PRINCIPLE OF CONSTRUCTION:

The construction of backed fabrics involves the following stages,

1. The face and back threads are marked out on design paper. They are marked out according to the order of insertion.
2. The face weave is inserted on the face threads only using normal convention for warp backing and reverse convention for weft backing.
3. The back weave is inserted on back threads only using the normal and reversed convention. A mark is placed on the back weave between two long floats of the face weave. This hides the binding marks of the back weave by covering float on the face.

In reversible structures the binding marks of the face weave should be equally well concealed on the back. This is achieved by a suitable choice of face and the back weaves.

Warp faced weaves are more suitable for warp backing and weft faced weaves for weft backing , while certain square faced weaves can be successfully applied to both structures. In order to get a well covered face in the back cloth, correct settings are very important as without sufficient density of the face threads, the binding marks of the back weave cannot be covered, no matter how clearly they are placed.

WARP BACKED FABRIC:

These fabrics are produced by alternately weaving two similar or different warp faced weaves. The objective of such a technique is to get greater thickness or mass of the fabric without using coarser yarns. For constructing warp backed fabrics two systems of warp and one system of weft is required. One series of warp threads constitute the face warp and the other constitutes the back warp. Obviously two warp beams are required. The ratio of the face to back warp threads is generally 1:1. Sometimes a ratio of 2:1 is also adopted.

The first step in the construction of warp backed fabric is the selection of the face weave. The next step is to choose the back weave. The back weave is selected so as to leave long weft floats on the back side in order to lower the back warp threads. Hence a warp faced weave is chosen for both the face and back threads.

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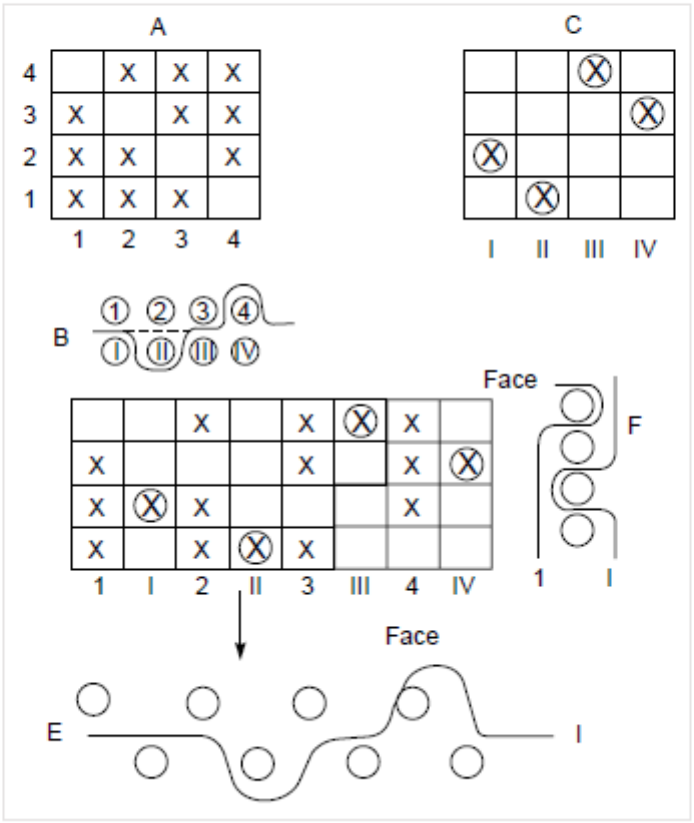
A design of warp faced back weave is shown in Fig. 11.1 below.



A 3/1 twill is chosen as the base weave for both the face and back weaves. At A is shown the face weave and at C is shown the back weave. The design at C is a 3/1 twill as seen from back side and is 1/3 as viewed from the face side. For clarity the face and back warps are denoted by arabic and roman numerals respectively. The figure B shows the warp way cross section with the first pick as reference to show the manner of interlacement. As can be seen from this cross section, the first pick of weft goes below the face warp threads 1, 2 and 3 and above 4 respectively. The weft also goes above the back warp threads I, III and IV and below II respectively. It can be seen that the warp thread II is the binding point for the weft. This has been chosen since the binding point comes in the middle. The point of intersection of the weft thread 1, 2, 3 and 4 with the back warp threads I, II, III and IV respectively is denoted by the circled cross mark in diagram C.

The face and back warp threads are arranged alternately in the ratio of 1:1 as shown at D. At E is shown the warp way cross section of the warp backed fabric. It is to be noted that this is the same as the one shown at B. The weft way cross section is shown at F. At G is shown the complete weaving plan of the warp backed design. The draft used here is a divided draft, since two sets of warp threads are used in the design.

WEFT BACKED FABRICS:

In these types of fabrics two series of weft threads and one series of warp threads are used. A drop box is necessary for the purpose. The purpose of introducing back weft thread is to obtain additional weight or thickness of fabric. The face weft threads are placed in the upper layer of the fabric and the back weft threads are placed in the lower layer of the fabric.

As in the case of warp backed weave, the first step is selection of the base weave. This may be either a warp or weft faced weave. A weft faced weave is suitable since it has longer warp floats on the back side.

BACKED FABRICS:

The backed fabrics are those types which employ a face and back weave alternatively on the two sides of the cloth. These weaves may be of a reversible or non reversible nature. These types of fabrics are mainly constructed for two purposes :

- Increasing the warmth retaining qualities of the cloth
- Secure a greater weight and substance that can be acquired in a single structure which is equally fine on the surface.

A heavy single cloth can only be made by using thick yarns in conjunction with which it is necessary to employ only a comparatively few threads per unit space. A heavy single texture appears to be coarse in appearance. By interweaving threads on the underside of a cloth it is possible to obtain any desired weight combined with the fine surface appearance of a light single fabric.

The purpose of inserting threads in forming a back to a face fabric is only to give additional weight. One of the advantages of the backed construction is that the extra weight can be obtained in an economical manner, since material which is inferior to the face yarns may be used on the underside. Backed cloths are constructed on both the backed weft and backed warp principle. In the case of warp backed cloth there are two series of warp threads and one series of weft threads, and in the case of weft backed cloth there are two series of weft threads and one series of warp threads.