

Technology Cooperation Office of the Presidency

12

# IRAN

## Technological Potential

*Reinforced Soil 3D Advanced Turf*



International Department



Iran Technological Potential  
Reinforced Soil 3D Advanced Turf

By introducing the first issue of “Iran Technological Potential” provided by Technology Cooperation Office of Presidency (TCO), we intend to encourage international cooperation aiming at sharing technological resources with others. We would put forward more publications of such bulletins in different arenas of science and technology in near future.

As a matter of fact, science and technology has a global nature rather than local or even national, so geographic boundaries has been crossed and as a result, exchanging ideas and maintaining joint research activities has become crucial to many scientists and researchers all over the world. In addition, developments of electronic communication tools as well as IT advances facilitate this process as never before.

The main objective of this bulletin is to improve the international community’s knowledge about recent advances of Iran capacities and capabilities in Science and Technology and to facilitate technological collaborations with other countries.

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## **PARS ASSAN GOSSTAR CO.**

Honored Pars Assan Gosstar engineering company as an “executer of innovative project in Iran” is at “service of engineering community” at technical fields as follows:

- Design and execution of different systems for enhancing of bearing capacity by means of geosynthetic materials

in projects, for example: sport fields, marsh lands, earth dams, retaining walls and shore structures.

- Design and execution of advance turf grass for different sports, such as football, horse race, running, golf,
- Design and making of laser-leveler machinery as controller of final levels and gradient accuracy in green sport fields.
- Design of intelligent grader and finisher (Machinery) for large sport areas.
- Design and production of ready-made, construction and maintenance machinery such as cutter, harvester mixer, over seeder and so on. We hope that the scientific efforts of our colleagues with rely on God, lead to progress and edification our country.

### **Introduction:**

Turf Reinforcement is a method or system by which the natural ability of plants to protect soil from erosion is enhanced through the use of geosynthetic materials.

### *Unstability of unreinforced turf grass 1:*

The desired green surface is a basic requirement for outdoor sport field. But it is too sensitive against weather conditions such as dry climate, which leads to surface hardness and danger to players. Also, fast rain often leads to some difficulties during competitions. Under above concerns, there are too limitation of loading on the surface and other losses. Holding a competition in a rainy day causes numerous difficulties to green surface in comparing with reinforced turf grass zone.

*Iran Technological Potential  
Reinforced Soil 3D Advanced Turf*

As a result its long time effects will be remained, therefore it lasts much time to repair of damage to green surface, as special technical supplies should be at service. Also, the soil compaction causes to sustain a loss to turf grass in longtime, then it will be poor-resistant to lateral cleat tuft tear and divot.



*Soil reinforcement systems, bed stabilization of sport fields:*

There are different concerns in soil reinforcement such as: Compaction, lack of tensile and shear strength, divot, water in filtration rate, soil water percolation rate, soil moisture and retention.

These subjects have been studied by our experienced experts and caused new commitment for Pars Assan Gosstar Co. (founded in 1993) to research and innovation.

Furthermore, because of importance the executive concerns, we have supplied modern installation machinery in professional applications. Our commitment is higher than your requirements. As a result, the best solutions are presented to clients.

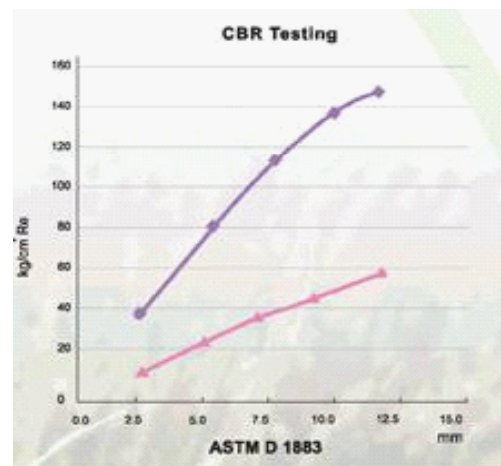
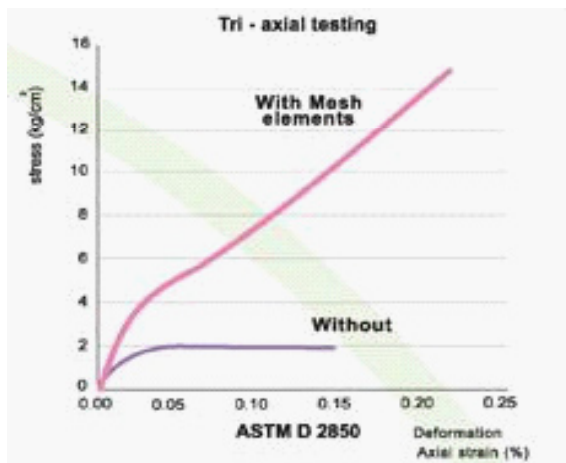


### Reinforced turf bed:

This system exclusively produces a stable root zone and excellent specification such as high tensile and shear strength, water infiltration rate, soil water percolation rate, better resistance to surface rutting and deformation, reduced divot size, enhanced divot opening turf recovery, soil moisture retention overall turf grass health.

There is also less compaction and a reduced potential for black layer problems, especially you relatively fine textured high sand- root zone.

As a result there will be high service ability in comparing with usual systems.



### Reduced divot size and enhanced divot opening turf recovery:

The interlock of randomly oriented mesh elements lead to strong anchorage into root zone layer. Therefore, there will be a reduction in the divot size and recovery time.

This is a top- advantage in comparing with other experienced systems in during recent years

*Iran Technological Potential  
Reinforced Soil 3D Advanced Turf*

*Water infiltration rate:*

Beside of desired bearing capacity for reinforced layer, the excellent water infiltration rate would be achieved.



*Installation of pipe in heating & chilling system:*

It contains over 28000 ml combined (1 and 5 layer) pipe to supply desired temperature for turf grass growth during the cold and hot weather conditions.

The collectors should be isolated with several layers to prevent from loss of energy.

*Harvest, transportation and installation of  
Turf grass rolls in faraway areas:*

The produced turf roll with width of 52 cm and desirable length, harvests completely monotonous, then it would transport to project and install by modern machinery. It is transportable up to 2 days.

The bed should be leveled by laser levelers.

In other word, the loading and air transporting process confidently can be achieved even to other Asian, African and European countries



*Iran Technological Potential  
Reinforced Soil 3D Advanced Turf*

*Application of geotextile in turf grass zone:  
The specification of desired materials for  
separating of layers.*

There are a lot of makeshifts which have been considered for control of water infiltration rate during of service- age and preventing from inter-wash of soil layers. By using of geotextile, the soil layers completely remain separate, also keep their service ability with special attention to environmental standards and minimize the void of soil instead of maximizing this parameter, in other to enhance soil moisture retention.



*Correct execution:*

In spite of high quality of materials, the poor- execution can be caused too many difficulties to project. For, we have created an innovative procedure further more composite mixers, the laser levelers are installed on the machinery bucket( grader, finisher, dozer), produce a monotonous gradient with high accurate. The company staff has acquired high professional skills and enough experiments.



*With mesh elements*



*Without mesh elements*

*Enhanced traffic capacity:*

*The executed green surface will be able to hold competitions up to go per year, instead of 40 in other systems, i.e. double competitions can be held in one stadium.*



*Iran Technological Potential  
Reinforced Soil 3D Advanced Turf*

*Reduced damage to players:*

An artificial green surface is too hard and dangerous to players; further more to produce oxygen and enjoyness.

There is more spread area for repairing that is required for damaged zone, also, differential colors between new and old green cover, much costs and no desired water infiltration rate, early tiredness and heat stroke to players. We have tried to leave out these disadvantages in our system.

**Opportunities for cooperation:**

Pars Gosstar Assan Co is interested to establish and develop cooperation with any interested company in joint marketing, production and installation of reinforcement turf.