

**AN ROINN TALMHAÍOCHTA BIA AGUS MARA
DEPARTMENT OF AGRICULTURE FOOD AND THE MARINE**

MINIMUM SPECIFICATION FOR THE REPLACEMENT OF SLATS.

The receiving of this specification does not imply approval of a grant application. However, if written approval is issued, then this specification becomes part of the contract between the applicant and the Department of Agriculture Food and the Marine.

This is a minimum specification. Where the word “SHALL” is used, then that standard (at least) **must** be followed in grant-aided buildings. Where a procedure is “RECOMMENDED”, this is advice only on good practice.

Note that all references to other Department Specifications are to the current edition of that specification [available on the Department of Agriculture, Food and the Marine’s Website (www.agriculture.gov.ie) under Farm buildings]. Similarly, references to Standards are to the current edition of the Irish, British or European Standard, as appropriate.

This specification gives details of the preferred method for the replacement of concrete slats in animal housing.

1 Safety

1.1 Responsibility for Safety

Applicants are reminded that they have a duty under the Safety, Health, and Welfare at Work Act 2005 to provide a safe working environment on the farm, including farm buildings, for all people who may work on that farm. There is a further duty to ensure that any contractor, or person hired to do building work, provides and/or works in a safe environment during construction.

1.2 Safety during Construction

Farmer/Applicant Responsibility: Please note that neither the Minister nor any official of the Department shall be in any way liable for any damage, loss or injury to persons, animals or property in the event of any occurrence related to the development and the applicant shall fully indemnify the Minister or any official of the Minister in relation to any such damage, loss or injury howsoever occurring during the development works.

Dangers: Where the applicant/farmer is undertaking any part of the above work, it is his/her responsibility to seek competent advice and to undertake all temporary work required to ensure the stability of excavations, superstructure, stanchion foundations, wall foundations, to guard against possible wind damage and to avoid any other foreseeable risk. It is also his/her responsibility to ensure that any drains, springs or surface water are diverted away from the works.

Power lines: Farm buildings shall not be constructed under or nearer than 10m to an overhead power supply. If advice is required, or if power lines need to be diverted, it is the applicant’s responsibility to contact, in writing, the local ESB supervisor before construction commences and then to follow the ESB conditions.

Danger to children: It is the applicants responsibility to prevent children from playing or spending time in the vicinity of any construction work.

1.3 Safety Notices

A safety notice shall be securely fixed beside every agitation point. The notice should be as close to the agitation point as possible. A typical agitation point safety notice is shown in Figure 1 below. The sign shall be not less than 490mm wide by 410mm high, and shall be printed on an aluminium alloy board.

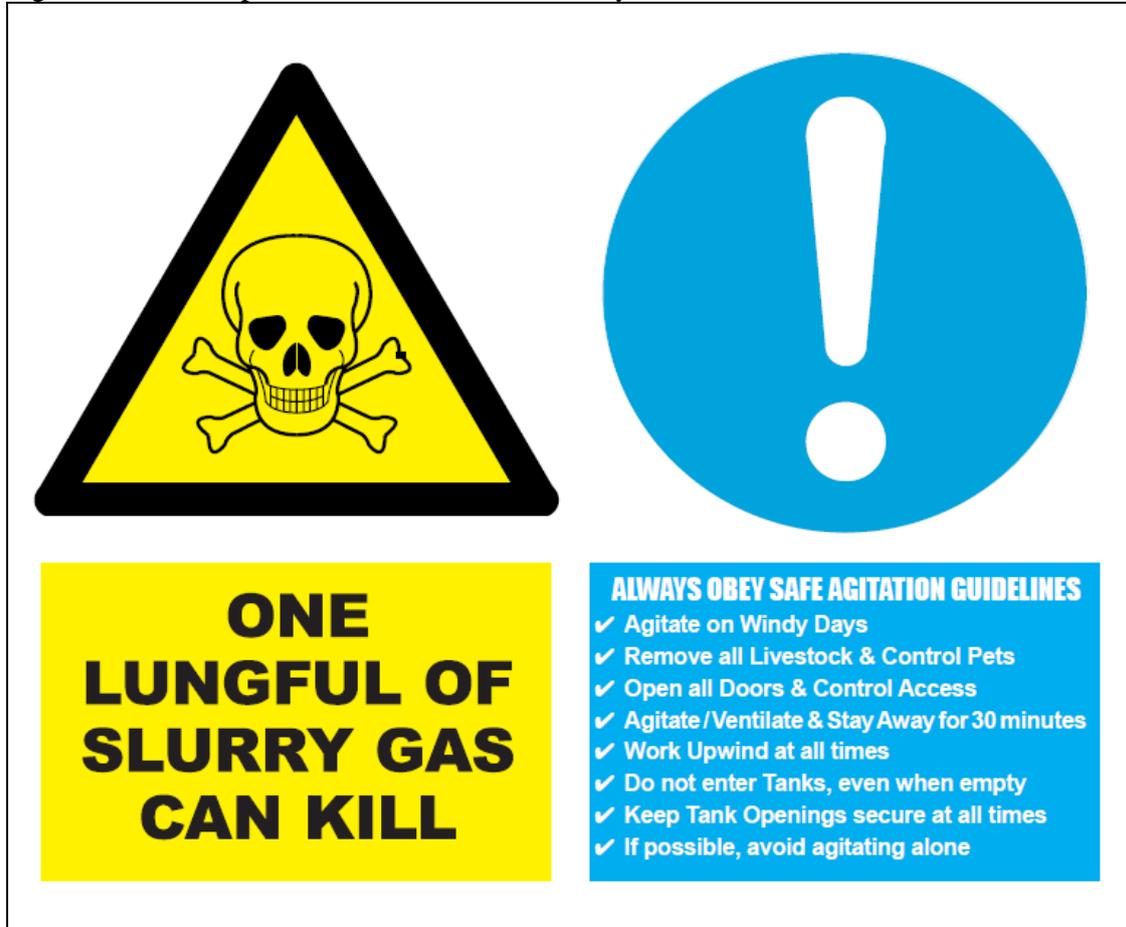


Figure 1: Agitation Point Safety Sign.

1.4 Toxic Gases and Agitation

Harmful gases are generated in slurry stores and these have been responsible for both human and animal deaths. Good ventilation in slatted buildings is always important, and is vital during agitation or emptying of the tanks. Where silage effluent has been added to the slurry there can be a danger of more concentrated gases. Therefore:

1. Tanks shall always be agitated and/or emptied from the external agitation points, and never from openings within the house.
2. Agitation shall tank place on windy days.
3. All animals shall be removed from the house before agitation commences. It is recommended that animal holding pens are installed close to the house to facilitate this removal.
4. All doors, and any feed-flaps, shall be fully opened before agitation/emptying begins and kept open until completion of tank emptying.
5. No person shall enter the house during agitation or emptying.

6. When agitating slurry always work upwind of the tank.
7. Some poisonous slurry gases are heavier than air. No person should climb down into an emptied or part-emptied tank without breathing apparatus. Such apparatus requires full training before it can be used.
8. Always keep the tank openings secure.
9. If possible avoid agitating alone. Always ensure that someone knows that agitation is being undertaken and the expected completion time.

2 Existing Tank Condition

Slat replacement shall only be undertaken on tanks that were constructed in accordance with S.123. This means that the replacement of slats shall not be undertaken on a slurry / effluent tank built with concrete blocks with a depth greater than 1.2m deep.

3 Emptying of Existing Tank

It is strongly recommended that the tank be fully emptied prior to the commencement of any work on the replacement of slats. It is strongly recommended that no one enters the tank during slat replacement activity.

If for some reason it becomes necessary to enter the tank, then the tank shall be tested for the presence of any harmful gases prior to anyone entering the tank. This test shall include, but not be limited to, testing for hydrogen sulphide (H₂S), methane (CH₄), ammonia (NH₃) and carbon dioxide (CO₂). If there is any doubt as to the levels of gases present, full breathing apparatus shall be used by anyone entering the tank. Gas testing and breathing apparatus shall only be used by trained, competent personnel.

4 Agitation / Access points

Any existing internal agitation points within a building shall be removed as part of the slat replacement works. Under no circumstances may agitation / access points be installed inside a building during slat replacement works.

Where there is currently no provision for external agitation of a tank, the tank shall be either, extend in accordance with S.123A, or have a simple aeration system (S.123D) installed.

Upon completion of the slat replacement works, all tanks shall have facilities for **the full agitation of slurry from point(s) outside the building.** Under no circumstances shall such extended tanks or access points be roofed over or enclosed. Adequate space shall be provided at all agitation points to ensure that an agitator can be installed into the tank and the tank both fully agitated and emptied.

5 Concrete Slats

Concrete slats shall be produced in accordance with IS EN 12737: 2004, and shall be CE marked and produced in a plant certified by a Notified body (e.g. NSAI or equivalent), to produce slats to IS EN 12737:2004. The concrete slats shall be load tested and be on the Accepted Concrete Slat List.

A **“Certificate of slat manufacture”** from a supplier approved by the Department shall be submitted. When laid, slats shall comply with the following requirements:-

- 1) Be free from any cracks, honeycombing, and chipping of the top corner arises.
- 2) **Have a full bearing of at least 150mm at points of support** (as per Figure 2).
- 3) Finished slat floor shall be level and free from any rocking movement.

- 4) **Be capable of being replaced with minimum disturbance.** [Slats are components with a limited working life, and are unlikely to last as long as the building.]

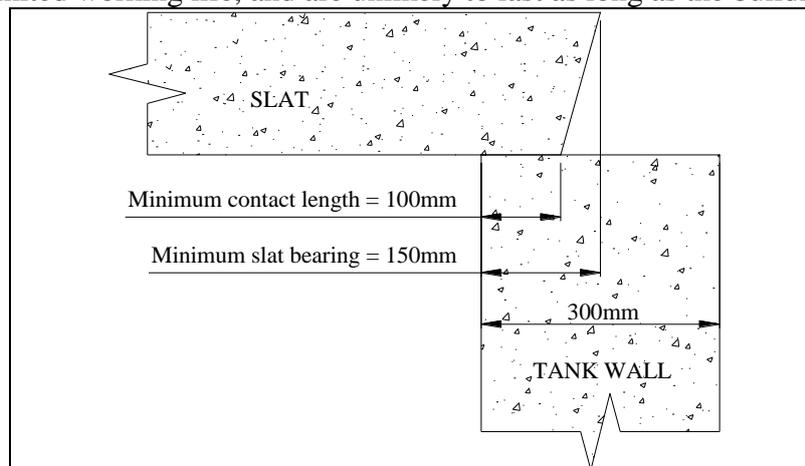


Figure 2: Diagram showing slat bearing.

6 Agitation points / Safety manhole covers

Agitation/emptying points shall be provided by covered access openings within the slab or slats. These covers shall be located and spaced as per clause 4.2, 4.3, 4.4, 4.6 and 4.7 of S.123 (i.e. all agitation / access points shall be fully external). Covers in every location shall be manufactured in steel with all elements galvanised to I.S. EN ISO 1461. Each cover unit shall consist of a frame; a hinged top-cover, either with a lock or safety catch, or with element(s) too heavy for a child to lift; and a safety grid underneath, hinged on the same side as the cover and also supported on (at least) the opposite side. The cover shall be hinged to lie back fully when opened, and the safety grid shall lean back at sufficient angle to stay open and be clearly visible in that position. The safety grid of minimum diameter 12mm steel or the equivalent shall have a maximum gap of 125mm between bars with the exception of one or (maximum) two apertures 225mm square, incorporated for slurry extraction.

Covers shall be manufactured to withstand a test load of 40kN [test procedure in accordance with IS EN 124:1994]. It is advised that where an access cover can be subject to heavy wheeled traffic it should be constructed to withstand at least an 80kN load.

Safety manholes covers should not be within an uncovered animal area, as such a location will severely shorten the expect life of the cover.

7 Slabs and Beams

All slabs and beams shall be constructed as set out in clause 11.4, 11.5 and 11.7 of S.123.

8 Steel tank extension covers

In cases where it is desired to install a fully steel tank extension cover over a slatted tank, the cover shall be certified to EN 1090, as for all structural steel. The cover shall be designed for the same loadings as heavy duty slats – i.e. 40 kN point load or 80kN axle load at 1.8m spacing. All elements of the steel tank extension cover shall be galvanised to I.S. EN ISO 1461.

9 Timber Slats for Sheep and Calves

Timber slatted floors shall be made up in sections to size that can be readily handled, generally not more than 5m² to 6m².

The timber slats shall be at least 50 x 22mm fixed at 20mm spacings with the framing and infill timbers at 600mm centres. Suitable sizes for framing and infill timbers are as follows:-

- Up to 1.6m span - 44 x 100mm.
- Up to 2m span 44 x 125mm.
- Up to 3m span 44 x 150mm.

Sections shall have minimum 100mm bearing on support walls and shall be laid parallel to the entry openings to pens.

10 Expanded Metal Slats for Sheep

Hot dipped galvanised expanded metal mesh shall be fixed with 50mm galvanised staples to timber framing as for timber slats but with infill timbers at 450mm centres. Suitable sizes for framing and infill timbers are as follows:-

- Up to 2m span - 44 x 100mm.
- Up to 3m span - 35 x 150mm.

Note: The standard dimensions of expanded metal “Empamet” 2088 is 2440 x 1220mm.

11 Solid Plastic Slats for Sheep, Calves, Pigs and Poultry

Solid plastic slats shall be listed on the “Accepted Slat List”, and shall be supported as per manufacturer’s instructions.

Each type of plastic slat shall only be used for the animal type for which it is accepted.

12 Cubicle Beds over Slats

Where there are cubicle beds constructed on existing slats, the portion of cubicle bed on the slat must be removed. **Standard cubicle beds shall not be built directly onto new replacement slats under any circumstances.** Where it is necessary to construct cubicle beds over slats then precast cubicle beds shall be used.

Precast cubicle beds may be placed on slats under the following conditions only:

- The concrete slabs making up the cubicle beds shall be not more than 2.4m x 2.4m or 4.8m x 1.2m (2 No. cubicle beds).
- The slats under the precast cubicle beds shall be heavy duty.

13 Walls over Slats

Where there is wall on existing slats, rather than removing the wall, the existing slat may be cut along the wall line and the portion of the slat under the wall left in place. The new slats shall start from the wall line. **Walls shall not be built directly onto new replacement slats under any circumstances.**

14 Concrete.

Due to the small volumes of concrete required for the replacement of slats, site mixed concrete is permitted.

Where concrete is required to fill gaps at the ends of replaced slats, it shall comply with the following:

If concrete is purchased, it shall be produced in a plant audited to I.S. EN 206-1: 2002 by a certified body accepted by The Department of Agriculture, Food and the Marine (e.g. N.S.A.I., B.S.I., Q.S.R.M.C). A numbered certificate, signed and stamped, shall be required for all concrete delivered to site. The certificate, the "Concrete Manufacturers' Specification Certificate", is produced in triplicate. The top certificate, printed on light blue paper, shall be retained by the applicant and given to and retained by the local AES Office of the Department of Agriculture for inspection upon completion of the works.

Where concrete is purchased it shall be on the basis of a characteristic 28 day crushing strength of 37N/mm². Minimum cement content shall be 310 kg/m³. Slump of unplastised concrete shall be either S2 or S3, and maximum aggregate size shall be 20mm.

If site mixed concrete is used, the concrete shall be mixed in the following proportions:

Component	1m ³ mix	0.25m ³ mix
Coarse aggregate (10mm or 20mm)	992 kg	248 kg
Fine aggregate (sand)	854 kg	213 kg
Cement (minimum)	310 kg	77.5 kg
Water (maximum)	170 litres	42 litres

15 Certificates

The following certificates shall be collected, and given to the Department before grant-aid can be paid:

- (1) "Slat" Certificate
- (2) "Concrete" Certificate

16 Related Department Specifications

The current edition of the specifications listed below shall also be followed as required:-

- 1) 'S.123: Minimum Specification for Bovine Livestock Units and Reinforced Tanks'.
- 2) 'S.146: Minimum Specification for Wintering Facilities for Sheep'.

Copies of this and other relevant Department specifications are available on the department website at: www.agriculture.gov.ie under farm buildings or by contacting the one of the local offices of the Department of Agriculture, Food and the Marine.

Appendix I: Date of clause revisions and additions

All changes from the previous version are highlighted in red.

Version: March 2018

New Clauses: 2,

Clases modified: Clases renumbered following addition of new clause 2.