SMP NO.:	28609
ISSUE DATE:	May 23, 2005
REVISION DATE:	
TITLE:	Initial Terminal and Intermediate (1500 Mile) Wheel Inspection

EQUIPMENT TYPE

X All Passenger Trains

Locomotives		Cars			
X	All Locomotives	X	All Cars	X	All Types
	Acela HST Power Car		Acela		Baggage
	AEM-7		Amfleet I		Cafe
	Cab Car: (Under Cars)		Amfleet II		Coach
	Car Movers		Auto Carrier		Diner
	Commuter		Commuter		Dinette
	F59PHI		Freight		Lounge
	GP40PH		Heritage HEP		Sleeper
	HHP8		Horizon		Other:
	MP15		Material Handling Cars		
	Non Powered Control Units		Private Cars		
	P32-8		RoadRailers		
	P32AC-DM		Superliner I		
	P-40		Superliner II		
	P-42		Surfliner		
	SW1001		Talgo		
	SW1200		Turboliner		
	SW1500		Viewliner		
	Turboliner		Other:		
	Talgo				
	Other:				

MAINTENANCE TYPE

	L – Locomotive C – Cars
	All Maintenance – L/C
	Daily – L/C
	30 Day – C
	Quarterly –L/C
	Semi-Annual – L/C
	Annual – L/C
	720 Day – L
	COT&S – C
L/C	Initial Terminal – L/C
L/C	Intermediate Terminal – L/C
	Modification – L/C
	Overhaul – L/C
	Running Repair – L/C
	Seasonal – C
	Wheels – L/C
	Facility
	Other:

1.0 PURPOSE

This SMP shall supplement Amtrak's Car Exterior Calendar Day Inspection and Locomotive Calendar Day Mechanical Inspection Quick Reference Cards section 1 (one), Wheels.

2.0 SCOPE

This SMP can be used as a reference by a QMP (Qualified Maintenance Person), who has been deemed qualified, by Amtrak for performing initial terminal pre-departure wheel inspections and intermediate (1500 Mile) wheel inspections.

NOTE: Supervisors are required to monitor inspection personnel to ensure compliance with these standards.

3.0 HISTORY

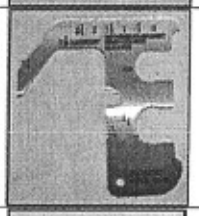
Check 12 months history of equipment performance for past Wheel problems and or repairs in WMS and facility records.

4.0 SAFETY PRECAUTIONS

4.1 Prior to starting work on equipment ensure all Code of Federal Regulations (Title 49, Chapter II, Part 218) and Amtrak's Blue Signal Protections are followed.

4.2 Wear approved PPE (Personal Protective Equipment).

5.0 REQUIRED PARTS AND TOOLS

Description	Quantity	AAMPS Number	Photo
Flashlight	1	25-090-06000	
Gage #1, Initial Terminal Inspection	1	45-795-06204	
Gage #1, Intermediate Inspection	1	45-795-06203	
Gage #1, Steel Wheel	1	45-795-73403	
Gage #201, Steel Wheel for AEM-7 Locomotives	1	N/A (Winchester Gage Number 201A)	

Note: The photos in the above chart are for pictorial reference only.

6.0 ADDITIONAL REFERENCE

Description	Supplied By
SMP 28003 Amtrak's Gages for Wheel Defects	Amtrak Intranet

7.0 INSPECTION

7.1 Wheel inspections require visual observation, knowledge of defects, and the use of gages for precise measurements. They shall be performed by a QMP.

7.2 Gages shall be inspected periodically. If anything out of the ordinary happens to the gage (i.e. dropped, run over by a piece of equipment, etc.) the gage must then be checked against a master gage. Master gages shall be calibrated every three years. Gages failing to compare accurately with the master gage must not be used.

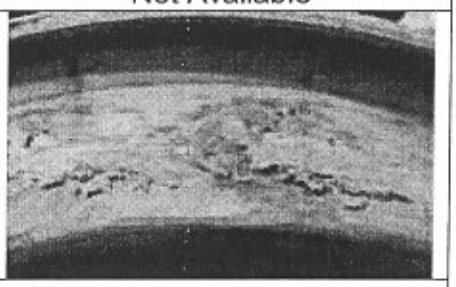
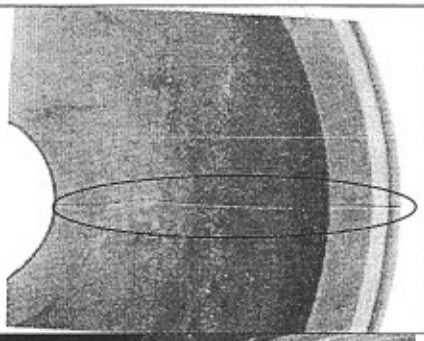
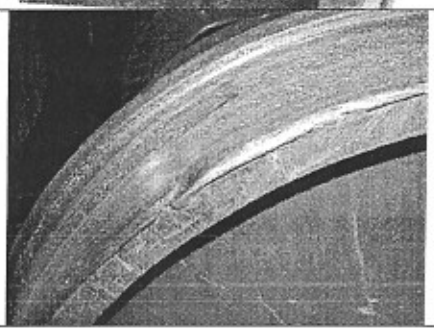
7.3 Starting at one end of the train the QMP shall carefully examine the front of each wheel on that side of the car for defects in the flange, tread, rim, and plate. The back of each wheel on the **opposite side** of the car shall also be observed for defects in the back face of the flange, back plate, the hub, and indications of a wheel loose on its axle.

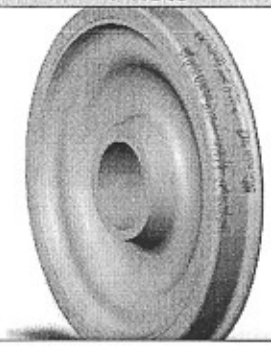
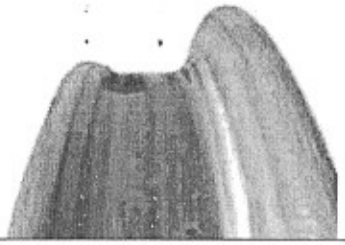
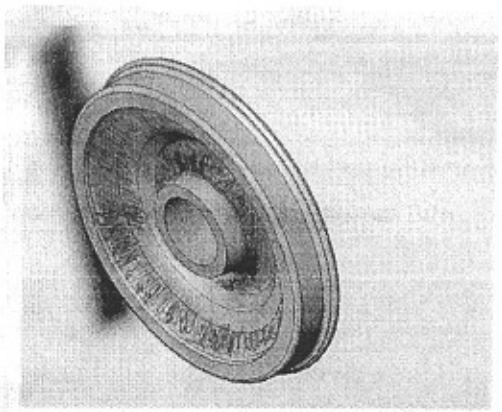
7.3.1 Examine the back face of the wheel hub carefully for cracks. Where the hub meets the axle, examine for indications that the wheel has not moved in or out along the axle. A shiny ring or satin-like appearance of metal at the fit, or an apparent space between the wheel and axle is evidence of a probable loose wheel and warrants a very close examination to determine whether or not the wheel is loose on the axle.

7.3.2 When a defect is found and it is questionable, the defect shall be measured with the proper gage. If the measurement confirms the defect to be a condemning condition, notify your immediate supervisor and record the defect on the MAP 9.

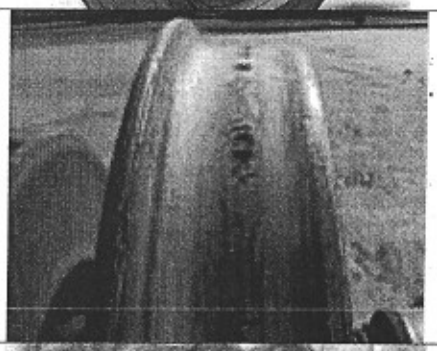
7.4 A Locomotive or Car found with a condemning wheel defect cannot continue in service. Documentation must be completed, local management and CNOC 24 Hour Mechanical Desk (ATS 734-2756, Bell 302-683-2756) must be notified.

8.0 CAR WHEEL DEFECTS INITIAL TERMINAL

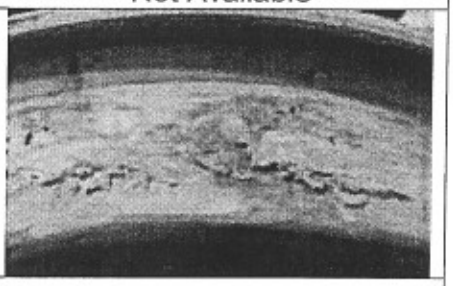
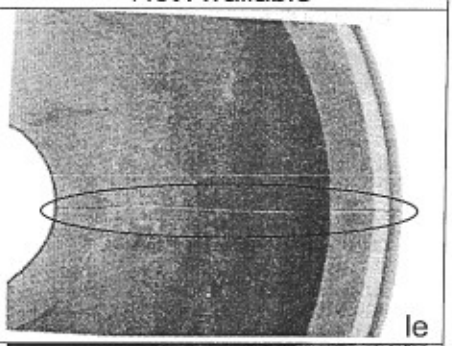
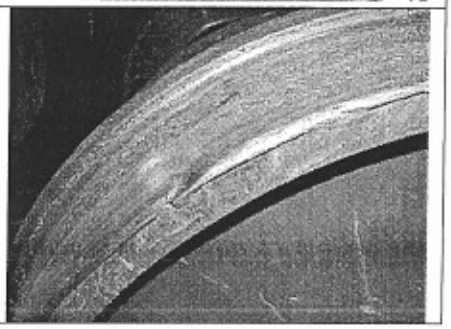
INITIAL TERMINAL			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
Axle	Any axle cracked, broken, or bent must be condemned	Any axle cracked, broken, or bent must be condemned	Not Available
Built up Tread	1/8" or higher than the wheel tread	1/8" or higher than the wheel tread	
Chip or gouge in Flange	Must not be 1-1/2" or more in length and 1/2" or more in width	Must not be 1-1/2" or more in length and 1/2" or more in width	Not Available
Crack or Break in the Flange, Tread, Rim, Plate, or Hub	Any wheel with any crack or break in the Flange, Tread, Rim, Plate, or Hub must be condemned	Any wheel with any crack or break in the Flange, Tread, Rim, Plate, or Hub must be condemned	
Grooved Tread, Scrape, Dent, or Gouge	1/8" or more in depth	1/8" or more in depth	

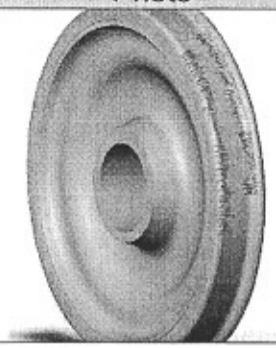
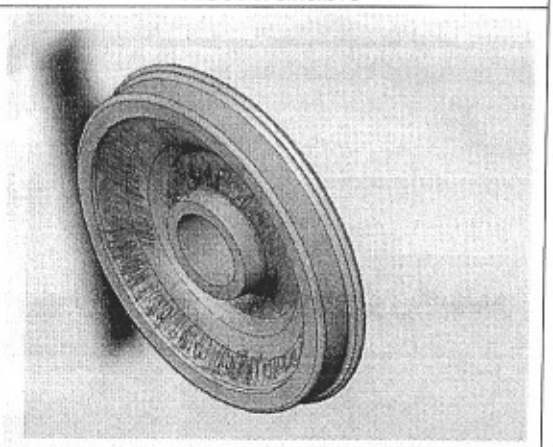
INITIAL TERMINAL			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
*Heat Checks (Refer to page 11)	Wheels shall **not** be condemned nor pull from service for heat checks	Wheels shall **not** be condemned nor pull from service for heat checks	
High Flange	Flange height must not be 1-3/8" or more	Flange height must not be 1-3/8" or more	
Tread Worn Hollow	Must not be greater than 5/32" (4 mm)	Must not be greater than 5/32" (4 mm)	
Loose or Out of Gage	Any loose or out of gage wheels must be condemned	Any loose or out of gage wheels must be condemned	Not Available
Overheated Wheels	Wheels must not have evidence of overheating or discoloration on front and back face of rim and plate that extends 4" into the plate	Wheels must not have evidence of overheating or discoloration on front and back face of rim and plate that extends 4" into the plate	

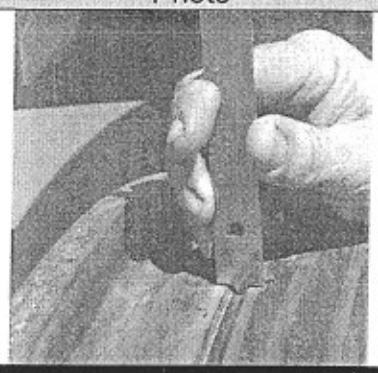
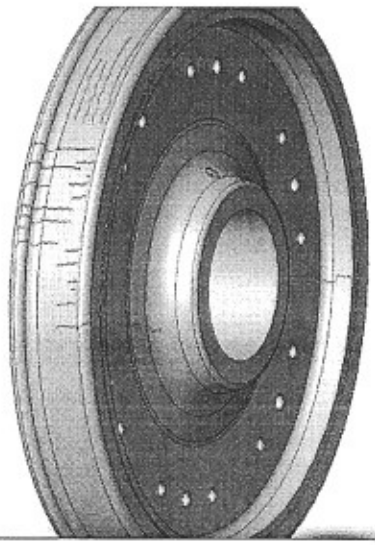
INITIAL TERMINAL			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
Seam	Seam (grooved tread) running lengthwise within 3-3/4" of the flange or 1/8" or more in depth	Seam running lengthwise that is within 3-3/4" of the flange	
Shelling/Spalling	1-1/2" or more in length (1-1/4" Transport Canada)	1-1/2" or more in length	
Slide Flat	1-1/2" or more in length	1-1/2" or more in length	

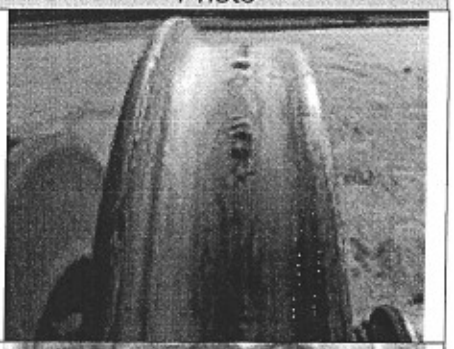
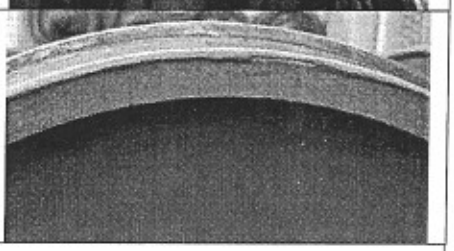
INITIAL TERMINAL			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
**Thermal Cracks, caused by intense brake heating. Appear as small, often jagged breaks or tears in the metal, and usually start in the flange or tread, extending crosswise (Refer to pg. 11)	Thermally-cracked wheels are subject to sudden and complete failure, and any wheel exhibiting any stage or degree of thermal cracking should be removed from service	Thermally-cracked wheels are subject to sudden and complete failure, and any wheel exhibiting any stage or degree of thermal cracking should be removed from service	
Thin Flange	Flange thickness must not be 1" or less.	Flange thickness must not be 1" or less	
Thin Rim	Rim thickness must not be 1-1/16" or less.	Rim thickness must not be 1-1/16" or less	
Welding	Welding is **not permitted** on any wheel or axle	Welding is **not permitted** on any wheel or axle	Not Available

9.0 CAR WHEEL DEFECTS INTERMEDIATE (1500 MILE)

INTERMEDIATE (1500 mile)			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
Axle	Any axle cracked, broken, or bent must be condemned	Any axle cracked, broken, or bent must be condemned	Not Available
Built up Tread	1/8" or higher than the wheel tread	1/8" or higher than the wheel tread	
Chip or gouge in Flange	Must not be 1-1/2" or more in length and 1/2" or more in width	Must not be 1-1/2" or more in length and 1/2" or more in width	Not Available
Crack or Break in the Flange, Tread, Rim, Plate, or Hub	Any wheel with any crack or break in the Flange, Tread, Rim, Plate, or Hub must be condemned	Any wheel with any crack or break in the Flange, Tread, Rim, Plate, or Hub must be condemned	 le
Grooved Tread, Scrape, Dent, or Gouge	1/8" or more in depth	1/8" or more in depth	

INTERMEDIATE (1500 mile)			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
*Heat Checks (Refer to page 11)	Wheels shall **not** be condemned, nor pulled from service for heat checks	Wheels shall **not** be condemned, nor pulled from service for heat checks	
High Flange	Flange height must not be 1-7/16" or more	Flange height must not be 1-7/16" or more	
Tread Worn Hollow	Must not be greater than 5/32" (4 mm)	Must not be greater than 5/32" (4 mm)	
Loose or Out of Gage	Any loose or out of gage wheels must be condemned	Any loose or out of gage wheels must be condemned	Not Available
Overheated Wheels	Wheels must not have evidence of overheating or discoloration on front and back face of rim and plate that extends 4" into the plate	Wheels must not have evidence of overheating or discoloration on front and back face of rim and plate that extends 4" into the plate	

INTERMEDIATE (1500 mile)			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
Seam	Seam (grooved tread) running lengthwise within 3-3/4" of the flange and 1/8" or more in depth	Seam running lengthwise that is within 3-3/4" of the flange	
Shelling/Spalling	1-1/2" or more in length (1-1/4" Transport Canada)	1-1/2" or more in length	
Slide Flat	1-1/2" or more in length	1-1/2" or more in length	
**Thermal Cracks, caused by intense brake heating. Appear as small, often jagged breaks or tears in the metal, and usually start in the flange or tread, extending crosswise (Refer to pg. 11)	Thermally-cracked wheels are subject to sudden and complete failure, and any wheel exhibiting any stage or degree of thermal cracking should be removed from service	Thermally-cracked wheels are subject to sudden and complete failure, and any wheel exhibiting any stage or degree of thermal cracking should be removed from service	

INTERMEDIATE (1500 mile)			
Defect	Condemning Limit Car	Condemning Limit Locomotive	Photo
Thin Flange	Flange thickness must not be 15/16" or less	Flange thickness must not be 15/16" or less	
Thin Rim	Rim thickness must not be 1" or less	Rim thickness must not be 1" or less	
Welding	Welding is **not permitted** on any wheel or axle	Welding is **not permitted** on any wheel or axle	Not Available

10.0 RECORD KEEPING

Document repairs to the equipment in WMS (Work Management System) and all appropriate MAP forms.

Heat Checks – Heat Checks are often caused by brake shoe heating and appear as a fine pattern of superficial lines. The pattern of lines may run in different directions or only appear on the tread area. Heat Check lines may look like fine hairs imbedded into the metal. Since Heat Check lines are only superficial and do not extend into the tread with any depth, condemning a wheel for this condition is not warranted.

Thermal Cracks – Thermal Cracking is caused by excessive heat on the wheel tread during heavy and repeated brake applications. The high carbon content of class "C" wheels makes them susceptible to this condition. Although high carbon wheels are produced for their wear properties under heavy loads, the high carbon content puts them at a disadvantage where severe or abnormal braking is encountered daily. Thermal Cracks are not to be confused with Heat Checks! Thermal cracks are pronounced lines that usually extend across the wheel tread in a random pattern. Severe Thermal Cracking may travel downward radically through the wheel plate and into the hub. <u>If on inspection the wheel shows any of these conditions it must be removed and scraped.</u>