AMTRAK EQUIPMENT MAINTENANCE DEPARTMENT

STANDARD MAINTENANCE PROCEDURE

SMP NO. : 48001

ISSUE DATE : 3-15-81

REVISION DATE : 10-15-85

TITLE : REPAIR OF TRUCK FRAMES AND BOLSTERS BY WELDING

EQUIPMENT TYPE: ALL AMTRAK EQUIPMENT

REPAIR OF GRADE "A" TRUCK FRAMES AND BOLSTERS BY WELDING

The physical properties of the Grade "A" steel conforms to A.S.T.M. specifications A27-55 grade U 60-30 and A.A.R. Specification M202-53 grade "A" unannealed.

The minimum physical properties are as follows:

Tensile Strength, psi	60,000
Yield Point, psi	30,000
Elongation in 2", percent	22
Reduction in Area, percent	30

Castings made of "A" steel are distinguished from our alloy castings by the lack of identifying marks. Alloy castings insure the quality performance of any weldment. The following procedure is recommended for normal service repair.

1. The weldment may be prepared by chipping, grinding or flame scarfing or burning.

   A. If the area involved extends through the section, a single "V" joint is recommended. A back-up strip (1/4" min. thick) should be used if the root opening is greater than 1/4".

B. The prepared weldment and immediately adjacent area should be free from scale, oil, dirt and other extraneous matter.

2. Welding should be performed with electrodes conforming to the minimum requirements of A.W.S. - A.S.T.M., A233-64T, Class E-6010. The use of other Calss E-60XX electrodes is optional.

3. Welding should be performed at ordinary room temperatures, not less than 60 degrees - 70 degrees F.

A. Areas which are subject to high stresses should be locally preheated to a minimum temperature of 250 degrees F and this temperature maintained until completion of the weldment.

4. Each pass is to be thoroughly cleaned of slag before the next pass is made.

5. Interpass temperatures in excess of 750 degrees F are not recommended.

6. Rapid cooling of any pass or completed weldment is not permitted.

7. Adequate excess weld metal is to be applied in order that the finished weldment may be ground or chipped flush with the base metal line with no discontinuity.

A. Finishing a weldment by grinding or chipping is not considered mandatory.

8. Undercutting porosity and visible surface inclusions or slag pockets are not permitted.

9. If weldment extends through the section, with or without a back-up stirp, the root of weld shall be chipped, ground or "scarfed" clean, thoroughly inspected and back welded from the root side.

10. The procedure detailed herein will also apply to the welding of the root side.

11. In extreme cases, where it is not possible to finish the root or back side of the weldment, a thorough inspection should be made for undercutting, etc., which may detract from serviceability.

12. Stress-relieving is not considered mandatory for general field repair welding. However, in the case of major welding operations, consideration may be given to the stress-relief of the entire casting.

REPAIR OF LOW CARBON NICKEL STEEL TRUCK FRAMES AND BOLSTERS BY WELDING

In general low carbon nickel cast steel is considered weldable under all conditions. However, certain percautions are advisable to insure the quality performance of any weldment. The following procedure is recommended for normal service repair.

1. The weldment may be prepared by chipping, grinding or flame scrafing or burning.

   A. If the area involved extends through the section, a single "V" joint is recommended.

      A back-up stirp (1/4" min. thick) should be used if the root opening is greater than 1/4".

   B. The prepared weldment and immediately adjacent area should be free from scale, oil, dirt and other extraneous matter.

2. Welding should be performed with low-hydrogen, lime coates electrodes conforming to A.W.S.-A.S.T.M., A 316-58T, Class E8016-C1 and preferably containing 2.00-2.50% nickel. Substitution of regular Class E 8016-C1 may be made on the basis of mechanical properties.

3. Welding should be performed at ordinary room temperatures, not less than 60 degrees-70 degrees F.

   A. Areas which are subject to which stresses should be locally preheated to a minimum temperature of 250 degrees F and this temperature maintained until completion of the weldment.

REPAIR OF LOW CARBON NICKEL STEEL TRUCK FRAMES AND BOLSTERS BY WELDING (cont'd)

4. Each pass is to be thoroughly cleaned of slag before the next pass is made.

5. Interpass temperatures in excess of 750 degrees F are not recommended.

6. Rapid cooling of any pass or completed weldment is not permitted.

7. Adequate excess weld metal is to be applied in order that the finished weldment may be ground or chipped flush with the base metal line with no discontinuity.

   A. Finishing a weldment by grinding or chipping is not considered mandatory.

8. Undercutting, porosity and visible surface inclusions or slag pockets are not permitted.

9. If weldment extends through the section, with or without a back-up strip, the root of weld shall be chipped, ground or "scarfed" clean, thoroughly inspected and back welded from the root side.

10. The procedure detailed herein will also apply to the welding of the root side.

11. In extreme cases, where the root or back side of the weldment, cannot be finished, a thorough inspection, if possible, should be made for undercutting, etc., which may detract from serviceability.

12. Stress-relieving is not considered mandatory for general field repair welding. However, in the case of major welding operations, consideration may be given to the stress-relief of the entire casting.

TWO-PIECE JOURNAL BOX STOPS

Effective immediately it is desired that all heavy repair shops proceed to modify all one piece truck pedestal tie bars on all Amtrak cars from the one piece type to the two piece journal box to stop type as typically shown on Amtrak drawing B-145, being sent to you herewith.

These instructions supersede those in our Mr. F. S. King's letter of March 21, 1973, covering journal box pedestal stops.

Application of stops of pedestals as shown per style A" or style "B" shall be made in accordance with Amtrak drawing B-130-B, also being sent you. It is desired that all worn and elongated holes in pedestal legs be properly restored by welding to original dimensions and that all loose pedestal filler blocks be properly secured prior to applying journal box stops. AS some trucks have offset tie bars it will be necessary that the journal box stops have identical offsets to provide the necessary clearance between the bottom of the journal boxes and the stops. It is imperative that all trucks be equipped with two (2) stops per truck pedestal. A minimum clearance of no less than 2 - 3/4" shall be maintained between the contact point on the bottom of the journal boxes and the top of journal box stops.

It is important that elastic stop nuts are used and, at least 2 - 1/2 bolt threads protrude through the nuts to insure that proper locking grip is obtained. It will be satisfactory to use "Huck" type bolts if the proper application equipment is available.

Yard repair track facilities shall also arrange to modify existing tie bars or apply new two piece journal box stops when cars are untrucked for any reason. It also is desired that every pedestal tie bar and journal box stop be carefully inspected each time any truck work is performed and see that necessary repairs are made to insure that they are properly secured.

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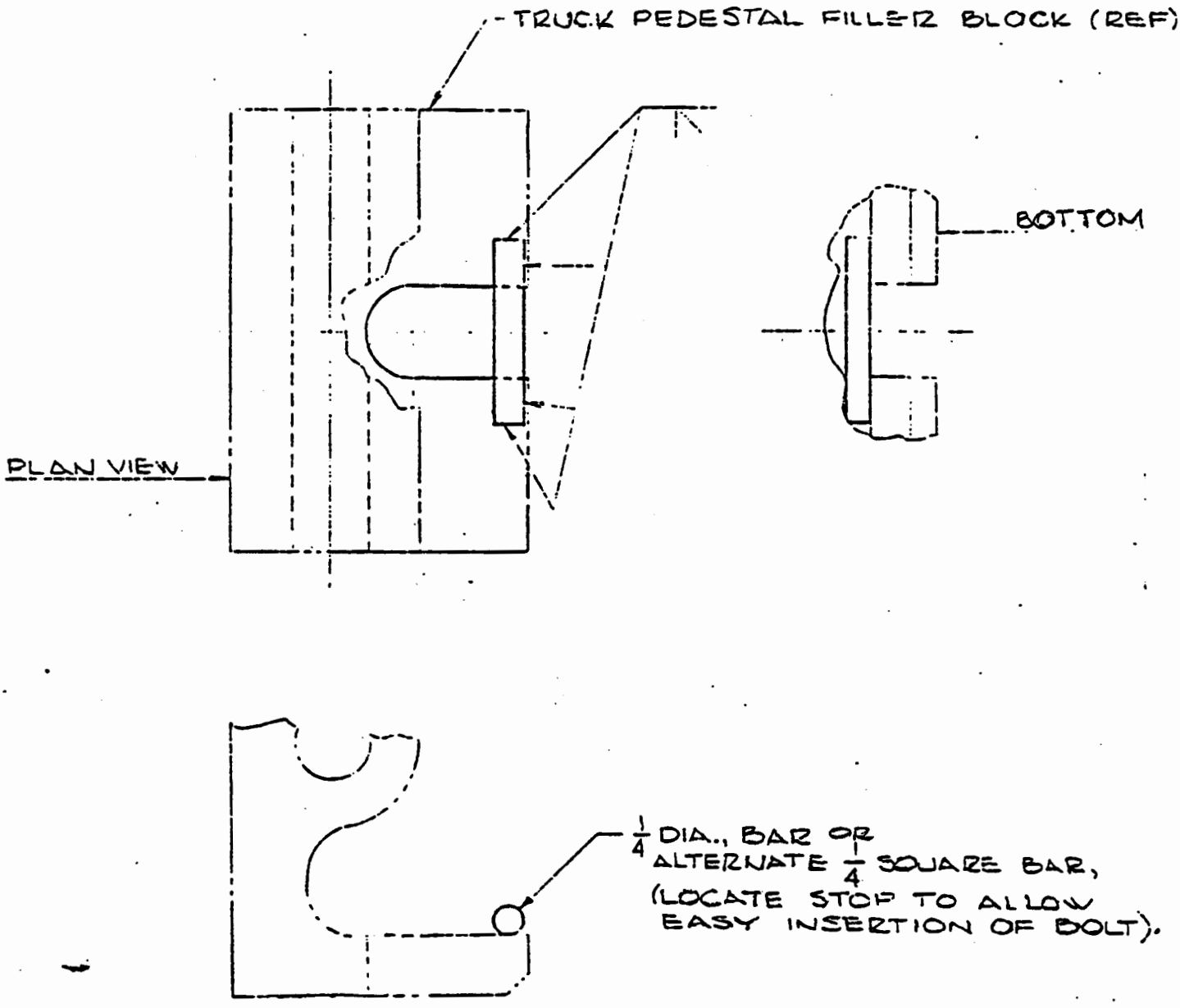
MODIFICATION OF TRUCK PEDESTAL FILLER BLOCK (CONT.)



NOTES:

1. MATERIAL: OPEN HEARTH STEEL
2. USE AWS: E-606-CI ELECTRODES FOR LOW CARBON NICKEL STEEL TRUCK FRAMES.
3. USE AWS: E-600 ELECTRODES FOR GRADE 'A' TRUCK FRAMES.
4. ALLOY TRUCK FRAMES HAVE THE LETTER "C" OR "N" CAST AS A PREFIX TO THE PATTERN NUMBER, AND GRADE "A" FRAMES LACK IDENTIFYING MARKS.

REF: GSI DWG 24495-11 (AMTRAK C-187)