

BMN

Building Metrication News

Consultant editor

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This section appears in the second and fourth issues of 'Building' each month, and gives current news and information on metrication, as well as providing a forum in which the ramifications of the change to metric can be freely discussed. It is published in association with the Modular Society.

CONTENTS

Leader

135
Decision to make concrete blocks and bricks to metric modular sizes should be an encouragement to designers of metric projects; what chance that the clay brick manufacturers will follow suit?

News from the Industry

136
Thinking metric is the key to going metric a Southampton conference is told; Canadians are advised to take note of changes to metric; co-ordinating work needed for agriculture; span charts for solid timber beams combine metric and imperial units; permanent home found for Metrication Board.

Key components

137
The fourth in the series of data sheets on Key components prepared by the Modular Society. This month's sheet is concerned with the Key wall tile.

Effects of metrication on building materials

139
A summary of two papers given at last November's BMP metric meeting in which the complications and cost factors for building material producers in changing to metric are discussed.

Breaking the deadlock

Eighteen months ago one of the biggest obstacles to getting the BSI programme under way looked as though it might be what was termed the 'chicken and egg' situation. To elaborate, how could designers specify metric components before they were on the market?; why should building material suppliers produce metric products before there was any call for them? This impasse was broken by the Ministry of Housing who made it clear that they were backing the BSI programme to the hilt by requiring all schemes submitted after 1 January 1972 to be in metric. A corresponding response is now coming from the building materials field in which, since the turn of the year, a number of manufacturers have been indicating dates when they will be producing to metric modular. The latest to do so are the concrete block and brick manufacturers who announced last month that, besides supplying present imperial sizes, they are to introduce metric modular sizes. Thus the concrete brick manufacturers, besides producing a metric equivalent of the old brick, are to supplement their present range with a metrically co-ordinated size of 200 x 100 x 75 mm whilst other co-ordinated sizes are anticipated. This statement of future intentions is exactly what is needed at the present time. Designers who have been holding back for lack of metric modular components on the market may now be encouraged to go forward, particularly if declarations of intent come from other component producers.

Will clay bricks follow suit?

Currently the output of concrete bricks in the UK is around 314m per annum, a fraction of total brick production which in 1968 amounted to nearly 7 500m. Unlike the concrete brick manufacturers, the Brick Development Association, representing the clay brick and sand lime side, are still looking at the problem of preferred dimensions. They have already intimated their preference for a single size 225 x 112.5 x 75 mm metric brick which differs very little from the current imperial brick. The claim that this format conforms to first preference of BS 4011 is presumably based on the use of four courses of brickwork, equalling 900 mm in length and 300 mm in height. Under the terms of BS 4011, however, the single unit is less satisfactory for although vertically the proposed metric brick may conform, no amount of juggling with numbers can disguise the fact that with a 225 mm long brick, the 300 mm grid line will be hit only once in three times. With such a non-conforming size, cutting to fit around windows and doors, which dimensional co-ordination is designed to eliminate, can hardly be avoided.

It is by no means impossible for brick companies to make to metric modular sizes. Some, in fact, are already doing so. The fly in the ointment is the fletton (pressed brick) sector, which accounts for over 40% of total brick production—and the cheapest brick at that! They, apparently, would find it extremely difficult to gear their manufacturing process to conform with metric sizes.

In the meantime the Brick Development Association have left the door ajar by admitting that the ultimate size of the brick is still open to question. With concrete bricks now being produced to metric modular sizes and one or two clay brick makers joining in, there is conceivably some hope that the brick industry will eventually follow suit.

Aid to designers

Now that we are in the practical stage of the metric change there is a good deal of information that the designer requires fairly quickly—new standards, component sizing, official publications, key dates, etc. To provide him with a handy and up-to-date reference we shall, in future, on this page provide a summary of important news and decisions with which he will be concerned. This service will begin in the next issue of BMN and will be repeated subsequently in every fourth issue of the month.

News from the Industry

Key to going metric

'Thinking metric' is the key to going metric, an audience of more than 400 architects and building industry men were told at Southampton. They were attending Trend 69, a conference on metrication in the building industry, organised by Dibben Builders Merchants Ltd. at their Thornhill headquarters.

The advice came from Michael Chaplin of the MPBW Directorate of Building and Development who said that learning metrication was like learning a new language. 'If you think and work in metric you very quickly learn the language' he said.

Using the metric units was not a great problem. The main problem was the establishment of recognition points. For example, quantity surveyors had to move from shillings per ft.² to pounds per square metres—a difficult task which might take some months. He advised them to think in metric as soon as possible—but not until they were going to work in metric.

Similar advice came from David Evans, who is director in charge of training for Gilbert-Ash (Southern) Ltd. He said that converting too soon would inevitably increase the risk of errors. More publicity was needed on the importance of extreme care in avoiding serious errors.

Mr. Evans said the aim was to become fully metric, and fully dimensionally co-ordinated at the least cost with the least disruption while giving continued good service and making a profit.

'We have to start with the people at the top who are in a position to make decisions and bring forward the major problems which need solving at high level.'

North American viewpoint

Advocacy of the metric system was made by F. Alan Tayelor, manager, technical services, British Columbia Lumber Manufacturers, at a symposium held in Vancouver late last year. Some interesting points arose from his paper on some of the side effects of not going metric. For instance, he says, when one speaks of costs relative to the metric system, most people immediately ask—'How much is it going to cost me to change?' 'Perhaps a more pertinent question would be "How much is it going to cost me not to change?"' United States Senator Claiborne Pell has been quoted as estimating that the United States loses \$10-\$25 billion in foreign trade each year by failing to switch to the metric system.

'One very important aspect often overlooked in inch-metric discussions is education. The Assistant US Commerce Secretary has said: "It is now generally estimated that changing to the metric system would save 25% of the time now

spent on studying arithmetic, and this might save us \$700m annually in education costs." The task of arithmetic conversion costs hundreds of millions of dollars every year. The US Weather Bureau estimates that at least 1 000 hours a month are wasted by the need for routine conversions between the two systems.'

Turning to the timber industry, Mr. Tayelor says that at home and in export areas it has traditionally been an 'inch-pound' business. Even areas such as Europe and Japan, which use the metric system, have conducted their timber trade in inches and feet. The Scandinavian and Russian mills produce inch sizes not only for the UK, but also for Europe. 'Now that the UK has decided to convert completely to metric, there has been a complete re-examination of the question of sizes by all the European softwood exporters and importers and the "inch-pound" business will disappear coincident with the UK conversion.'

As a consequence the British Columbia timber industry find themselves in a much more difficult position than suppliers in Europe since they are producing for two distinctly different market areas. An additional complication in current standards deliberations is the possibility that the United States will adopt a new softwood lumber standard in the near future.

In conclusion, Mr. Tayelor urged members to 'begin to think metric, get to understand it and be prepared for it when it comes, or it will be a large and bitter pill to swallow.'

Agricultural problems

Gaps in co-ordination and information on the change to metric in agriculture were revealed at a meeting convened by the Country Landowners' Association in London recently. Some time ago the CLA set up a working party to deal with the change to metric in the construction industry so far as it affects farm buildings and relevant contents. In this field the working party acted as co-ordinator for the work done on the technical aspects of conversion by the Ministry of Agriculture and the British Standards Institute.

The NFU who are members of the Confederation of British Industry, have set up a committee to co-ordinate their activities on metrication in farming, and the NFU Machinery and Commercial Departments had been concerned in this work.

Response from the continent was sometimes surprising—goods previously supplied by the dozen and gross had been offered in tens and refused; there was the problem of educating to metric dimensions; information was lacking on the position of the Milk Marketing Board—when will it accept milk and pay for it in metric measures of capacity and how long will the changeover to metric sized bottles take?

It was obvious that there was an urgent need for an 'umbrella' under which all aspects of metrication could be considered. After some two hours' discussion it was decided that the CLA should

approach the Royal Agricultural Society of England to ask whether they would be prepared to co-ordinate the work on behalf of agriculture by organising a Sector Planning Body to report to and liaise with the Metrication Board.

Span charts for beams

New span charts for solid timber beams prepared by Trada, combine metric and imperial units. They are suitable for any size of timber and should form a useful design aid during the change to metric.

The set of charts has been published as an A3 size book. The set of diagrams consists of a universal span chart applicable to any timber in any grade, followed by 25 simplified charts for individual grades of certain important timbers. The simplified charts show the effects of long, medium and short-term load on the design and also the effect of 'load sharing' as defined in BS Code of Practice 112 (1967) 'The Structural Use of Timber.'

The method of plotting the diagrams is itself an important achievement, since this is the first time that the whole design process for a timber beam has been concentrated into a single chart. It is obvious that beams must be (1) strong enough to resist breakage and (2) stiff enough to prevent excessive deflection; however, it is not so obvious that (3) they must have a high enough shear strength to prevent them from splitting. In the past these three requirements had to be examined by means of three separate calculations or charts. The new TRADA chart shows at a glance which of the three effects is the important one for a particular loading, and presents the whole solution to the designer in a single easily understood picture.

'TRADA span charts for solid timber beams' is available from the Timber Research and Development Association, Hughenden Valley, High Wycombe, Bucks, at 25s. each for members of TRADA or 50s. each for non-members.

Home for Metrication Board

The Metrication Board, which has been temporarily housed in Millbank Tower, London, SW1, has moved into permanent offices at 22 Kingsway, London, WC2.

Metric posters

The second of a series of posters designed to encourage the engineering industry to plan now for the change-over to the metric system is available from Mintech. The poster, designed for display in engineering plants and workshops, indicates the timing of the metrication programme for the industry. Distribution of the poster is being organised by Mintech through some 250 trade associations. Copies may be obtained, free of charge, from: Ministry of Technology, Standards Division, Room 428, Abell House, John Islip-street, London, SW1.

Key components

Wall tiles



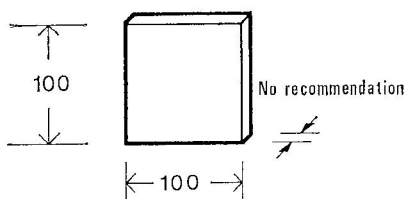
This is the 4th of a series of data sheets prepared by The Modular Society under the editorship of Brian Jolly, ARIBA, to be published monthly in BMN.

The purpose of this fourth data sheet is to present the proposals of the Modular Society for the Key wall tile which should be included in any manufacturer's range of these components, to justify their choice as Key Components and to demonstrate their use in current building practice. These proposals are put forward as a basis for discussion—see introductory article in 'Building,' 10 January 1969. Comments will be welcomed. The Society wish to thank correspondents who have already submitted their views on earlier data sheets.

The wall tiles to be discussed in this data sheet are internal wall finishing components suitable for adhesion as a lining to the surfaces of internal walls and partitions. They are, by nature, small additive components since they are usually produced in material which is difficult to cut. The most common material used for wall tiles is glazed ceramic and, therefore, it is with this material that this data sheet will be primarily concerned. Reference will be made to BS 1281: Glazed Ceramic Tiles and Tile Fittings for Internal Walls. It should be noted that the Key Component is the wall tile itself. Tile fitting of various forms and sizes for corners and the more common peripheral conditions may be required in order to produce a comprehensive product range. Detailed recommendations for these components will not be given since, as their form and number is variable, they are not considered to be Key Components.

Key wall tile

A wall tile, suitable for use in combination to form the surface finish of an internal wall or partition.



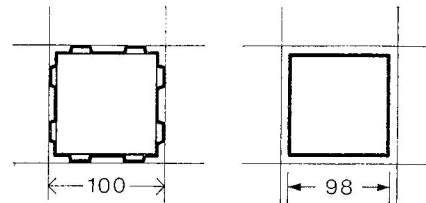
Key wall tile size

The Key wall tile is square on face, each side being nominally 100 mm. This is a BS 4011 second preference metric size and equal to the international basic module size. Since a wall tile is relatively thin and always used in composite construction, its thickness is of secondary importance in dimensional co-ordination. Therefore, no nominal thickness is advocated for the Key wall tile.

The manufacturing or work size of the Key wall tile must make due allowance for the width of the joint. Two forms of tile are specified in BS 1281:

- 1 Tiles having cushion edges and spacer lugs.
- 2 Tiles having neither cushion edges nor spacer lugs.

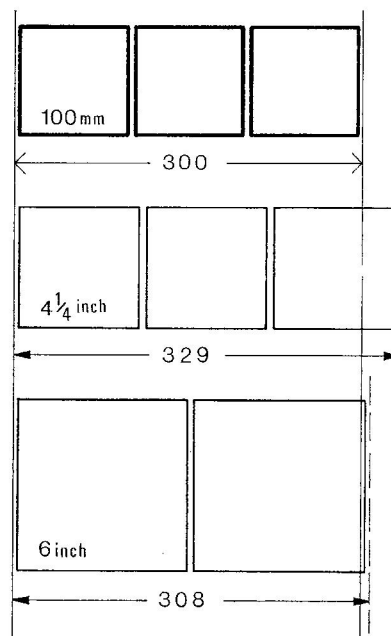
The work size of the former should be 100 mm x 100 mm overall dimensions including the spacer lugs. The work size of the latter should have its nominal size reduced by the average joint width appropriate to the type of tile.



The Key wall tile size is included in a current standard range of sizes. BS 1281 gives an appendix which recommends this size, together with 200 mm x 100 mm, for dimensionally co-ordinated glazed ceramic tiles. Other current sizes listed in BS 1281 and BS 2552: Polystyrene tiles for walls and ceilings, include 103 mm x 103 mm (4in. plus $\frac{1}{8}$ in. joint), 110 mm x 110 mm ($1\frac{1}{8}$ in. plus $\frac{1}{8}$ in. joint) and 154 mm x 154 mm (6in. plus $\frac{1}{8}$ in. joint).

Tiling sizes

Tiled areas of any 100 mm increment of length or height may be achieved with the use of the Key wall tile size. The diagram below shows the widths of Key tiles, $4\frac{1}{4}$ in. tiles and 6in. related to



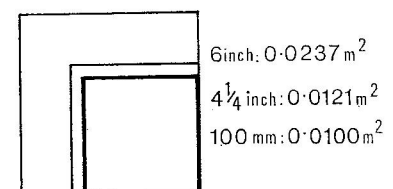
the BS 4330 preferred increment of zone spacing.

Heights of tiling will conform to the recommendations of BS 4330 for:

- 1 all floor to ceiling heights, with the exception of 2350 mm (housing only)
- 2 all floor to window cill and head heights
- 3 all changes of level.

2400			
2300	24	22	16
2100			
2000			
1800			
1700			
1500			
1400			
1300			
1200			
1100			
1000			
900			
800			
700			
600			
300			
200			
B.S. 4330	100mm	$4\frac{1}{4}$ inch	6 inch
Heights	tiles	tiles	tiles

This high degree of conformity with the recommended controlling dimension sizes should result in a greatly reduced necessity for cutting Key tiles in metric co-ordinated building. Although this advantage should increase the rate at which tiling may be applied on site, with a corresponding reduction in wastage, it will to some extent be offset by the reduced coverage of the tiles. The coverage of 100 Key wall tiles is 1m². The corresponding figures for $4\frac{1}{4}$ in. and 6in. tiles are 1.21 m² and 2.37 m² respectively.

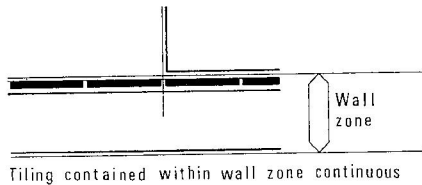


* Relative tile coverages

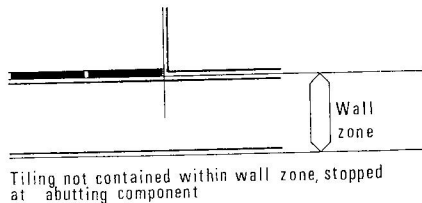
Planning with Key wall tiles

Since the wall tile is a finished component, its relationship to the nominal face line of the wall is most important. Generally, the following rule may be adopted:

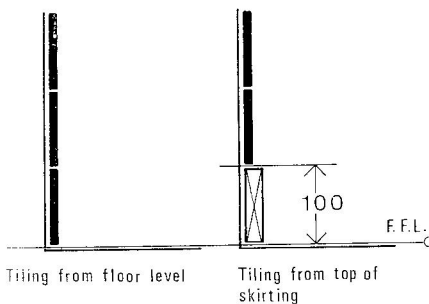
1) Where the tiles finish forms an integral part of the wall construction, the tiling should be contained within the wall zone. In certain solid construction this may not always be possible, in which case the tiled areas should be treated as in 2 below.



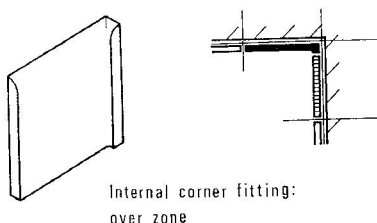
2) Where the tiling is used in small areas as one of a number of alternative wall finishes, it may be considered separately from the main wall construction and thus project across the zone boundary. Care must be taken to ensure that the tiled area is stopped at built-in furniture, staircases, etc.



Ideally tile courses should be located so that vertical controlling lines coincide with joints between the tile courses. Where a skirting is used at floor level, this should be 100 mm in height.

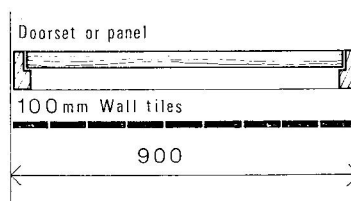
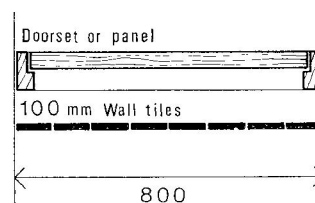
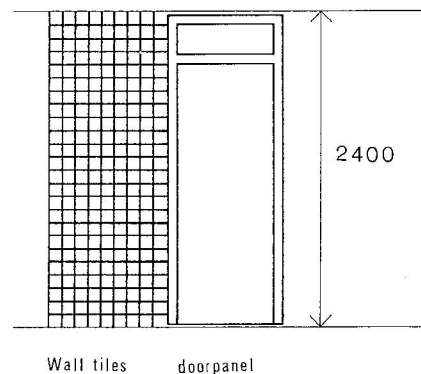
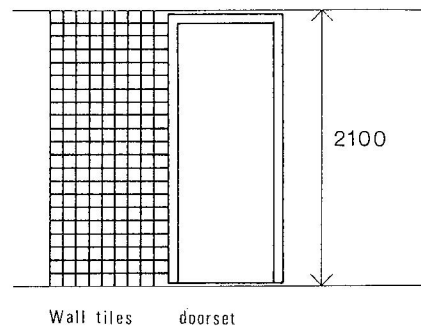


The use of tile fittings will be principally associated with the second category of tiling. Fittings will be required for internal and external corners and tiling perimeters. The dimensions of these fittings will depend on the distance between the faceline of the actual tiling and the nominal faceline of the wall. Particular consideration should be given to the internal corner.

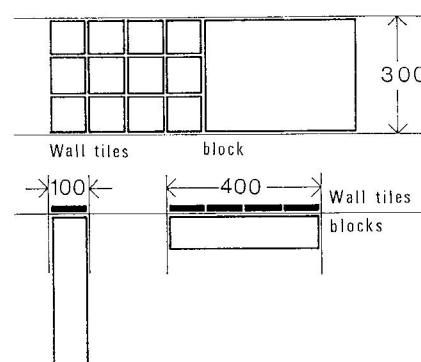


Co-ordination with other Key components

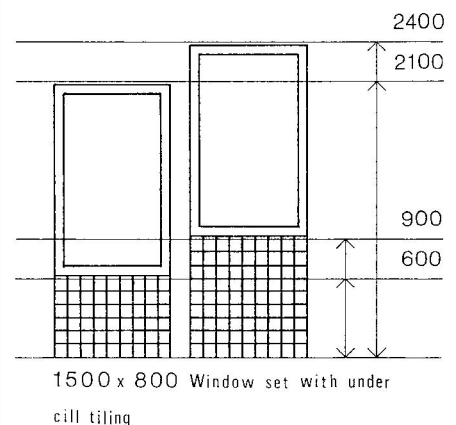
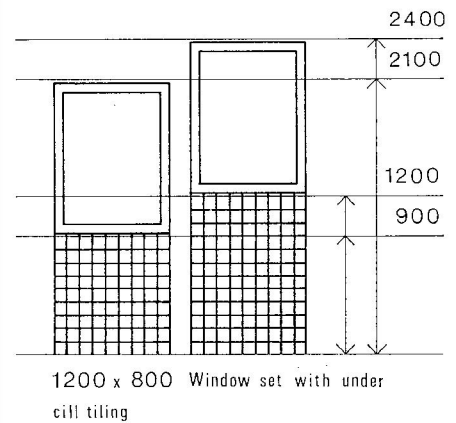
Doorsets and doorpanels



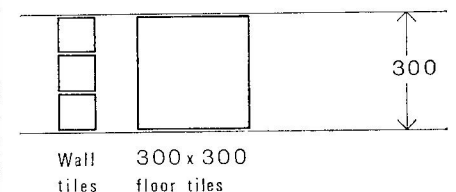
Blocks



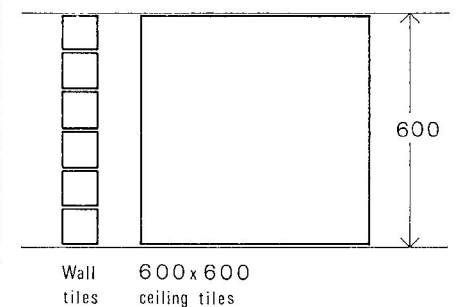
Window sets



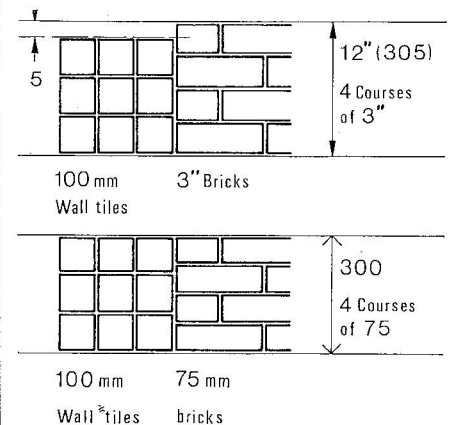
Floor tiles



Ceiling tiles



Co-ordination with imperial sized bricks



BUILDING METRICATION NEWS

The effects of metrication on building materials

In November last year, a full-day seminar on metrication was organised by the National Council of Building Material Producers. Amongst a number of aspects discussed were the likely effects of going metric and the possible steps that can be taken to mitigate the increased costs involved. Extracts from these papers, one by W. A. Balmain, the other by Thomas Sibthorpe, are given below.

W. A. Balmain, in his paper 'The commercial effects of metrication,' said that the complications and the cost factor came not so much from going metric but from the adoption of dimensional co-ordination. Problems would vary from company to company and it was difficult to project an overall picture.

Costs were even more difficult to assess since no quantitative facts on financial debits and credits had been given. 'The arguments about the change are all qualitative. They may be no less valid for this reason, but I find it astonishing that a change of this magnitude should have been agreed and started without even an attempt to produce an estimated balance sheet.'

Where costs arise

Mr. Balmain continued: The first and most important commercial fact is, to quote the report of the Standing Joint Committee on metrication, 'the costs of adopting the metric system must lie where they fall,' and the major costs will fall on the manufacturers of building materials and components.

The change to metric will not alter the size of the market for building materials in this country, but it will require capital expenditure and, initially, will increase costs of production and stocking. In order to keep capital expenditure and production costs to a minimum, it is necessary to examine where these costs arise. This can only be done in detail by each individual firm, but we can examine broadly where they will arise.

Personnel of all grades will have to be trained to use the metric system, but many manufacturers may be in a favourable position here relative to other sectors of industry if they are

already making metric sized products for export, as many of us are. I do not think that this aspect will generate much trouble or cost. The use of measuring tools is independent of the units on its scales or dials.

The second item is literature. The programme calls for this to be done in two stages. One is the provision of the actual metric sizes of products, as now produced, by the end of 1968. Second, the literature covering new metric products must be available with the products. This stage should be mainly completed by the end of 1972 and finalised by the end of 1973. This first operation, calling for the revision of all literature in a short time, can be expensive in relation to its expected short life, and the protracted discussion on the use of the point or comma has not helped manufacturers to keep to the Programme.

The major problem facing each manufacturer is the cost of altering his production to metric sizes. As a very broad generalisation, manufacturers can be divided into two main classes, those who cut sections to length and assemble in jigs, such as joinery and window manufacturers, and those who are dependent on heavy machinery, presses or moulds, such as most sheet producers, precast concrete makers and brick makers. An alternative classification is labour intensive and capital intensive industries, though in general the two types of classification coincide. Of course, there is almost every gradation of manufacturer intermediate between these two types, but it is only by considering the extremes, which in any case represent substantial sections of the industry, that we can draw any conclusions.

The costs imposed on these two types of manufacturer, not so much by the change to metric measure but by the introduction of dimensional co-ordination, can vary enormously. The capital expenditure required in the first class of producers may be comparatively small and the time required to convert their plant reasonable in terms of the BSI Programme, and the problem of producing two lines of products, one based on imperial and the other on metric measure, not difficult.

The heavy plant based manufacturers, if they allow it, may be faced with an entirely different position which could involve immense capital expenditure and a physical time programme which cannot fit into the BSI Programme as laid down. As an example, if as a result of dimensional co-ordination it was necessary to increase substantially the width of asbestos cement sheeting machines, either because of a demand for wider sheets or a large demand for narrower sheets, of the order of 900 mm which seriously reduced the through-put of the present machines, it could cost the industry tens of millions of pounds and the conversion would extend far beyond 1972. Even if this sort of position does not arise, and it must be prevented from arising, the heavy plant manufacturer as a rule is faced with substantial capital expenditure to adapt his take-off plant at the end of his production line to take new sizes and to arrange for the

production of both imperial and metric sized products, if this proves necessary. The problem is complicated by the fact that, though we are all supposed to be organising our factories for the production of metric sized components at this moment, most of us do not yet know the sizes of the products that we shall be required to make, and if we wait for the issue of metric sized standards, as envisaged under the original BSI Programme, we shall not know 12 months from now.

The only way for manufacturers to meet this position and to keep the capital costs of the change within their capabilities, is to decide the metric sizes of products which they can economically produce and inform the relevant Functional Group Panel at BSI of their decision. This is the action that has been taken by the Metal Window Federation, the plasterboard manufacturers and other groups, and it is the advice that AIBCM are tendering to their members. It may mean another change of size at a later date when the industry has had some practical experience of the working of dimensional co-ordination, but at least this second change would be based on an actual market demand. Everything is theoretical at the moment, and the market non-existent.

Production and storage

Let us now examine production and storage costs. The main argument in favour of dimensional co-ordination is that it will reduce the number of components required, and by stimulating the mass production of a smaller range of components will increase the length of production runs and reduce storage requirements, and hence reduce costs. The initial effect of the change, in many cases, will be to increase the number of sizes of components in production because it will be necessary to produce both imperial and metric ranges at the same time, thus shortening production runs and increasing costs, and the effects of this will increase as the market of metric sized products builds up, and will not diminish until metric sizes are established as the major product. How long this dual production will last is the subject of heated discussion and nobody really knows the answer, which probably varies for every industry.

There are three main areas of confusion; firstly, how and where and at what rate the market for metric sized components will grow; secondly, the requirements of the maintenance market for replacement foot/inch products, and thirdly, the actual time it will take manufacturers to convert the majority of their products to rationalised metric sizes and how far this is necessary anyway.

The market for metric sized components will develop first from Government, as the Ministry of Housing and Local Government have already made design in metric mandatory and other departments have stated that they will follow the BSI Programme. This represents some 50% of the market so that the demand, theoretically, will be substantial by 1973. I think it is a fair assumption

tion that the private sector will be slower in changing and that it will be influenced by what happens in the Government sector and by the cost of metric components. I think the private sector will demand foot/inch sized products, if only on a cost basis, for some time yet.

With regard to the requirements for maintenance, it is a fact that our major stock of buildings for the next 30 to 40 years will be based on imperial measure. The extent to which replacements can be effected from rationalised metric sized components is unknown, but this must be taken into account in deciding the metric sizes which are to be made. It will certainly be possible in some cases, but equally certainly, owing to reduction in component range, metric sized components of the type required will not be available. The assumption that all metric sized components can be used because they will be slightly smaller than foot/inch components may only be true in some cases, since dimensionally co-ordinated metric products are not straight translations of foot/inch into metric sizes, and as far as information is available, a number tend to be bigger.

My own view is that many manufacturers will be faced with double production lines and double stocks for at least five years, probably ten years, and in some cases it may be 20. The approach adopted by some manufacturers that all standard production should be changed to metric on a given date, and after that requirements for foot/inch sizes should be specials at a much higher price, whilst very good if it can be done, is certainly not applicable to a large number of products.

It is clear that large sections of the building material suppliers will be faced, for varying times, with shorter production runs, double production lines and double stocks and this will increase the prices of metric sized products and probably all products, and the amount will vary from firm to firm.

The benefits

When can we expect the benefits of increased production due to reduction in variety to come into play to balance these increased costs and when will they eventually start reducing costs? There will be some slight savings due to the simplicity of use of the metric system. It all depends on how the system of dimensional co-ordination works in practice, and how flexible our system is for modifying it in the light of experience. The manufacturers have an important rôle to play in this, since it is not entirely due to the absence of a system of dimensional co-ordination that the product range is as extensive as it is. It is also due to the fact that a designer has asked for something and some manufacturer has been prepared to make it. If we are to make dimensional co-ordination work, and we must if we are to industrialise building, manufacturers must be prepared to refuse to produce products and they must be heavily involved in the design process of components and elements. It is not being pessimistic to suggest that if we can make dimensional co-

ordination work, it will be of the order of 15 to 20 years before the industry as a whole begins to reap cost benefits from it. For individual firms, the period may vary from 3 years upwards.

Report on costs

In his paper 'The future: practical application to production, costs, etc.' Thomas Sibthorpe, consultant to BWMA, produced a list of costs which he and Philip Dunstone had prepared for the NCC of the civil engineering and building industries.

On the debit side the items are:

1. Planning and administration of the damage of the change including the cost of the consultants employed in advising and making decisions on sizing.
 2. Retooling, modifying or recalibrating plant, machinery and tools.
 3. Modifying transport.
 4. Modifying office machinery.
 5. The extra space, administration and labour in stocking both metric and imperial items.
 6. Retraining all personnel which in most cases will be difficult since there will be an overlap period when imperial and metric will be used concurrently.
 7. Reissuing catalogues.
 8. New technical reference books.
 9. Intensified advice to users which might mean increased sales staff.
 10. Changing documentation, invoicing, etc.
 11. There is a great danger of escalation of costs due to over-pricing at every level in the organisation, in particular the managing director's loading of on-costs for unfamiliarity.
 12. Revised office forms.
- The credits appear to be limited to:
1. Variety reduction through dimensional co-ordination (long term).
 2. Obligation to rethink organisation and methods which will establish modern management techniques and have other side benefits.
 3. Tax allowance on some debit forms.
 4. Possible increase in export.

'It is because this balance sheet looks black that many believe the whole exercise to be wrong,' said Mr. Sibthorpe. However, he believed that whilst there might be some initial increases in costs, these could be kept to the minimum. Ultimately the whole of the industry, including members of BMP, should gain by the improvement brought about by improved methods of production.

(A 50-page report on the seminar is available, price 8s. (postage 8d.) from the National Council of Building Material Producers, Suite 18, Chantrey House, Eccleston-street, London, SW1.)

Producers urged to participate

Without debating the rights and wrongs of the metric change, the National Council of Building Material Producers takes the view that it is here and must be implemented as smoothly as possible, stated H. E. Pierce, the council's president, at their annual meeting last month. Besides participating in the work of the key BSI committees, BMP is also

hoping to be represented on the Metrication Board when it is set up. It is also planning to hold another seminar later this year following the successful November meeting.

To some producers, said Mr. Pierce, the change will be of very little moment but to many companies, faced with the high capital cost of plant replacement and modification, metrication 'will represent a major and revolutionary development.' He felt there were strong arguments for some kind of tax allowance for those firms who must install new plant if they are to successfully meet the demand for dimensionally co-ordinated products.

Coming Events

MPBW lectures

The following lectures on the change to metric have been arranged by the MPBW's Directorate of Research and Information.

Tuesday, 15 April

Lerwick, Scotland. Speakers: J. Leiper, Head of Building Department of Aberdeen Technical College, and M. F. Brake of Scottish Development Department at Isleburgh House Community Centre, 7.30.

Wednesday, 16 April

Kirkwall, Scotland. Speakers: as above, at Kirkwall Hotel, 7.30.
 Durham: a short conference under the title 'Metric and the Builder,' will be held at Ramside Hall Hotel, Belmont, from 9.45 to 5 p.m. Speakers include M. F. Chaplin of MPBW; W. J. Slaten, Department of Construction and Related Professional Studies, Charles Trevelyan Technical College; M. H. Brooke of J. B. Brooke & Sons Ltd.; V. L. Cox of AIBCM; W. J. Pinfold of MHLG; and D. F. Dennis of CITB. For further particulars apply to G. Hartley, MPBW, Government Buildings, Lawnswood, Leeds LS16 5PX.

Thursday, 17 April

Thurso, Scotland. Speakers: J. Leiper and M. F. Brake at Thurso Town Hall, 7.30.
 Braintree. Speaker: D. Percival, chief architect, City of Norwich, at Braintree College of Further Education, Church-lane, 3 p.m.

Monday, 28 April

Short conference provisionally arranged under the title Construction goes Metric, White Hart Hotel, St. John-street. Further particulars from J. J. Carr, MPBW, The Pithay, Bristol BS1 2NJ.

INSTITUTE OF BUILDING

The following meetings are being held on metric:

Tuesday, 15 April

More metric: Central London Centre meeting at Ivanhoe Hotel, Bloomsbury-street, London, WC1.

Thursday, 17 April

Changing to metric in the construction industry: Southampton Centre meeting at Salisbury Technical College, 7.15. Speaker—Victor Harriss, AIAS, AIOB.

Friday, 18 April

Changing to metric in the construction industry: North Gloucester Centre meeting at Carlton Hotel, Parabola-road, Cheltenham, 7.30.