

### MacGrid™ WG

The following is the Maccaferri recommendation for the successful installation of the Maccaferri MACGRID WG range (see Figure 1):

1. Care should be taken in the handling, lifting and positioning of the MACGRID rolls. The weight of the rolls is such that mechanical lifting arrangements are necessary, the use of a lifting beam is recommended.
2. To ensure ease of installation, and proper performance, of the MACGRID the formation on which it is to be installed should be flat without ruts, vegetation and sharp undulations. Clean the ground from debris, tree trunks, etc. Smooth and level the subgrade to the prescribed elevation as required by the contract.
3. The rolls of MACGRID should be placed such that overlaps, laying directions and alignments are made easy in advance of unrolling the product otherwise corrections would be difficult.
4. Unroll the MACGRID on site in the direction of laying in the direction of traffic/road and apply tension by hand to minimise wrinkles. The unrolled flat MACGRID layer overlap requirements, either side by side or end to end, shall depend on the strength of the subgrade. See Table (I) for guidance. The overlapping shall be made in the direction of the soil spreading to avoid MACGRID lifting. The MACGRIDS maybe tensioned and fixed along the outer edges with "U" bars or with stones.
5. In order to optimise the MACGRID performance, Table (II) below suggests the typical fill grain size distribution.
6. Depending on the existing subgrade shear strength encountered on site, there are two distinctive installation procedures to be adopted for filling:

a Over Firm Subgrade:

- When applying the fill material over relatively competent subgrade (CBR>3%), a rubber tyre truck can drive directly on the geogrid at a very slow speeds (less than 5mph or 8kph) and dump the fill material as it moves on. The operators/drivers must not make any turns or sudden stops when driving over the MACGRID.
- Tracked vehicles should not be driven directly on the MACGRID. A minimum of 150mm of structural fill material should be placed between the MACGRID and the tracks.
- Base course material should be placed in lift thicknesses and compacted in accordance with the design requirements.
- Any ruts developed during the spreading or compacting must be filled with additional fill material to reach the design thickness. Do not grade out ruts. Rutting is normally indicative of aggregate fill that is too thin, too wet, or not compacted enough. Grading out the ruts will further reduce the fill placed between the wheel tracks and potentially expose the underlying MACGRID.

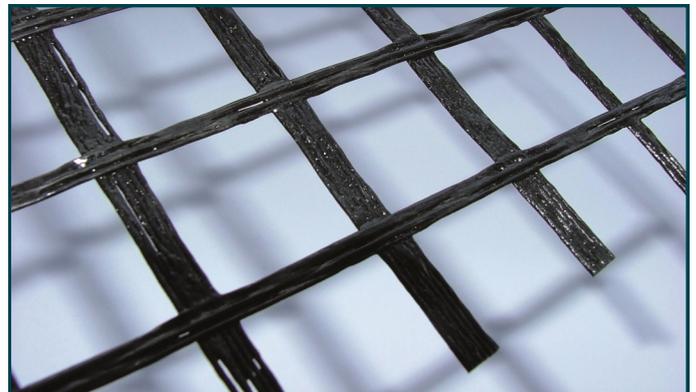


Figure 1 - MacGrid WG



Figure 2 - MacGrid WG installation picture

CBR (%)	Overlap
>3	300mm
1-3	500mm
<1	750mm

Table I - MacGrid WG overlapping requirements

Size (mm)	% Passing Sieve
30	100
20	50-100
6	20-50
4.76	25-50
0.15	5-15
0.074	<10

Table II - Recommended structural fill grading

b Over Soft Subgrade:

- When applying the fill material on weak subgrade ( $1\% < \text{CBR} < 3\%$ ) or very weak subgrade ( $\text{CBR} < 1\%$ ), an initial minimum fill lift of 300mm is recommended to support equipment. Low ground pressure equipment is recommended for spreading of the fill over the soft subgrade. Back dump the specified fill material onto the MACGRID where the subgrade is most stable, it is advisable to vary the location of the fill dumping along the whole of the construction site rather than concentrate on one location. Spread the fill over the MACGRID out towards the weaker subgrade using low ground pressure equipment. Tight turns, sudden stops and/or spinning should be totally prohibited.
- Loaded haul trucks or any heavy equipment should avoid riding over the fill material until the total compacted fill thickness has been achieved and capable of supporting the load.
- Compaction of the fill material to the prescribed density should be conducted without overstressing the subgrade. Use only light equipment for compacting the first course on the very soft subgrade, if required, wrap around the MACGRID at the outer edges to enhance performance.
- Any ruts developed during the spreading or compacting must be filled with additional material to reach the design thickness. Do not grade out ruts. Rutting is normally indicative of aggregate fill that is too thin, too wet, or not compacted enough. Grading out further reduce the fill placed between the wheel tracks and potentially expose the MACGRID.

7. If more than one layer of MACGRID is prescribed, repeat phases 2, 3 and 4.

**Note:**

**Repairing:** MACGRID sections damaged during the installation must be repaired by patching. Remove the fill from the surface of the MACGRID extending 750mm surrounding the damage area and then place a MACGRID patch to cover the damaged area, assuring it extends 750mm in all directions.

**Cutting:** MACGRID can be easily cut with sharp shears to accommodate manhole covers, curves, etc.

**Protection:** The MACGRID shall be protected from long-term exposure to direct sunlight during transport and storage. Whilst UV stabilise, it is recommended that the MACGRID is covered as soon as possible after placement.



Figure 3 - MacGrid WG installation picture



Figure 4 - MacGrid WG installation picture

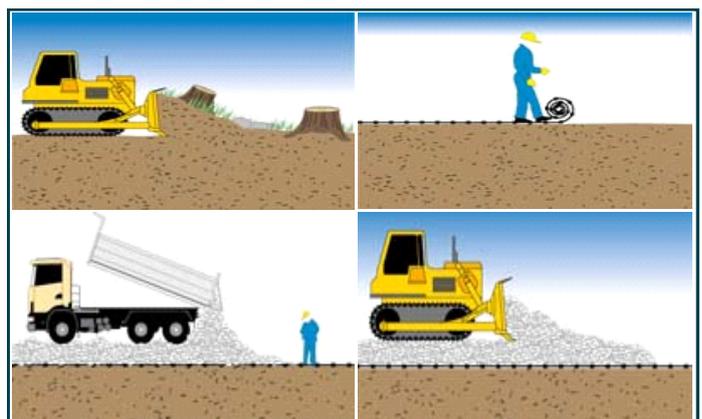


Figure 5 - MacGrid WG installation picture