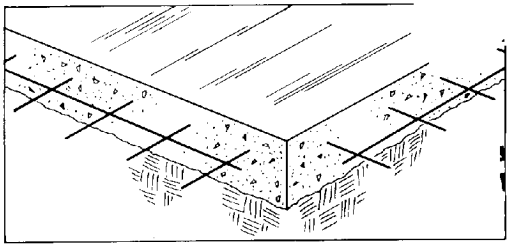
TECH FACTS
TF 701

REINFORCING STEEL IN SLABS-ON-GRADE

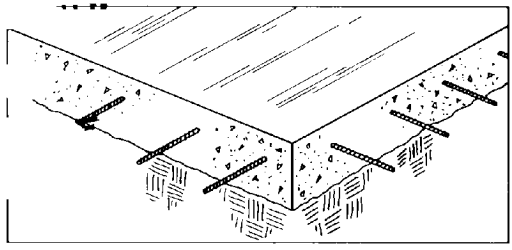
EDR No. 37

WIRE REINFORCEMENT INSTITUTE
CANADIAN CHAPTER

REINFORCING STEEL INSTITUTE OF CANADA



WELDED WIRE FABRIC



REINFORCING BARS

INTRODUCTION

The phrase slab-on-grade, as commonly used in practice, covers a number of practical slab applications. Included are industrial and commercial floors, residential floors, parking lots, pavements, airport slabs and other practical uses of ground-supported concrete slabs. This report applies to all of these applications.

Reinforcing Steel, in the form of welded wire fabric or deformed bars in both directions, may be placed in the slab-on-grade for a number of reasons. This form of reinforcement adds to the strength of the slab, acts as crack control including the well-known restraint of shrinkage (as well as temperature) effects, reduces future maintenance, and generally helps produce a higher quality concrete slab. A complete listing of advantages is included elsewhere in this report.

Reinforcing bars or welded wire fabric (WWF) functions as reinforcement because such steel is supported and thus placed in a specific position in the slab prior to the placement of the concrete. Visual inspection verifies that the reinforcement is properly positioned and will have the positive effects desired.

When reinforcing bars are specified, they are to be placed in two layers (one layer directly in contact with the other), with bars running in two perpendicular directions, tied together so as to maintain the spacing requirements, and they must be supported. When welded wire fabric (deformed or plain) is specified, it should have sufficiently large wire diameters so as to be structurally stiff enough to remain in its proper position during construction, with a wire spacing selected for construction stability and convenience, and the WWF must be supported.

ADVANTAGES

There are numerous advantages that result from placing reinforcing bars or welded wire fabric in a slab-on-grade. The following list shows what reinforcement can do for the slab. Some of these can be achieved in no other way:

- **Controls Cracking**
  Reinforcement with a slab prevents cracks from becoming wide and objectionable. These cracks may be due to drying shrinkage or due to externally applied loadings. When these cracks are kept tight, aggregate interlock will still exist and faulting will not occur. Cracks are frequently kept so tight as to be difficult to see.

- **Allows Increased Joint Spacings**
  The spacings of construction and control joints may be increased when distributed reinforcement is used. The increase can vary from 'slight' to 'substantial' depending upon the concept of design and the intended performance of the slab. The subgrade drag equation (explained in design