

# INSTALLATION GUIDELINES FOR TENCATE MIRAFI<sup>®</sup> MPG<sup>4</sup> COMPOSITE PAVING GRIDS

Prepared by:

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## Mirafi® MPG<sup>4</sup> Composite Paving Grids Roll Sizes, Shipping and Handling

- Review the plans in conjunction with the staging to determine what lanes will be covered first. This will help define what width of product will be required.
- The standard roll widths are 10 feet and 12.5 feet suitable for most lane widths. However, it might be necessary to order half roll widths, non-standard widths, or to order full size rolls and cut them to size. There is a longer lead time for non-standard widths, and a slitting charge.
- When selecting roll sizes, always consider the required, or minimum overlap widths, and keep overlap widths to less than 18 inches to minimize overlap and asphalt binder waste.
- Allow for 5% overlap waste when ordering the quantity of material ordered for a project. If there are numerous curves on a project, the waste could be higher.
- A reciprocating blade should be used to cut rolls. A circular saw is not recommended.

## Storage of the Mirafi® MPG<sup>4</sup> Composite Paving Grids

- Although the rolls are typically wrapped with plastic, the ends of the rolls, including the cores, are exposed. Therefore, during transportation on any open vehicle, or if stored on site, the material should be fully covered with a tarp.
- The covered rolls should be stored off the ground, on 4x4 or 6x6 timber beams, or other materials.
- Rolls that are saturated, and/or have wet cores should be transported or moved around site with a steel core inserted in the core, otherwise the core will break, and the roll will have to be discarded.
- Wet material, or material that has mold should not be installed.
- Material storage and handling should be in accordance with ASTM D4873 *Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples*.

## Surface Preparation

- Power broom, sweep, vacuum, or blow the pavement before installing *Mirafi® MPG Composite Paving Grid(s) (interlayer)*. The pavement surface should be dry, free of dirt, oil and loose stones prior to installation. Additional effort may be necessary on a milled surface to clean the milled surface of dirt and debris. Typically, a power broom and vacuum are effective at removing larger particles, and a blower (leaf or industrial), is more effective at removing finer particles. Consider using power brooms or vacuum trucks in conjunction with a blower to achieve a clean surface.
- When installing the interlayer directly on a milled surface or the existing aged asphalt surface, fill all open cracks  $\frac{1}{4}$ " (6 mm) or greater with an approved crack fill or mastic material.
- If the existing pavement surface exhibits extensive faulting at joints or cracks, a thin leveling course should be placed prior to placing the fabric. If a leveling course is used, crack sealing may not be necessary, unless required per local standard practice.
- Repair all structurally failed pavement areas prior to installing the **interlayer**.
- After milling, it is likely that the remaining lift of asphalt will be milled up leaving localized areas that are lower than the milled surface. If these localized areas are deeper than  $\frac{1}{2}$ " (12 mm), it is recommended that these areas be filled with asphalt mix prior to placing the **interlayer**.
- In some cases, after milling, the aggregate base or cement treated base is exposed during the milling of the asphalt layers. If the area is smaller than 10'x 10' (3m x 3m), then the area should be tacked with a diluted emulsion till it breaks, and then the asphalt binder for the **interlayer**, should be applied.
- If the exposed aggregate base or cemented base area is larger than 10' x 10' (3m x 3m), then a thin layer of asphalt mix should be installed on the primed exposed unbound surface. Alternatively, the unbound surface

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should be scarified using a rake, or other suitable equipment, and then tacked with a diluted emulsion (0.15 gal/sy or 0.70 l/sm solids), and then recompact once the emulsion breaks on the surface. The **interlayer** installation can then proceed.

- The installed **interlayer** must be clean and dry prior to the asphalt overlay application, otherwise delamination may result between the **interlayer** and new overlay.

### Asphalt Binder Installation

- **Always** use neat asphalt or polymerized asphalt binder to install the **interlayer**. Emulsions or cutbacks are not recommended.
- PG64-XX, PG70-XX, PG76-XX asphalts should be used for the neat asphalt binder. For high temperature installations (ambient air temperatures exceed 90°F or 32°C), higher viscosity asphalt binder should be used. These include but are not limited to; PG70-XX asphalts. (See Asphalt Binder Table 1 for recommended grades to be used when installing **interlayers**)
- In areas where the summer temperatures are expected to exceed 90°F or 32°C, then we recommend that the PG70-XX be used to prepare the bid estimate. If cooler conditions are encountered during installation, then one can always revert back to PG64-XX.
- Asphalt binder application rates are based on the specific **interlayer** used. Table 2 provides the recommended optimum rate of asphalt binder to be used based on **interlayer** material type and surface conditions. Adjustments to the asphalt binder rate may be made based on existing surface conditions.
- The asphalt binder should be sprayed full width, and should provide a continuous wet surface, with no gaps. If a gap is observed, the operator should be informed immediately, and the affected nozzle cleaned before proceeding. If clogging is ongoing, then the filters should be checked.
- The length of asphalt binder application should never exceed the length of the roll to prevent the asphalt binder from hardening during the roll change on the tractor. The asphalt distributor trucks normally can track the distance of their pulls, and therefore should keep track of the length to ensure they do not exceed the length of the interlayer roll. If the distributor truck does not keep track of the pull distance, then the roll lengths can be marked out ahead of the installation crew using spray paint.
- In cool or windy conditions, the asphalt binder will develop a film on the surface, potentially limiting the ability for the **interlayer** to bond. Therefore, when the temperatures are lower than 50°F (10°C), and/or there are windy conditions, the length of the asphalt binder application pulls should be reduced in length.
- The width of the asphalt binder shall be sprayed sufficiently to include the **interlayer** width, plus a minimum of 4" (100 mm) longitudinally and transversely on the overlap side(s). For example, for a 12.5 foot wide roll, the spray width should be approximately 13 feet.
- At the end of one roll and the start of the next roll, the asphalt binder needs to be applied on the previously installed roll (approx. 4-6" or 100-150 mm). Wherever there is an overlap of interlayer material, there should always be two corresponding applications of asphalt binder.
- The asphalt binder rate at the start of a pull, is typically much higher, and could be excessive and pond. Some asphalt binder distributors can be adjusted to limit the surge of asphalt binder at the start of a run. If this adjustment is not available as an option on the available distributor, the operator should look to do running starts to attempt to reduce the surge application of the asphalt binder. If this is not resolved, then the pooled asphalt binder will need to be spread out using squeegees. All of these pooled areas will also require sanding after the interlayer has been installed. Sand should be liberally applied over the overlap, swept to provide a uniform thin blinding layer of sand (the interlayer should still be visible through the sand layer, otherwise there is too much sand and the excess should be removed, or distributed over a larger area). This sand will also limit any pickup from exposed asphalt binder and limit the potential for bleeding.

### MPG Composite Paving Grid (Interlayer) Installation

- The **interlayer** must be installed with **glass fibers placed facing down into the asphalt binder**.

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- Care must be taken when handling the **interlayer**. Do not drop or bend rolls as this may damage the core and material.
- Any wrinkles that occur during installation, 1" (25 mm) and larger, shall be slit and lapped in the direction of paving and pressed down into the asphalt binder by applying some pressure. The slitting of wrinkles is recommended to be addressed once the roll has been placed, so that the asphalt binder is still warm and the repair will be easier to perform.
- To ease installations around curves, and thereby avoid the increased possibility of wrinkles, it is recommended that shortened lengths of asphalt binder pulls and the corresponding lengths of **interlayer** are installed, to fit the curve. Neither the asphalt binder distributor operator nor the tractor operator should attempt to follow the curve, but maintain short straight pulls to fit the curve.
- To alleviate the pickup of **interlayer** by vehicle tires, caused by the exposure to high ambient temperatures or overspray of asphalt binder causing bleed-through, "Sanding" can be performed by adding clean blotting sand or hot mix asphalt spread over the affected area. Excess loose blotting sand (where you no longer can see the interlayer through the sand) shall be removed before the installation of the final hot mix asphalt placement over the installed **interlayer**.
- Sanding is typically not required where the maximum daily ambient temperatures stay below 80degF. Sanding has been performed as a means to keep the construction tires clean, and avoid damaging the installed interlayer at elevated temperatures for many years, and as long as the sanding operation does not completely blind/conceal the underlying installed interlayer, and clean sand is used, then there is no risk to the bond integrity.
- Regular traffic should not be allowed to travel on the installed **interlayer**. If temporary access is required for one or two vehicles, then at this location, any exposed asphalt binder must be covered with clean sand or loose hot mix asphalt, before the traffic runs over the **interlayer**. Areas where the paver is likely to turn on the interlayer, or concentrated truck traffic is anticipated should be sanded with either loose hot mix asphalt, or sand.
- The **interlayer** can be installed using a tractor, front mounted frame or by hand. Brooms should be used to seat the **interlayer** into the asphalt binder and remove air bubbles to ensure complete contact. The length of applied asphalt binder ahead of the laydown crew will depend on the speed of the installation device, so the length of asphalt binder pulls will be much longer for a tractor, then for a hand installation.
- Pneumatic tire rolling equipment (steel wheel rollers are not recommended) may be used to "seat" the **interlayer** in cooler weather where asphalt binder tends to harden and stiffen rapidly, and winds tend cause a skin to form on the asphalt binder surface, reducing the adherence to the **interlayer**. In many cases, the pneumatic tire rollers are also used to seat the interlayer, when the **interlayer** is being installed on a milled surface to improve the bond.
- Typical longitudinal overlaps may range from a minimum of 1" (25 mm) to no more than 4" (100 mm). All overlapping material must be tacked together with asphalt binder, so untacked interlayer material should either be tacked by hand, or removed, but there should still be an overlap.
- Transverse overlaps, or overlaps at 90° to the direction of paving are typically 4" (100mm) to 6" (150mm). These overlaps must also be tacked with asphalt binder in all cases. Therefore, two layers of interlayer in any location should have two applications of asphalt binder beneath each layer.
- Turning while at a standstill by paving equipment, asphalt delivery trucks or other construction vehicles on the **interlayer** should be kept to a minimum to avoid damage to the material. Spreading loose asphalt mix on the interlayer in advance is highly recommended, to avoid having to repair the damage.

### Asphalt Paving on the Installed MPG Composite Paving Grid (Interlayer)

- The recommended minimum compacted hot mix asphalt overlay thickness for **interlayer** is 1.5" (40 mm).
- The **interlayer** should be protected from getting wet after installation. This can be accomplished by following the weather reports closely, and if rain is imminent, then the amount of exposed installed **interlayer** should be significantly reduced.
- On milled surfaces, it is recommended that any installed **interlayer** be rolled by a pneumatic tire roller to

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maximize saturation of the **interlayer** within the troughs of the milled surface.

- Prior to the rainfall it is recommended that any installed **interlayer that cannot be covered with asphalt** be rolled by a pneumatic tire roller to minimize the possible saturation of the **interlayer** with rain water.
- If the interlayer product has been rained on, then if water is displaced around one's shoe while walking on the installed **interlayer**, then paving should be halted. Blowers and brooms can be used to attempt to displace the water from the installed **interlayer**.
- During construction, do not allow asphalt delivery vehicles to park on the installed **interlayer** for extended periods of time. This could cause damage to the **interlayer** and cause bleed through of the asphalt binder caused by the high contact pressure of the tires and the elevated temperatures of asphalt trucks and support equipment.

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Table 1: Recommended Asphalt Binders for Mirafi® MPG Composite Paving Grids

	Penetration Grade			AC Grades	PG Grades	Polymer Modified
	40			AC 40		
Asphalts for Mirafi® MPG-G	50				PG 70- 22	SBSPG 76-22
		60		AC 20	PG 67- 22	SBSPG 70-22
					PG 64-22	
		70	85	AC10	PG 58-10	
			0		PG 58-28	
			120	AC 5		HPSPG76-10
		150	200 300	AC 2.5	PG 52-28	

Table 1 is prepared for use as a guide for liquid asphalt binders to be used as asphalt binders when installing the **interlayer**. It is not intended to be an exact comparison of liquid asphalt rate or specific properties of individual grades for use in specific applications. The region of the country and ambient temperatures at the project can influence asphalt binder preference and selection.

The amount (gallons/Square Yard) of asphalt binder placed should be sufficient to:

- 1) Bond the **interlayer** to the old pavement (or leveling course).
- 2) Saturate the **interlayer**.
- 3) Provide enough residual to bond the new overlay to the **interlayer**.

Too light of an application of asphalt binder could preclude any of the above. Too heavy an asphalt binder rate could result in slippage problems at higher temperatures. Therefore, it is very important that the proper amount of asphalt binder be applied. The condition of the existing pavement is one of the determining factors for the proper application rate.

Table 2: Recommended Asphalt Binder Application Rates

Mirafi® MPG Composite Paving Grids	MPG-G4	MPG4-100
<b>Normal Application Rates (&lt;90°F, new asphalt, uncracked surface)</b>		
Gallons/Square Yard	0.19	0.25
Liters/Square Meter	0.86	1.13
<b>Normal Application Rates (&gt;90°F, new asphalt, uncracked surface)</b>		
Gallons/Square Yard	0.17	0.23
Liters/Square Meter	0.77	1.04
<b>Heavy Application Rates (&lt;90°F ambient, milled, heavily oxidized, badly cracked)</b>		
Gallons/Square Yard	0.21	0.27
Liters/Square Meter	0.95	1.22
<b>Heavy Application Rates (&gt;90°F ambient, milled, heavily oxidized, badly cracked)</b>		
Gallons/Square Yard	0.19	0.25
Liters/Square Meter	0.86	1.13

Application rates should be adjusted based on pavement conditions, (milled, irregular or porous, oxidized and cracked- distressed are characterized as heavy applications).

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