

## Product Description and Delivery Advice

The **Advanced Turf System** consists of the following 3 components, each of which is supplied by **ABG**. and will be delivered onsite on the date(s) that has previously been agreed with the customer.

1. The **Advanced Turf System (ATS400/B)** rootzone. A composite blend of sand, organic matter and mesh elements. This pre-blended rootzone will be delivered to site in 29 tonne bulk loads in articulated vehicles, unless smaller sized vehicles are requested when quotations are prepared. A 200mm thick layer of **ATS400/B** will be laid and consolidated in 2 layers, so it is recommended that consideration is given to a location for tipping/stockpiling of the material when it arrives on site, thus avoiding double handling.
2. Sandy soil grown turf as specified. Only specified sandy soil grown turf, or turf grown on a sandy rootzone should be used, as conventional turf is wholly unsuitable for use with the **Advanced Turf System**.
3. Pre-turfing fertiliser, as appropriate, if specified.

## Important notes for all Advanced Turf® installations

After reading the following notes, select the most appropriate installation method for your project.

- If the **ATS400/B rootzone** is to be stockpiled for long periods on site, it is recommended that it is sheeted over, to avoid contamination or mesh dispersal. It is possible that minor mesh separation will occur during transportation, but tipping from the vehicle and the installation process will correct this. Small unblended bundles of mesh can be dispersed by hand into the mix.
- The **ATS400/B rootzone** must not be hand raked, or bladed out with an excavator bucket that has teeth, as this will separate out the mesh. Always use machines fitted with non-toothed buckets/blades - Shovels, back of rake etc.
- The **ATS400/B rootzone** must not be placed, graded or consolidated in wet weather conditions during installation. Doing so may affect the soil structure and impair drainage characteristics. Allow the rootzone to drain prior to re-commencing consolidation after rain.



Fig. 1: ATS400/B rootzone/mesh blend



Fig. 2: Rootzone bulk delivery



Fig. 3: Set accurate rootzone levels



Fig. 4: Rootzone spreading over Terrex NW9

- Do not contaminate the **ATS400/B rootzone** with site debris and mud etc. when installing. Doing so may affect the structural and drainage capacity of the ATS400/B.
- Ensure that drainage and irrigation systems are not damaged by site traffic during installation. Avoid damage or capping of drainage channels, findrains and sub-base surface as this will affect the **ATS400/B** drainage.
- Any small quantities or bundles of mesh that remain on the surface of the **ATS400/B** after levelling and consolidation can be hand-picked or lightly brushed off. **DO NOT USE A RAKE.**
- The **ATS400/B rootzone** should be kept damp but not saturated during installation. Irrigation may be required prior to the specified sandy soil grown turf and fertiliser being applied.
- Any fertiliser supplied by **ABG** has been specifically selected to ensure rapid grass establishment and it is critical that it is applied correctly prior to turfing.
- It is recommended that delivery of the turf is delayed until most of the **ATS400/B rootzone** has been installed, as the turf must be laid as soon as possible and within 1 day of delivery. This is particularly critical in hot or dry weather. Watering may be required during establishment of the turf.
- The turf must be firmed closely onto the **ATS400/B rootzone** layer surface to promote rapid rooting. Removing excessive surface mesh prior to laying the turf will assist in this. Light top dressing with a sandy rootzone is optional as specified.
- It is the responsibility of the specifier/engineer and contractor to ensure that the site sub-grade, sub-base and drainage specifications and conditions are suitable for purpose prior to the installation of the **ATS400/B rootzone** layer.



**Fig. 5: Maintain accurate levels**



**Fig. 6: Rootzone compaction with roller**



**Fig. 7: Rootzone compaction on slopes**



**Fig. 8: Newly turfed Advanced Turf System**

## Installation for Walkways and Pedestrian areas

1. Survey and mark out the area of the site.
2. Excavate the area to the required ATS400/B rootzone depth and remove all debris from the site, leaving a clean formation level.
3. Cultivate the sub-grade to a depth of 150mm and reconsolidate using a light roller without vibration, to simulate heeling. In some cases where a poor quality sub-grade soil exists, a layer of good quality top soil may have been imported instead of cultivating the sub-grade soil. Consolidate this new soil layer.
4. Install drainage and irrigation systems as specified, then carefully re-cultivate between the drain lines if any compaction has occurred, taking care not to damage or cap over the drainage/irrigation.
5. Proceed with the installation of the **ATS400/B rootzone** as described for 'Access Routes' (steps 9 to 19 below). For **ATS400/B rootzone** layers up to 150mm thick consolidation may be achievable in one layer where an adequately sized roller is selected (refer to Table 2).

## Installation for Access Routes and Parking Areas

1. Survey and mark out the area of the site.
2. Excavate the area to the required depth and remove all debris from the site, leaving a clean formation level.
3. Prepare and proof roll the sub-grade formation to a tolerance of 20mm or as otherwise specified.

For projects where **ATS400/b rootzone** layer is less than 200mm thick and where no sub-base is required complete steps 4 and 5.

For projects where the **ATS400/B rootzone** layer is 200mm thick or greater, and where the subbase is required go to step 6.

4. Place the specified DoT Type 1, Type 3 or CGA reduced fines sub-base and consolidate in accordance to DoT highways specification (see Table 1). Place a layer of **ABG Terrex NW9** geotextile over the sub-base.
5. Install drainage and irrigation systems as specified, then carefully re-cultivate and re-consolidate between the drainage lines if any heavy compaction has occurred, taking care not to damage or cap over the

drainage/irrigation.

Then continue by following steps 9 to 19 to complete the installation.

6. Consolidate the sub-grade formation layer with several passes of a 1.5 to 2 tonne roller until the required sub-grade strength is achieved.
7. Cultivate the subgrade soil to 150mm depth and reconsolidate with < 1 tonne roller (without vibration) Any imported top soil must be similarly lightly consolidated.
8. Install the specified drainage and irrigation.
9. Establish levels using pegs and lines or a laser, to help maintain a uniform layer thickness of the **ATS400/B rootzone** whilst laying to maximum tolerances of 15mm in 1m, or as otherwise specified.
10. Place heaps of **ATS400/B rootzone** in the construction area using a dumper/excavator. The quantities placed will be governed by the **ATS400/B** layer thickness to be consolidated and the size of roller to be used for consolidation (refer to Table 2). Vehicles may travel slowly over the **ATS400/B rootzone**, provided that the rootzone is not wet and that it is thick enough to prevent rutting of the sub-grade/sub-base.
11. Spread out the first layer of the **ATS400/B rootzone** using the bucket of an excavator and hand tools. On large areas, welding a 150mm diameter steel pipe to the bucket of the excavator will aid uniform spreading and levelling of the rootzone.
12. Make a single pass over the rootzone with a smooth drum roller (without vibration), followed by the consolidation rates as specified in Table 2, with vibration on.
13. Install the second **ATS400/B rootzone** layer using the same placement and levelling procedures and consolidation rates as for the first layer. Achieve final levels with hand tools and by placement of rootzone in localised low areas. Tolerance 15mm in 1m.
14. Apply the specified fertiliser.
15. The surface should be turfed as soon as possible after rootzone installation. Turf should be laid so that edges are tightly butted together and is firmed closely onto the surface. A top dressing of unreinforced rootzone may be applied where specified.

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# Advanced Turf®

16. Water all the surfaces immediately or as required according to weather conditions. Turf may require frequent and daily watering until established during hot/dry weather.

17. Protect the areas from traffic and pedestrians until the grass has established and the roots have grown deeply into the rootzone. Turf will normally provide a fully traffickable surface after 2-4 weeks.

18. After the recommended time period, re-apply the appropriate fertiliser (refer to maintenance advice) and carry out normal turfgrass maintenance practices.

19. Seasonal fertiliser applications will encourage strong healthy grass growth on the **Advanced Turf®** surface and will ensure that its structural and agronomic properties are fully achieved.

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## Installation method for Steep Slopes

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1. Slope design will be project specific as determined by the slope angle and subgrade materials. Consultation with **ABG** Technical Department is strongly recommended prior to slope construction and installation.
2. Placement and handling practices for the **ATS400/B** are the same as previously described for all other applications. However, consolidation of **ATS400/B rootzone** on slopes using a roller is generally impractical but can be achieved by applying localised heavy pressure with an extractor bucket. Hand tools can be used to shape the formation, then reconsolidate.
3. The specified turf may require pegging onto the slope surface with biodegradable pegs until established. Ground cover plants can be used as an alternative to turf. Project specific advice can be obtained from **ABG**.

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## Terms and Conditions

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Site specific engineering design should be carried out after site investigation has provided all the necessary information.

The assessment of suitable safety factors in relation to each particular project must always remain the responsibility of the design engineer.

# Advanced Turf®

## Sub-base and Rootzone Compaction Tables

**Table 1:**  
Compaction Requirements for granular Sub-base Material.

Type of compaction plant	Category	Number of passes for layers not exceeding the following compacted thicknesses:		
		110mm	150mm	225mm
Smooth wheeled roller (or vibratory operating without vibration)	mass per metre width of roll:-			
	2700kg up to 5400kg	16	unsuitable	unsuitable
	over 5400kg	8	16	unsuitable
Pneumatic tyred roller	mass per wheel:			
	over 4000kg up to 6000kg	12	unsuitable	unsuitable
	over 6000kg up to 8000kg	12	unsuitable	unsuitable
	over 8000kg up to 12000kg	10	16	unsuitable
	over 12000kg	8	12	unsuitable
Vibratory roller	mass per metre width of roll:			
	over 700kg up to 1300kg	16	unsuitable	unsuitable
	over 1300kg up to 1800kg	6	16	unsuitable
	over 1800kg up to 2300kg	4	6	10
	over 2300kg up to 2900kg	3	5	9
	over 2900kg up to 3600kg	3	5	8
	over 3600kg up to 4300kg	2	4	7
	over 4300kg up to 5000kg	2	4	6
	over 5000kg	2	3	5
Vibrating plate compactor	mass per square metre of base plate:			
	over 1400kg up to 1800kg/m <sup>2</sup>	8	unsuitable	unsuitable
	over 1800kg up to 2100kg/m <sup>2</sup>	5	8	unsuitable
	over 2100kg	3	6	10
Vibro tamper	mass:			
	over 50kg up to 65kg	4	8	unsuitable
	over 65kg up to 75kg	3	6	10
	over 75kg	2	4	8
Power rammer	mass:			
	100kg up to 500kg	5	8	unsuitable
	over 500kg	5	8	12

**Table 2:**  
Advanced Turf System rootzone consolidation

Type of compaction plant	Category	Advanced Turf Rootzone	
		Maximum compaction thickness (mm)	Number of passes required
Vibratory roller	mass per metre width of vibratory roll:		
	over 270kg up to 450kg	75	8
	over 450kg up to 700kg	75	6
	over 700kg up to 1300kg	125	5
	(e.g. A Bomag 80 or 120)		
	over 1300kg up to 1800kg	150	4
	over 1800kg up to 2300kg	150	2
	over 2300kg up to 2900kg	175	2
	over 2900kg up to 3600kg	200	2
Vibratory roller	mass per m <sup>2</sup> of base plate of a vibratory roll:		
	over 880kg up to 1100kg	unsuitable	unsuitable
	over 1100kg up to 1200kg	75	5
	over 1200kg up to 1400kg	75	3
	over 1400kg up to 1800kg	125	3
	over 1800kg up to 2100kg	150	3
	over 2100kg	200	3

\*Important note: Where the heaviest vibratory roller available is less than 2900kg per metre width, then the rootzone must be laid and compacted in layers not exceeding 150mm

(i.e. 200mm thickness to be laid and compacted in two layers).

Extracted from The Department of Transport Specification for Highway Works.

December 1991, reprinted August 1993.

Series 800 Road Pavements - unbound Materials Table 8/1.