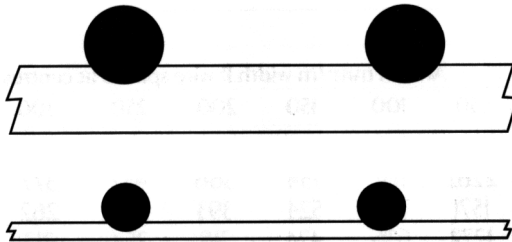


Special Fabrics

Where standard Fabrics do not meet a particular design requirement, BRC SPECIAL FABRICS can be manufactured. The tables show cross sectional areas that enable special meshes to be designed.

Possible wire spacings are limited by the machine design: longitudinal wires must be spaced in multiples of 50mm or 75mm and cross wires in multiples of 25mm. Variation in sheet length is comparatively easily achieved. There are, however, limits on the diameter of longitudinal and cross wires that can be used. Proposed special fabrics should be discussed with a senior BRC Representative to confirm that they can be manufactured before being incorporated into a design. When special sizes are used, the cutting of Fabric on site is usually eliminated saving time and avoiding costly waste.



BRC FABRIC

Description

BRC Fabric is a pre-fabricated steel reinforcement material. It is a rectangular or square mesh reinforcement manufactured in flat sheets from cold reduced high yield strength steel wire.

Welded Wire Fabric is manufactured on automatic welding machines which assures uniform spacing of wires and consistent cross-sectional areas

The welding is accomplished by an electronically controlled electrical process employing the principle of fusion combined with pressure, which actually fuses the intersecting wires into a homogeneous section without loss of strength.



FIG. 1
Cutaway Section of Weld

Controlled Manufacture

BRC Fabric is manufactured from hard drawn steel wire which has a breaking strength of not less than 510 N/mm² and a minimum of 0.2% proof stress of 485 N/mm², whereas the yield point of structural grade mild steel may be as low as 250 N/mm². Unlike hot-rolled bars, cold reduced wire has no definite yield point at or near its elastic limit.

The Benefits of Using BRC Fabric

BRC Wire Fabric provides designers, engineers and contractors with an established convenient and economical reinforcement for modern concrete structures.

Properties

The Barbados National Standards Institute (BNSI), in their standard BNS 150 : 1990, requires wire used in the manufacture of Fabric to have a characteristic yield strength of 460 N/mm² (approx. 66, 700 p.s.i.). The hard-drawn steel wire used in the manufacture of BRC Fabric meets this requirement.

BRC Fabric bears the BNSI and Buy Caribbean certification marks. To ensure that high standards are maintained, the wire is regularly tested at our factory and copies of test certificates are available for inspection.

Designed Reinforcement

Welded Wire Fabric provides proper distribution of steel reinforcement throughout the concrete slab. The great number of small diameter wires, which are closely and more uniformly spaced, distribute load stress widely and equally throughout the concrete slab.

From the standpoint of efficiency, Welded Wire Fabric is preferred reinforcement for concrete. Whereas steel bars must rely entirely on adhesion of the concrete to the bar surface to provide bond for anchorage, BRC Fabric provides positive mechanical anchorage by utilizing the rigidly connected cross-wires welded at each intersection.

By specifying BRC Fabric, the designer is assured of obtaining the required areas of steel at the correct spacing so that on-site supervision is reduced.

Easily Handled & Placed

BRC Fabric is simple to fix, and when properly supported, will remain in position during concreting.

Adaptable For Forming & Shaping

Welded Wire Fabric possesses the right degree of ductility to allow it to be bent, shaped, or fashioned readily on the job, yet is sufficiently rigid to maintain its shape after bending.

Speed & Economy

BRC Fabric permits maximum construction speed and economy while retaining full design strength in the concrete structure. The higher tensile working stresses permitted for Fabric in building codes reduces the mass of steel required, and costs associated with transportation, handling and placing.

BRC Fabric is a reinforcing material pre-fabricated to suit individual job requirements. The cost of laying the flat sheets is much less than the cost of placing, spacing and wiring together the equivalent number of loose rods at the site. The direct saving in time is becoming increasingly important under modern construction methods and the use of 'Critical Path' planning. In many cases, the time and labour required to place reinforcement can be considerably reduced.

Weighing some 65 per cent less, BRC Fabric as a reinforcement is equivalent in strength to mild steel bars and the total cost of the fabric in place is generally much less than the in-situ cost of loose rods.

As well as providing these economies, BRC Fabric does not have the scrap and waste during processing compared with mild steel bars. The actual quantity of steel bar purchased is usually at least 5 per cent more than that used and this factor should be taken into account in any cost comparison.

A conversion chart appears on Page 15 to compare the difference in quantities of BRC Fabric used at an allowable stress of 230 N/mm² against quantities of mild steel bar designed at 140 N/mm².

Controls Cracking

BRC Fabric controls cracking in concrete slabs. The small closely spaced wires are highly efficient at distributing and equalizing the stresses that occur at or near any cracks that may form.

Research into crack widths and the width prediction formulae being adopted by building codes show that maximum crack widths are proportional to the distance from the surface to the closest reinforcement, that is, to bar spacing and concrete cover.

Principal Applications

BRC Fabric is especially suitable for the reinforcement of concrete floors (including flat plates), roofs, walls, footings, retaining walls, swimming pools, tanks, roads, pavements, pre-cast concrete components and for the encasing and fireproofing of structural steel-work.

Slabs on Ground

Various BRC Fabrics are made for use in slabs laid directly on the ground, either excavated or filled. Examples of such slabs are the extensive floors of houses of the modern type, and floors for factories, office buildings, garages, warehouses, etc.

The ability of a floor slab cast on the ground to carry load and resist flexural stresses depends upon its overall tensile strength. BRC Fabric will assist in limiting random cracking to a series of much finer cracks and will permit greater lengths of concrete to be laid in one operation. The reinforcement can be expected to help control tensile forces developed in the concrete as a result of natural shrinkage, contraction of the slab being restricted by frictional contact with the ground.

Basements, ground floors, utility rooms, porches, driveways, garage floors and sidewalks require Welded Wire Fabric for concrete construction in and around the home to control unsightly cracking, leakage and slab deterioration as the building ages.

Suspended Slabs

The greatest benefits of BRC Fabric are enjoyed when it is used as a structural material in suspended slabs spanning up to 5 metres. In many cases the most difficult work in connection with erection of reinforced concrete structures, is the accurate spacing of the reinforcement. In order that a slab of concrete may safely sustain its superimposed load, it is not merely essential that it be provided with a certain amount of steel, but the greatest care must be taken to ensure that the reinforcement is correctly placed in the concrete.

Where single rods are used, a considerable amount of time and money is involved in separately laying the bars, carefully spacing them and then individually tying them into position. The correctness, or otherwise, of such positioning is completely dependent on the steel fixer, whereas the spacing of the wire in BRC Fabric is machine-controlled and it is impossible for their relative positions to become changed either before or after laying, or during concreting. The speed of fixing and time saved in supervision and inspection allow concrete to be poured sooner, thereby reducing overall construction time. Both Fabric series 'B' and 'C' are commonly used in suspended slabs.

Spread Footings & Strip Footings

BRC Fabric is a convenient reinforcement for use in footings because of the ease of placing this reinforcement in the ground. BRC B503 Fabric may be suitable in strip footings.

Girder Wrapping

In steel-framed structures, the structural steel members may be concrete encased to achieve the required fire resistance. Most building regulations require that the steel members be wrapped with steel wire to reinforce the concrete encasement. Welded Wire Fabric (D98) is ideal for this purpose, as it can be pre-fabricated to shape and quickly installed on the site.