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16.0 H&R BULLETIN - A-FRAMES AND TROLLEYS

16.1 BACKGROUND

A recent hoisting and rigging occurrence, 2002-RL-HNF-0025, *I Beam Trolley Failure*, indicated the urgent need to address portable A-frames and trolleys.

16.2 DISCUSSION AND RESOLUTION/EXPECTATION

This H&R Bulletin shall be implemented immediately to address portable A-frames and trolleys.

16.2.1 Portable A-Frames and Trolleys

Manufacturers' recommendations shall be followed regarding assembly, maintenance, and use of portable A-frames (Figure 16.1) and trolleys. Manufacturers' instructions for use shall be posted in the area of use or on the portable A-frame, or personnel shall have been trained on the manufacturers' instructions for use. Manufacturers' instructions for assembly and maintenance of portable A-frames and trolleys shall be made available to inspection and maintenance personnel.

16.2.2 Documented Periodic Inspection

After repair or replacement of load-bearing parts, annually, and after being reassembled, an A-frame or trolley must undergo a documented inspection by a qualified inspector **before being put into service**. The inspection shall consist of a thorough examination of all components with a focus on any abnormality or damage that may affect the integrity or load-carrying capacity of the devices. Nondestructive examinations (i.e., magnetic particle or dye penetrant tests) are not required unless requested by an inspector. Written documentation of the inspection is required. The portable A-frames and trolleys shall be marked/tagged indicating the due date for the next annual inspection. The inspection shall cover the following items.

- A. Look for bent, broken, damaged, corroded, cracked, or missing parts.
- B. Verify that the following required markings are present and legible.
 - a. Each portable A-frame has its rated capacity legibly marked on the structure on each side of the primary beam.
 - b. The manufacturer's name and model number are permanently and legibly marked on each portable A-frame.
 - c. A tag indicating due date of the next inspection is attached to the trolley, A-frame, and any attached hoist.
- C. Ensure that trolley or beam clamp working load limits do not exceed the capacity rating of the A-frame. Hoists attached to the A-frame must have a rated capacity equal to or less than all supporting components. (Down rating the hoist to the A-frame capacity is acceptable with administrative controls and markings in place.)
- D. Ensure that A-frame components from different manufacturers are not intermixed or that components from different A-frames are not combined, regardless of similarities in manufacturers or rated capacities.

- E. Validate the proper dimensional relationship between the trolley wheels and rail. (See Figures 16.2 and 16.3.)
 - a. Load-carrying trolleys must suit the shape and weight of the specific load. Trolley wheel design must be matched properly to the rail shape and size to ensure that trolleys do not slip off the track and drop the load. Refer to Figures 16.2 and 16.3 for the proper dimensional relationship between the trolley wheels and rail.
 - b. If a new or replacement trolley is installed on a monorail, the qualified person installing the trolley shall ensure by actual operational verification or measurement that the installed trolley stops on the system are compatible with the new trolley, thereby preventing trolley travel past a point where it could fall from the rail.
- F. Check for evidence of worn bearings and wheels on trolleys.
- G. Observe trolley side plates for any bending or distortion.
- H. Check for missing or loose bolts, nuts, and retaining pins or retaining devices on trolleys and A frames.

NOTE: If any required information is missing or illegible, an attempt shall be made via engineering drawings, prints, evaluations, manufacturers catalogs, etc., to establish the A-frame's manufacturer, rated capacity, and other pertinent criteria. If this attempt is unsuccessful, the A-frame shall be removed from service until engineering personnel have thoroughly evaluated the design and adequacy of the structure. Engineering calculations must support all conclusions. The A-frame shall be identified and marked accordingly.

16.2.3 A-Frame and Trolley Use

The user of a portable A-frame shall perform a pre-use inspection (documentation not required) before use or at least once each shift. The inspection shall consist of the following items.

- A. Look for bent, broken, damaged, corroded, cracked, or missing parts.
- B. Verify that required markings are installed and legible.
 - a. Each portable A-frame must have its rated capacity legibly marked on the structure on each side of the primary beam.
 - b. A tag indicating the due date of the next inspection is attached to the trolley, A-frame, and any attached hoist.
- C. Verify that the rated capacity is legibly marked on the structure on each side of the primary beam.
- D. Ensure that the trolley, beam clamp, or hoist working load limits do not exceed the capacity rating of the A frame. (Down rating the hoist to the A frame capacity is acceptable with administrative controls and markings in place.)
- E. Perform a function test of the trolley and hoist to ensure proper operation.
- F. If adjustments or repairs are necessary or any defects are found that affect safe operation, the operator shall stop work and report deficiencies to the supervisor or equipment custodian.

16.2.4 Conduct of Operators

- A. When performing a lift, the load shall be positioned directly under the trolley. Side loading is prohibited. Side loading may spread the side frames, bend the suspension plate, and cause the trolley to fall from the A-frame.
- B. The operator shall not pick up a load in excess of the rated capacity of the trolley except in the performance of a properly authorized load test. Load weight shall be known or a load-measuring device shall be installed to prevent overloading the hoist and/or system.
- C. Attaching the hoist to the A-frame by suspending it from slings wrapped around the structure is prohibited without written approval from the manufacturer.

16.2.5 Qualifications of Personnel

Personnel operating hoisting equipment installed on a portable A-frame, or assembling and inspecting portable A-frames and trolleys must be trained/qualified in accordance with requirements outlined in Chapter 4, "Personnel Qualification and Training," of DOE-RL-92-36, *Hanford Site Hoisting and Rigging Manual*.

Figure 16.1. Portable A-Frame.

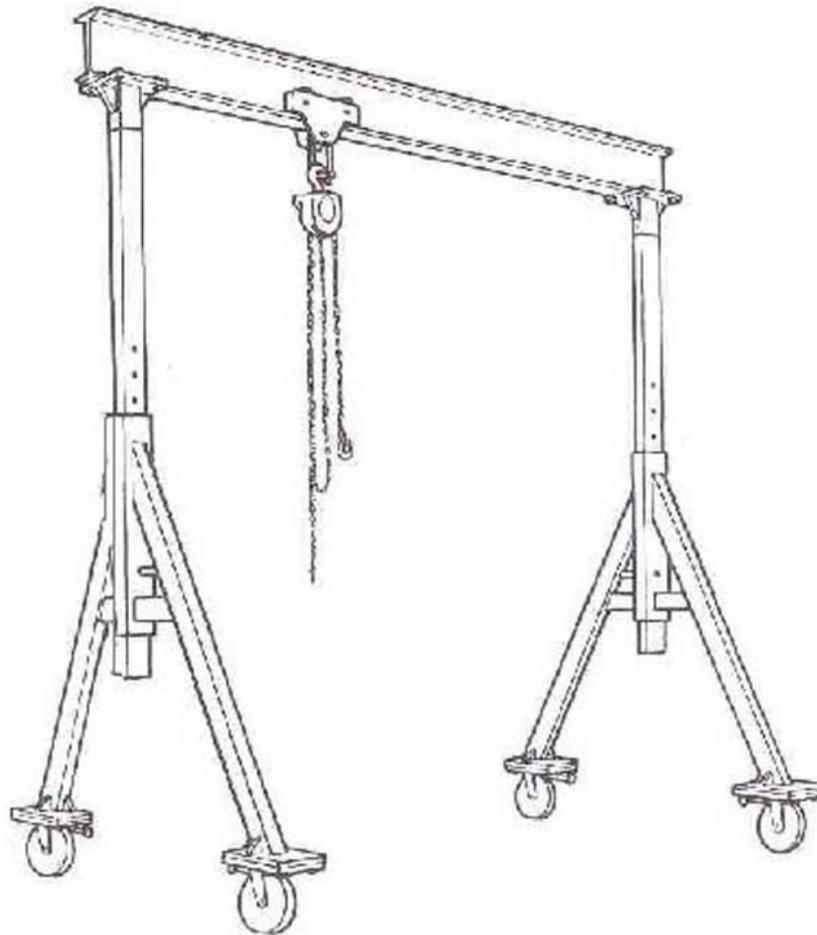


Figure 16.2. Trolley Flange Distance.

Note: Set flange-to-flange distance between wheels equal to rail width plus 1/8".

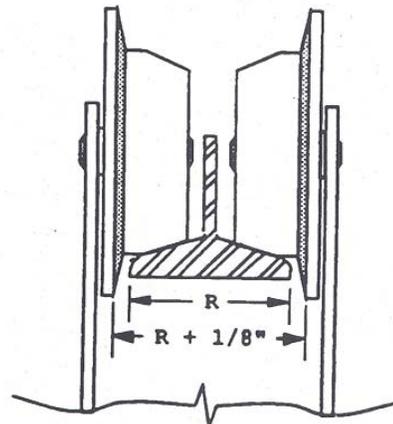
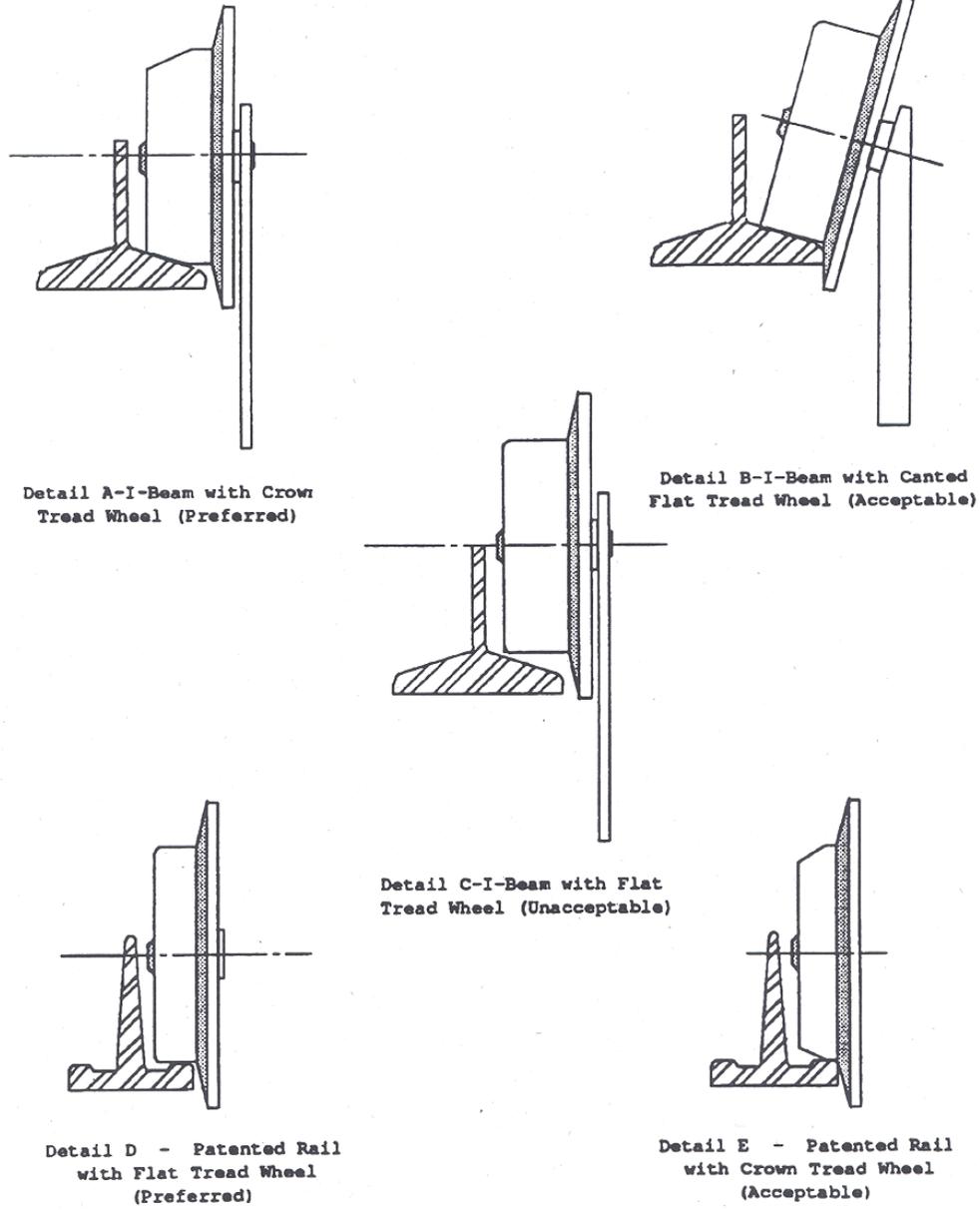


Figure 16.3. Types of I Beams



A-FRAME PREUSE INSPECTION CHECKSHEET SAMPLE

A-Frame Identification: _____ Date: ____/____/____

The user shall perform the following checklist prior to performing hoisting and rigging operations with this A-Frame. Correct Unsat items found during this inspection before using this equipment. If Unsat items can not be corrected, tag the equipment out of use. Mark not applicable (N/A) for items not contained or applicable to this A-Frame

A-Frame Inspection Areas	N/A	SAT	UNSAT
Manufacturers' instructions for use are posted in the area of use or on the portable A-Frame.			
Look for bent, broken, damaged, corroded, cracked, or missing parts			
Verify required markings are installed and legible: Rated capacity legibly marked on the structure on each side of the primary beam, and a tag indicating the due date of the next inspection is attached to the trolley, A-Frame, and any attached hoist.			
Ensure the trolley, beam clamp, or hoist working load limits do not exceed the capacity rating of the A-Frame			
Perform a function test of the trolley and hoist to ensure proper operation			
If adjustments or repairs are necessary or any defects are found that affect safe operation, stop work and report deficiencies to the equipment custodian.			
Operator is qualified in accordance with the Hanford Site Hoisting and Rigging manual to perform H& R operational activities			

Type of hoist used on the A-Frame: None _____ Air _____ Manual _____ Electric _____

Hoist Inspection Areas	N/A	SAT	UNSAT
Unusual sounds			
Brakes working properly			
Hooks inspected in accordance with H&R Manual Section 5.0			
Housing integrity intact			
Supporting structure sound			
Load bearing parts (Yoke, Clevis)			
Cable/Chain in operating condition			
Operating controls respond properly			
Load limiting devices functional			
Limit switches work properly			
Warning labels installed in accordance with H&R Manual Sect. 12.8.2.2 or 12.8.2.3			
Sheaves and Drums inspected for damage/wear			
Lubrication in accordance with manufacturers' instruction manual			
Collectors/Load chain buckets properly affixed			
Evidence of wiring wear or damage			
Supply air system at rated air pressure			

COMMENTS: _____

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