

**Recommended Instructions for Hot-Bearing Detector Site Selection**

Revised 2025 (3 Pages)

**A. Purpose**

This Manual Part recommends instructions for the survey and/or selection of hot-bearing detector sites. The instructions set forth general requirements representing recommended practice.

**B. Instructions**

## 1. Detector Location

- a. Site (outbound) should be no closer than 15 mi (24 km) (30 min. running time) from the nearest terminal areas to permit the bearings to stabilize at their normal operating temperature.
- b. Sites (inbound) to a terminal should not be located where prolonged stops may occur.
- c. Sites should be readily accessible from nearby roads to facilitate maintenance.
- d. Sites should provide sufficient space to install wayside equipment conforming to railroad practices.
- e. Avoid low areas where flooding may occur.
- f. Avoid areas of high vandalism.
- g. Avoid heavily populated areas (towns) that may require braking, stopping, and other train moves that may cause a detector malfunction.
- h. Consideration should be given to the consolidation with other types of defect detectors.
- i. Consideration should be given to the availability of communication facilities required for hot-bearing detector systems operation, maintenance, and remote interrogation/diagnostics. These may be company-owned/leased or commercially available voice and data communications means.
- j. Scanners should face a direction that minimizes solar interference.

## 2. Track Conditions

- a. Track should be tangent for a minimum of 1500 ft. (457 m) from curves, turnouts, and 150 ft. (46 m) from grade crossing (highway or rail), and/or other structures that could cause excessive lateral displacement or truck skew.
  - b. Track gauge at hot bearing detector shall not exceed:
    - (1). 56-3/4 in. (144.15 cm) when measured under moving load. This is the maximum dynamic gauge allowable. Gauge transition requires a minimum of 100 ft. (30 m) of rail for each 1/4 in. (6.35 mm) of gauge correction.
    - (2). 56-5/8 in. (143.83 cm) when measured on the unloaded track. This dimension should be reduced by the extent to which physical evidence indicates that both rails can move toward the field under load. Track gauge tighter than 56-1/2 in. (143.50 cm) does not adversely affect hot-bearing detection. Therefore, the gauge through the detector should be as tight as permitted by the railroad.
  - c. Track should be anchored on both sides of every tie for a minimum distance of 100 ft. (30 m) on each side of the installation.
  - d. Track bed should be tamped, stable, and well maintained.
  - e. Jointed/sectioned track requires the installation to be placed midway between the adjacent rail joints.
3. Train Operation
- a. Sites should be selected where trains generally travel more than the minimum speed required for the system to gate and process bearing heat information.
  - b. Site should be chosen where train braking is minimal and trains seldom stop.
  - c. Site should be chosen to permit normal braking to stop the train for inspection before passing a setout location.
  - d. Consideration should be given to the availability of suitable setout locations nearby that are accessible by road for car inspectors.

- e. Sites should be avoided where the terrain and/or structures present hazards to crews inspecting the trains. The area for several miles in either direction of the detector site should conform to this need.
  - f. Sites that are near highway-rail grade crossings should be avoided; trains stopped for inspection may block the crossings.
4. Hot Bearing Detector Operation
- a. Sites for hot bearing detectors should be located near commercial power sources.
  - b. Hot bearing detector sites should be equipped with radios to alert crews of the detector's inspection results. Consideration should be given to terrain, structures, and other restrictions to radio transmissions.
  - c. Data transmission capability, if used, should be available to send hot bearing detector inspection results and other pertinent data to a central office for analysis and/or storage.
  - d. Hot bearing detector systems equipped with a self-check capability that require advance start circuits should be located to take advantage of existing signal circuitry.