

THE BRITISH CPI INITIATIVE, RESULTS AND IMPLEMENTATION

Meyricke Serjeantson
RIBA Services Ltd
39 Moreland St
LONDON
EC1V 8BB

Tony Allott
NBS Ltd
Mansion House Chambers
The Close
NEWCASTLE UPON TYNE
NE1 3RE

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Abstract

The Co-ordinating Committee for Project Information has produced a series of documents which introduce a new arrangement for specifications, bills of quantities and drawings. The Common Arrangement is described and its likely effect upon construction industry libraries is discussed.



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Meyricke Serjeantson, RIBA Services Ltd
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Introduction

1988 has witnessed the start of major change in the organisation of project information in the United Kingdom. This change is the culmination of nine years of work by the Co-ordinating Committee for Project Information (CCPI), which was established in 1979 by the Royal Institute of British Architects (RIBA), the Royal Institution of Chartered Surveyors (RICS), the Building Employers Confederation (BEC) and the Association of Consulting Engineers (ACE). The intention is to improve the quality of documents used for the procurement and construction of buildings and, above all, to improve the level of co-ordination between the different trades and professions within the industry.

The problem

The UK industry has always been fragmented, with several different professions (architects, structural engineers, services engineers, quantity surveyors), and with much of the site work being performed by small groups of sub-contractors. This has been the cause of major problems in the transfer of information between these various bodies, both drawn information and text documents, such as bills and specifications. CI/SfB, adopted widely in architects practices from the early 1960s for the purpose of organising product literature, has never gained much acceptance by the other professions. This can, without doubt, be partly ascribed to the long standing divisions between the professions, with the quantity surveyors never being particularly keen to adopt a system advocated by the architects and vice versa. Even within the architectural practices, however, CI/SfB does not enjoy majority support as a means of organising specifications. The National Building Specification was issued in two sequences - by CI/SfB Table 2 and by the Standard Method of Measurement - only about 40% of subscribers had opted for CI/SfB order at the start of 1988.

The Standard Method of Measurement is published by the RICS and the BEC and it effectively controls the content and arrangement of Bills of Quantities in the UK. Until the 6th edition of 1978 it was organised in a trade related sequence which had little in common with CI/SfB Table 2, except that neither paid much attention to the building services area. It was not compatible with an elemental approach to project organisation, neither did it relate closely to the pattern of organising and subcontracting work.

The end result of this was a major problem in the transfer of information within the industry, a problem which was highlighted in reports by the Building Research Establishment ⁽¹⁾ and the Institute of Advanced Architectural Studies ⁽²⁾. The advent of widespread computerisation and the advantages that this could bring was being obstructed by incompatibility of CI/SfB specifications and SMM bills of quantities. CCPI was, therefore, established to produce a "common arrangement", which was eventually to become "The Common Arrangement of Work Sections".

The Common Arrangement of work sections (CA) and Codes of procedure

The development concentrated upon specifications and bills of quantities - ie those areas least associated with CI/SfB in the UK. It was decided that the Common Arrangement should relate as closely as possible to the activities performed on the average UK building site. The aim was, therefore, to identify the groups of sub-contractors whose operations would have to be described in the specification and costed in the bill of quantities. As a result, the work of CCPI may be limited to the UK in its usefulness because of the ways in which site practice and the organisation of subcontractors varies between countries. Whilst the general concept may be adopted elsewhere, the identified work sections may well be unique to the UK.

The finalised list of work sections can be found on pages 9 - 12 of "*Co-ordinated project information for building works, a guide with examples*", a copy of which should have been received by all participants. This has been produced by CCPI as a guide for those using the Common Arrangement for producing specifications and bills. The list was arrived at after a lengthy period of study and a series of consultation papers which involved a wide range of interests within the industry. There is a general similarity between the top level headings and CI/SfB Table 2 but this vanishes once the level of the actual work sections is reached. Following the CIB W74 meeting in Stuttgart in 1985 some restructuring of these headings was suggested in order to improve the logic of the system. CCPI accepted that such rationalisation was necessary but chose to give effect to this in a rather different way to that suggested by W74. The "Common Arrangement" was published in June 1987 and was soon followed by a Code for Production Drawings, a Code for Project Specification and SMM7. (Full references for these can be found in *Co-ordinated project information for building works: a guide with examples*). The CCPI initiative as a whole was given an official launch by the UK's Department of the Environment in early 1988.

The Implementation of CA

The two main documents to use the new classification are the 7th edition of the Standard Method of Measurement, which was issued in January 1988 and which came into official use in July 1988 (see *Co-ordinated project information* for reference) and the National Building Specification, which will be reissued in Common Arrangement sequence in December 1988. It is, of course, too soon to make any assessment of the level of satisfaction which this rearrangement will achieve within the industry but the whole process has throughout had the full support of all of the leading institutional bodies.

Drawings

Drawings have been the subject of a special study, the conclusions of which are given in the Code of Procedure for Production Drawings.⁽³⁾ This recommends a flexible approach to structuring drawings according to the size and complexity of the project. A grouping into location, assembly and component drawings is recommended, subdivided by elements where appropriate. Elemental classification is preferred to Common Arrangement as the use of work sections would result in most details having to be drawn several times, each time from the point of view of a different trade. It is suggested, however, that co-ordination be achieved by consistent cross referencing to the specification in the annotation of drawings.

Areas not covered by CCPI

There are two main areas of classification which have not been directly covered by the CCPI work. These are libraries and drawings produced by computer-aided design.

1 Libraries

Architects' libraries in the UK are dominated by CI/SfB, with RIBA Services Ltd alone running over 1200. 99% of these use CI/SfB. Allowing for those in related sections of the industry run by other companies, by in-house library staff or by free-lance librarians, it is reasonable to assume that there are over 3000 construction libraries in all within the UK, approximately 66% of which are arranged by CI/SfB. In addition, there are numerous library based information systems such as RIBADATA and the Barbour Compendium which are arranged roughly in accordance with CI/SfB.

It is tempting to think that libraries might be arranged by Common Arrangement so that they would be compatible with project specifications and bills of quantities. As can be imagined, however, the cost of converting all of these collections and services from CI/SfB to Common Arrangement would be huge. Consequently, however good Common Arrangement might be for libraries, it will be a long time before any widespread change is made. There are, for instance, many libraries still arranged according to the 1968 version of CI/SfB, 12 years after it was replaced by the 1976 edition.

A small number of libraries have been changed to Common Arrangement and these appear to have met with reasonable success. It must be stressed, however, that this is merely the view of those involved and that no independent evaluation of them has yet been made, it being too soon to make a considered judgement.

There are differences of view as to how CA might best be used for library classification. One possibility would be to use CA as a direct replacement for Table 2 of CI/SfB, which was, after all, intended to be a work sections table. It was developed as such in the 1950's for use in the Swedish ByggAMA. It would also be possible to suggest that the citation order of the tables could be made flexible so that libraries could be classified by Table 1, subdivided by CA, or by CA, subdivided by Table 1, whichever the office preferred. Experience suggests that architects would prefer the former and quantity surveyors, the latter.

A major problem is that SfB Table 1 and CA are by no means mutually exclusive. Table 1 contains classes which are essentially work section rather than elementally orientated. Classes (5-) and (6-) are good examples. Equally, CA contains many elemental sections. **Class L Windows/Doors/Stairs** exemplifies this. Consequently, it seems unlikely that the two systems could be combined adequately.

The "work section" type classes within the existing Table 1 seem to be conceptually alien. Both (5-) **Services, mainly piped, ducted** and (6-) **Services, mainly electrical**, as they stand, represent the concept of distribution mechanisms, whereas in a truly elemental table, building services would be organized according to facilities for the end user, including the various aspects of climate control. A restructuring of Table 1 on these lines would be a considerable improvement.

The "elemental" type classes within Common Arrangement are another matter. The authors of CA argue strongly that the work section is a dual concept involving skill in using a type of material (SfB Tables 2 and 3) and also skill in constructing parts of the finished building. In some cases, the material is dominant (eg **E10 In-situ concrete**); in others, the element is dominant (eg **H11 Curtain walling**). Regardless of what the CA section is called, both concepts are always included, the difference being the emphasis that is given to each. In effect, work sections are seen as representing the total process of converting materials and products into parts of the finished building.

Given that in any library there should, ideally, be only one placing for each concept, it is clear that CA and the existing SfB Tables 1, 2 & 3 could not be used together. CA would have to be used as a replacement for (or alternative to) those Tables. In each case, Table 0 (Building types) and Table 4 (Activities and properties) would be needed in order to classify the range of documents in a full office collection.

Our work to date has shown that the main problem with CA for library use is its coverage of "common products", ie those products which are common to different work sections. CA was, of course, designed for the production of bills and specifications, so that only those products which have a common specification for a wide range of uses are covered. Pumps and mortar are obvious examples of these. CA has a detailed Section Y for these products in the building services area but Section Z, which handles the equivalent problem for the building fabric is somewhat deficient. In order to improve CA's ability to handle product information, the UK SfB Agency is involved in a research project to identify those product groups which should be included in this area. An expanded Section Z will then be produced in order to solve this problem.

One of the main criticisms levelled at CI/SfB is that it allows too much flexibility - ie people wish to be given a single location in which to place or find each concept, not a range of possibilities. We are anxious to find ways of reducing the alternative placings within existing CI/SfB. Equally, we are concerned that if and when CA is formally introduced for library use, the rules for its use are such that we do not have a repetition of the problem.

As already discussed, cost considerations are likely to deter many, if not most, offices from changing from CI/SfB to CA. Consequently, there will be a need for some time to have a means of linking specification clauses arranged by CA to an office library arranged by CI/SfB. We are, therefore, in the process of producing cross reference indexes between the two. These, it is hoped, will be available by early 1989 although the exact method of dissemination has yet to be decided. This work will involve the production of a computer database containing terms and classes from both CI/SfB and CA. This can then be used for a number of other purposes, including an improved alphabetical subject index to the CI/SfB Manual and a "list of placings" which would simplify the task of indexing documents and which has long been requested within the UK.

2 Computer-aided design

Computer-aided design and draughting has produced a requirement for another development in classification. The "layering" facility, which is of increasing importance in the efficient use of CAD, has to be organised in some way. The UK standards body, BSI, is currently producing a new part 5 to its standard on construction drawing, BS 1192.⁽⁴⁾ This is now being circulated as a draft for public comment. With minor amendments, it has been accepted that CI/SfB Table 1 is the most suitable means of organising this information, based upon its use for some years by several of the main CAD system designers in the UK.

Conclusion

In conclusion, whilst commendable efforts are being made within the UK to produce a Common Arrangement, this will only be common in certain areas. The varying requirements of different sections of the industry suggest that true commonality in arrangement will never be achieved. Some types of information are best arranged by work section and others by element. What is most likely is that attention will have to be concentrated on terminology, with arrangement being left in the hands of the next generation of computers. These will automatically organise project information and information databases into whatever sequence is required for the job in hand. Whilst that seems far fetched at the moment, we suspect that it will be a reality within 10 years.

- (1) BRE Information Paper 13/85. *Using experience and publications in building design*. Building Research Establishment, 1985.

BRE Information Paper 14/85. *Meeting building designer's needs for trade information*. Building Research Establishment, 1985.

- (2) IAAS Research Paper 23. *Information and experience in architectural design*. Institute of Advanced Architectural Studies, 1985.
- (3) *Production drawings: a code of procedure for building works*. Building Project Information Committee, 1987.
- (4) 88/11344 DC BS 1192 *Construction drawing practice. Draft Part 5: Guide for graphic representation by computer*. British Standards Institution, 1988.