

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-027
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Title: Inspection Procedure of Runway Beams		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

Inspection Procedure of Runway Beams

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1. YOUR SAFETY IS FIRST:

Your safety wear is mandatory at job sites including in general: suit, shoes, helmet, gloves, ear plugs, glasses, and mask.

2. SCOPE:

This Procedure covers the inspection and testing winches

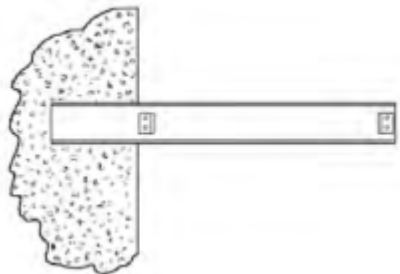
3. PRODUCT/ MANUFACTURE STANDARDS:

BS 2853:2011	<i>Specification for the testing of steel overhead runway beams for hoist blocks</i>
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4. TYPES OF RUNWAYS:

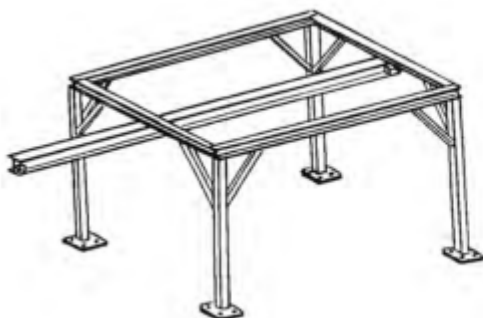
* Built in (Encastre)

Runways may be built directly into suitable walls, and is considered to be a simply supported beam. In this case, note the pad stones distributing the resulting crushing loads imposed on the bricks at the bearing points.



* Free Standing

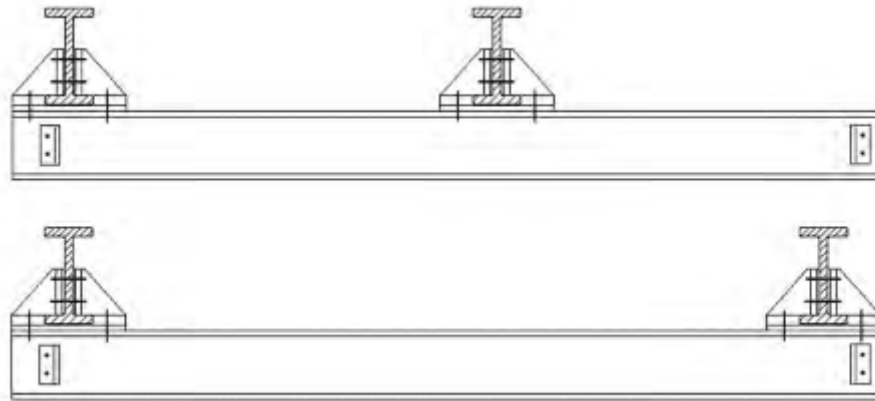
Where runways are used in locations that do not provide suitable supporting structures, free standing runway structures are common. The supporting structures can take various forms to suit the application and location of the runway



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* Suspended

Runways are commonly suspended from suitable roof members or beams built into the building structure



5. THOROUGH EXAMINATION:

The hoist must regularly be thoroughly examined by a Competent Person to check whether it remains safe to use. This is to be done within a maximum period of 12 months unless a written scheme of examination (for guidance refer to LEEA 032 Guidance to Written Schemes of Examination), drawn up by a competent person is in place and operating.

Reports of thorough examination should be compliant with the legal requirements or the LEEA template report documents, retained and cross referenced to the hoists historical records for inspection by the Competent Person or the enforcement authority.

Any defects found by the examination should be reported to the owner of the equipment, who must assess the root cause of the defect and implement procedures to prevent reoccurrence, e.g. training of operators, increased inspections, etc., before remedying the equipment and returning it to service. The competent person may deem it necessary to supplement their examination with testing. Such testing could be NDT, electrical safety testing, functional testing, overload testing, etc. The nature and extent of testing is always at the discretion of the competent person in support of their thorough examination.

Note:

Unless a mandatory requirement of the applicable national legislation or manufacturer, LEEA does not recommend the routine overload testing of hoists, except following an exceptional circumstance such as significant modification or repair. This is because overload testing has few benefits and number of disadvantages;

- Some manufacturers do not recommend overload tests, except in 'exceptional' circumstances.
- Repeated overloads can cause deterioration of the equipment over time.
- Most structural failures are the result of fatigue and such defects will not be revealed by an overload test; fatigue cracking can be identified during thorough examination.

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- Defects such as fatigue cracking can be made worse by overload testing but may still not be identified by the test.
- If equipment fails during testing it could be dangerous and will certainly be expensive
- Inspection bodies do not recommend it as there is no defined structural or mechanical benefit

6- SAFE USE OF RUNUWAY BEAMS

the following recommendations should be followed:

- (1) The SWL of a runway is the maximum load for which the runway should be used and must not be exceeded. The weight of the lifting appliance(s) should be allowed for in the rating of the runway, but it should be noted that the weight of any slings and other lifting equipment used form a part of the load and thereby reduce the effective lifting capacity.
- (2) Before lifting, ensure that the lifting appliance is positioned vertically above the load. Failure to do this places undue stress on the trolley wheels and the lifting appliance chain or rope guides, thus promoting wear or in extreme cases failure, in addition to causing excessive torsional stress in the runway track. A further danger is that the load may swing when raised causing possible shock load to the runway and lifting appliance and being a possible source of danger to the operative.
- (3) Never attempt to use the lifting appliance hook or travel motion to drag loads along the ground. The marked SWLs apply to freely suspended loads only.
- (4) Apply the rules for the safe use of all lifting equipment employed in the lift as detailed in the relevant sections of this code. In particular, check to ensure that all lifting attachments are correctly and firmly in place, take the weight of the load gently and then complete the lift. Lower loads gently taking care to ensure an unrestricted landing area.
- (5) On all occasions prior to traversing the trolley, ensure that there are no obstructions in the path of the load. This is particularly important when lowering from runways in multi-storey applications and it is necessary for the operative to move into a position that enables him to have a clear view of the load path. It is important in applications where more than one operative is required, e.g. loading and unloading vehicles, that all assisting with the lift are aware of the correct signals for lifting, lowering and emergency stop. Equally, it is important that anyone assisting clearly understands the correct slinging procedures to be adopted.
- (6) When using hand push travel trolleys, it is preferable to move the load by pushing and not by pulling it. Care must be taken to avoid the risk of swinging loads. In some applications, e.g. lowering loads over apertures, the use of an extended arm fitted to the trolley is recommended.
- (7) When lowering loads through apertures or over the edge of buildings etc., edge protection should be placed across the opening once the load has been moved clear of the building. This enables the operative to safely stand close to the opening in order to look down the load path and to communicate with the assistance below. A load should never be lowered to another level without someone being in attendance at the lower level to handle the load and give instruction to the operative.
- (8) Care must be taken to avoid the load swinging. Swinging loads may strike supporting structures, or when operating in multi-storey applications, the building, not only causing damage to them or the load but also affecting the safe slinging of the load. Excessive swinging can result in increased loads

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being imposed on the lifting appliance, runway or cantilever. Danger also exists to personnel who may be struck or pinned by swinging loads.

(9) Avoid shock loading the runway or lifting appliance. This is particularly important where loads are being moved clear of buildings, etc., or where raised loads are being added to, e.g. using a container to clear debris from an upper floor of a building, etc.

(10) In some cases, a runway may be fitted with more than one lifting appliance. Where this is the case, follow the recommendations given in section 1 paragraph 1.8.2(6) of this code. In particular care must be taken to avoid collision. Further, the permitted loading in any one span of the runway track or the appliance lifting centres may be restricted and care must be taken to ensure that this is not exceeded by the approach of other appliances.

(11) It is generally accepted that the use of powered equipment places higher dynamic loading on a structure than manual equipment. Allowance for this is made in the design of runways. A runway fitted with hand operated lifting appliances should never be converted to power operated appliances without the express approval of a Competent Person.

(12) Multiple runway systems often employ switches or turntables to allow the appliance and load to be transferred from one track to another. Such systems are usually fitted with gate type end stops, which may be automatic or manually operated and care must be taken to ensure that they are in the correct position before continuing with the operation. All such systems must be operated in accordance with the manufacturer's instructions as well as the recommendations given in this section of the code.

(13) In some applications, e.g. for raising and lowering loads over the sides of buildings, the runway system may include a retractable section of track or the complete runway may be of a retractable design. Reference should be made to the manufacturer's operating instructions and these should be strictly followed.

(14) In the case of curved runway tracks or those that include bends, care must be taken when replacing trolleys onto the track. The trolley may be such that it only negotiates the bends when mounted on the track in a certain direction. The trolley manufacturer's instructions should therefore be sought and followed.

(15) Never attach additional steelwork to or suspend pipes, cables or similar items from runways. On no account should the runway or its supporting members be modified without the express approval of a Competent Person.

7- IN-SERVICE INSPECTION AND MAINTENANCE

***Pre-use Inspection**

In addition to the thorough examination by a Competent Person necessary under legal requirements, all runways and their associated lifting appliances should be visually inspected by a suitably qualified and experienced person prior to use or on a regular basis. For runways in regular use it is good practice to make the inspection at the start of each shift or working day. For runways used infrequently it should be done before use on each day of use. It is recommended that a formal system of pre-use inspection is implemented, and a written record kept identifying the date inspected, confirmation that it passed inspection and the

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name and signature of the person making the inspection. In the event that it does not pass inspection, there should be procedure to quarantine the runway to prevent further use of the equipment until the problem has been resolved. The purpose of the pre-use inspection is to check functionality of the runway and make a visual check for any obvious defects. Guidance on pre-use inspection of lifting appliances will be found in the relevant sections of this code. The following are examples of the common defects which may become apparent in use or during the regular inspection of runways. If any of these defects are found the runway should be withdrawn from service and referred to a Competent Person:

- (1) Damage or deformation to the track, such as cracks, bent or twisted flanges, wear to the running face of the track etc. Also twisted, bent or 'turned down' cantilever jib sections.
- (2) Damage or deformation to supporting steel structures, such as cracks, distorted columns, bent or twisted flanges, damaged or distorted stools, packers and fixings, bent or distorted base plates.
- (3) Corrosion of any of the structural members or track.
- (4) Loose, missing or distorted bolts, nuts or clamps. All washers, including taper washers where appropriate, and locking devices must be in place. (In the case of missing bolts, nuts or washers, they must be replaced by ones of the correct size, grade and type. If any doubt exists withdraw from service and refer to a Competent Person.)
- (5) Insecure, cracked or undercut welds.
- (6) Loose foundation bolts. (It may be necessary to consult the manufacturer's instructions as certain types of foundation bolt require periodic re-torquing during the initial period of use. Where the manufacturer's instructions do not mention this or if the problem recurs, withdraw from service immediately and refer to a Competent Person.)
- (7) Damaged, loose or missing end stops. End stops are safety devices which prevent the trolley, hoist or load colliding with the structure or running off the end of the track. Their correct fitting is of vital importance to the safe use of the runway. They must be set so that they mate with the wheel tread and do not contact the flanges of the trolley wheels.
- (8) In the case of runways which are built into stone or brick walls, cracking or crumbling of the wall.
- (9) Trolley lacks traction or all of the wheels are not in full contact with the track. In the case of hand geared trolleys, trolley tilts when effort is applied to the hand chain. (If the trolley slips or slides on the track, this may be due to dirt or debris. The running face of the track and trolley wheel treads should be cleaned of all contamination which may impede the free movement and correct operation of the trolley. If the problem persists, withdraw from service and refer to a Competent Person.)

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6. MARKING:

The following information should be permanently and legibly marked on the runway to give maximum visibility to the operative. In certain instances, it is recommended that the SWL should be marked in more than one place.

- (1) Identification mark(s). (If the manufacturer has not provided a unique serial number then it is the responsibility of the user to add the identification mark to identify the equipment with the inspection and examination reports).
- (2) SWL. This should be marked on both sides of the runway in such a way that it is readily legible from the operating position.
- (3) Any limiting conditions marked on the runway must be clearly visible. (i.e. reduced capacity towards the end of a cantilever).
- (4) Maximum hoisting speed for powered hoists or else the words 'Manual Hoist'.
- (5) Year of manufacture and installation.
- (6) Name of manufacturer or supplier.

Special care must be taken with regard to the SWL of the runway and lifting appliance(s). The maximum load to be lifted, including the weight of the equipment, should not exceed the marked SWL of the runway. This is particularly important in cases where the lifting appliance is regularly removed and replaced, as may be the case in maintenance applications, or where more than one lifting appliance is being used, i.e. multi-point lifting.

7. REPORTING AND CERTIFICATION:

A certificate of test and thorough examination will be issued upon the satisfactory completion of the examination, i.e. the lifting equipment is safe to operate

A defect report will be issued if the lifting equipment fails to meet the requirements.