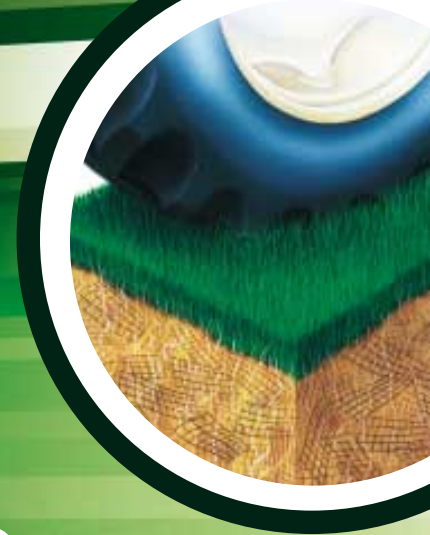


NETLON[®]

TURF SYSTEMS

Advanced Turf



Advanced Turf[®]

installation guidance

Access Roads/
Parking Areas

Walkways/
Pedestrian Areas

Slopes



Note: Netlon Advanced Turf is an ideal solution for many sports fields and surfaces of all kinds. For more information on this type of application please contact the NTS team



TURF SYSTEMS



Product Description And Delivery Advice

The Advanced Turf System consists of the following 4 components, each of which is supplied by Netlon and will be delivered onto the site on the date(s) that have previously been agreed with the customer.

1. The Netlon Advanced Turf (ATS) rootzone. A composite blend of sand, soil and Netlon mesh elements.

This pre-blended rootzone will be delivered into site in 25 tonne bulk loads in articulated vehicles, unless smaller sized vehicles are otherwise requested when quotations are prepared. The ATS rootzone 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. The Netlon R400 topping layer. A sand: soil blend, supplied when a grass seeded finish is specified. This will be delivered to site in appropriately sized bulk loads.

This topping layer will not be supplied when a washed turf finish is selected, unless the project has a sports type application.

3. The Grass seed or Washed turf as specified.

Only bare root Washed Turf or turf grown on a sandy rootzone should be used, as conventional turf is wholly unsuitable for use with the Advanced Turf System.

4. The Netlon pre-seeding or pre-turfing fertiliser, as appropriate.

Important Installation Notes For

All Advanced Turf (ATS) Applications

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

- If the ATS 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 remaining bundles of mesh can be dispersed by hand into the mix.
- The ATS 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 ATS 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.
- Do not contaminate the ATS rootzone with site debris and mud etc, when installing. Doing so may affect the structural and drainage capacity of the ATS.
- Ensure that drainage and irrigation systems are not damaged by site traffic during installation. Avoid capping-off the tops of gravel filled drainage channels and the sub-base surface with site debris and mud etc. Doing so will affect drainage of the ATS.
- Any small quantities or bundles of mesh that are laid at the surface of the ATS after levelling and consolidation are complete, can be hand picked off and disposed of, or may be burned off the surface with a flame gun if site conditions permit. **Do not rake.**
- The ATS rootzone should be kept damp but not saturated during installation, then watered prior to the seed or washed turf and the fertiliser being applied.
- The fertiliser supplied by Netlon has been specifically selected to ensure rapid grass establishment and it is critical that it is applied correctly prior to seeding or turfing.
- It is recommended that when a washed turf finish is specified, delivery of the turf is delayed until most of the ATS rootzone has been laid, as washed turf must be laid on the day it is delivered. This is particularly critical in hot/dry weather conditions.
- Washed turf must be firmed closely onto the surface to promote rapid rooting. Removing excessive surface mesh prior to laying the turf will assist in this. Top dressing washed turf with a sand:soil blend after installation is optional, but will aid establishment.
- 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 ATS rootzone layer.



Installation Method 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.

Then either:

4. Where the Netlon ATS rootzone layer is less than 200mm thick and no sub-base is required.

Cultivate the sub-grade to a depth of 150mm and reconsolidate using a 0.5 to 1 tonne roller without vibration, to simulate heeling. In some cases where a poor quality sub-grade soil exists, a layer of sandy loam may have been imported at this stage instead of carrying out the sub-grade cultivation; this sandy loam layer should be similarly consolidated.

5. Install the drainage and irrigation systems as specified, then carefully re-cultivate and re-consolidate between the drainage lines where any heavy compaction has occurred, taking care not to damage or cap over the drainage/ irrigation systems.

Then continue by following items 9 to 20 to complete the installation... Or

6. Where the Netlon ATS rootzone layer is 200mm thick or greater and where a sub-base is required.

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. Place the required thickness of DoT Type 1 sub-base or hardcore as specified, to a tolerance of 15mm or other specified tolerances and compact in layers in accordance with Department of Transport Specifications for Highway Works (See Table 1)

Where a free draining DoT Type 1x reduced fines sub-base has been specified, this must be similarly compacted and then blinded off with a 25mm thick layer of 5 - 14mm sized gravel or crushed aggregate to BS882.

8. Install the drainage and irrigation systems as specified.
9. Establish levels using pegs and lines or a laser, to help maintain a uniform layer thickness of the ATS rootzone whilst laying to tolerances of 15mm or as otherwise stated.
10. Place heaps of the ATS rootzone in the construction area using a dumper/ mechanical bucket etc. The quantities placed will be governed by the ATS layer thickness to be consolidated and size of roller to be used for consolidation

(refer to Table 2). Vehicles may travel over the ATS rootzone, provided that the rootzone is not wet and that it is thick enough to prevent rutting of the lower layers.

11. Grade out the first layer of the ATS 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 spreading and levelling of the rootzone.
12. Make a single pass over the rootzone with a smooth drum roller without vibration on, followed by the consolidation rates as specified in Table 2, with vibration on.
13. Install the second ATS 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. Always roughen previously consolidated low spots prior to placing fresh rootzone and then re-consolidating as recommended. Tolerance +/- 15mm.
14. Where an R400 topping layer is specified, this should be spread evenly over the finished surface at a thickness of 15mm +/- 5mm.
15. Netlon installation fertiliser should be applied at the specified rate onto the R400 topping layer.
16. Apply either grass seed or washed turf to the surface, preferably within 1 to 3 days of rootzone completion.

Grass seed should be broadcast or lightly drilled into the R400 topping and lightly rolled into the surface.

Turf should be laid so that edges are tightly butted together and it is firmed closely onto the surface. A top dressing of Netlon R400 or sand shall be applied where specified, to assist knitting in of the turf.

17. Irrigate all the surfaces immediately and as required according to weather conditions. Washed turf will require frequent and daily irrigation until established.
18. Protect the areas from traffic and pedestrians until the grass has established and the roots have grown deeply into the rootzone. Washed turf will provide a fully trafficable surface earlier after installation than will a seeded finish.
19. After the recommended time period, re-apply the appropriate fertiliser (refer to Netlon maintenance advice) and carry out normal turfgrass maintenance practices.
20. Regular routine 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.

Installation Method For Walkways And Pedestrian Areas

1. Survey and mark out the area of the site.
2. Excavate the area to the required ATS 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 sandy loam may have been imported at this stage instead of carrying out the sub-grade cultivation; this sandy loam layer should be similarly consolidated.

4. Install the drainage and irrigation systems as specified, then carefully re-cultivate between the drain lines where any heavy compaction has occurred, taking care not to damage or cap over the drainage/ irrigation systems.

5. Proceed with the installation of the ATS rootzone as previously described for Access Routes, from Items 9 to 20.

For ATS 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 Of Slopes

1. The design of each slope will be project specific; therefore variable sub-grade and sub-base materials will be involved. Consultation with a Netlon technician is strongly recommended prior to slope construction and installation.
2. Placement and handling practices for the ATS are the same as previously described for all other applications. However, for areas that involve placing of the ATS rootzone onto steep slopes where consolidation using a roller is not possible, the consolidation procedure can be achieved by applying localised heavy pressure with the

bucket of an excavator type machine. An operative should then use hand tools to carefully grade the slope to achieve an even finish.

3. Washed turf is the preferred surface finish option for slopes and it may require pegging into place until the roots have grown into the ATS rootzone.

Project specific technical advice for design and installation of Advanced Turf areas can be obtained from Netlon Ltd.

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 roller operating without vibration)	mass per metre width of roll: 2700kg up to 5400kg over 5400kg	16	unsuitable	unsuitable
		8	16	unsuitable
Pneumatic-tyred roller	mass per wheel: over 4000kg up to 6000kg over 6000kg up to 8000kg over 8000kg up to 12000kg over 12000kg	12	unsuitable	unsuitable
		12	unsuitable	unsuitable
		10	16	unsuitable
		8	12	unsuitable
Vibratory roller	mass per metre width of roll: over 700kg up to 1300kg over 1300kg up to 1800kg over 1800kg up to 2300kg over 2300kg up to 2900kg over 2900kg up to 3600kg over 3600kg up to 4300kg over 4300kg up to 5000kg over 5000kg	16	unsuitable	unsuitable
		6	16	unsuitable
		4	6	10
		3	5	9
		3	5	8
		2	4	7
		2	4	6
2	3	5		
Vibrating -plate compactor	mass per square metre of base plate: over 1400kg up to 1800kg/m ² over 1800kg up to 2100kg/m ² over 2100kg	8	unsuitable	unsuitable
		5	8	unsuitable
		3	6	10
Vibro-tamper	mass: over 50kg up to 65kg over 65kg up to 75kg over 75kg	4	8	unsuitable
		3	6	10
		2	4	8
Power rammer	mass: 100kg up to 500kg over 500kg	5	8	unsuitable
		5	8	12

Extracted from The Department of Transport Specification for Highway Works. December 1991, reprinted August 1993. Series 800 Road Pavements - Unbound Materials Table 8/1.

Table 2: Netlon Advanced Turf 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 a vibratory roll: over 270kg up to 450kg over 450kg up to 700kg over 700kg up to 1300kg (e.g. A Bomag 80 or 120) over 1300kg up to 1800kg over 1800kg up to 2300kg over 2300kg up to 2900kg over 2900kg up to 3600kg	75	8
		75	6
		125	5
		150	4
		150	2
		175	2
Vibrating plate	mass per m ² of base plate: of a vibratory roll: over 880kg up to 1100kg over 1100kg up to 1200kg over 1200kg up to 1400kg over 1400kg up to 1800kg over 1800kg up to 2100kg over 2100kg	unsuitable	unsuitable
		75	5
		75	3
		125	3
		150	3
		150	3
		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).**

Netlon Advanced Turf is patented in the UK, the USA and other countries.

Netlon and Tensar are registered trademarks of Tensar International Limited in the UK, the USA and other countries.

This information in this document is of an illustrative nature and is supplied without charge. It does not form part of any contract or intended contract with the user. Final determination of the suitability of any information or material for the use contemplated and the manner of use is the sole responsibility of the user and the user must assume all risk and liability in connection therewith.