

**AN ROINN TALMHAÍOCHTA BIA AGUS MARA**  
**DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE**  
**MINIMUM SPECIFICATION FOR PROPRIETARY OVER-GROUND**  
**CIRCULAR SLURRY/EFFLUENT STORES**

**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 Website ([www.agriculture.gov.ie](http://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.

**Note:** Slurry/effluent stores need careful and constant management to ensure correct operation.

## **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:** Due to the complex criteria involved, where buildings are proposed within 35 metres of the centre of any overhead power line, the landowner shall contact ESB Networks in advance to ascertain the specific minimum building clearance requirement. It is a requirement on landowners under The Electricity Supply Acts to

notify ESB Networks, at least, two months before commencement of any construction works near overhead lines. As a guide, table 1 below sets out the usual minimum clearance distances required, however, ESB Networks shall be contacted and their advice followed for any structure within 35m of the centre line of an overhead power line. ESB will provide landowners with written confirmation of the required clearances. Landowners can contact ESB through phone numbers provided on their electricity bills.

Where building work is undertaken near power lines there is also a safety issue regarding Machinery, Tipper Trucks and Elevators operating without proper safety measures in place. When landowners contact ESB they will be provided with relevant safety literature.

**Table 1:** In general the following clearances apply to various voltage levels.

<b>Voltage</b>	<b>Clearance</b>
Low Voltage	0.5 to 3 Metres
Medium Voltage	3 to 6 Metres
38KV Lines	10 to 17 Metres
110kv Lines	23 Metres
220KV Lines	30 Metres
400KV Lines	35 Metres

**Note:**

- ESB overhead lines consist of lines at various voltage levels and require specific safety clearances from buildings depending on voltage level and construction type.
- Clearances are specific to the line voltage, building height, location in line span and ground levels.

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

**2. The Store Contractor**

All the construction work specified in this document shall be the responsibility of the Store Contractor, who shall be a specialist in this form of construction, and accepted as such by the Department of Agriculture, Food and the Marine. The full installation of the tank shall be carried out directly by the Store Contractor. All other works shall be completed either by the Store Contractor, or in accordance with the Store Contractor’s instructions. In all cases the installation shall at least meet all of the requirements of this specification. Certificates shall be required from the Store Contractor to cover all aspects of the work. [Clause 13]

It is recommended that the Store Contractor has ISO 9002 Quality Accreditation, and uses only materials from an ISO 9001 Quality Approved Manufacturer. As a minimum, the work shall be performed to a level accepted by a recognised European accreditation body.

The store contractor shall have both Employers and Public Liability Insurance, records of training in current Health and Safety procedures and in manual handling/lifting techniques, and use only certified lifting equipment, scaffolding and tank erection jacks.

All Store Contractors accepted by the Department shall be listed in Specification S. 122A.

### **3. Planning Permission**

In every case planning permission shall be obtained for this type of slurry/effluent store.

### **4. Storage Capacity**

**A minimum of 16, 18, 20 or 22 weeks storage** shall be provided in all new and converted structures in line with the requirements of S.I. 31 of 2014 European Communities (Good Agricultural Practice for Protection of Waters) Regulations and any subsequent amendments to the regulations. However, where the Local Authority has specified a higher winter storage period, then this must be complied with.

**Note:** The requirements for the capacities of slurry, effluent, and soiled water stores which are defined in S.I. 31 of 2014 Regulations shall be followed. The regulations require that an additional freeboard of 200mm must be provided for all covered tanks and 300mm for all uncovered tanks.

Where a holding lies partly in one county and partly in one or more other counties, the slurry storage on the holding shall be designed in relation to the county in which the longest storage period is required.

### **5. Location**

The location of any slurry/effluent store shall be in compliance with all requirements of planning permission and other statutory regulations. Additionally the location should be at a suitable remove from busy work areas, or from circulation areas in the farmyard, and well away from trees. No part of the structure shall be directly under any power line [Clause 1]. Site investigations shall take place to determine ground water level, bedrock depth and subsoil types to determine the suitability and carrying capacity of the soil. Trial pits shall be sunk at least two metres below the expected lowest level of the store.

A storage facility shall be located not less than 50m from any waterbody in the case of new farmyards, and not less than 10m in the case of extensions/modifications to an existing facility. The minimum distance between a storage facility and a public/private water supply source, either surface or ground, shall be 60m for new farmyards and not less than 30m for existing farmyards, subject to a hydro-geological survey. In vulnerable situations this distance should be increased up to 300m.

### **6. BUNDING**

In some cases, bunding of stores may be required to prevent slurry entering watercourses in the event of a significant spillage from the slurry store. Bunding may consist of an earth embankment around the store, or an earth embankment located further away from the store. The actual type of bunding will depend upon the site conditions.

### **7. Concrete Specification**

#### **7.1 Certificates**

Concrete shall be produced in an audited plant only: It shall not be produced on site. 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, Food and the Marine for inspection upon completion of the works.

## **7.2 Curing of Concrete**

**Concrete produced and supplied is fit for purpose ONLY IF proper curing procedures are adhered to and the structure is not put into service until an adequate curing time (usually a minimum of 28 days) has elapsed.** The curing regime shall take account of best practice appropriate to the concrete binder composition and prevailing climatic conditions at time of placing.

All concrete shall be cured by keeping it thoroughly moist for at least seven days. Wetted floor slabs and tank walls shall be protected by polythene sheeting, kept securely in place. Alternatively proprietary curing agents may be used in accordance with manufacturer's instructions. When frost is a danger, straw bales shall be placed over the polythene on slabs. Concrete shall be at least 28 days old before being subjected to full load or silage effluent.

For further information on curing, see the website of the Irish Concrete Society.

## **7.3 Concrete**

Concrete shall be purchased on the basis of a characteristic 28 day cube crushing strength of  $37\text{N/mm}^2$  (strength class C30/37). Minimum cement content shall be  $310\text{ kg/m}^3$ . The maximum water to cement ratio will be 0.55. The specified slump class shall be S2 or S3. The maximum aggregate size shall be 20mm.

**The concrete shall be ordered using the appended form for 'S.100 Mix B' or by requesting '37N concrete with 310kg cement minimum, 0.55 water cement ratio maximum, and slump class S2 or S3, certified to IS EN 206, for use to Specification S.100'.**

## **7.4 Fibres**

Polypropylene fibres may be incorporated into the concrete mix to improve the properties of concrete. Only fibres which have been tested and approved by National or European approval authorities may be used. The use of fibres helps to reduce plastic cracking and improve surface durability but they are not a substitute for structural reinforcement. Fibres shall be used in strict compliance with manufacturer's instructions and shall only be added at the concrete manufacturing plant. The concrete certificate (Clause 7.1) shall clearly show the amount and type of fibre added. The mix design, compacting, and curing of fibre concrete is the same as concrete without fibre. Under no circumstances shall additional water be added to the concrete to change the workability.

## **7.5 Materials**

Cement and other materials used in the production of concrete shall be in accordance with Department of Agriculture, Food and the Marine specification S.100.

Plasticisers and other admixtures shall be to EN 934. All admixtures shall be used in strict accordance with manufacturer's instructions, and shall be added only by the concrete-mix manufacturer.

**7.6 Tests**

The Department reserves the right to require that concrete should be tested in accordance with EN 12390 and EN 12504, and that installed reinforcement may be checked by electronic or other means.

**7.7 Compaction of Concrete**

All concrete shall be compacted by either vibrating screed or poker vibrator depending upon the position of the concrete. Poor compaction leads to entrapped air, which will weaken the concrete and may cause premature failure.

**8. Construction of Base**

**8.1 Excavation**

All top soil and soft material shall be excavated to a minimum depth of 150mm, or down to solid stratum, and the excavated material shall be removed from site to a suitable area. Hardcore shall be compacted in 150mm layers using a suitable vibrating or heavy roller. Consolidation with wheeled or tracked plant is not adequate. The compacted hardcore shall be extended a minimum of 300mm in each direction beyond the edge of the base. Special care shall be exercised in compacting the edges of the base, and under the ring beam. All hardcore shall be blinded over by fine sand or by a 50mm layer of blinding concrete finished smooth.

A 1000 gauge polythene membrane shall be laid on the finished hardcore with 600mm overlaps. The overlaps shall be sealed with suitable adhesive tape. The polythene shall be brought up on the inside of the timber or steel formers around the outer edge of the ring beam.

In cases where fill is purchased for use under concrete, it shall be certified to EN 13242:2013 and meet the requirements of Annex E of S.R. 21: 2015. This material shall also be used as the top 300mm of any backfill around stanchion foundations.

**8.2 Ring Beam**

A ring beam shall be constructed around the outer edge of the store, on which the store wall shall be constructed. The ring beam shall be constructed to the store contractor’s specification, but in no case shall the beam be smaller than that specified in Table 2.

Suitable fixing points shall be installed in the ring beam for the fixing of the store walls. The concrete in the ring beam shall be vibrated using a poker vibrator.

**Table 2:** Minimum ring beam dimensions and mesh reinforcement

Store Diameter	Ring Beam		Mesh Size in ring beam
	Width	Depth	
Up to 19m	460mm	330mm	A193
> 19m	600mm	330mm	A393

**8.3 Store Floor**

The minimum floor thickness shall be at least that specified in Table 3. Steel mesh shall be laid in all floors. The mesh shall be sized as per Table 3, and shall have a concrete cover of at least 40mm. The concrete shall be thoroughly compacted using a vibrating screed, and compaction around steel reinforcement shall be carried out with a

poker vibrator. The floor shall be finished smooth. The mesh shall be supported using suitably sized ‘chair’ supports at appropriate intervals.

**Table 3:** Minimum floor thickness and mesh sizes for stores.

Store Diameter	Mesh Size in floor	Floor depth
Up to 19m	A252	150
>19m	A393	175

## **9. Tank sides and agitation equipment**

### **9.1 Tank Sides**

The sides of the tank shall be constructed and placed by the store contractor. All joints shall be suitably sealed and certified as leak tight by the store contractor. The materials used in the tank sides shall be those accepted by the Department of Agriculture, Food and the Marine. If changes are made to the materials to be used in the tank sides, then acceptance shall be sought from the Department of Agriculture for the new materials used.

Vitreous enamelled steel sheets shall conform to EN ISO 28722:2011. All bare edges of enamelled sheets shall be protected by a fillet of durable mastic which overlaps the coated surface and all joints shall be sealed with mastic. Connections shall be made using galvanized bolts and nuts or other suitable connectors.

Care shall be taken to ensure that tightening the bolts does not cause the enamelling to crack. For this purpose plastics washers or, alternatively, galvanized steel washers bedded on mastic should be used. Bolt heads should be provided with plastic caps.

Concrete wall panels shall be designed in accordance with the recommendations given in BS EN 1992-3. Where an impermeable lining is provided, constructions should be designed in accordance with the recommendations given in BS EN 1992-1-1.

Loadings on tank sides shall be in accordance with BS 5502 Buildings & Structures for Agriculture, or to an equivalent International Standard.

### **9.2 Access ladders and platforms**

An access ladder shall be supplied to the side of the tank to enable viewing of the upper surface of the slurry in the tank. This ladder shall be provided with a back safety cage. The lower 2.4 metres of this ladder shall be removable so as to prevent unauthorized access to the top of the tank.

If agitation is to be performed using a ‘jetter’ affixed to the top of the tank, then a safety platform, with safety rails, shall be provided for the jetter operation. This platform shall be at least 2 metres long by 1 metre wide and be fitted with toe board and safety railing. The platform shall be constructed from galvanised steel and have a non-slip surface finish. At least two rails shall be placed around the platform.

### **9.3 Agitation equipment**

Appropriate agitation equipment shall be selected in conjunction with the farmer, and installed by the store contractor at the time of construction of the store.

## **10. Reception Pits and flow channels**

Reception pits and flow channels shall be installed as required. They shall be constructed to the standard as set out in Specification S. 123. Where provided, the

reception pit shall be capable of storing a minimum of seven days production of slurry, however, it is recommended that it be capable of storing 14 days slurry production. Care shall be taken when constructing the reception pit not to disturb the main slurry store.

All required pumps and pipe work for the transfer of the slurry from the reception pit to the store and from the store to the reception pit (for agitation by jetter) shall be installed at the time of construction.

## 11. Emptying facilities

All points for emptying the tank through either the side or base of the tank shall be controlled by at least two valves in series. The valves shall be spaced at least 1 metre apart and be independently operated. This is to prevent accidental spillages of large quantities of slurry. Both of the valves shall be independently locked when not in use.

The store may be emptied using the reception pit, or emptying may alternatively be done directly by pipe into a slurry tanker. In either case the valves shall be securely supported and shall be bolted to the surrounding pipe work. Push fittings or quick release fittings are not acceptable. All valves shall be located so that they are accessible in case of needing repair. Valves shall be located so that the minimum distance between the lowest point of the valve handle and the ground below is not less than 300mm when the valve is closed. This is to ensure that the valve can be fully closed at all times.

A barrier, minimum of 1.2m high and minimum of 1.0m from the valves, shall be constructed round the emptying point so as to prevent accidental damage occurring to the valves. The barrier shall be of, at least, IPE 160 or equivalent for both uprights and horizontal sections. An opening 900mm wide may be left in the barrier to provide access to the valves.

## 12. Warning Signs

Warning signs shall be erected at suitable locations around the store, stating “**SLURRY STORE: DANGER OF DROWNING, DANGEROUS GASSES, TOXIC HAZARD**”. It is recommended that a sign saying “**NO SMOKING**” is erected along side the main warning sign.

## 13. Information Plate

An information plate shall be attached to the store at the time of construction giving a reference number and details on the date of construction of the store, and details about whether the store may be extended and if so how this should be done.

## 14. Certification

The following Certificates shall be provided to the applicant for submission to the Department before grant-aid can be certified for payment.

1. ‘Concrete’ Certificate [clause 6.1]
2. Contractors Certificate of Ground Preparation and Leak Tightness for Over-Ground Circular Steel Slurry/Effluent Stores [Appendix A].

**Appendix A. –**

Contractors Certificate of Ground Preparation and Leak Tightness for Over-Ground  
Circular Slurry/Effluent Stores.

To be reproduced on contractors headed paper as per sample given overleaf.

*To Be Completed on Contractors Headed Paper*

**Contractors Certificate of Ground Preparation and Leak Tightness  
for Proprietary Over-Ground Circular Slurry/Effluent Stores.**

*(To be completed by Store contractor)*

Name of Client: \_\_\_\_\_

Address of client: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I hereby certify that the excavation and preparation work performed is of the required standard to at least meet the requirements of the Department of Agriculture, Food and the Marine specification S122, 'Minimum Specification for Proprietary Over-Ground Circular Slurry/Effluent Stores'.

Name of contractor preparing site: \_\_\_\_\_

Address of contractor preparing site: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date site certified ready for Store construction: \_\_\_\_\_

Name and position of person certifying preparation work: \_\_\_\_\_  
\_\_\_\_\_

Signature of person certifying preparation work: \_\_\_\_\_

It is further certified that the circular store has been installed to, at least, the standard of specification S122, and is hereby certified as leak tight. It is also certified that all safety features have been installed.

Date of certification: \_\_\_\_\_

Name and position of person certifying store: \_\_\_\_\_  
\_\_\_\_\_

Signature of person certifying store: \_\_\_\_\_

Company Stamp of Store contractor:

