MODERNISING BUILDING STANDARDS IN SCOTLAND

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1 INTRODUCTION

The Building (Scotland) Act 2003 introduced changes in the Scottish system of building control. With effect from 2005, the current prescriptive standards will be replaced by expanded functional standards accompanied by guidance. Potentially, this reduces constraints on innovation. It also allows the adoption of harmonised European test methods and product standards without the need for amendments to regulations. Scotland is one of the first countries to arrange its documentation in six sections based on the Essential Requirements of the Construction Products Directive. This paper offers an insight into the elaboration of policy. It discusses the requirements for Noise, the introduction of certification, and potential differences between the approaches in Scotland and England & Wales to regulation and systems of implementation.

2 THE BUILDING (SCOTLAND) ACT 2003

2.1 Scottish Building Regulation

Building has been regulated in Scottish burghs since the 17th century, when the Dean of Guild Courts, which dated from mediaeval times, started to deal with boundary disputes and objections to buildings. By the 19th century the burghs had developed building regulations and building proposals had to be submitted to the Dean of Guild courts until their abolition in 1975. At the end of the nineteenth century the Public Health (Scotland) Act allowed county councils to control building in other areas and the Police Acts introduced a degree of commonality by specifying the courts' duties and procedures. Model byelaws were drawn up in the early twentieth century, but unsatisfactory enabling Acts meant that they were not applied uniformly.[1]

National unified standards were effected in the 1960s, following the Guest Committee recommendations which informed the Building (Scotland) Act 1959. The 1959 Act was amended in 1970, but was only recently replaced, by the Building (Scotland) Act 2003.[2] The 1959 Act was implemented by means of several regulations, which were amended at various dates. The 2003 Act will be implemented by four sets of Regulations, the Building (Scotland) Regulations 2004[3], together with regulations for Procedures, Fees, and for the Building Standards Advisory Committee.

Figure 1 Changes in regulations

CURRENT REGULATIONS	REGULATIONS EFFECTIVE FROM 2005
Building Standards (Scotland) Regulations 1990 amended 93 94 96 97 99 01 *supported by* Technical Standards	**Building (Scotland) Regulations 2004** *supported by* Guidance Documents
Building Operations (Scotland) Regulations 1975	
Building Procedures (Scotland) Regulations 1981 amended 87 91 92 95 97 99	**Building Procedures (Scotland) Regulations 2004**
Building Forms (Scotland) Regulations 1991 amended 92 97	**Building Fees (Scotland) Regulations 2004**
Building Standards (Scotland) (Relaxation by Local Authorities) 1997	
Building Standards Advisory Committee (Scotland) Regulations 1959	**Building Standards Advisory Committee (Scotland) Regulations 2004**

Drafts of the Building (Scotland) Regulations 2004 and Guidance Documents were issued for public consultation[4] in July 2003 and the review of responses started in early November. The other regulations are currently in preparation.

2.2 Comparisons between standards in Scotland and in England and Wales

The Building Standards division works closely with the Office of the Deputy Prime Minister (ODPM) in England and Wales, but it is just as likely to look for exemplars of good practice to Norway, the Netherlands, or New Zealand. The only mandatory link between the standards in Scotland and those in England and Wales is European legislation, but in practice the degree of independence is constrained by consideration of the economic impact of differing standards on Scottish suppliers and contractors. Nonetheless, there are numerous differences between the systems of building control north and south of the border. Scotland has a pre-emptive system of Building Warrants and does not allow Building Notices. Completion certificates are compulsory. Currently, there is no privatisation of building control, unlike the Approved Inspectors in England and Wales, so that only local authorities undertake the checking of designs and inspections of work in progress. Scotland does not have the same competent persons scheme for installers of controlled services and fittings, but it has allowed the certification of structural design and electrical installations for several years.

Scotland covers all the same topics as England and Wales, but is a little wider in scope, with additional subjects, such as requirements for electrical installation and some space standards. It sets some different levels of requirements, including higher U-values for walls and more demanding fire safety standards. Since the 2002 revision to Approved Document E, there has been a much greater difference between the countries' noise requirements than in the past.

3 ARRANGEMENT, FORMULATION, IMPLEMENTATION OF STANDARDS

3.1 Changes in the arrangement of standards

The current Technical Standards are presented in a single volume with 16 Parts, of which 14 Parts contain technical topics (Parts C-H, J-K, M-P, Q-S). Most topics are design principles, such as Structure or Resistance to transmission of sound, but some relate to parts of buildings, such as Combustion appliance installations or Electrical installations. Each topic refers to at least one of the Building Standards (Scotland) Regulations 1990, and contains a number of requirements.

Figure 2 Structure of the Technical Standards 2001

TECHNICAL STANDARDS		REGULATIONS
Introduction	The building control system in Scotland	
Part A	Definitions. References to published standards. Exempted classes of buildings. Fixtures not requiring a warrant. Limited life buildings. Classification of buildings by purpose. Occupancy capacity. Measurements. Compliance with standards.	3 to 9
Part B	Fitness of materials and workmanship	10
Part C	Structure	11
Part D	Structural fire precautions	12
Part E	Means of escape from fire, Facilities for fire-fighting, Means of warning of fire	13
Part F	Combustion appliance installations. Storage of liquid and gaseous fuels	14, 15
Part G	Preparation of sites. Resistance to moisture. Resistance to condensation	16, 17, 18
Part H	Resistance to transmission of sound	19 to 21
Part J	Conservation of fuel and power	22
Part K	Ventilation of buildings	23
Part M	Drainage, and Sanitary facilities	24, 25
Part N	Electrical installations. Aids to assist the hard of hearing	26, 26A
Part P	Miscellaneous hazards	27 to 28
Part Q	Access and Facilities for dwellings	29
Part R	Storage of waste	30 to 31

The new Scottish Building Standards are arranged in two volumes, domestic and non-domestic, each comprising six Sections. In total, there are 63 draft Standards, of which four do not apply to domestic buildings, and six do not apply to non-domestic buildings. There is one Standard for Noise, which only applies to dwellings or to elements of structure that separate non-domestic accommodation from dwellings.

Figure 3 Structure of the Scottish Building Standards 2004

		DOMESTIC	NON-DOMESTIC
Section 0	General		
Section 1	Structure	1.1 - 1.2	1.1 - 1.2
Section 2	Fire	2.2 - 2.12, 2.14	2.1 - 2.14
Section 3	Environment	3.1 - 3.26	3.1 - 3.10, 3.12, 3.14, 3.17 - 3.24, 3.26
Section 4	Safety	4.1 - 4.6, 4.8 - 4.9, 4.11 -4.12	4.1 - 4.5, 4.7 - 4.12
Section 5	Noise	5.1	5.1 *(separation from dwellings)*
Section 6	Energy	6.1 - 6.8	6.1 - 6.8

The sections correspond to the Essential Requirements of the Construction Products Directive.[5] This structure is intended to allow for easy updating in response to the rolling programme of changes to the harmonised European Standards. However, it is not a perfect basis for the arrangement of building standards. Firstly, it does not consider spatial characteristics, such as convenience for people with disabilities or space standards, which contribute to the sustained use of buildings. Secondly, the headings are based on design principles, rather than parts of buildings or trades. However, the rearrangement of the Technical Standards was mostly straightforward, with easy translations for the sections on Structure, Fire, Noise and Energy. The Standards for spatial characteristics were split between Environment, by treating space standards as health and hygiene issues, and Safety. The most difficult decision was the relocation of several Standards for installations of combustion appliances, which must be designed with regard to structural stability (where there is a chimney), fire safety, environmental health, safety, and energy efficiency. Rather than scattering requirements across five different sections, all the standards for combustion appliances were located in Environment, for the sake of the convenience of designers and installers.

3.2 Formulation of requirements

The 63 Scottish Building Standards were derived from the numerous requirements of the Technical Standards. They are statements of functional requirements, and are the only mandatory technical requirements. The accompanying Guidance Documents describe performance requirements and specifications that should be considered as minimum levels of practice, but the building owner may choose to comply with the Standards in other ways. Failure to comply with the Guidance Documents does not render a person liable to civil or criminal procedures, but compliance with the guidance may be relied on as tending to negative liability for an alleged contravention.

The Technical Standards were meant to allow alternatives to the deemed-to-satisfy solutions (DTS), as is made clear in Regulation 9 (2): “Without prejudice to any other method of complying with a relevant standard, conformity with provisions which are stated in the Technical Standards to be deemed to satisfy that standard shall constitute such compliance.” In practice the system became inflexible, with the DTSs treated as the only means to satisfy the technical requirements, by designers as much as building control officers. The new formulation is meant to promote the adoption of developments in construction design and delivery, and the division is already running a roadshow to explain the intention of the new Standards.

The provision of specifications is intended to allow building owners a straightforward way to comply with the functional requirements. The options of performance requirements and alternative measures afford a more flexible approach, but demand expertise on the part of designers.

The translation from DTSs to guidance is a level transposition, so that a building that could be built under the Technical Standards could also be built under the 2004 Scottish Building Standards. The words 'reasonable' and 'adequate', frequently used in the earlier Regulations and Technical Standards, were replaced by more explicit statements that should be easier to interpret in the courts. Mostly, the only other changes were concerned with the new advisory status so that, for instance, 'must' was replaced by 'should'. Despite the principle of level transposition, some small amendments were made where the original was particularly unclear.

3.3 Implementation of Standards

From 2004, the building standards system will be run by a new Scottish Building Standards Agency (SBSA), an executive agency of the Scottish Executive Development Department. As well as preparing legislation and guidance, it will approve Verifiers to check applications for warrants, check how they operate the system, and offer them opinions to assist their decision making. At present the only appointed verifiers are the 32 Scottish local authorities. Crown buildings will be verified directly by the Agency. The SBSA could, if necessary, take over the enforcement role from a local authority, on behalf of the Scottish Ministers. Its other main duty is to operate the new system of Certifiers.

The Building (Scotland) Act 2003 allows the Scottish Ministers to appoint Approved Certifiers of Design and Approved Certifiers of Construction. Certification in Scotland is potentially more wide-reaching than the Competent Persons programme in England and Wales. Scotland already has certificates for structural design and electrical installations, but the system of Approved Certifiers will introduce rigorous auditing of eligibility and practice that is not part of the current arrangements. Most Certifiers will belong to Certification Schemes run by professional and trade associations. The Agency will check the ability of such associations to run Certification Schemes. They in turn will check the qualifications, experience, and business practice of Certifiers.

The Agency will offer every assistance to reputable organisations that wish to devise Certification schemes. Certification is a form of empowerment whereby the industry can take responsibility for its own work. We can only hope that the insurance industry recognises the value of Certification and reduces premiums for those businesses that are approved as Certifiers.

4 DEVELOPING NEW LEGISLATION AND GUIDANCE

4.1 Consultation and Research

The development of the new Act and Regulations is a process of continuing consultation, with the participation of many organisations and individuals. As well as the public consultation procedures with written responses, the Building Standards Division benefits from the guidance of the Building Standards Advisory Committee and other experts. For instance, there was a working party to consider the responses to the *Improving Building Standards* consultation in 2000 and its report was used to develop the Building (Scotland) Bill. There are ongoing working parties to develop the regulations and Guidance Documents.

We commission research to support the development of the Building Standards and other Building Regulations. For instance, the Construction Licensing Executive is currently investigating the implication of our proposed procedures for Certification Schemes. Often the research addresses shortcomings in existing Standards, investigates the implications of new materials or technologies, changes to regulations in England and Wales, and problems arising from events that are not currently covered by building regulations. The last work on Noise in 2001 examined two issues: firstly, the performance in practice of the 'specified constructions',[6] secondly, the possible implications for Scotland of the changes to Part E.

Even before the 2004 Scottish Building Standards have been finalised, the division has funded research to improve the Guidance Documents and to inform the first review of the standards in 2006-7. The research programme is advised by a sub-committee of the Building Standards

Advisory Committee, chaired by Roger Talbot of Edinburgh University. Briefs are usually tightly focused and contractors are asked to work to a fairly rapid turnaround. Some are more speculative. Summaries or full reports are published on the website.

4.2 Future changes to Standards and Guidance

The Building Standards Division has often learnt about problems with the standards through the relaxations process, whereby local authorities allow relaxations from particular aspects of the Technical Standards. Typically, technological advances mean that a particular deemed-to-satisfy provision becomes redundant and a great many relaxations are granted. In such cases, the relevant officer draws up a class relaxation, which is adopted by subsequent amendments of the Regulations and the Technical Standards. In future, there are unlikely to be many class relaxations, due to the change from deemed-to-satisfy solutions to guidance, so the Division will have to rely on its monitoring of trade publications and the Building Standards Advisory Committee to keep track of advances in the industry.

If there are calls for the new Standards to be altered by reducing or extending their scope, by changing their objectives, or by raising the level of requirements, a more extended process will be required. The Building Standards constitute Schedule 5 of the Building (Scotland) Regulations 2004 and any such changes would only be undertaken with a public consultation process, regulatory impact assessment, and amendment legislation. Most changes will not require a legislative change. Instead, the Guidance Documents can be updated when there are advances in technology that make it possible to meet the requirements in different ways or when there is research that identifies improved techniques. By far the simplest way of updating the Guidance Documents is to insert a reference to a document. Ideally, we would publish all the documents cited on our website, but unfortunately many are British Standards.

When guidance is added, it must not inadvertently raise the level of requirements. Both the Guidance Documents and the external guidance that it cites should only assist the interpretation of the Building Standards. It is not the task of the Building Standards to promote best practice, but to describe minimum standards. For instance, the Standard on Noise only refers to domestic separating walls and floors. Therefore, the Guidance Documents shouldn't refer to issues such as the acoustic performance of façades, reverberation times in hallways, or partitions in schools. If Guidance that is cited deals with such issues, it must be made clear that these are not required by the Scottish Standards.

We intend to develop a good practice guide for improving acoustic performance in existing buildings, hopefully in time for the 2004 version. At a later date, we may need further research into the performance test standards if there are not sufficient existing publications to decide on changes to the Standards.

There will be changes to the delivery of the standards. The Building Standards division currently publishes the Technical Standards on its web-site as fully searchable .pdf files for downloading. It has published the consultation on the Draft Scottish Building Standards in a similar way, but the files were also circulated on a CD to all the consultees.

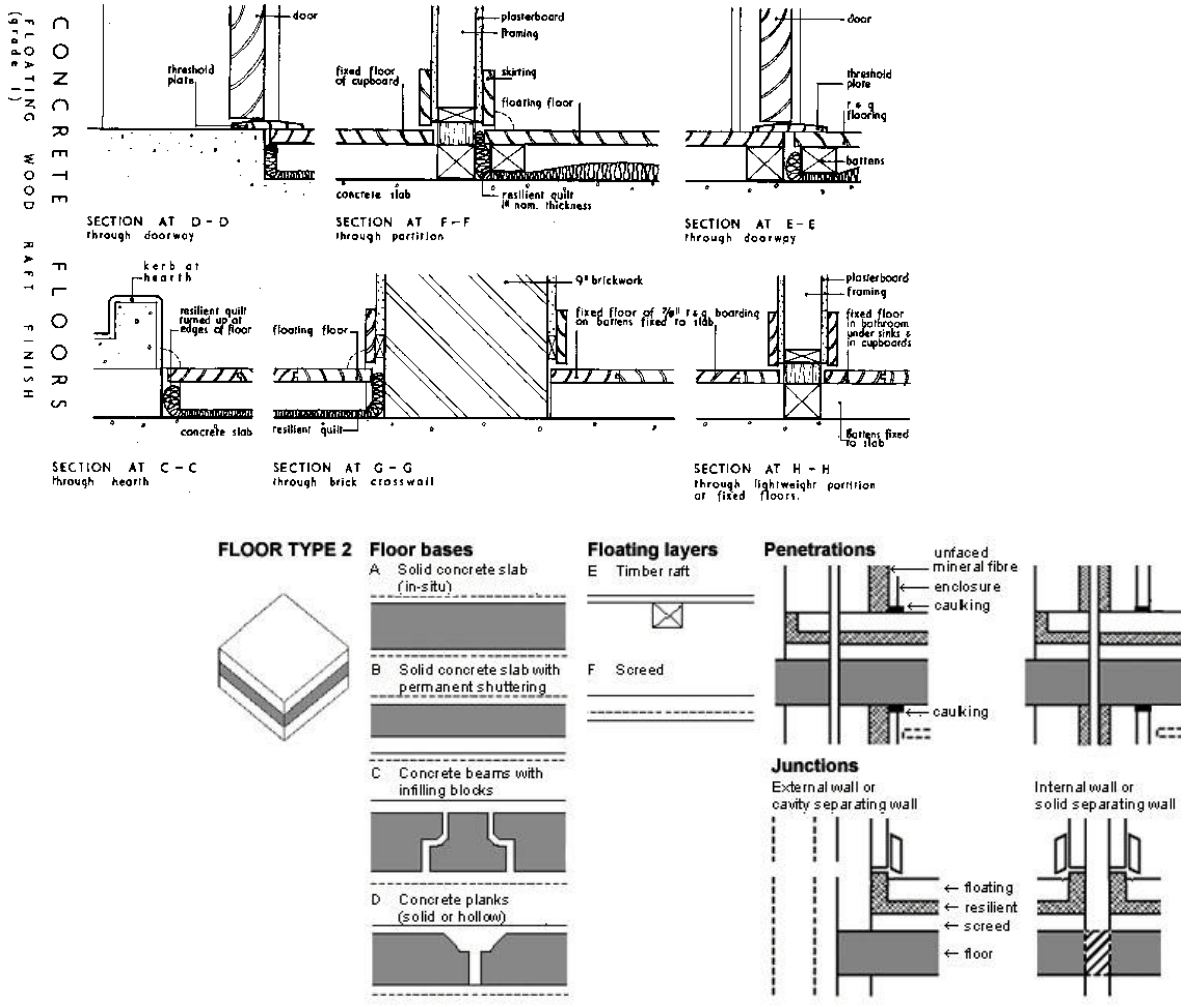
The division has commissioned research to make the Standards as easy to use as possible, using an .xlm format, with meta-tagging to make it possible to call up all the standards relevant to a particular part of a building. This is ground-breaking research, which has aroused considerable interest amongst the building control community, including the ODPM. However, we are still a long way from committing to this form of delivery, not only because the software is not yet sufficiently advanced, but also because it has considerable implications for the way in which the officers compose the standards.

5 THE SCOTTISH STANDARD FOR NOISE

5.1 Early standards for Noise

The model byelaws included requirements for sound insulation, but the immediate precedent to the Technical Standards was a 1957 memorandum by the Department of Health for Scotland[7] which described sound insulation standards for cottages and flats. It identified nine-inch brick walls, plastered both sides, as the minimum acceptable for party walls between cottages and related this standard to grades for flats using different types of concrete. It advised against using timber party floors and recommended concrete floors as a means to reduce flanking transmission. It is noticeable that the current DTS constructions of the Technical Standards are very similar to the 1957 recommendations, but are shown in a more abstract way. The 1957 diagrams show junctions at doorways, unlike the DTSs, but do not include details for services penetrations.

Figure 4 Comparison of 1957 recommendations and 2001 deemed to satisfy constructions for concrete separating floors with a floating wooden raft



5.2 The mandatory functional Scottish Building Standard 2004

The draft wording of the Standard for Noise is a combination of the wording of the Construction Products Directive and the objectives of the Building (Scotland) Act 2003. Whereas Approved Document E for England and Wales requires “reasonable resistance to sound“, the draft wording

attempts a more precise definition of acceptable noise levels, in terms of threat to health and inconvenience:

> **" Resisting sound transmission to dwellings using appropriate constructions**
> Every building must be designed and constructed in such a way that each wall and floor separating one dwelling from another, or one dwelling from another part of the building, or one dwelling from a building other than a dwelling, ensures that noise perceived by the occupants of each dwelling is kept down to a level that will not threaten their health or inconvenience them in the course of sleep, rest, recreation, study or other domestic activities."

Unlike England and Wales, there are no requirements for the performance of internal walls and floors within dwellings, for reverberation levels in the common internal parts of buildings, or for acoustic conditions in schools. It is possible that the Scottish Ministers may decide there is a need for controls on other aspects of building acoustics, or for the control of other types of buildings, but nothing is currently planned.

5.3 Options for compliance

The Technical Standards require either the use of specified constructions, or performance test standards.[8] These are similar to requirements that were used throughout the UK until recently. The draft Guidance Documents identify three ways to fulfil the mandatory functional Standard: the use of the same constructions or performance test standards, or possibly the use of the House Builders Federation's Robust Standard Details (RSDs).

The level transposition means that we cannot make changes to constructions that we know to have high rates of failure, or reflect advances in building practice. However, we considered that it was acceptable to point to good practice which makes it easier to comply with the functional requirements. For instance, walls lined with plasterboard are known to have a high failure rate, and we have inserted some advice on parging the walls and mounting boards with dabs rather than battens. The working party will also discuss the addition of a further note to encourage the use of screed toppings for concrete planks under floating floors.

The draft Building Standards state that compliance using the RSDs is an option "to be confirmed." The RSDs may present an interesting alternative to the current specified constructions for new housing, but there may be less interest in RSDs amongst the industry in Scotland than in England and Wales. There is a history of routine testing by many councils, including Glasgow and Edinburgh, although this has decreased due to pressure on building control budgets. Many house-builders rely on constructions that have passed earlier tests. We wait to learn from industry whether there is any demand for the use of RSDs in Scotland. Meanwhile, we are exploring the feasibility of using the RSDs as a way to make it easier for new housing to meet the functional Standard.

There features of the RSDs that would need to be revised in order to comply with Scottish Standards for fire safety. For instance, the Guidance Documents advise against wiring runs through timber frame separating walls, so that the detail for electrical sockets would not be acceptable. We would also like to explore the feasibility of a detail for floors at doorways. However, we feel that the central issue is the management of the RSDs in practice.

5.4 Noise and Certification

There could be a number of ways to preserve the advantages of the RSDs within the Scottish system. For instance, it would be possible to incorporate RSDs in a design submitted for Type Approval, and the construction checked and certified by an Approved Certifier of Construction for RSDs. Alternatively there might be Approved Certifiers of Design for Noise, who are qualified both to use RSDs or other means of satisfying the functional requirement. The construction of RSDs

could be checked and certified by Approved Certifiers of Construction. More highly qualified Approved Certifiers could be allowed to certify either RSDs or Tests of Noise Performance.

For a Certifier to be approved, there must be evidence of appropriate qualifications and experience but unlike structural design, it is not easy to identify a qualification that indicates the competence of a designer of the acoustic performance of dwellings. The noise Standard applies only to dwellings and the design of dwellings tends to be undertaken by generalists, without specialist training. Architects and architectural technologists may have had courses in acoustics at university, but the scope of such courses varies between institutions. For new housing, RSDs and Type Approval can avoid this issue. However, this does not address the issue of work to existing buildings and only applies to the warrant application, not the completion certificate.

If the industry wants to take responsibility for certifying that construction meets the noise Standard, it must develop an appropriate Certification Scheme that incorporates quality-assured checking of RSDs, probably with performance testing as part of an audit process. The scheme might be offered by a trade association that represents house-builders or by an independent testing organisation with appropriately qualified certifiers who offer both performance testing and checking of RSDs.

It appears to us that many building professionals are poorly equipped to design for good noise performance without using standard design, or evaluate whether non-standard designs meet the functional requirement. Architects have complained to us that they have had good quality designs rejected by building control because they do not comply with the specified constructions. More generally, we would like to see better informed designers, building control officers, and developers, with academic institutions, professional and trade organisations offering courses that don't simply look at the minimum necessary compliance but that educate in the principles, strategies, and tactics of noise control. Ultimately, operatives need to be educated in the detailing necessary to achieve good standards of noise performance in buildings. We hope that the industry will look at the new Certification scheme in Scotland as an opportunity to raise awareness and instill good practice.

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