

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

**MINIMUM SPECIFICATION FOR GRAIN DRIERS**

**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 Building Specifications]. Similarly, references to Standards are to the current edition of the Irish, British or European Standard, as appropriate.

However, if other structural designs are used, then a full set of design drawings and full structural calculations shall be prepared by a chartered engineer, and given to this Department for acceptance prior to the issuing of approval for the commencement of grant-aided works.

**1 SAFETY..... 1**  
**2 BATCH GRAIN DRIERS..... 3**  
**3 CONTINUOUS FLOW GRAIN DRIERS..... 3**  
**4 ELECTRICAL INSTALLATION ..... 6**  
**5 CERTIFICATES..... 7**  
**6 RELATED DEPARTMENT SPECIFICATIONS..... 7**

**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. It is the applicant’s responsibility to provide a construction stage project supervisor.

**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 grain driers 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 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 applicants responsibility to prevent children from playing or spending time in the vicinity of any construction work.

**Roof work:** When working on any roof, it is essential to assume that the roof is fragile, unless confirmed otherwise by a competent person.

The HSA Code of Practice for Safety in Roofwork shall be consulted prior to any work being undertaken on a roof. All advice in the code of practice shall be followed.

The HSA code of practice gives recommendations and practical guidance on how to work safely on roofs, including the safe maintenance of roof mounted plant and services, and how to design and plan for safe working. It offers guidance on the design and construction of

roofs on new buildings and the maintenance, cleaning and demolition of existing roofs. All work at height poses a risk and a risk assessment should be carried out to assess those risks and put appropriate controls in place.

### **1.3 Maintenance**

All farm buildings require regular maintenance to ensure the health and safety of personnel and animals. Fittings such as electrical fittings, pumps and filters, etc., should be periodically checked, and all defective items replaced.

## **2 Batch Grain Driers**

All batch grain driers shall be of proprietary manufacture.

The grain driers shall have integral intake and discharge augers.

Grain driers shall be fitted with an integral grain cleaning and dust catchment system. It is important that only the most minimal amount of dust can enter the air intake system of the grain drier.

The driers shall be electronically controlled and be capable of monitoring the grain temperature and grain moisture.

The driers may be either direct fired, where the flue gasses pass through the grain, or indirect fired. Indirect fired grain driers shall be fitted with a heat exchanger, and the flue gasses expelled away from the grain drying area.

## **3 Continuous Flow Grain Driers**

### **3.1 General Requirements.**

All continuous flow grain driers shall be of proprietary manufacture.

The grain driers shall have integral intake and discharge augers.

Grain driers shall be fitted with an integral grain cleaning and dust catchment system. It is important that only the most minimal amount of dust can enter the air intake system of the grain drier.

The driers shall be electronically controlled and be capable of monitoring the grain temperature and grain moisture.

The driers may be either direct fired, where the flue gasses pass through the grain, or indirect fired. Indirect fired grain driers shall be fitted with a heat exchanger, and the flue gasses expelled away from the grain drying area.

The housing for the grain drier shall comply with clauses 3.2 to 3.6

### **3.2 STRUCTURAL DESIGN**

All roof structures shall comply with Department of Agriculture, Food and the Marine's current edition of specification S101: Minimum Specifications for the Structure of Agricultural Buildings. Alternative proprietary construction systems (e.g. proprietary structural wall panels) may be used if such systems have received the prior acceptance of the Department of Agriculture, Food and the Marine. Gutters and downpipes shall be fitted to all

roofs and arranged so as not to discharge onto soiled yards. All metal cladding fixed to timber rails or purlins shall be separated by a layer of DPC.

### **3.3 Structure Certification**

Were the steel frame work is manufactured by a contactor it needs to be CE Marked and have a Declaration of Performance. All steel frame structures shall be CE marked and produced in a plant certified by a Notified body (e.g. NSAI or equivalent), to manufacture structural steel frames in accordance with IS EN 1090. A Declaration of Performance shall be supplied for each building, by the certified steel frame manufacturer. The contractor must be certified to EN 1090-1, even in cases where the steel frame is manufactured on site. The building contractor shall be certified to, at least, execution class 1 under IS EN 1090.

Where there is either no Declaration of Performance, or welding certificates the building will be considered NOT to be in compliance with this specification.

### **3.4 ROOF AND SIDE CLADDING**

#### **3.4.1 Single Sheet Roof and Side Cladding**

Single sheet roof and side cladding shall conform to the current edition of Specification S.102.

#### **3.4.2 Proprietary insulated Cladding Sheets**

Proprietary insulated cladding sheets with a double metal skin may also be used for roof and side cladding. Where produce is loose-stored, or where there is any danger of mechanical damage, such cladding shall only be installed above mass concrete walls.

Double skin roof panels are strongly recommended, but panels with bonded insulation with a smooth hardened washable surface may also be accepted, if there is no risk of mechanical damage. Roofing felt, or other loose insulation, or wire netting shall not be installed.

### **3.5 CONCRETE SPECIFICATION**

#### **3.5.1 Certificates**

Concrete 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). 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 for inspection by the Agriculture, Environment and Structures (AES) Division of the Department of Agriculture upon request.

#### **3.5.2 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 to silage or silage effluent.

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

### **3.5.3 Concrete.**

Concrete for the foundations for grain driers shall be purchased on the basis of a characteristic 28 day cube crushing strength of 37N/mm<sup>2</sup> (strength class C30/37). Minimum cement content shall be 310 kg/m<sup>3</sup>. 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'.**

In the case of exposed yard slabs where freeze/thaw action is a concern, 'S.100 Mix B' shall be used with 3.5% minimum air entrainment. Alternatively 'S.100 Mix A' may be used.

If plasticised concrete is desired, the slump class shall not exceed S3.

### **3.5.4 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 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.

### **3.5.5 Self-Compacting Concrete.**

Self-compacting concrete (SCC) may be used in vertical elements only. SCC must comply with all requirements of this specification, except for the slump class which must meet slump flow class SF2. SCC shall be produced by a manufacturer with experience in producing SCC and should be placed by a contractor with experience using SCC.

If it is proposed to use SCC, additional guidance shall be sought by the contractor undertaking the works. Particular care must be taken in the use of fully sealed formwork, designed to withstand the higher hydrostatic pressure exerted by SCC. Guidance can be obtained from the Irish Concrete Society website ([www.concrete.ie](http://www.concrete.ie)).

### **3.5.6 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.

### **3.5.7 Tests.**

The Department reserves the right to require that concrete should be tested in accordance with EN 12390 and EN 12504.

### **3.5.8 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. All concrete can be easily placed and compacted when using a vibrating screed or poker vibrator which helps ensure the concrete achieves its full strength.

## **3.6 CONCRETE FLOORS**

Solid Floors shall be a minimum 125mm concrete laid smooth with a non-slip finish. Concrete shall comply with Clause B6 above. A minimum 150mm hard-core base shall be laid, compacted with vibrating or heavy roller, and topped with fine sand. All floors shall incorporate 1000 gauge polythene DPC membrane with 600mm overlaps laid on the sand under concrete. The polythene membrane shall be taken up along walls to meet DPC where this has been installed.

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.

## **4 ELECTRICAL INSTALLATION**

Wiring and fittings shall be installed, and all work shall be carried out in accordance with the Fourth Edition of the National Rules for Electrical Installations, ET101:2008 specifically Part 7-705: Requirements for special installations or locations - Agricultural and horticultural premises. An ETCI completion certificate shall be required, signed by the Electrical Contractor(s) or a person duly authorised to act on his/her behalf to certify that the electrical installation has been constructed and/or has been tested according to the National rules of Electrical Installations and has been found to be satisfactory. An associate certificate, specifically for agricultural work, the "Supplementary Agricultural Certification Form" shall also be signed by the Electrical Contractors or authorised persons and the number of the main ETCI completion Certificate clearly marked on it. If no valid numbered ETCI Certificate is available for the completed installation, then the Electrical Contractor shall complete a new numbered ETCI Certificate indicating that the new installation has been tested for safety and compliance, and note that number on the Supplementary Form. The signed printed "Supplementary Agricultural Certification Form" together with a copy of the ETCI Completion Certificate shall be given to the Department of Agriculture, Food and the Marine before grant-aid can be finally certified.

## **5 Certificates**

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

- (1) “Concrete” Certificate (Clause 3.5.1, where appropriate)
- (2) “Electrical” Certificate (Clause 4, where appropriate)
- (2) “Protection of Structural Steel” Certificate (where appropriate)

## **6 Related Department Specifications**

Copies of other relevant Department specifications are available on the department website at: [www.agriculture.gov.ie](http://www.agriculture.gov.ie) under ‘Building Specifications’ or by contacting the one of the local offices of the Department of Agriculture, Food and the Marine.