

Mesh reinforcement	Published Date: 29/05/2009
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Mesh (or fabric) reinforcement is a convenient way of using pre-assembled sheets of reinforcement bars. It is made up of wires, welded together. The wires are usually ribbed type 2.

The relevant standard is BS4483:2005 "Steel fabric for the reinforcement of concrete". This BS gives the preferred range of fabrics as below. It should be noted that many of the types are rarely used and availability should be checked before specifying. It should also be noted that the traditional A98 is no longer in the range, although the identical D98 still remains.

Fabric reference	Longitudinal wires			Transverse wires			Mass kg/m ²
	Size mm	Pitch mm	Area mm ² /m	Size mm	Pitch mm	Area mm ² /m	
Square fabric							
A393	10	200	393	10	200	393	6.16
A252	8	200	252	8	200	252	3.95
A193	7	200	193	7	200	193	3.02
A142	6	200	142	6	200	142	2.22
Structural fabric							
B1131	12	100	1131	8	200	252	10.9
B785	10	100	785	8	200	252	8.14
B503	8	100	503	8	200	252	5.93
B385	7	100	385	7	200	193	4.53
B283	6	100	283	7	200	193	3.73
Long fabric							
C785	10	100	785	6	400	70.8	6.72
C636	9	100	636	6	400	70.8	5.55
C503	8	100	503	5	400	49	4.34
C385	7	100	385	5	400	49	3.41
C283	6	100	283	5	400	49	2.61
Wrapping Fabric							
D98	5	200	98	5	200	98	1.54
D49	2.5	100	49	2.5	100	49	0.77
Stock sheet size: Length 4.8m Width 2.4m Area 11.52m ²							

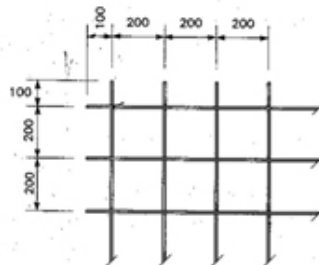
The decision whether to use mesh instead of loose bars is largely dependent on the shape of the precast unit.

Stock size of standard meshes is 4.8m x 2.4m.

If a unit is larger than a stock sheet, then lapping will be necessary. Lapping requirements for two sheets of mesh is covered by BS8110 cl 3.12.8.5. If the lap occurs at the middle of a panel, then the minimum lap length for an 'A' mesh must include 4 welded cross wires. This infers a minimum lap length of (3 @ 200 + 100) = 700mm. Care should be taken at laps since the overall space required for several sheets could become excessive. If the quantity merits it, consideration should be given to special sheets, (see below for detailing rules.)

An alternative to lapping sheets of mesh may be to 'lap' using loose bars. In this case the lap length will be determined by the standard 'rules' based on bar diameters.

"A" Square Mesh Fabric
A 200mm square mesh with longitudinal wires and cross wires of the same size.



The normal edge detail for 'A' mesh sheets is as shown left. If the sheet is cut then the overhang may be even higher, up to nearly 200mm. In these cases, if this occurs at a face of the concrete, a loose edge-trimming bar should be added to the end of the cross wires with (typically) 50mm cover. The diameter of this trimming bar should be as the adjacent wire.

Mesh reinforcement is also available in stainless steel, although checks should be made on availability and delivery times. Typically available standard sizes in stainless are A393, A252, A142, D98 & D49. A 100 x 100 x 5mm mesh is also available.

Mesh reinforcement

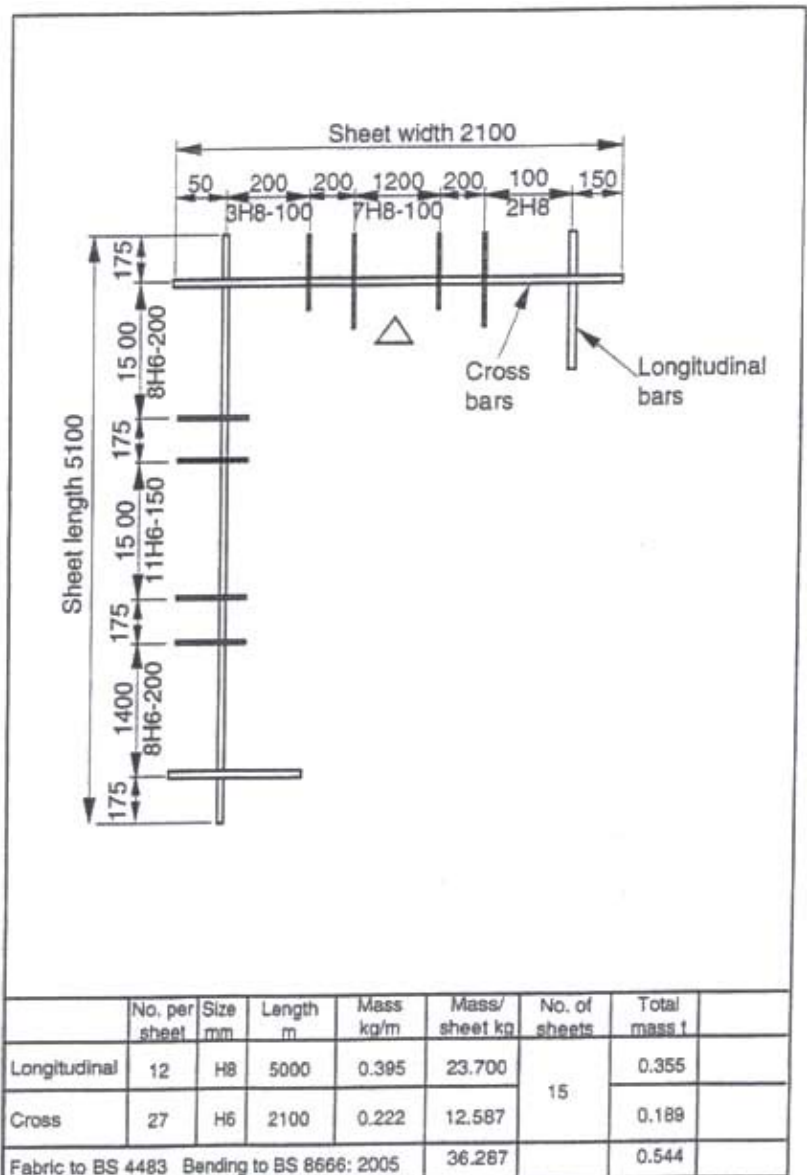
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When detailing 'special' mesh types it must be remembered that the production methods require large quantities to be made at a time. It is not practical therefore to have 'one-offs'. Families of sheets should be grouped together to allow longer production runs. For economy, it is often better to compromise rather than specify small quantities of 'exact' sizes.

The simplest 'special' is a sheet that fits exactly the requirements of the unit. Another common case is to have a longer end dimension beyond the last cross-wire (sometimes called a 'flying end'). This allows lapping without increasing the overall layers/thickness. To specify special sheets, a schedule should be produced as below.

The schedule should be discussed with reinforcement suppliers as soon as practical to allow them to check for practicality.

With appropriate equipment, mesh can be bent into shapes allowing rapid fabrication of cages, but this needs careful attention to detail. If a bend(s) is required then the shape should be sketched on the diagram. It must be clear which axis the bending take place on. When checking bent shapes it must be remembered that cross wires prevent any significant overlap. It should also be remembered that bent mesh is a bulky item for transport since it is unlikely to nest. In most cases it will be easier to have the bend as loose bars with the mesh attached as normal.



Cage from bent mesh

A further alternative to special meshes is to use a standard light mesh and attach further loose bars to it. This is particularly useful when a lot of steel is required in one direction only, or in a limited area. Lap details must be carefully considered.