the ATC cubicle, unless connection points on the terminal boards are available.

Note 2: Siemens to provide cable with connectors between intermediate connector and ATC equipment.

Table 8: Wire Termination on Terminal Block at ATC Cubicle

Term. No.	Circuit	Wire Marks	Figures	Remarks
1	Emergency Brake T/L EMV-2	EMBRV-2A	3, 6	
2	EMV Circuit (-) from E-Stop	EMBR10	6	
3	EMV Circuit (+) to E-Stop	EMBR9		
4	ATC EM Bypass-1	ATCBP6		
5	ATC EM Bypass-2	ATCBP5		
6	ATC EM Bypass-3	ATCBP4		
7	ATC EM Bypass-4	ATCBP3		
8	ATC EM Bypass-5	ATCBTL(+)		
9	ATC EM Bypass-6	ATCBTL(-)		
10	Emergency Brake Return	EMTLLG	3	
11	EMV Circuit + to PEHU	EMBR1	6	
12	EMV Circuit – from PEHU	EMBR2	6	
13	M/C Network (RS), Signal-1	MCN+R	9	
14	M/C Network (RS), Signal-2	MCN-R		
15	M/C Network (RS), Shield	S		
16	M/C Network (LS), Signal-1	MCN+L		
17	M/C Network (LS), Signal-2	MCN-L		
18	M/C Network (LS), Shield	S		
19	Car Network (MDS), Signal-1	CNB+	10	
20	Car Network (MDS), Signal-2	CNB-		
21	Car Network (MDS), Shield	S		
22	TLC Network (RS), Signal-1	TLCN+R	11	
23	TLC Network (RS), Signal-2	TLCN-R		
24	TLC Network (RS), Shield	S		
25	TLC Network (LS), Signal-1	TLCN+L		
26	TLC Network (LS), Signal-2	TLCN-L		
27	TLC Network (LS), Shield	S		
28	-	-	-	Reserved
29	ATC1 CB Power	ATC1	12	
30	ATC1 Return	ATC1LG		
31	ATC2 CB Power	ATC2		
32	ATC2 Return	ATC2LG		
33	ATC3 CB Power	ATC3		
34	ATC3 Return	ATC3LG	12	
35	ATC Coupler Status #1 end -1	ATCDS11	13	On A-Car Only
36	ATC Coupler Status #1 end -2	ATCDS12		
37	ATC Coupler Status #2 end -1	ATCDS21		
38	ATC Coupler Status #2 end -2	ATCDS22		
39	Not used			
40	Not used			
41	Not used			
42	Not used			

Term. No.	Circuit	Wire Marks	Figures	Remarks
43	Not used			
44	Not used			
45	Not used			
46	Not used			
47	Not used			
48	Not used			
49	Not used			
50	Not used			
51	Not used			
52	Friction Brake Released T/L	BRTL3	15	
53	BRTLLG	BRTLLG	15, 16	
54	Not used			
55	Not used			
56	ATC Mode SW (Manual)	ATCMD3		
57	ATC Mode SW (Release)	ATCMD4		
58	ATC T/L 1 (#1 end)	ATCML1		
59	ATC T/L 2 (#1 end)	ATCML2		
60	ATC T/L 3 (#1 end)	ATCML3		
61	ATC T/L 4 (#1 end)	ATCML4		
62	ATC T/L 5 (#1 end)	ATCML5		
63	ATC T/L 6 (#1 end)	ATCML6		
64	ATC T/L 7 (#1 end)	ATCML7		
65	ADCL T/L (+)	DRCTL8		
66	ADCL T/L (-)	DRCTL11		
67	ATC T/L 1 (#2 end)	ATCML1-1		
68	ATC T/L 2 (#2 end)	ATCML2-1		
69	ATC T/L 3 (#2 end)	ATCML3-1		
70	ATC T/L 4 (#2 end)	ATCML4-1		
71	ATC T/L 5 (#2 end)	ATCML5-1		
72	ATC T/L 6 (#2 end)	ATCML6-1		
73	ATC T/L 7 (#2 end)	ATCML7-1		
74	Active Cab (+)	ATCCMR1		
75	Active Cab (-)	ATCCMR2		
76	Not used			
77	Audible Common	MCBOUT	14	
78	Audible Alarm 1	ATCALM1	14	
79	Audible Alarm 2	ATCALM2	14	
80	Friction Brake Applied T/L	BRTL6	16	
81	Return for ATC Mode Switch	MC3LG		
82	MYW-R1	DRE3		
83	MYW-R2	DRE2		
84	MYW-L1	DRE8		
85	MYW-L2	DRE7		

Term. No.	Circuit	Wire Marks	Figures	Remarks
86	ATC Bypass Switch Status 1	ATCBP1	7	
87	ATC Bypass Switch Status 2	ATCBP2	7	
88	ATC T/L Network 1 (#1end), Signal-1	ATCNM1+	8	Interconnection ① ATC T/L Network #1 End E-Coupler * Shields are not grounded in the electrical coupler
89	ATC T/L Network 1 (#1end), Signal-2	ATCNW1-		
90	ATC T/L Network 1 (#1end), Shield*	S		
91	ATC T/L Network 2 (#1end), Signal-1	ATCNW2+		
92	ATC T/L Network 2 (#1end), Signal-2	ATCNW2-		
93	ATC T/L Network 2 (#1end), Shield*	S		
94	ATC T/L Network 3 (#1end), Signal-1	ATCNW3+		
95	ATC T/L Network 3 (#1end), Signal-2	ATCNW3-		
96	ATC T/L Network 3 (#1end), Shield*	S		
97	ATC T/L Network 4 (#1end), Signal-1	ATCNW4+		
98	ATC T/L Network 4 (#1end), Signal-2	ATCNW4-		
99	ATC T/L Network 4 (#1end), Shield*	S	8	
100	ATC T/L Network 1 (#2end), Signal-1	ATCNM1+1	8	Interconnection ① ATC T/L Network #2 End E-Coupler * Shields are not grounded in the electrical coupler
101	ATC T/L Network 1 (#2end), Signal-2	ATCNW1-1	8	
102	ATC T/L Network 1 (#2end), Shield*	S	-	
103	ATC T/L Network 2 (#2end), Signal-1	ATCNW2+1		
104	ATC T/L Network 2 (#2end), Signal-2	ATCNW2-1		
105	ATC T/L Network 2 (#2end), Shield*	S		
106	ATC T/L Network 3 (#2end), Signal-1	ATCNW3+1		
107	ATC T/L Network 3 (#2end), Signal-2	ATCNW3-1		
108	ATC T/L Network 3 (#2end), Shield*	S		
109	ATC T/L Network 4 (#2end), Signal-1	ATCNW4+1		
110	ATC T/L Network 4 (#2end), Signal-2	ATCNW4-1		
111	ATC T/L Network 4 (#2end), Shield*	S		
112	ATC Radio Unit 1, Signal-1	ATCRU1		
113	ATC Radio Unit 1, Signal-2	ATCRU2	-	Interconnection ⑤ To ATC Radio Unit
114	ATC Radio Unit 1, Shield	S	-	
115	ATC Radio Unit 2, Signal-1	ATCRU3	-	
116	ATC Radio Unit 2, Signal-2	ATCRU4	-	
117	ATC Radio Unit 2, Shield	S	-	
118	ATC Radio Unit 3, Signal-1	ATCRU5	-	
119	ATC Radio Unit 3, Signal-2	ATCRU6	-	
120	ATC Radio Unit 3, Shield	S	-	
121	ATC Radio Unit 4, Signal-1	ATCRU7	-	
122	ATC Radio Unit 4, Signal-2	ATCRU8	-	
123	ATC Radio Unit 4, Shield	S	-	
124	ATC Radio Unit 5, Signal-1	ATCRU9	-	
125	ATC Radio Unit 5, Signal-2	ATCRU10	-	
126	ATC Radio Unit 5, Shield	S	-	
127	ATC Radio Unit 6, Signal-1	ATCRU11	-	
128	ATC Radio Unit 6, Signal-2	ATCRU12	-	

Term. No.	Circuit	Wire Marks	Figures	Remarks
129	ATC Radio Unit 6, Shield	S	-	

Table 9: Interconnection ⑥ For ATC TOD

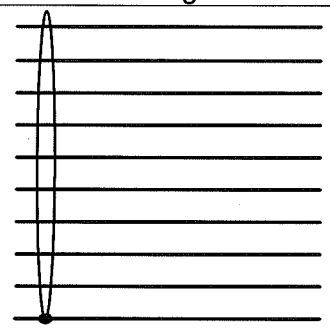
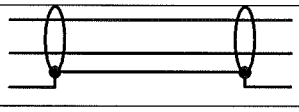
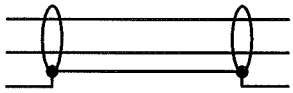
In ATC Cabinet		To ATC TOD	
Wire Ring Marks	Cable Configurations	Wire Purposes	
ATCSVGA2 (R-IN)		R	SVGA Cable
ATCSVGA2 (G-IN)		G	
ATCSVGA2 (B-IN)		B	
ATCSVGA2 (R-GND)		R-GND	
ATCSVGA2 (G-GND		G-GND	
ATCSVGA2 (B-GND)		B-GND	
ATCSVGA2 (DIGI-GND)		DIGI-GND	
ATCSVGA2 (H-SYNCHRO)		H-Synch	
ATCSVGA2 (V-SYNCHRO)		V-Synch	
S		Overall Shield	
ATCTD21		RS422 RX+	RS422 for Touch Screen
ATCTD22		RS422 RX-	
S		Shield	
ATCTD23		RS422 TX+	
ATCTD24		RS422 TX-	
S		Shield	

Table 10: Interconnection ⑥ For non-ATC TOD

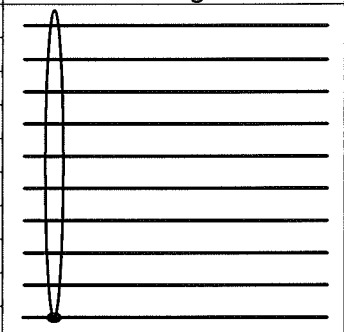
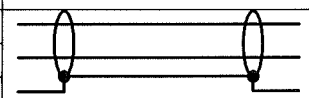
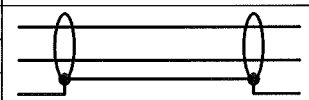
In ATC Cabinet		To ATC TOD	
Wire Ring Marks	Cable Configurations	Wire Purposes	
ATCSVGA1 (R-IN)		R	SVGA Cable
ATCSVGA1 (G-IN)		G	
ATCSVGA1 (B-IN)		B	
ATCSVGA1 (R-GND)		R-GND	
ATCSVGA1 (G-GND		G-GND	
ATCSVGA1 (B-GND)		B-GND	
ATCSVGA1 (DIGI-GND)		DIGI-GND	
ATCSVGA1 (H-SYNCHRO)		H-Synch	
ATCSVGA1 (V-SYNCHRO)		V-Synch	
S		Overall Shield	
ATCTD11		RS422 RX+	RS422 for Touch Screen
ATCTD12		RS422 RX-	
S		Shield	
ATCTD13		RS422 TX+	
ATCTD14		RS422 TX-	
S		Shield	

Table 11: Interconnection ⑪Truck-mount ATC Transponder Antenna

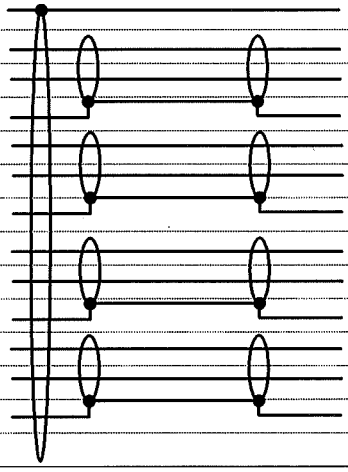
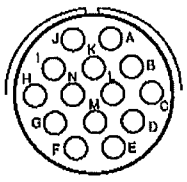
In ATC Cabinet		Intermediate Connector	
Wire Ring Marks	Cable Configurations	Pin No.	Connector Type
S		A	 **20-27** 14 *16* A
ATCTP/PS1		B	
ATCTP/PS2		C	
S		D	
ATCTP/PS3		E	
ATCTP/PS4		F	
S		G	
ATCTP/PS5		H	
ATCTP/PS6		I	
S		J	
ATCTP/PS7		K	
ATCTP/PS8		L	
S		M	
-		N	

Table 12: Interconnection ⑮ ATC Speed Sensor 1

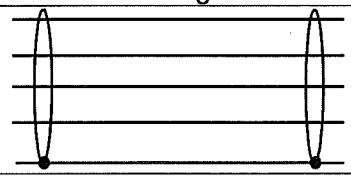
In ATC Cabinet		Intermediate Connector	
Wire Ring Marks	Cable Configurations	Pin No.	Connector Type
ATCSS1P		A	 14SA-7 7 16 A
ATCSS1R		B	
ATCSS1A+		C	
ATCSS1A-		D	
S		*	
-	* For Carbody Side	E	
-	* For Speed Sensor Side	F	

Table 13: Interconnection ⑮ ATC Speed Sensor 2

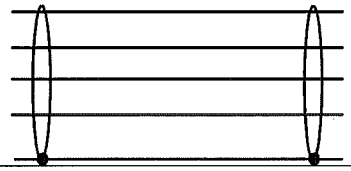
In ATC Cabinet		Intermediate Connector	
Wire Ring Marks	Cable Configurations	Pin No.	Connector Type
ATCSS2P		A	 14SA-7 7 16 A
ATCSS2R		B	
ATCSS2A+		C	
ATCSS2A-		D	
S		*	
-	* For Carbody Side	E	
-	* For Speed Sensor Side	F	

Table 14: Interconnection ⑮ ATC Speed Sensor 3

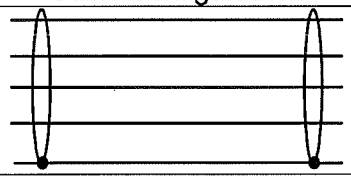
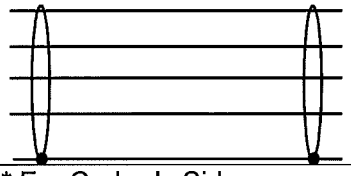
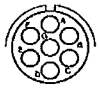
In ATC Cabinet		Intermediate Connector	
Wire Ring Marks	Cable Configurations	Pin No.	Connector Type
ATCSS3P		A	 14SA-7 7 16 A
ATCSS3R		B	
ATCSS3A+		C	
ATCSS3A-		D	
S		*	
-	* For Carbody Side	E	
-	* For Speed Sensor Side	F	

Table 15: Interconnection ⑮ ATC Speed Sensor 4

In ATC Cabinet		Intermediate Connector	
Wire Ring Marks	Cable Configurations	Pin No.	Connector Type
ATCSS4P		A	 14SA-7 7 16 A
ATCSS4R		B	
ATCSS4A+		C	
ATCSS4A-		D	
S		*	
-	* For Carbody Side	E	
-	* For Speed Sensor Side	F	

*** For Fig. 13 ~ 16, the shield from the speed sensor shall not be connected to the shield of the carbody (ATC Cabinet) side.**

11. ATC Speed Sensor

Siemens will provide speed sensors specified by this document.]

On the A-car, on each of four axles, one speed sensor is installed per the traction motor for ATC system use. Each speed sensor is powered by ATC.

Speed Sensor Information

Lenord Bauer GEL-247Y-xxxxx (TBD)*
See Attachment 3 Specification Data Sheets for the electrical characteristics and the sensing gear profile
* The exact model number of the Speed Sensor will be available after the cable length is finalized.

Drive Train Information

Pulses per one motor revolution: 186 pulses/revolution
Overall Gear ratio: 1:5.588
Wheel Diameter: 28" New, 25" Fully Worn
Gear unit total backlash, +/- 0.7 deg
Maximum Operation Speed: 60 MPH +20% Overspeed
Pulse Frequency at 60 MPH on new wheels: 12465.89 Hz

Cable Length

L = Initially set for 2050mm; To be finalized after verifying the cable routing and truck rotation test on the actual car using a sample speed sensor

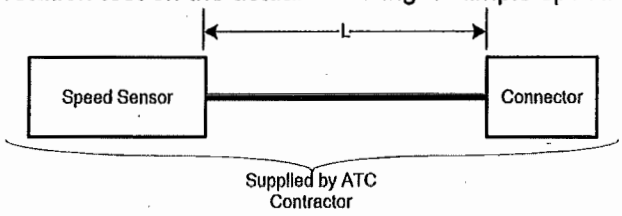


Figure 20: Speed Sensor

Shield Connections

The shielding on the speed sensor shall be isolated from the shield on the carbody harness. As indicated in Table 13 though 16, pin allocations in the intermediate connector shall accommodate this isolation.

12. Radio Frequency Allocations

The following table summarizes frequency allocations for the wireless communications on board the train.

Table 16: Frequency Allocations

	Frequency Band	Antenna Location***
ATC Radio	2.4GHz **** 5.8GHz Channels 149 & 153	A-car, #1 End, Ceiling
PATH Communication Radio	160MHz 800MHz (Future provision)	A-car, #1 End, Ceiling
MDS Radio	5.8 GHz* Channels 157 & 161	A-car, #1 End, Ceiling
PVIS	2.4GHz **	A-car, #2 End, Ceiling C-car, #2 End, Ceiling
CCTV	TBD	A-car, #1 End, Ceiling

** PVIS uses 2.4GHz,
*** For the actual locations of antennae, see attached drawings.
**** The ATC Antenna is operating in the 2.4 GHz band, with a maximum Effective Isotropic Radiated Power up to the legal limit

13. MDS Interface

ATC interfaces with MDS via Car Network B. Two nodes on the network are reserved for ATC; one node is assigned to one controlling logic of ATC system.

13.1 Information from MDS to ATC

The following information is made available for ATC to retrieve through a data packet named, Present Time Packet. The Present Time Packet is broadcast type information on the Car Network periodically sent by MDS. The packet includes time and date information, as well as other information required by onboard systems.

- Time
- Date
- Train Consist Information (a numbers of cars in the train, car ID numbers*)
- C/B MC1 and CB MC2 status

* Car ID number information is sent from MDS to ATC over Car Network B, using Direct Data Transmission method.

13.2 Information from ATC to MDS

ATC shall provide the following information groups to MDS, when requested by MDS.

- Status Indication
- Selftest Result
- Software Versions
- Historical Data

1) Status Indication

For each ATC logic, ATC shall provide operational status of the system, active ATC indication, and other information as required by the system. The information

is used as part of criteria to display trouble messages related to ATC, and also to determine CMC interface. The following signals are required as minimum.

"Operation Status"
This signal shall flag '1' to indicate operational condition; whenever ATC is working as intended, even if a fault is being detected by ATC. Non-controlling ATC shall also indicate this signal.

"Active"
When the M/C Key is placed in Run on the lead car, an active ATC Logic on the same lead car shall flag '1'.

Only one ATC logic can annunciate "Active" at any given time. If both ATC logics annunciate "Active" signals at the same time, CMC will interface with ATC Logic 1.

"M/C Network Fault"
ATC shall flag this signal to logical '1', when ATC loses network communication with Master Controller, when expected. Section 7.2 defines the fault condition.

"ATC Emergency Application"
ATC shall flag this signal to logical '1', when ATC applies the Emergency Brake.

2) Selftest Result
When commanded by MDS, ATC shall perform Selftest and provide MDS LRU level failures.

3) Software Versions
When commanded by MDS, ATC shall send MDS the software versions of all software applications defined as SCI.

4) Historical Data
When commanded by MDS, ATC shall send MDS the event log accumulated in the system.

13.3. AAS Interface

ATC interacts with CMC using Car Network B to perform AAS tasks. ATC on the active (i.e. M/C Keyed up) lead car shall establish interface with the CMC on the same car.

13.3.1 Distance Information

Based on the ATC Speed Sensors, ATC sends the distance information to CMC. CMC, in turn, uses the information to sequentially controls Automatic Announcement System. ATC sends the information to CMC over Car network B, using Direct Data Transmission method.

14. Event Recorder Interface

Event Recorder is required to record the following specified data pertains to ATC system.

- ATC Time
- ATC Departure Test Passed
- ATC Extra 1

- ATC Extra 2

ATC sends these signals to Event Recorder, over Car Network B, using Direct Data Transmission method.

15. EMI Limitations

15.1 Requirements

The Contractor shall comply with FRA and AREMA requirements.

16. Guaranteed Emergecy Brake Rate

The minimum guaranteed emergency brake rate is initially set to 1.4 MPHPS as specified by PATH

A safe braking analysis will be provided to PATH, which is subject for review and approval by PATH through a separate correspondence.

PATH is in the position to determine and finalize the safe braking rate based on the analysis.

17. Not Used

18 L/R Values of Selected Components and Circuits

The table below lists L/R values of some of the key components and circuits thought to be beneficial for the ATC interface design.

Table 17: LR Values of Selected Components and Circuits

-	Items	1 car	10 cars
1	Emergency Magnet Valve	4.02 ms	- *
2	Emergency Relay	11 ms	- *
3	Audible Alarm	Negligible	- *

* These components are not parts of Trainline circuits. They belong to local car circuits that conclude within a car.

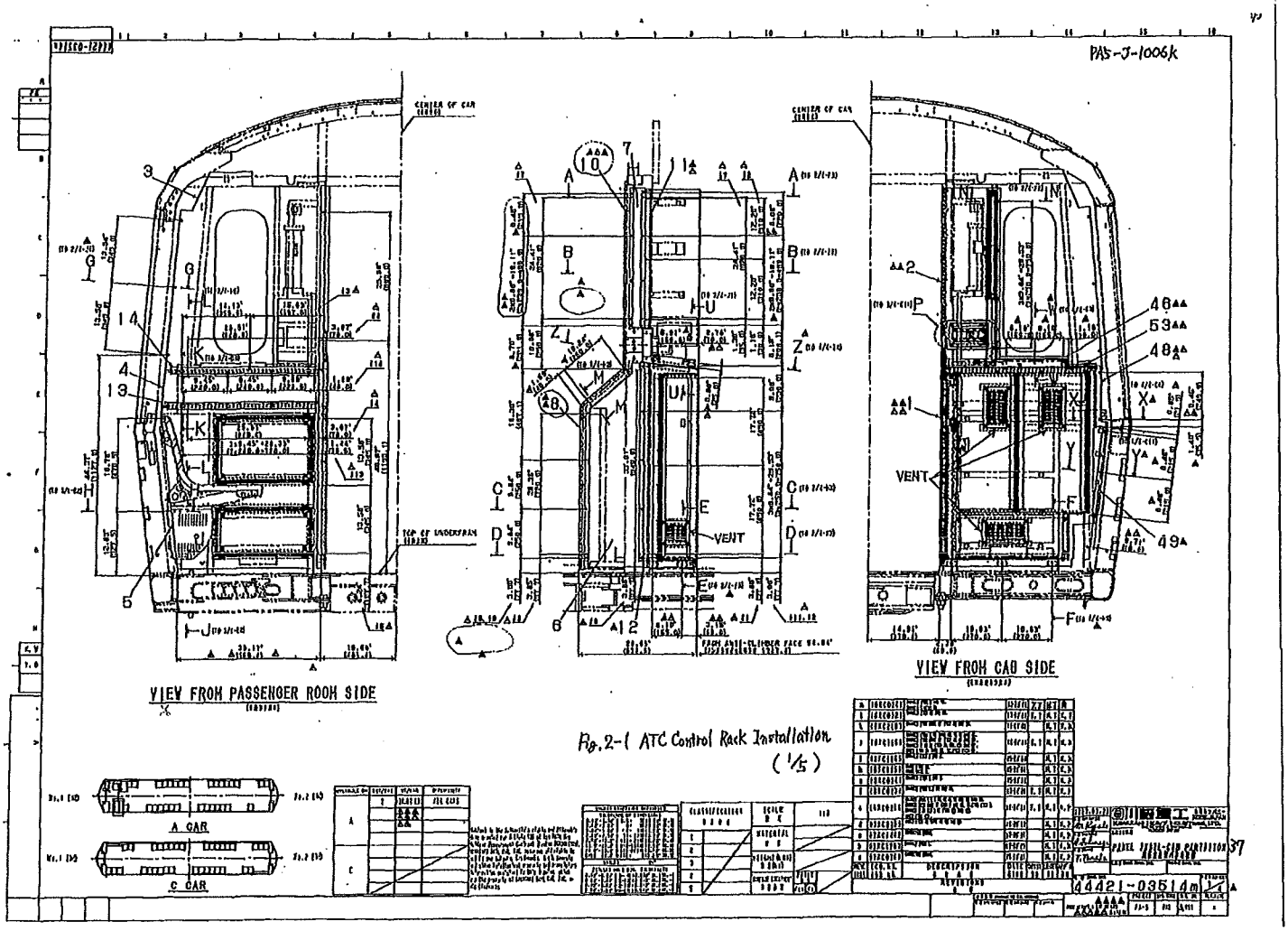
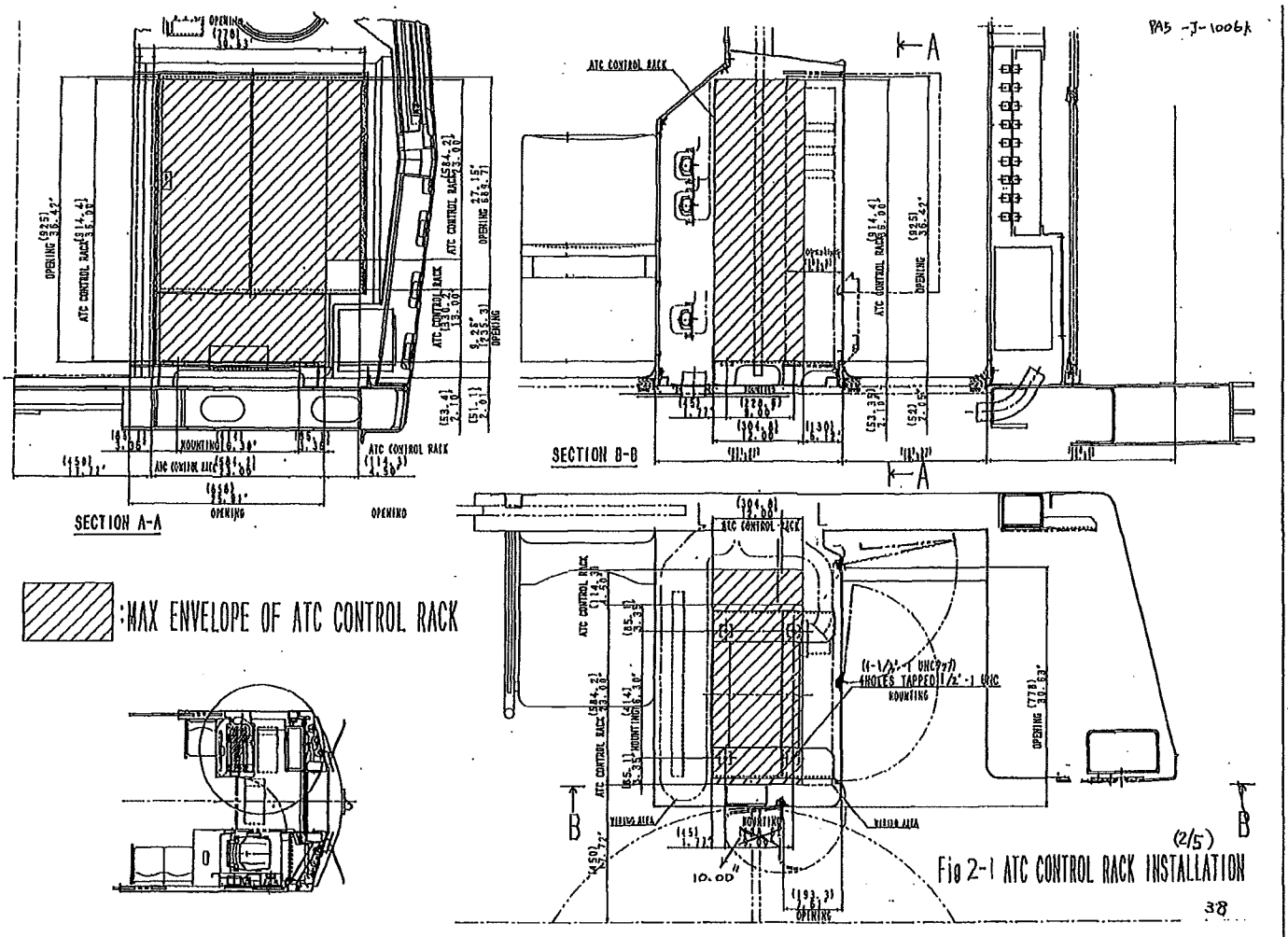


Fig. 2-1 ATC Control Rack Installation (1/5)

PAS -J-10064



(2/5)

Fig 2-1 ATC CONTROL RACK INSTALLATION

PAS-3-1006k

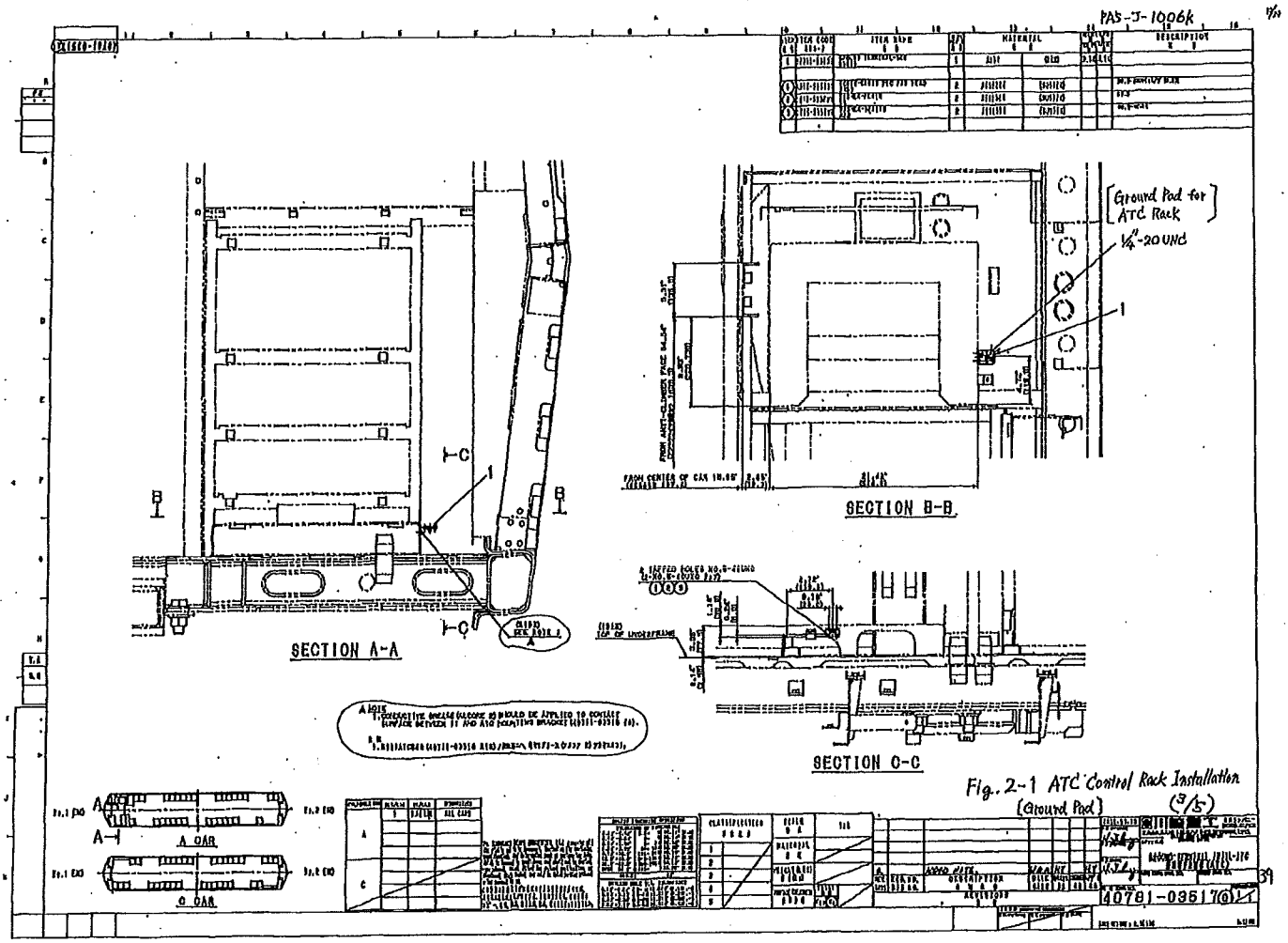


Fig. 2-1 ATC Control Rack Installation (Ground Pad) (3/5)

40781-0351760

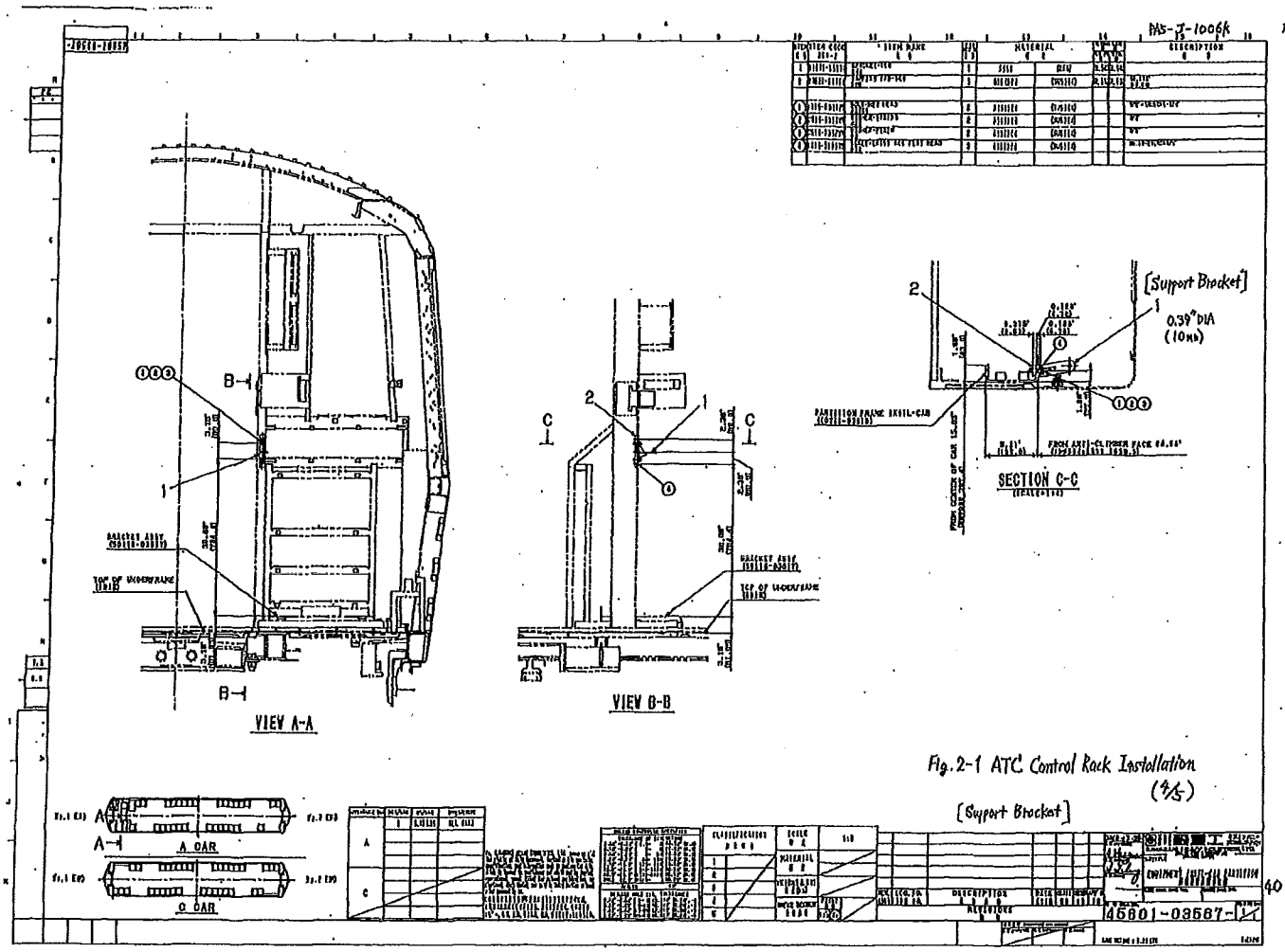


Fig. 2-1 ATC Control Rack Installation (1/3)

[Support Bracket]

45601-03567-1

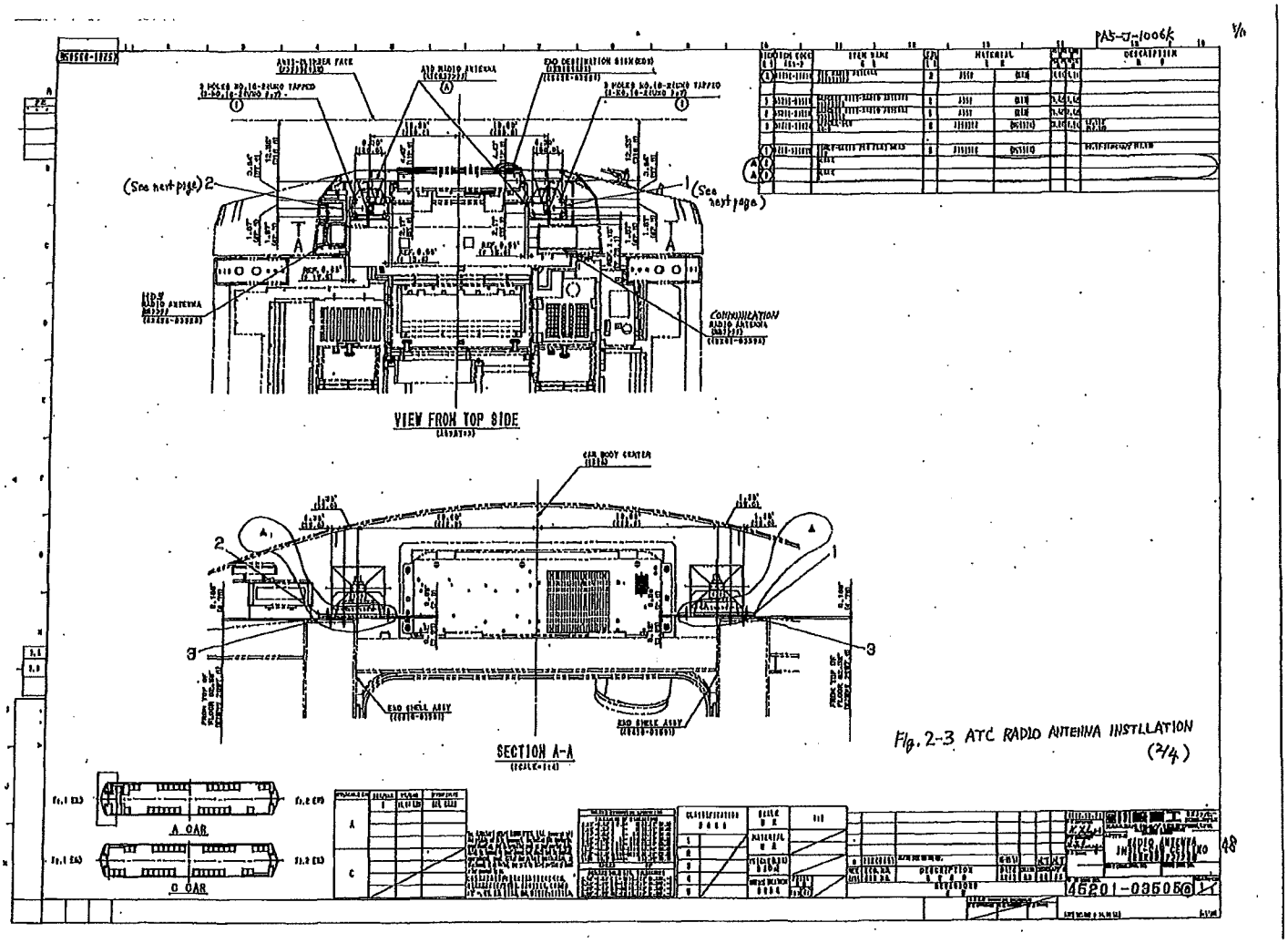
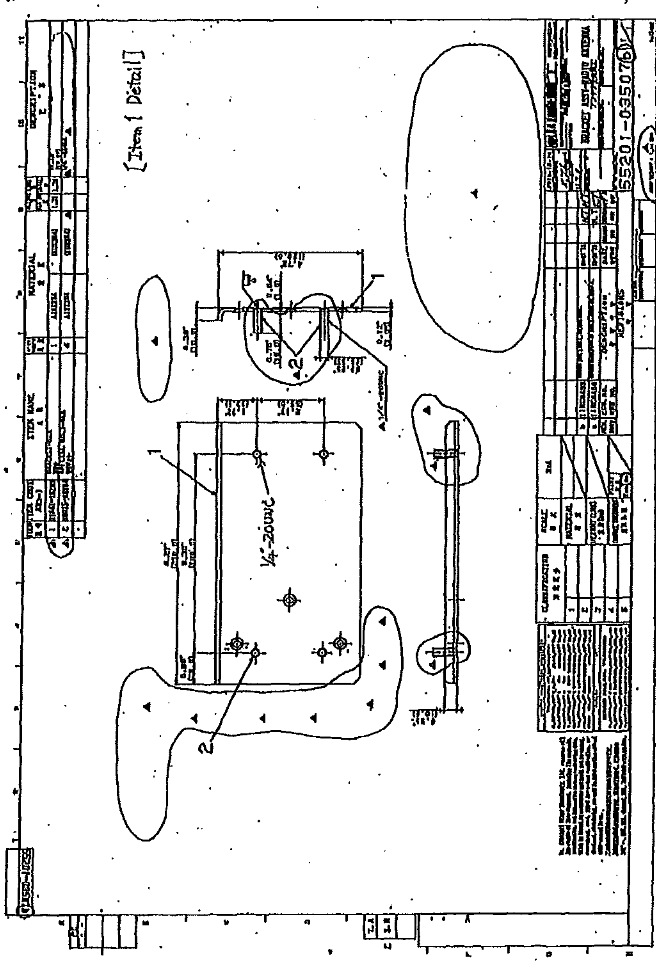


Fig. 2-3 ATC RADIO ANTENNA INSTLLATION (2/4)

PAS-J-1006K



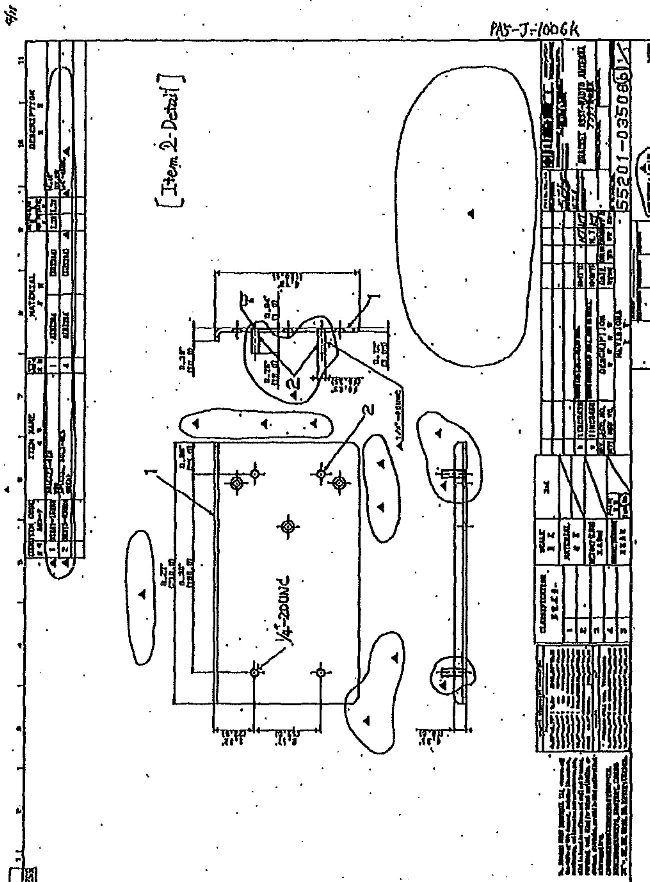


Fig. 2-3 ATC RADIO ANTENNA INSTALLATION (3/4)
[Bracket]

PA5-J-1006A

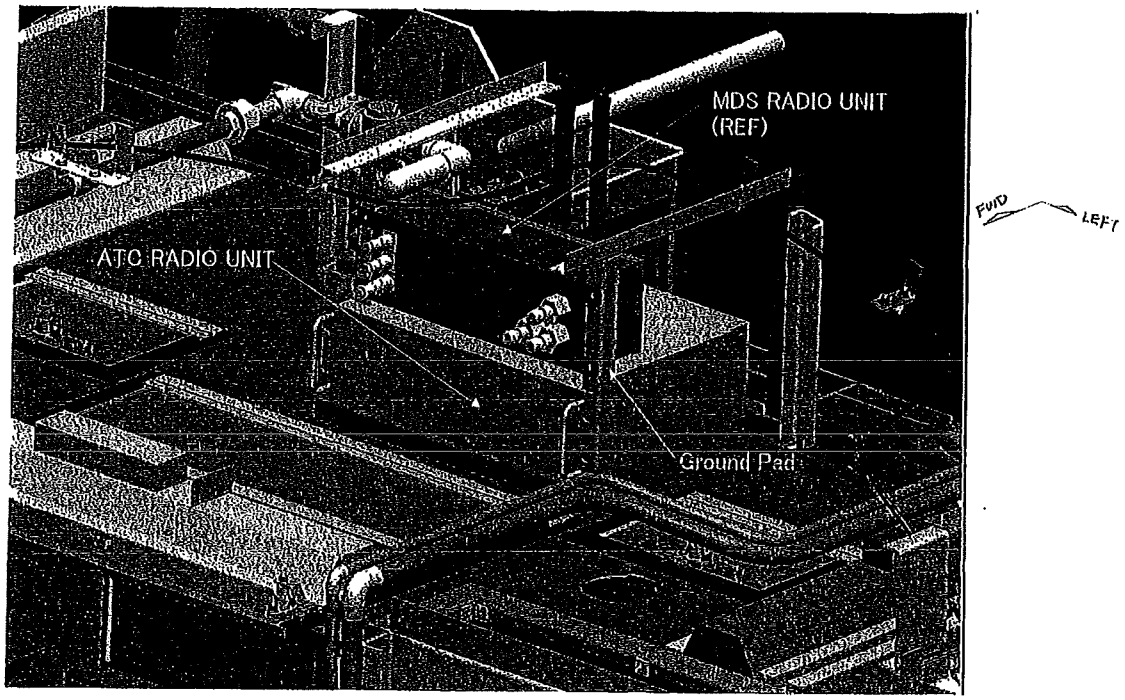


Fig 2-4 ATC RADIO UNIT INSTALLATION (1/5) 51

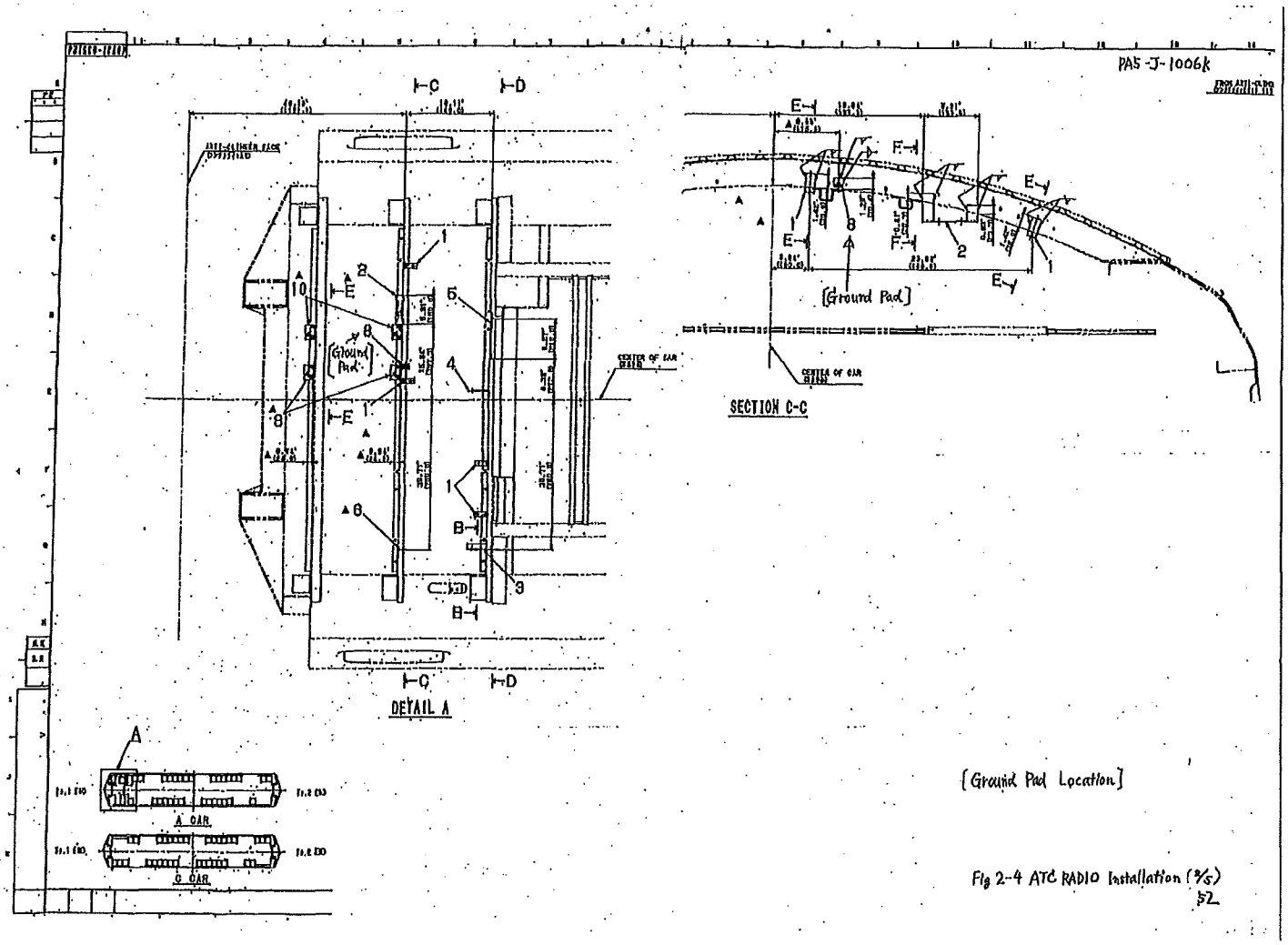
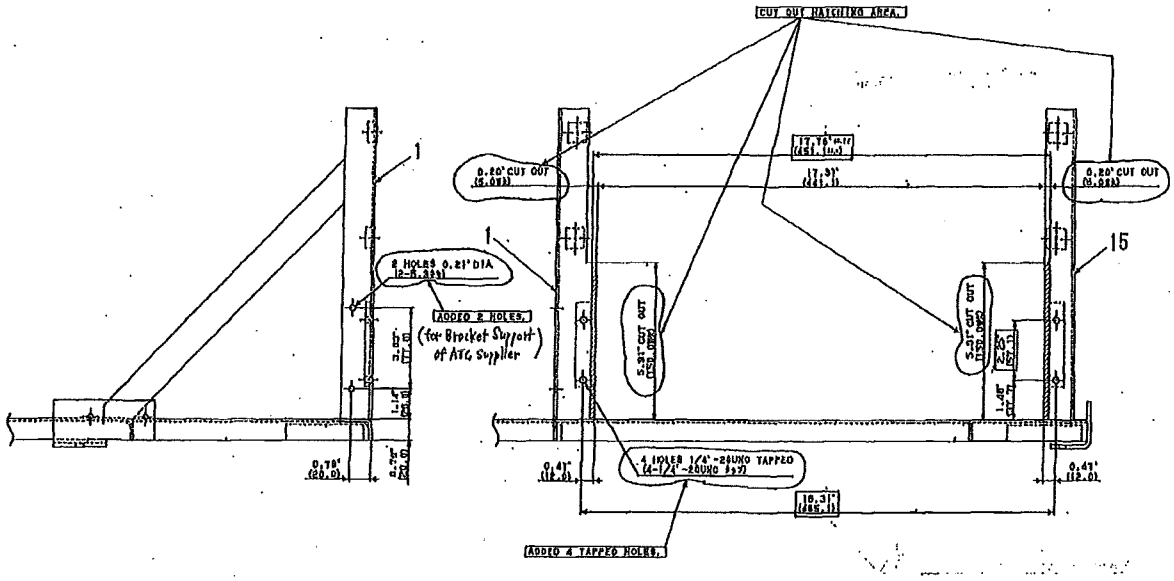


Fig 2-4 ATC RADIO Installation (1/5)

52

PAS-J-1006K



50761-03550 (CONVERTION)

Fig.2-4 ATC RADIO INSTLLATION (3/5)

PAS-J-1006K

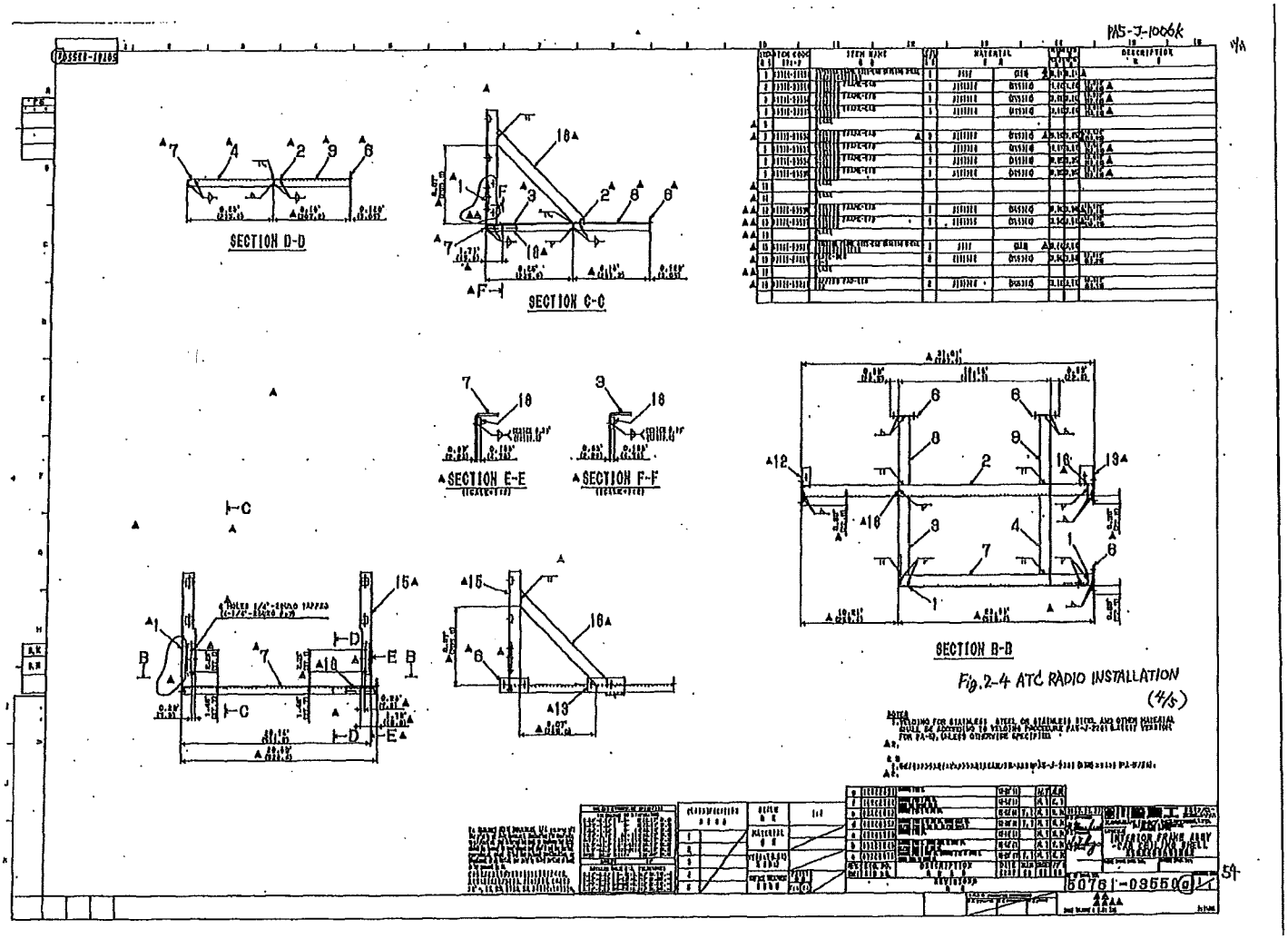
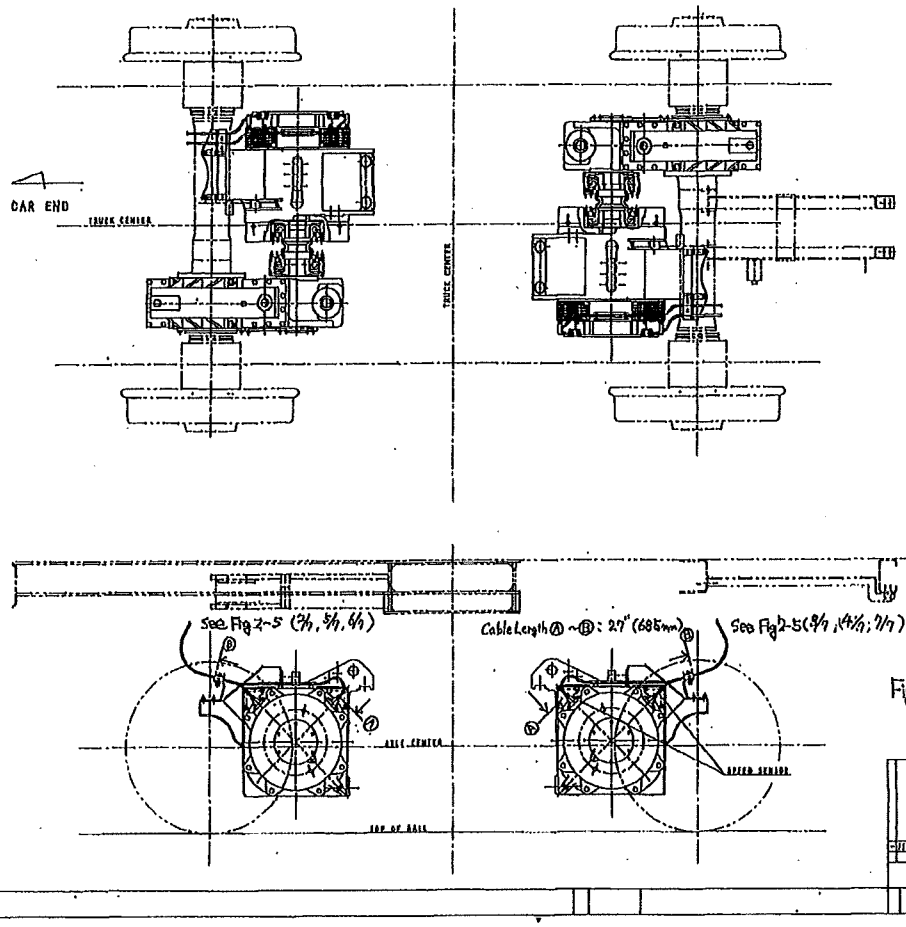


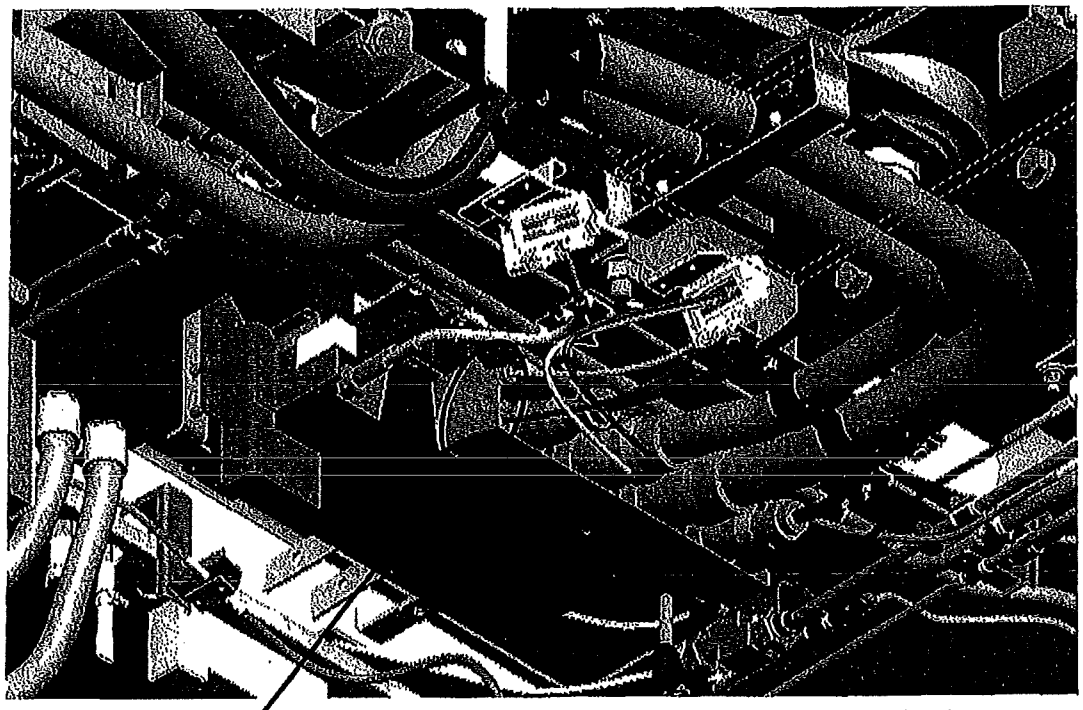
Fig. 2-4 ATC RADIO INSTALLATION (4/5)



DRAFT (1/7)

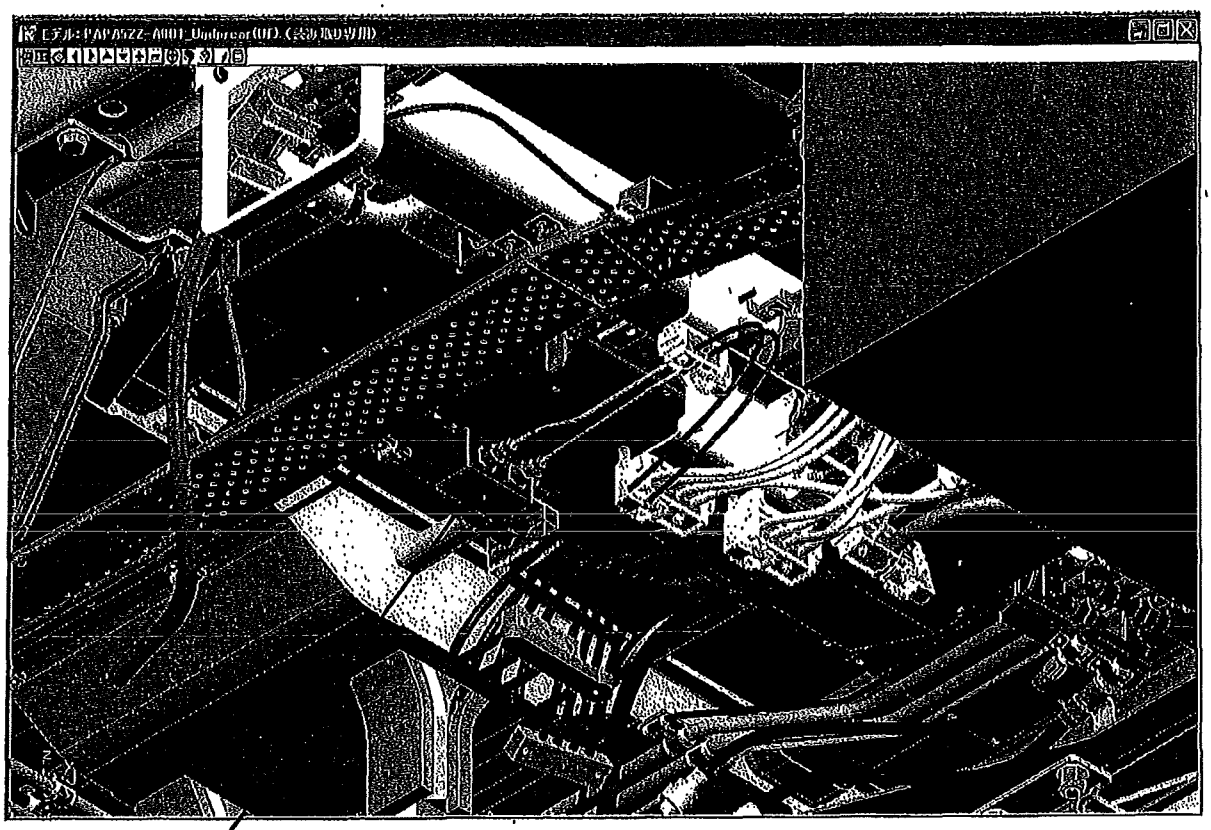
Fig 2-5 Speed Sensor Install

PATH PA6



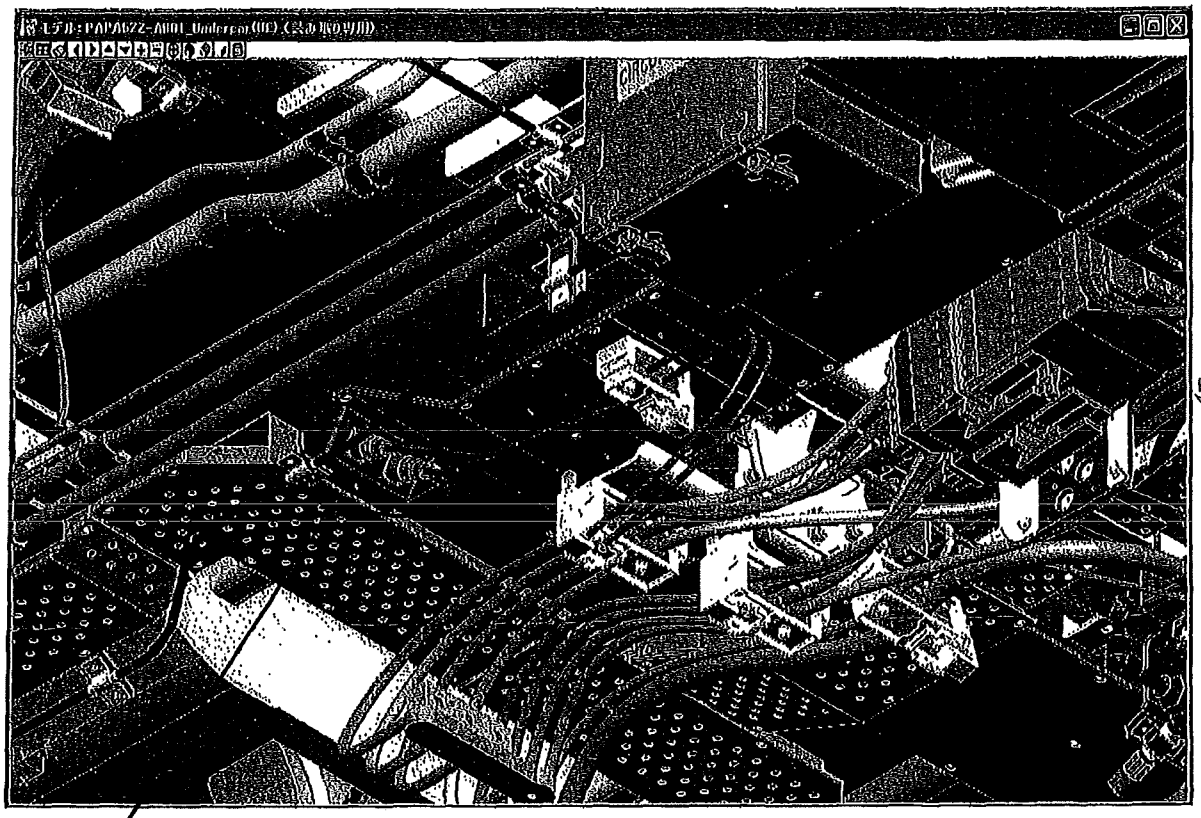
Kawasaki to provide two receptacles (connector) (one for propulsion, one for ATC), cleat (and bracket) on the car.
ATC supplier to provide the plug (connector) with cable coming from encoder (speed sensor)

Fig 2-5 Wiring for Speed Sensor (2/7) (#1 Axle of Truck)



Kawasaki to provide two receptacles (connector) (one for propulsion, one for ATO), cleat (and bracket) on the car.
ATO supplier to provide the plug (connector) with cable coming from encorder (speed sensor)

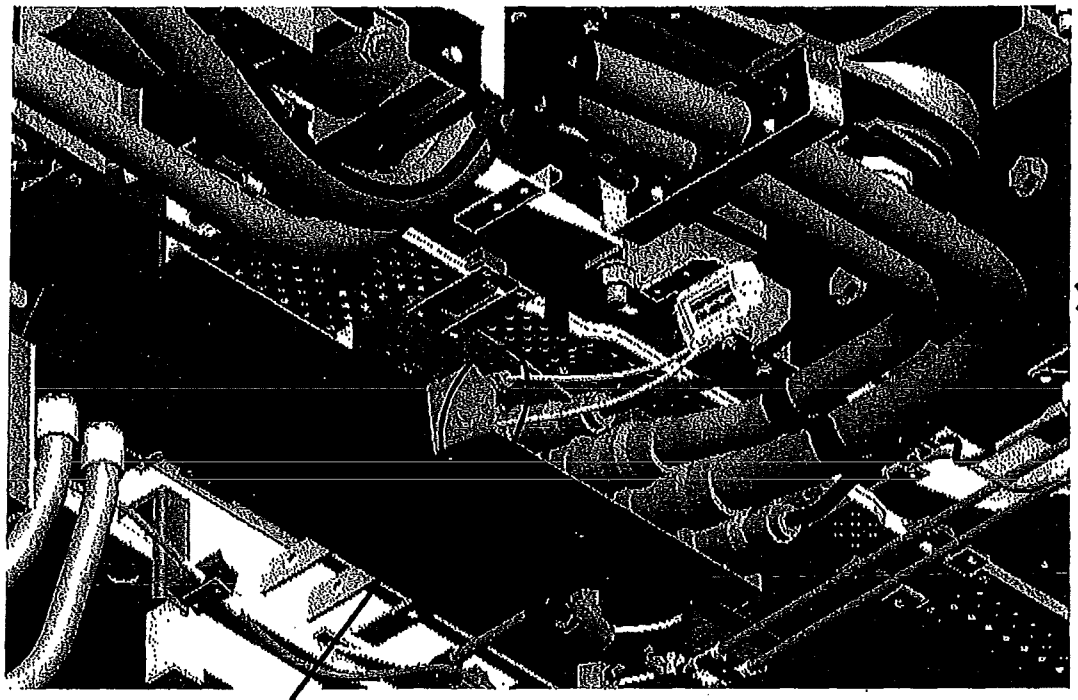
Fig 2-5 Wiring for Speed Sensor (3/7) (#2 Axle of Truck)



Kawasaki to provide two receptacles (connector) (one for propulsion, one for ATO), cleat (and bracket) on the car.
ATO supplier to provide the plug (connector) with cable coming from encorder (speed sensor)

Fig 2-5 Wiring for Speed Sensor (4/7) (#3 Axle of Truck)

PA5-J-1006 k



Kawasaki to provide two receptacles (connector) (one for propulsion, one for ATC), cleat (and bracket) on the car.
ATC supplier to provide the plug (connector) with cable coming from encoder (speed sensor)

Fig 2-5 Wiring for Speed Sensor (5/7) (#4 Axle of Truck)

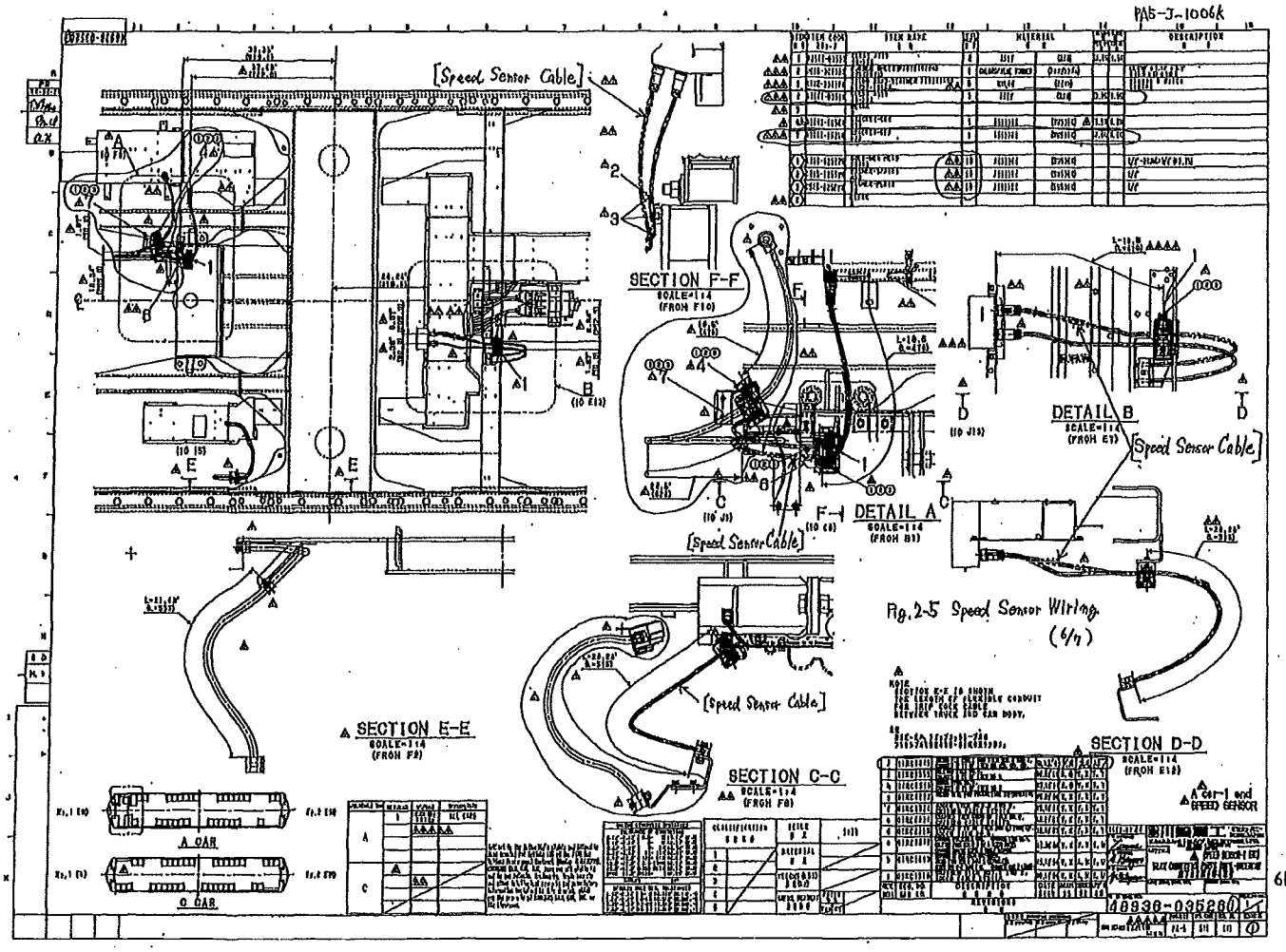


Fig. 2-5 Speed Sensor Wiring (6/7)

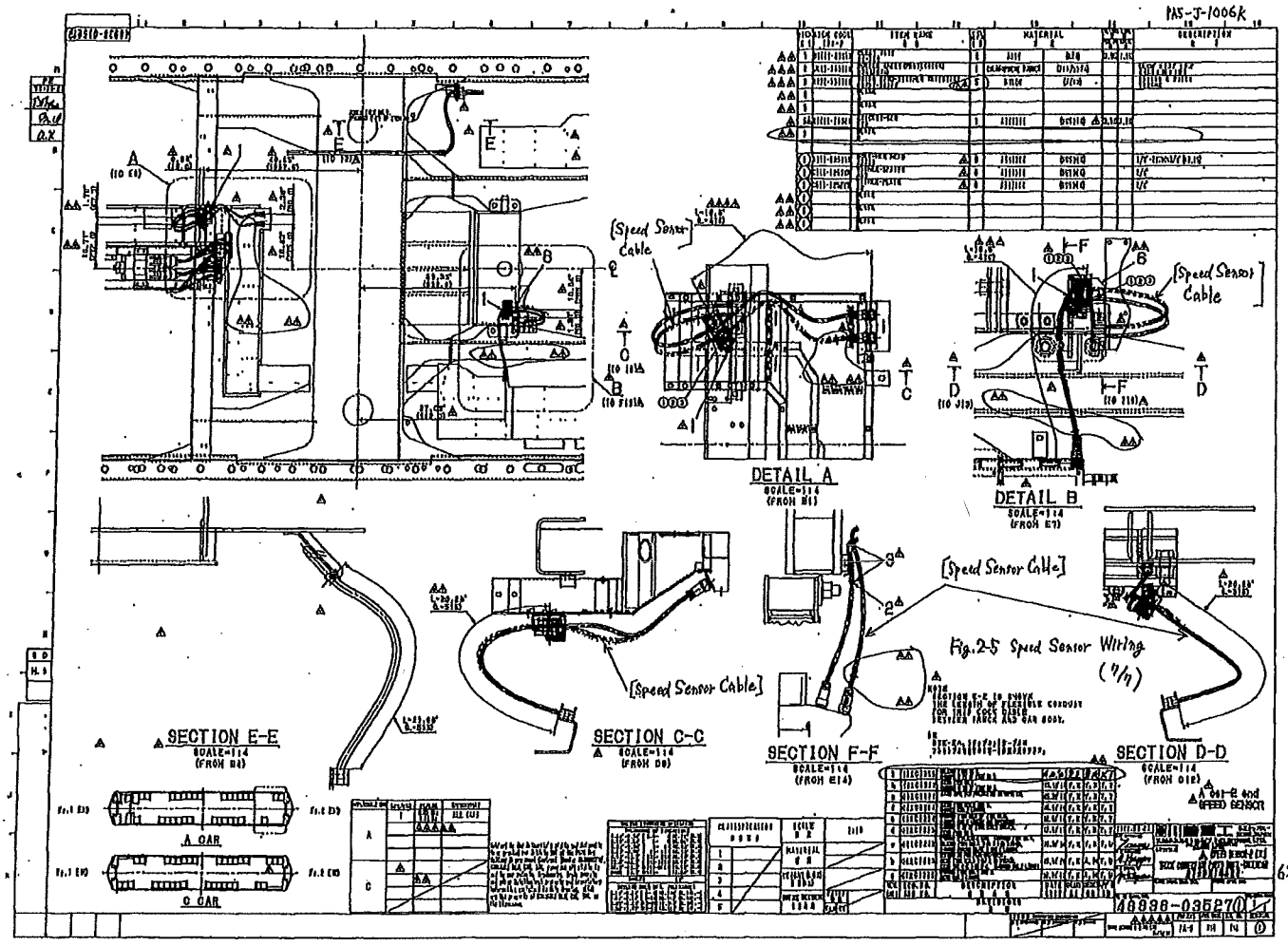
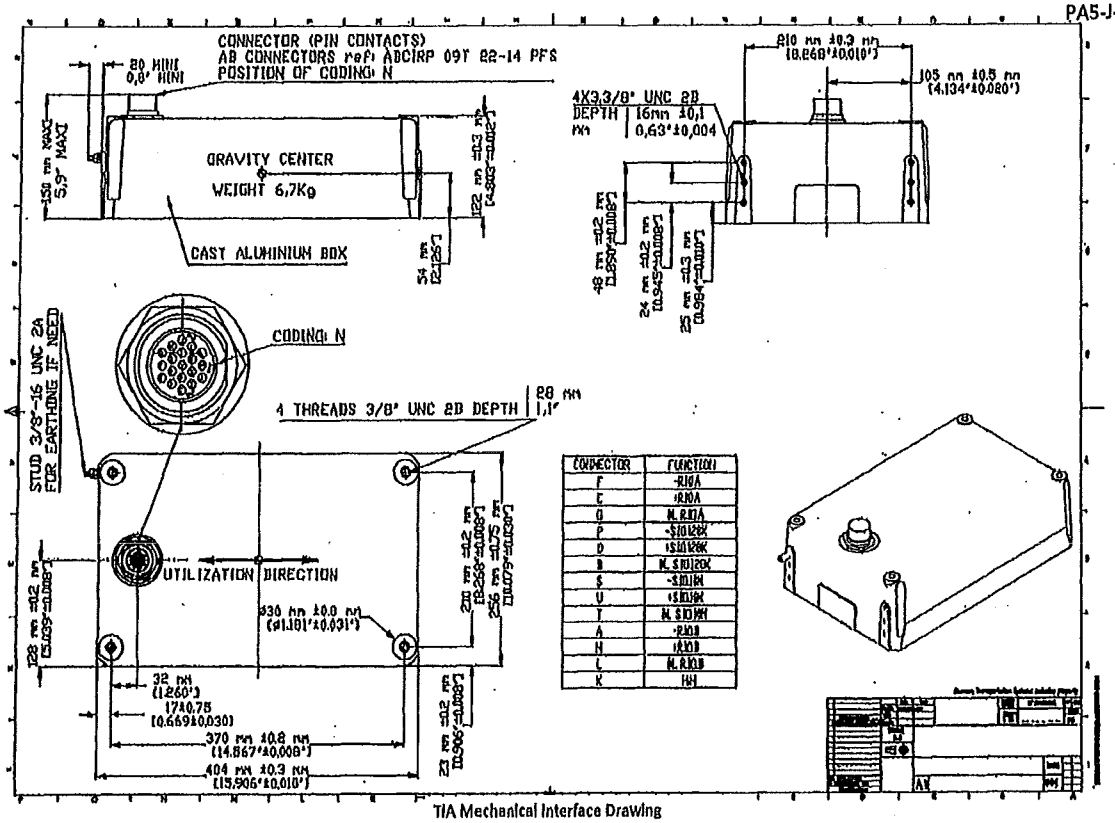


Fig.2-5 Speed Sensor Wiring (1/1)

PA5-J-1006k



TIA Mechanical Interface Drawing

Fig 2-8 ~~Proximity Sensor~~ / Trandponder Antenna

(4/8)

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PA6-U-7398, Rev. new
Attachment 1-1

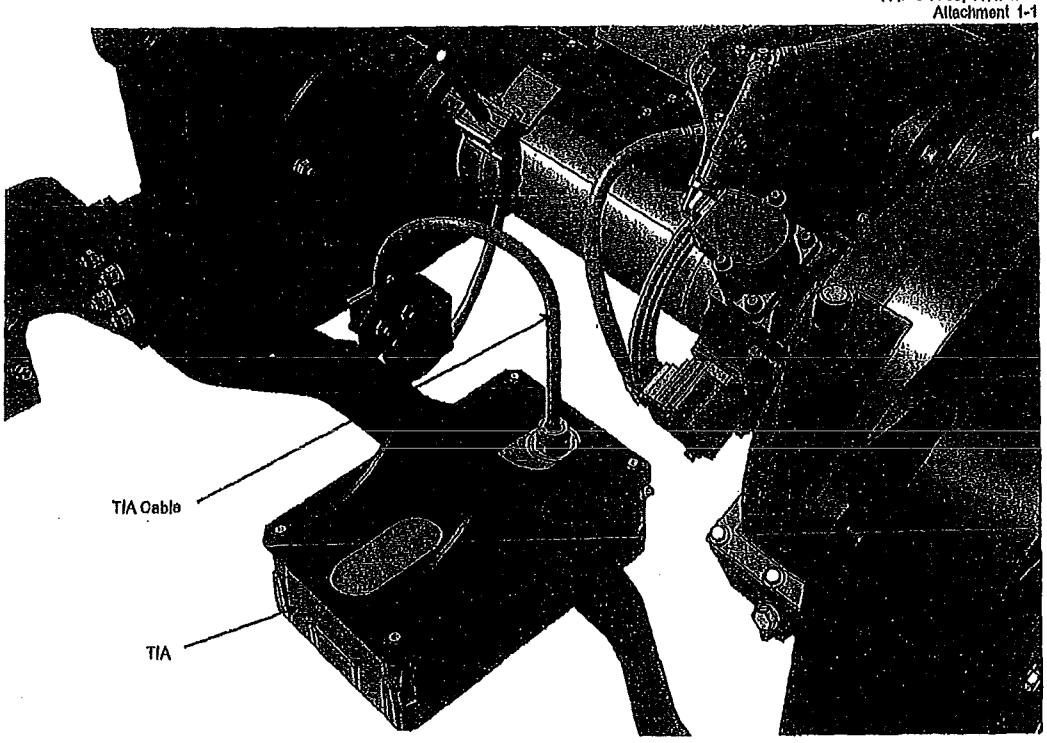


Fig. 2-8 TIA Wiring (5/8)

PA6-U-7399, Rev. new
Attachment 2-1

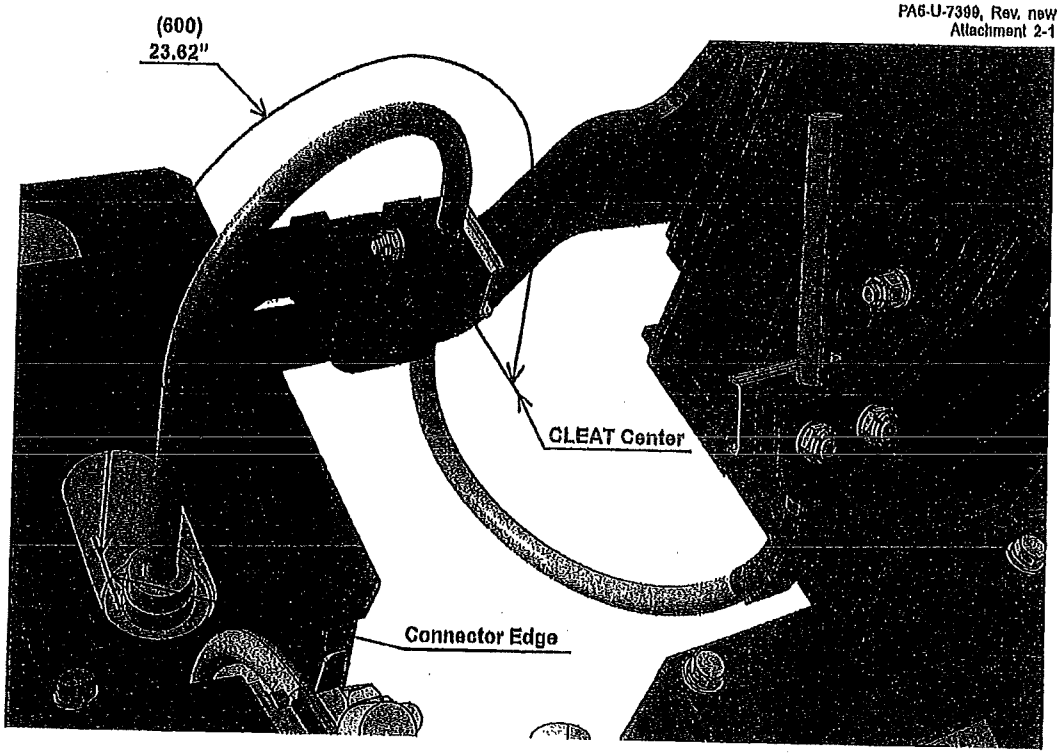
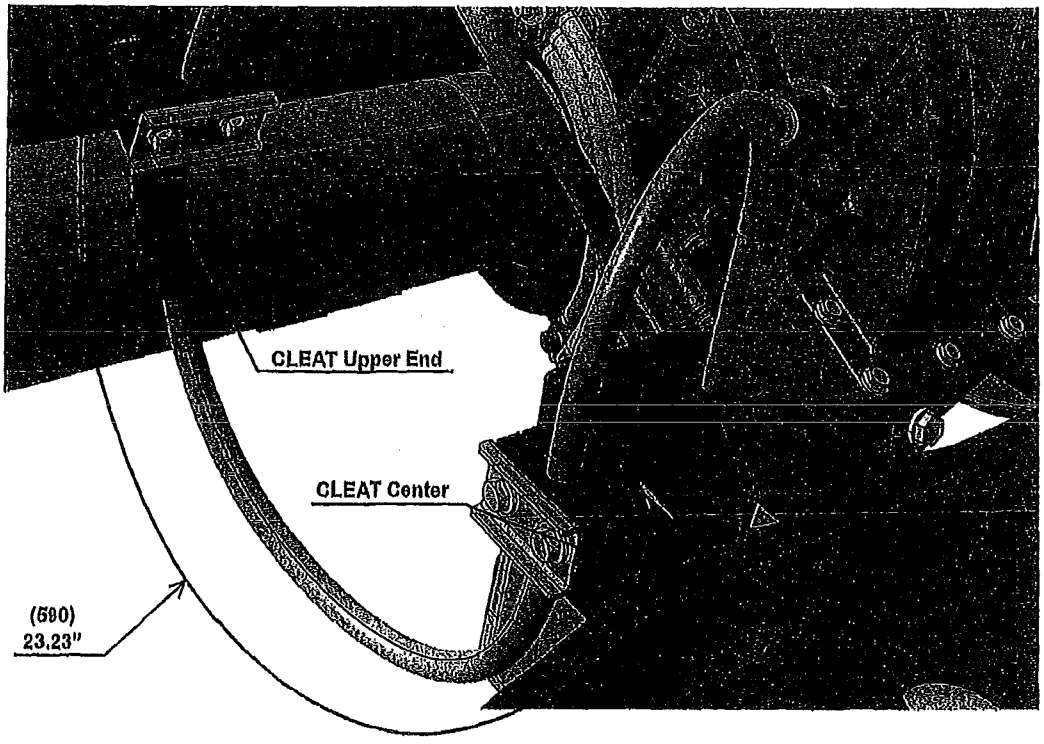


Fig. 2-8 TIA Wiring (1/8)

PA6-U-7399, Rev. new
Attachment 2-2



77

Fig 2-8 TIA Wiring (7/8)

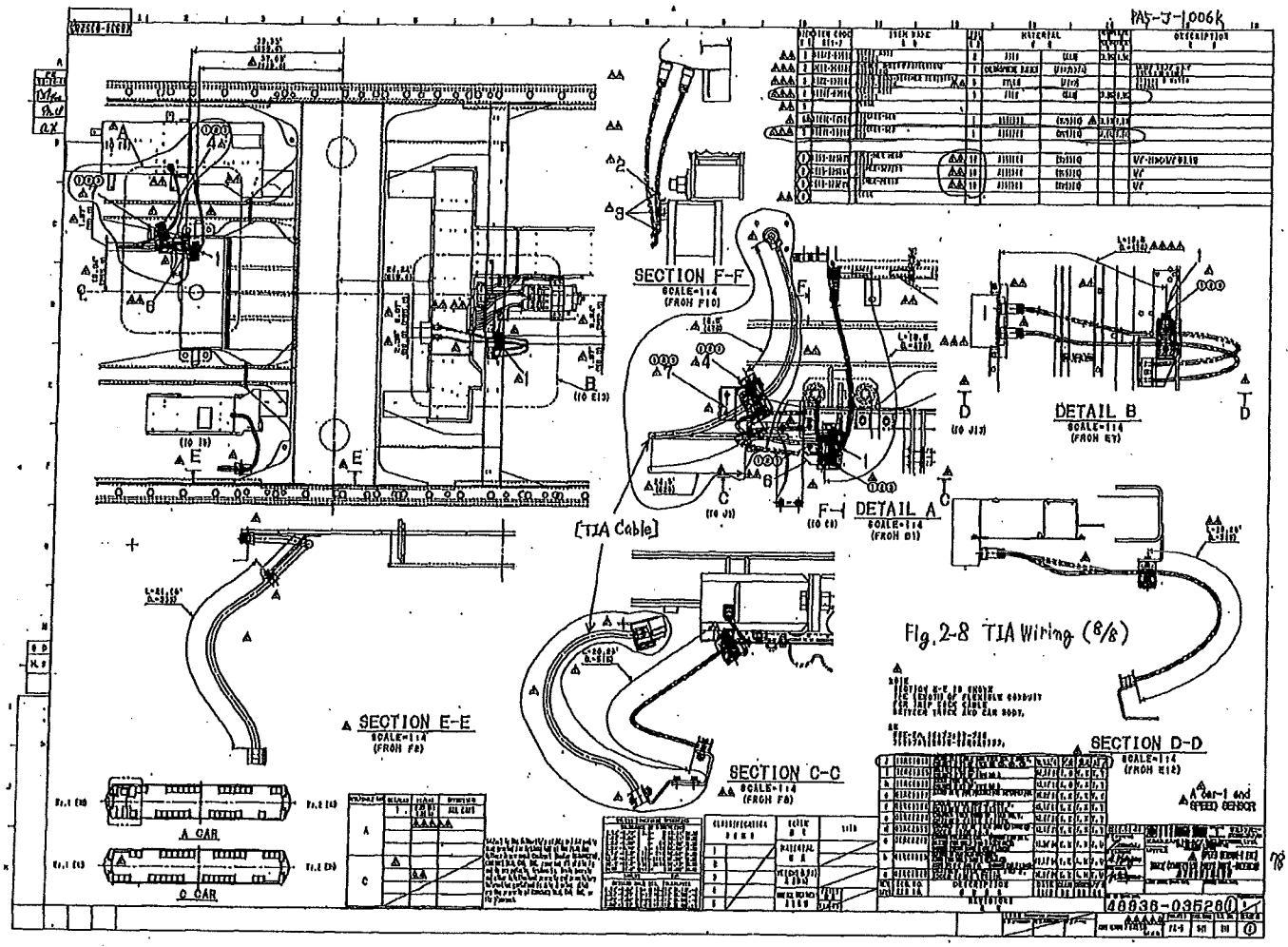


Fig. 2-8 TIA Wiring (6/8)

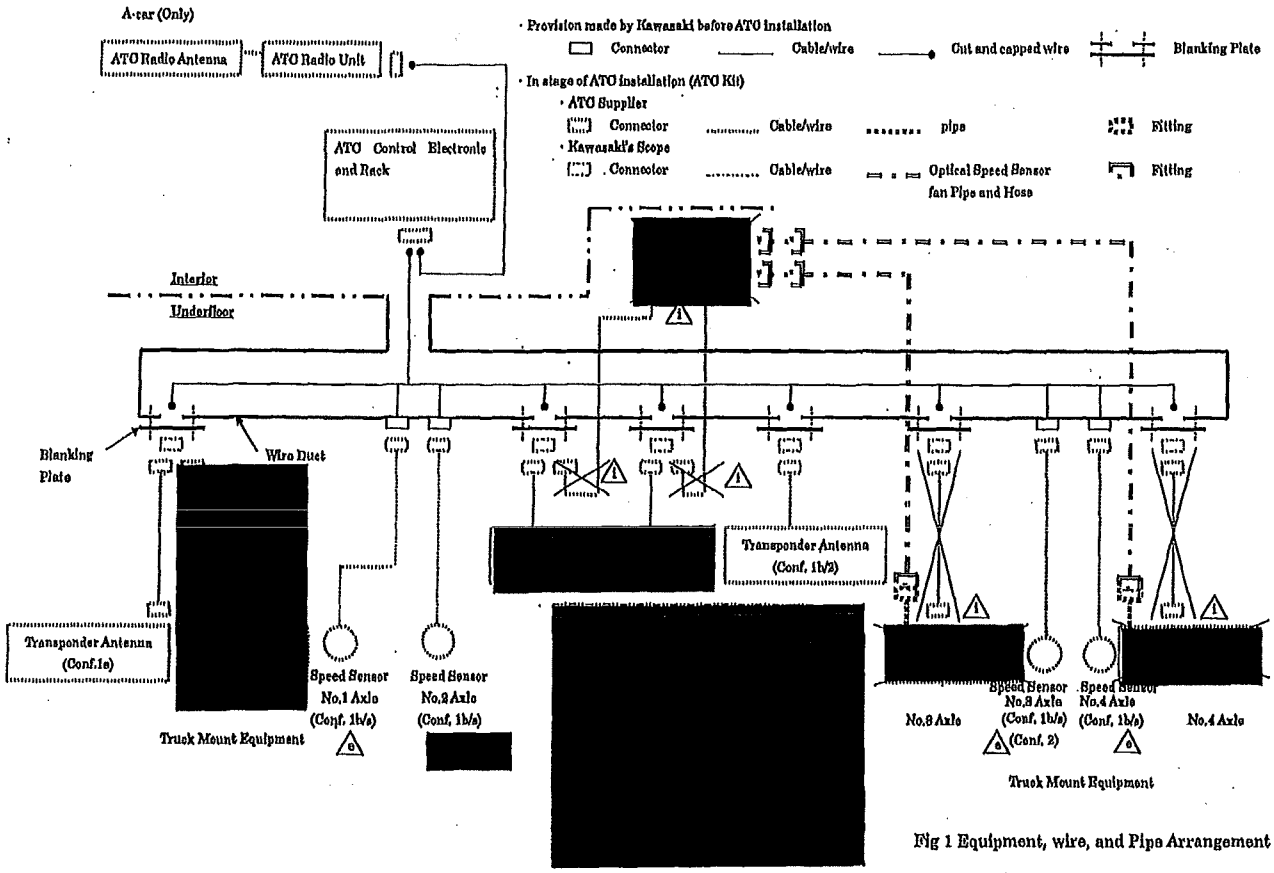


Fig 1 Equipment, wire, and Pipe Arrangement

TUNNEL	START_MARKER	END_MARKER	GRADE	FEET
A	1010 + 70	1011 + 20	1.58	50
A	1011 + 20	1017 + 10	-0.5	590
A	1017 + 43	1026 + 98	-1.377	955
A	1026 + 80	1031 + 20	0.5	440
A	1031 + 20	1033 + 90	2.41	270
A	1033 + 90	1035 + 0	-1.17	110
A	1035 + 0	1036 + 20	-1.17	120
A	1036 + 20	1054 + 10	-0.59	1790
A	1054 + 10	1063 + 40	-2.54	930
A	1063 + 43	1064 + 65	-0.3	122
A	1064 + 65	1065 + 60	-0.14	95
A	1065 + 60	1068 + 17	0.374	257
A	1068 + 53	1070 + 92	0	239
A	1068 + 17	1068 + 53	0.937	36
A	1070 + 92	1071 + 53	1.118	61
A	1071 + 53	1072 + 73	0.216	120
A	1072 + 73	1074 + 14	0.832	141
A	1074 + 14	1075 + 4	0.864	90
A	1075 + 94	1077 + 25	0.996	131
A	1075 + 4	1075 + 94	0.111	90
A	1077 + 25	1080 + 26	-0.442	301
A	1080 + 26	1083 + 39	-0.724	313
A	1083 + 39	1084 + 22	-0.728	83
A	1084 + 39	1085 + 76	-0.323	137
A	1085 + 76	1087 + 60	-0.635	184
A	1090 + 8	1091 + 1	-1.611	93
A	1091 + 1	1092 + 52	-2.36	151
A	1092 + 52	1093 + 42	-4	90
A	1093 + 42	1095 + 27	-1.4	185
A	1095 + 27	1096 + 14	0	87
A	1096 + 14	1097 + 13	-4.423	99
A	1097 + 80	1098 + 70	-3	90
A	1097 + 13	1097 + 80	-4.571	67
A	1098 + 70	1099 + 96	-3.716	126
A	1099 + 96	1100 + 66	-4.2	70
A	1100 + 66	1101 + 28	-3.1	62
A	1101 + 28	1102 + 18	-3.55	90
A	1102 + 18	1103 + 9	-3.815	91
A	1103 + 9	1104 + 30	-3.457	121
A	1104 + 30	1109 + 98	-1.593	568
A	1109 + 98	1113 + 23	5.465	325
A	1113 + 23	1116 + 36	1.404	313
A	1116 + 36	1119 + 46	0	310
A	1119 + 46	1124 + 31	0.718	485
A	1124 + 31	1127 + 5	-0.273	274
A	1127 + 5	1128 + 87	-0.273	182

A	1128 + 87	1132 + 41	-0.055	354
A	1132 + 41	1137 + 21	-0.324	480
A	1137 + 21	1139 + 97	3.271	276
A	1139 + 97	1147 + 66	1.144	769
A	1147 + 66	1151 + 91	1.765	425
A	1151 + 91	1156 + 32	3.469	441
A	1156 + 32	1158 + 10	4.962	178
A	1158 + 10	1159 + 14	3.257	104
A	1159 + 48	1160 + 7	1.521	59
A	1159 + 14	1159 + 48	0	34
A	1160 + 88	1163 + 26	0.134	238
A	1160 + 7	1160 + 88	0.123	81
A	1163 + 71	1165 + 65	1.333	194
A	1163 + 26	1163 + 71	2.567	45
A	1165 + 65	1166 + 17	-2.019	52
A	1165 + 50	1165 + 65	1.333	15
A	1166 + 68	1167 + 35	-3.301	67
A	1166 + 17	1166 + 68	-4.45	51
A	1167 + 35	1168 + 39	-2.089	104
A	1168 + 39	1168 + 89	-0.395	50
A	1168 + 89	1169 + 23	-0.424	34
A	1169 + 23	1170 + 34	-1.546	111
A	1170 + 34	1171 + 36	0.9304	102
A	1171 + 36	1174 + 28	1.4212	292
A	1174 + 28	1176 + 71	2.428	243
A	1176 + 71	1177 + 62	1.7033	91
A	1177 + 62	1178 + 95	3.4211	133
A	1178 + 95	1180 + 48	2.2549	153
A	1180 + 48	1182 + 83	2.997	235
A	1182 + 83	1184 + 65	2.131	182
A	1184 + 65	1185 + 66	3.7426	101
A	1185 + 66	1186 + 80	2.7982	114
A	1186 + 80	1187 + 29	0.5102	49
A	1187 + 29	1189 + 0	0.53	171
B	5 + 0	5 + 70	-0.81	70
B	5 + 70	6 + 8	-4.03	38
B	6 + 99	8 + 41	-3.808	142
B	6 + 8	6 + 99	-4.741	91
B	8 + 41	9 + 10	-4.599	69
B	9 + 72	10 + 43	-4.883	71
B	9 + 10	9 + 72	-3.15	62
B	10 + 75	12 + 48	-4.345	173
B	10 + 43	10 + 75	-2.902	32
B	12 + 48	16 + 23	-3.703	375
B	16 + 23	17 + 50	-4.338	127
B	17 + 50	18 + 0	-4.127	50
B	18 + 81	20 + 22	-4.647	141

B	18 + 0	18 + 81	2.537	81
B	20 + 22	21 + 33	-1.763	111
B	21 + 33	22 + 3	0	70
B	22 + 3	22 + 65	-1.667	62
B	22 + 65	23 + 0	0	35
B	23 + 33	24 + 4	0	71
B	23 + 13	23 + 33	1.25	20
B	23 + 0	23 + 13	0	13
B	24 + 86	26 + 7	0.772	121
B	24 + 4	24 + 86	2.505	82
B	26 + 7	27 + 8	2.334	101
B	27 + 71	28 + 93	2.415	122
B	27 + 9	27 + 71	0	62
B	28 + 93	29 + 56	-0.352	63
B	29 + 84	30 + 74	-0.112	90
B	29 + 56	29 + 84	-1.046	28
B	30 + 74	31 + 0	-0.337	26
B	31 + 0	32 + 65	-0.337	165
B	32 + 65	33 + 42	-3.047	77
B	33 + 42	33 + 88	0.112	46
B	33 + 88	34 + 3	1.287	15
B	34 + 25	35 + 56	0.107	131
B	34 + 3	34 + 25	0.138	22
B	35 + 56	36 + 36	1.642	80
B	36 + 36	36 + 68	0.134	32
B	36 + 88	37 + 8	0.137	20
B	36 + 68	36 + 88	1.13	20
B	37 + 28	37 + 78	0.819	50
B	37 + 8	37 + 28	0	20
B	37 + 78	37 + 98	1.77	20
B	37 + 98	38 + 15	0.819	17
B	38 + 15	40 + 12	-0.764	197
B	40 + 13	47 + 52	-0.433	739
B	47 + 52	50 + 58	-0.947	306
B	50 + 58	52 + 6	-0.338	148
B	52 + 6	58 + 47	-0.539	641
B	58 + 47	63 + 67	-0.452	520
B	63 + 67	66 + 27	-0.673	260
B	66 + 27	68 + 35	-0.183	208
B	68 + 35	71 + 0	-0.95	265
B	71 + 0	72 + 26	0	126
B	72 + 26	75 + 13	0.679	287
B	75 + 13	75 + 76	-0.637	63
B	93 + 0	100 + 0	2.39	700
B	100 + 0	107 + 0	1.34	700
B	107 + 80	115 + 80	0.61	800
B	107 + 0	107 + 80	1.34	80

B	115 + 80	124 + 90	-0.41	910
B	124 + 90	128 + 30	-0.24	340
B	128 + 30	139 + 0	2.1	1070
B	139 + 0	158 + 0	0.08	1900
B	158 + 0	159 + 0	0.08	100
B	159 + 0	166 + 0	-1.45	700
B	166 + 0	175 + 70	1.37	970
B	175 + 70	182 + 20	-1.1	650
C	1162 + 48	1163 + 1	-0.178	53
C	1163 + 74	1165 + 23	0.189	149
C	1163 + 1	1163 + 74	0.461	73
C	1165 + 23	1166 + 27	-1.897	104
C	1166 + 27	1167 + 5	-2.077	78
C	1167 + 5	1168 + 38	-2.781	133
C	1168 + 38	1169 + 8	-0.302	70
C	1169 + 75	1171 + 51	0.288	176
C	1169 + 8	1169 + 75	-1.598	67
C	1171 + 51	1171 + 84	1	33
D	1281 + 56	1282 + 40	1.4	84
D	1282 + 40	1283 + 1	0.4	61
D	1283 + 74	1285 + 57	2.181	183
D	1283 + 1	1283 + 74	1.869	73
D	1285 + 57	1287 + 31	1.459	174
D	1287 + 31	1288 + 61	-1.697	130
D	1288 + 61	1290 + 24	1.027	163
D	1290 + 24	1291 + 6	0	82
E	1171 + 0	1179 + 10	-3.06	810
E	1179 + 10	1184 + 0	-1.71	490
E	1184 + 0	1187 + 50	-1.71	350
E	1187 + 50	1196 + 0	1.06	850
E	1196 + 0	1199 + 0	0.48	300
E	1199 + 0	1204 + 40	0.48	540
E	1204 + 40	1215 + 80	0.54	1140
E	1215 + 80	1222 + 60	0.44	680
E	1222 + 60	1223 + 0	0	40
E	1223 + 30	1226 + 0	0.5	270
E	1223 + 0	1223 + 30	0	30
E	1226 + 0	1228 + 80	0.5	280
E	1228 + 80	1239 + 0	3.59	1020
E	1239 + 0	1240 + 0	0.26	100
E	1240 + 0	1251 + 40	0.26	1140
E	1251 + 40	1262 + 0	-0.55	1060
E	1262 + 0	1272 + 40	-0.162	1040
E	1272 + 40	1279 + 90	-3.45	750
E	1279 + 90	1280 + 70	-0.35	80
E	1280 + 70	1281 + 0	-0.7	30
E	1281 + 0	1287 + 70	-0.7	670

E	1287 + 70	1295 + 30	1.73	760
F	1022 + 50	1027 + 30	-0.44	480
F	1027 + 30	1037 + 0	1.56	970
F	1037 + 30	1047 + 30	0.98	1000
F	1037 + 0	1037 + 30	1.56	30
F	1047 + 30	1055 + 20	0.66	790
F	1055 + 20	1067 + 0	-0.49	1180
F	1067 + 0	1076 + 90	-1.11	990
F	1076 + 90	1077 + 0	-1.72	10
F	1077 + 0	1088 + 50	-1.72	1150
F	1088 + 50	1092 + 0	-0.5	350
F	1092 + 0	1095 + 0	-0.5	300
F	1095 + 70	1099 + 20	-1.1	350
F	1095 + 0	1095 + 70	-0.5	70
F	1099 + 20	1109 + 20	-0.52	1000
F	1109 + 20	1118 + 50	-0.5	930
F	1118 + 50	1121 + 0	-0.49	250
F	1121 + 0	1132 + 10	-0.49	1110
F	1132 + 10	1139 + 0	1.68	690
F	1139 + 90	1153 + 20	4.21	1330
F	1139 + 0	1139 + 90	1.68	90
G	1223 + 0	1229 + 80	0.5	680
G	1229 + 80	1236 + 70	3.44	690
G	1236 + 70	1240 + 0	0.44	330
G	1240 + 0	1247 + 0	2.79	700
G	1247 + 0	1248 + 10	2.79	110
G	1248 + 10	1255 + 10	0.5	700
G	1255 + 10	1257 + 0	2.82	190
G	1257 + 0	1258 + 30	2.82	130
G	1258 + 30	1269 + 90	0.52	1160
G	1269 + 90	1277 + 0	-1	710
G	1277 + 0	1279 + 60	-0.5	260
G	1279 + 60	1286 + 0	2.5	640
G	1286 + 0	1288 + 70	1.62	270
G	1288 + 70	1294 + 50	1	580
G	1294 + 50	1309 + 0	0.14	1450
G	1309 + 0	1314 + 0	0.22	500
G	1314 + 0	1317 + 25	0.396	325
G	1317 + 25	1325 + 0	0.054	775
G	1335 + 0	1342 + 0	-0.56	700
G	1342 + 0	1347 + 5	-0.251	505
G	1347 + 50	1354 + 50	-0.676	700
G	1354 + 50	1358 + 0	-0.334	350
G	1358 + 0	1362 + 0	-0.638	400
G	1362 + 0	1368 + 0	-0.353	600
G	1368 + 0	1373 + 0	0.504	500
G	1373 + 0	1380 + 0	1.072	700

G	1380 + 0	1381 + 0	1.072	100
G	1381 + 0	1383 + 50	1.57	250
G	1383 + 50	1390 + 80	0.37	730
G	1390 + 80	1392 + 43	0	163
G	1392 + 43	1394 + 8	0.11	165
G	1394 + 8	1395 + 73	-0.11	165
G	1395 + 73	1397 + 35	0	162
G	1397 + 35	1399 + 20	0.09	185
G	1399 + 20	1419 + 0	-1.06	1980
G	1419 + 0	1425 + 0	-1.078	600
G	1425 + 0	1441 + 50	-0.974	1650
G	1441 + 50	1462 + 0	0.47	2050
G	1462 + 0	1471 + 0	0	900
G	1471 + 0	1496 + 0	-0.074	2500
G	1496 + 0	1505 + 50	0.008	950
G	1505 + 50	1516 + 0	0.101	1050
G	1516 + 0	1523 + 0	-0.093	700
G	1535 + 0	1523 + 0	0.27	-1200
G	1542 + 0	1549 + 0	0.342	700
G	1542 + 0	1535 + 0	0.539	-700
G	1596 + 0	1602 + 62	1.7	662
G	1602 + 62	1610 + 40	3.91	778
G	1610 + 40	1613 + 0	0.96	260
G	1613 + 0	1616 + 75	-2.2	375
G	1616 + 75	1622 + 6	-0.48	531
G	1622 + 6	1624 + 43	-0.1	237
G	1624 + 43	1627 + 44	0.03	301
G	1627 + 44	1628 + 80	0	136
G	1628 + 80	1630 + 0	-0.34	120
G	1630 + 50	1634 + 41		391
G	1634 + 41	1638 + 75	-1.41	434
G	1638 + 76	1644 + 21	5.22	545
G	1644 + 21	1648 + 24	-0.7	403
G	1648 + 24	1654 + 36	-3.48	612
G	1654 + 36	1662 + 76	0.1	840
G	1662 + 76	1679 + 76	-0.04	1700
H	639 + 7	645 + 37	0.04	630
H	645 + 37	662 + 69	-0.14	1732
H	662 + 69	668 + 89	3.48	620
H	668 + 89	672 + 77	0.07	388
H	672 + 77	678 + 84	-4.56	607
H	678 + 84	682 + 73	1.41	389
H	683 + 73	684 + 0		27
H	684 + 0	686 + 0		200
H	686 + 0	687 + 32	-0.04	132
H	687 + 32	688 + 65	0.05	133
H	688 + 65	693 + 22	0.01	457

H	693 + 22	694 + 42	0.49	120
H	694 + 42	696 + 0	2.54	158
H	696 + 0	697 + 40	2.84	140
H	697 + 40	710 + 45	-4.06	1305
H	710 + 45	712 + 24	-3.13	179
H	712 + 24	715 + 99	-0.51	375
H	716 + 0	721 + 50	-0.222	550
H	721 + 50	724 + 50	-0.743	300
H	724 + 50	727 + 50	-0.197	300
H	727 + 50	734 + 50	-0.611	700
H	734 + 50	742 + 95	-0.44	845
H	742 + 95	752 + 55	-0.276	960
H	752 + 55	762 + 20	0	965
H	762 + 20	766 + 40	0.405	420
H	766 + 40	777 + 50	0.607	1110
H	777 + 50	783 + 5	0	555
H	783 + 5	802 + 50	-0.754	1945
H	802 + 50	810 + 0	0.133	750
H	810 + 0	817 + 0	0.224	700
H	817 + 0	820 + 50	0.076	350
H	820 + 50	823 + 50	0	300
H	823 + 50	848 + 0	0.08	2450
H	848 + 0	854 + 50	0	650
H	854 + 50	877 + 0	-0.04	2250
H	877 + 0	896 + 0	0.99	1900
H	896 + 0	900 + 50	1.04	450
H	900 + 50	917 + 42	1	1692
H	917 + 42	929 + 34	0	1192
H	929 + 34	939 + 0	-1.02	966
H	939 + 0	948 + 50	-0.98	950
H	948 + 50	955 + 0	0.45	650
H	955 + 0	959 + 50	0.63	450
H	959 + 50	963 + 0	0.33	350
H	963 + 0	966 + 0	0.62	300
H	966 + 0	976 + 50	0.46	1050
H	976 + 50	982 + 0	0.57	550
H	982 + 0	992 + 0		1000
H	992 + 0	1001 + 0	-0.05	900
H	1001 + 0	1015 + 0	-0.25	1400
H	1015 + 0	1022 + 43	-1.03	743
H	1022 + 80	1024 + 20	-4.2	140
H	1024 + 20	1028 + 80	-4	460
H	1028 + 80	1031 + 30	-0.62	250
H	1031 + 30	1037 + 60	-2.5	630
H	1037 + 60	1040 + 30	0.47	270
H	1040 + 30	1048 + 0	1	770
H	1048 + 0	1059 + 20	-0.58	1120

H	1059 + 20	1061 + 0	-2.82	180
H	1061 + 0	1062 + 50	-2.82	150
H	1062 + 50	1073 + 0	-0.5	1050
H	1073 + 0	1074 + 30	-0.5	130
H	1074 + 30	1079 + 70	-3.5	540
H	1079 + 70	1087 + 20	-3.34	750
H	1087 + 20	1094 + 50	-0.5	730
J	1071 + 50	1077 + 50	0.5	600
J	1077 + 50	1080 + 90	-2.39	340
J	1080 + 90	1082 + 30	0.25	140
K	1077 + 10	1078 + 0	-0.89	90
K	1078 + 0	1081 + 20	2	320
K	1081 + 20	1083 + 20	2.79	200
L	1228 + 67	1229 + 59	0.508	92

APPENDIX A1: DBE GOALS STATEMENT PA 3752A/ 3-16

The undersigned Bidder has satisfied the requirements of the Contract in the following manner (Complete the appropriate spaces and check one box):

☐ The Bidder is committed to meeting the DBE goal set forth in this Contract.

OR

☐ The Bidder is unable to meet the DBE goal set forth in this Contract, but is committed to a minimum of_____% DBE utilization on this Contract and submits the attached narrative and documentation demonstrating good faith efforts consistent with Appendix A of 49 CFR 26 to meet the DBE utilization goal set forth in this Contract. Attach as many pages as necessary to provide a full and complete narrative and supporting documentation of good faith efforts made. This narrative shall be submitted on company letterhead and signed.

It is the present intent of the Bidder to utilize the specific DBE firms identified in Appendix A2 in the performance of the Work under this Contract. If for any reason, one or more of the DBE firms identified in Appendix A2 are unable or unwilling to participate, the Bidder will make good faith efforts to replace the DBE firm with another DBE firm in accordance with the Information For Bidders clause entitled "Disadvantaged Business Enterprise Program (DBE)".

I_____(print name), an officer of _____ (company name), certify that I have read the Appendix A1 – DBE Goals 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_____Title_____Date _____

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

ACKNOWLEDGMENT BY NOTARY PUBLIC

APPENDIX A1 – DBE GOALS STATEMENT (reverse)

STATE OF_____)
)ss:
COUNTY OF_____)

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)

APPENDIX A2: DBE PARTICIPATION PLAN AND AFFIRMATION STATEMENT PA 3752B / 3-16

Instructions: Submit one DBE PARTICIPATION PLAN AND AFFIRMATION STATEMENT form for each DBE firm used on this Contract.

CONTRACT NUMBER AND TITLE: _____

BIDDER:
Name of Firm: _____

Address: _____Telephone: _____

Email Address: _____

DBE:
Name of Firm: _____

Address: _____Telephone: _____

Description of work to be performed by DBE: _____

Calculation (supply only): _____

The Bidder is committed to utilizing the above-named DBE 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 DBE

The above-named DBE 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 DBE - Print Name and Title

If the Bidder does not receive award of the Contract, any and all representations in this DBE Participation Plan and Affirmation Statement shall be null and void.

I _____ (print name), an officer of _____ (company name), certify that I have read the Appendix A2 – DBE 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 DBE material supplier will be counted toward the DBE goal. Please show calculation above. Example: $100,000 x 60% = $60,000 estimated DBE dollar value of work. Plan cannot be accepted without calculation.

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

ACKNOWLEDGMENT BY NOTARY PUBLIC

APPENDIX A2
DBE PARTICIPATION PLAN AND AFFIRMATION STATEMENT (reverse)

STATE OF _____)

S.S.:

COUNTY OF _____)

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)

APPENDIX A3: INFORMATION ON SOLICITED FIRMS — PA 3752C / 3-16

The bidder must complete this form for itself and for all firms which gave the bidder a quotation for any work planned to be subcontracted regardless of whether they are ultimately chosen to participate in the Contract. Provide the information required below for every firm that provided a bid or a quote for a subcontract – even if the bid or quote from the firm is not used in the preparation of the final Proposal.

Name of Firm	Address of Firm	Phone Number	Contact Person	Firm Age	Annual Gross Revenue Range NOTE: See Footnote Below	DBE Certified (Yes/No)

Footnote: Annual Gross Revenue Ranges: Less than $500,000; $500,000 - $1 Million; $1 - $2 Million; $2 - $5 Million; Over $5 Million - Select the category that best identifies the annual gross revenue of the solicited firm.

I _____ (print name), an officer of _____ (company name), certify that I have read the Appendix A3 – **INFORMATION ON SOLICITED FIRMS** 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 _____ Title _____Date _____ _____

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

ACKNOWLEDGEMENT BY NOTARY PUBLIC

APPENDIX A3
INFORMATION ON SOLICITED FIRMS (reverse)

STATE OF _____)
S.S.:
COUNTY OF _____)

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)

THE PORT AUTHORITY OF NY & NJ

PRE-AWARD DBE TRUCKING COMMITMENT FORM **PA 3751A / 03-16**

INSTRUCTIONS:

A LOW BIDDER THAT SUBMITS A DBE PARTICIPATION PLAN THAT INCLUDES AMOUNT(S) FOR TRUCKING MUST COMPLETE THIS FORM TO SHOW HOW THE COMMITMENT AMOUNT WAS ESTIMATED. THIS FORM IS TO BE ATTACHED TO THE REQUIRED "DBE PARTICIPATION PLAN AND AFFIRMATION STATEMENT (APPENDIX A2)" FOR FEDERALLY FUNDED CONTRACTS.

PRIME CONTRACTORS UTILIZING DBE FIRMS WITH A "TRUCKING" CLASSIFICATION TO MEET DBE CONTRACT GOALS MUST BE AWARE THAT CERTAIN CONDITIONS MUST BE MET BY THE DBE TRUCKING FIRM IN ORDER TO BE CONSIDERED COMMERCIALLY USEFUL. THESE CONDITIONS DIRECTLY AFFECT HOW MUCH PARTICIPATION CREDIT WILL BE COUNTED TOWARD THE GOAL. FOR DBE CREDIT, THESE CONDITIONS ARE OUTLINED UNDER CFR PART 26.55(d) (1) THROUGH (7).

Use the following factors in determining whether a DBE trucking company is performing a commercially useful function:

- The DBE must 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 DBE goals.
- The DBE must itself own and operate at least one fully licensed, insured and operational truck used on the contract.
- The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates, using drivers it employs.
- The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
- The DBE may also lease trucks from non-DBE firms and owner-operators. The DBE can count the value of these trucking services up to the value of services performed by the DBE trucks used on the contract. DBE participation can be counted for the value of services of non-DBE trucks that exceed the value of services performed by DBE trucks only in the amount of the fee or commission a DBE receives as a result of the lease arrangement.
- A lease must indicate that the DBE has exclusive use of and control over the truck for the period of the subcontract. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck

FILL OUT THE INFORMATION ON PAGE 2 FOR EACH DBE TRUCKING FIRM UTILIZED.

MAKE ADDITIONAL COPIES FOR EACH DBE TRUCKING FIRM USED ON THE CONTRACT.

PRE-AWARD DBE TRUCKING COMMITMENT INFORMATION

DATE: _____ CONTRACTOR NAME: _____

CONTRACT NUMBER: _____ TELEPHONE: _____

NAME OF DBE TRUCKING FIRM: _____

SCOPE OF WORK OF TRUCKING FIRM: _____

SUPERVISOR OF THE DAY-TO-DAY DBE TRUCKING OPERATION: _____

NUMBER OF TRUCKS _____ + _____ = _____
OWNED LEASED TOTAL

NUMBER OF TRUCKS
PERFORMING WORK _____

_____ _____ X _____ = _____
RATE PER DURATION/NUMBER COMMITMENT

LIST THE PROPER PERMITS REQUIRED TO BE RETAINED BY THE FIRM FOR THE WORK FOR WHICH IT IS BEING HIRED. _____

DOES/WILL THE DBE FIRM HAVE OR BE ABLE TO RETAIN THE PROPER PERMITS REQUIREDTO PERFORM THE WORK FOR WHICH IT IS BEING HIRED? YES _____ NO _____ IF NO, FIRM CANNOT BE UTILIZED.

FOR ANY LEASED TRUCK, SUBMIT A COPY OF THE LEASE AGREEMENT.

SIGNATURE OF PRINCIPAL OR OFFICER OF TRUCKING FIRM: _____

PRINT NAME: _____ TITLE: _____

I _____ (print name), an officer of _____ (company name), certify that I have read the Pre-Award DBE Trucking Commitment Information 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 _____Title _____Date _____

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

ACKNOWLEDGMENT BY NOTARY PUBLIC

PRE-AWARD DBE TRUCKING COMMITMENT INFORMATION (reverse)

STATE OF _____)
)ss:
COUNTY OF _____)

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)

THE PORT AUTHORITY OF NY & NJ

DBE REGULAR DEALER VERIFICATION FORM PA 3750A / 03-16

(To be completed by DBE firm and signed by Prime Contractor)

Project Number:	Telephone # of Prime
Prime Contractor:	
DBE Firm:	
Provide a brief description of the material(s) your firm will be supplying and the Prime is requesting be credited as a regular dealer (including item numbers and estimated quantities when possible).	

If either question is marked 'No', then the Prime cannot receive regular dealer credit for the services provided by the DBE firm. Instead, the maximum credit that could be received would be the fee or commission the DBE firm receives for its services. Before executing this form, read the attached 'Guide for Counting DBE Suppliers' which includes the official question and answer issued by the United States Department of Transportation.

	Yes	No
1. Does your firm "regularly" engage in the purchase and sale or lease, to the general public in the usual course of its business, of product(s) of the general character which will be involved in this contract and for which DBE credit is being sought?		
2. Is the role your firm will play on this specific contract consistent with the regular sale or lease of the product(s) in question, as distinct from a role better understood as that of a broker, packager, manufacturer's representative, or other person who arranges or expedites a transaction?		

Authorized Representative of DBE Firm

The undersigned individual hereby verifies that he/she is authorized to make this verification on behalf of the DBE firm, that the DBE firm "regularly" engages in the purchase and sale or lease of the items listed herein and is not otherwise a packager, broker, manufacturer's representative, or other person who arranges or expedites transactions, that the answers and information provided herein are true and correct to the best of her/his knowledge, information and belief and any false statement made in this verification 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.).

_____ _____

Signature of Principal or Officer Date

_____ _____

Print Name and Title Phone Number

Authorized Representative of Prime Contractor

The undersigned individual hereby verifies that he/she is authorized to make this verification on behalf of the prime contractor, that, to the best of his/her knowledge, information and belief the DBE firm 'regularly' engages in the purchase and sale or lease of the items listed herein and is not otherwise a packager, broker, manufacturers' representative, or other person who arranges or expedites transactions.

I, Signature of Principal or Officer _____ Date _____

_____ an officer of _____

Print Name and Title Company

certify that I have read the DBE Regular Dealer Verification Form 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.

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

ACKNOWLEDGMENT BY NOTARY PUBLIC

DBE REGULAR DEALER VERIFICATION FORM (reverse)

STATE OF_____)
)ss:
COUNTY OF_____)

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)

GUIDE FOR COUNTING DBE SUPPLIERS

- The official question and answer (Q & A) issued by the United States Department of Transportation on December 9, 2011 as institutional guidance based on 49 C.F.R. § 26.55 relative to regular dealers poses two questions that must both be answered 'yes' in order for the DBE firm to receive regular dealer credit equivalent to 60 percent of the value for materials supplied on federally-assisted transportation projects.
- Following is the official Q & A in italics:
  First, does the firm "regularly" engage in the purchase and sale or lease, to the general public in the usual course of its business, of products of the general character involved in the contract and for which DBE credit is sought?
    - *Answering this question involves attention to the activities of the business over time, both within and outside the context of the DBE program.*
    - *The distinction to be drawn is between the regular sale or lease of the products in question and merely occasional or ad hoc involvement with them.*
    - *In answering this question, [the Port Authority of NY and NJ] will not insist that every single item the DBE firm supplies be physically present in the firm's store, warehouse, etc. before it is sold to a contractor. However, the establishment in which the firm keeps items it sells to the general public should be more than a token location.*
    - *For example, a mere showroom, the existence of a hard-copy or on-line catalog, or the presence of small amounts of material that make questionable the ability of the firm to effectively supply quantities typically needed on a contract, are generally not sufficient to demonstrate that a firm regularly deals in the items.*

  Second, is the role the firm plays on the specific contract in question consistent with the regular sale or lease of the products in question, as distinct from a role better understood as that of a broker, packager, manufacturer's representative, or other person who arranges or expedites a transaction?
    - *For example, a firm that regularly stocks and sells Product X may, on a particular contract, simply communicate a prime contractor's order for Product Y to the manufacturer, acting in a transaction expediter capacity.*
    - *This means that a firm that acts as a regular dealer on one contract does not necessarily act as a regular dealer on other contracts. For example, a firm that acts as a regular dealer on Contract #1 may act simply as a "transaction expediter" or "broker" on Contract #2. It would receive DBE credit for 60 percent of the value of the goods supplied on Contract #1 while only receiving DBE credit for its fee or commission on Contract #2.*
    - *In some circumstances, items are "drop-shipped" directly from a manufacturer's facility to a job site, never being in the physical possession of or transported by a supplier. In many such cases, the supplier's role may involve nothing more than contacting the manufacturer and placing a job-specific order for an item that the manufacturer then causes to be transported to the job site.*
    - *In such a situation, the supplier's role may often be better described as that of a "broker" or "transaction expediter" (see 49 C.F.R .§ 26.55(e)(2)(ii)(C)) than as a "regular dealer." In such a case, DBE credit is limited to the fee or commission the firm receives for its services. If the firm does not provide any commercially useful function (i.e., it is simply inserted as an extra participant in a transaction), then no DBE credit can be counted.*
- The Port Authority of NY and NJ propose that primes submit the two questions to DBEs in writing. If the DBE firm answers 'yes' to both questions, then the written documentation would be taken into account in the Port Authority of NY and NJ's good faith effort determination in accordance with Section 26.53 of the federal DBE regulation set forth in Title 49 Code of Federal Regulations Part 26.
- If it were later determined that the DBE misrepresented itself or erroneously concluded that it was acting as a regular dealer, the Port Authority of NY and NJ would strongly consider this documentation in evaluating the actions of the prime and in determining whether the prime exercised reasonable due diligence by obtaining a written regular dealer confirmation from the DBE even though it later turned out to be false.
- Participation would still have to be revised, but the Port Authority of NY and NJ will fully consider the written documentation in its good faith effort review.
- The Port Authority of NY and NJ reserves the right to address any misrepresentation by the DBE firm or the prime consistent with the "Bidders Certification Statement" and other requirements and procedures for determinations of whether a contractor has acted responsibly.