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# FOOTBALL TURF INSTALLATION GUIDE

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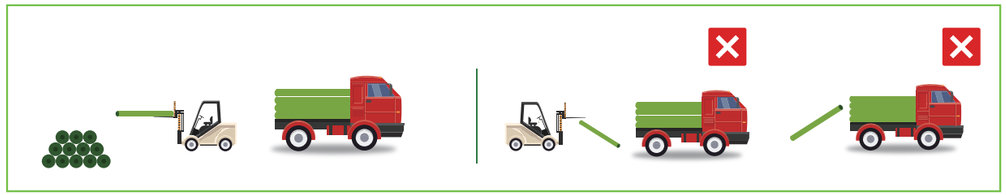
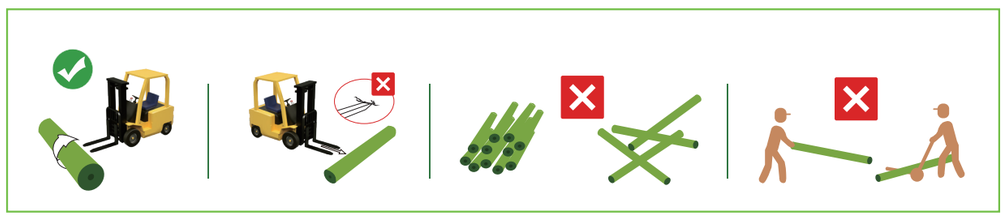
# 1 Material handling and storage

## 1.1 Artificial turf handling and storage

### ◆ Unloading

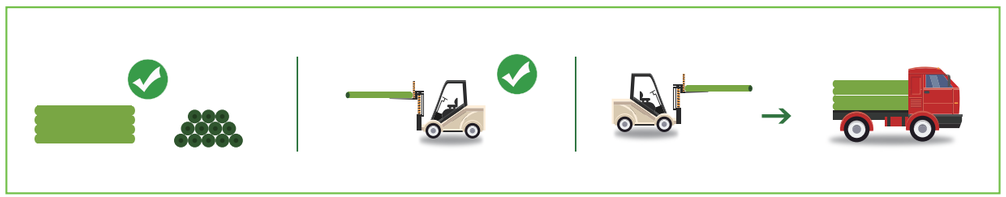
Use crane or forklift or special equipment for the unloading. Due to the heavy weight of artificial turf, for safe, manual towing is strictly prohibited for unloading.





### ◆ Load and transport

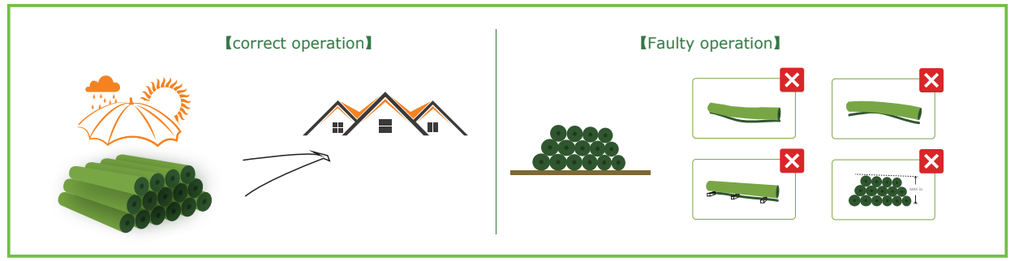
Use crane or forklift or special equipment for loading.When using the forklift to load, the grass should be firmly fixed, in order to prevent the grass rolling damage, or the grass sliding down from injuring people. After loading, the grass shall be neatly stacked on and piled up tightly to prevent the grass from shaking.





### ◆ Artificial turf storage

After the arrival of the artificial turf, with the construction be carried out immediately, the materials can be placed to the specific location of the filed according to the design drawings after unloading. If the construction cannot be carried out immediately, artificial turf can be stowed near the site.




***Note :*** The artificial turf shall be stored in ventilated, dry, and pollution-proof warehouses, preventing from direct sunshine, rain, moist， fire， chemicals, and over-extrusion.

## 1.2 Accessories Storage

### ◆ Glue

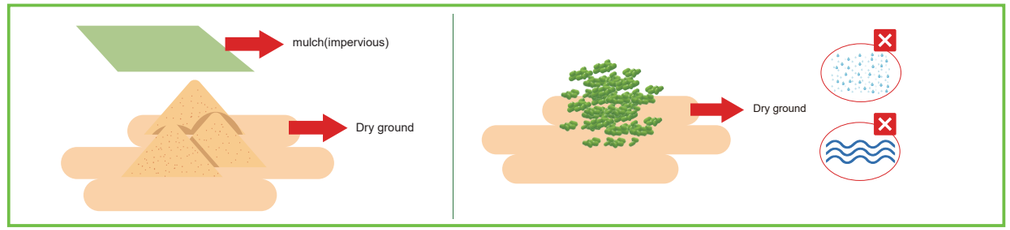
Glue should be stored in a ventilated, cool and dry place after arriving in the field. No exposure to open fire and high temperature.


### ◆ Quartz sand

After the arrival of quartz sand, it should be stored on the dry, clean and flat ground. If it cannot be used immediately, impermeable covering should be applied to cover it, so as to prevent the filling difficulty caused by rain.

### ◆ Rubber granules

After the arrival of rubber granules , it should be stored on the dry, clean and flat ground to prevent being soaked in water for long time or granule adhesion caused by rain.



# 2 Subbase structure

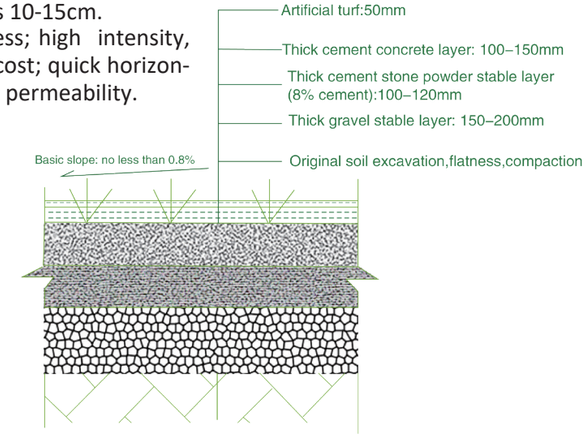
## 2.1 Basic types

Three main types: cement concrete base, asphalt base, other base types.

## 2.2 Features

◆ **Cement concrete base（rigidity）**

Thickness： The general requirement is 10-15cm.
Cemented material ：Good compactness; high intensity, good flatness and stability; moderate cost; quick horizontal drainage,and poor vertical drainage permeability.




Artificial turf cross-section diagram

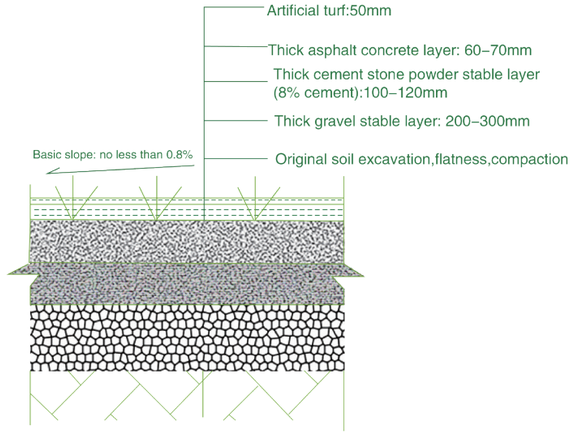
◆ **Cement concrete base：**

- The subgrade soil of the original field shall be excavated, leveled and compacted. The compaction degree of the subgrade soil shall not be less than 95%, and the slope shall be made reasonably according to the field conditions.
- Gravel and other cushion: the layer thickness is about 150-200mm.
- 8% cement stone powder stable layer or sand: the layer thickness is about 100-120mm.(Better flatness and integral temperature performance)
- Pouring concrete strength grade is generally not less than C20 with pouring thickness of about 100-150mm.
- Separation seam is cut to prevent cracking. Each separation seam is 6m long and wide respectively. The seam width is 5mm and the depth is about 1/3 thick. The separation seam should be filled with asphalt.
- Required maintenance period shall be more than 28 days.



◆ **Asphalt concrete base （ flexibility ）**

Thickness: The general requirement is 6-7cm.
Features: high intensity; good flatness and stability; small porosity; rapid surface drainage; general vertical drainage; high cost.




Artificial turf cross-section diagram

◆ **Asphalt concrete base**


The subgrade soil of the original field shall be excavated, leveled and compacted. The compaction degree of base soil shall not be less than 95%.

Gravel and other cushions: laying thickness is about 200-300mm.

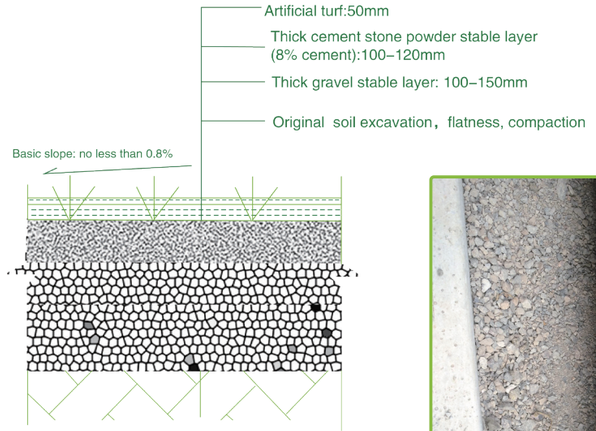
8% cement stone powder stable layer: laying thickness is about 100-120mm.

The thickness of asphalt laying is about 6-7cm. （Medium-grain asphalt concrete: 3-4cm, fine-grain asphalt concrete: 3cm）

Required maintenance period: more than 28 days.
（For the pavement plastic surface layer, asphalt concrete base shall be maintained according to the requirements, and the plastic construction can only be carried out after the sulfur compounds in the asphalt and other harmful substances are volatilized）

◆ **Cement stabilized gravel base or sand base, dirt base, etc.:**

Simple construction, low intensity, poor flatness, integrity and stability; the lowest cost.
With good drainage, it has both drainage function and water retention function. When the water volume is large, it can drain quickly and keep part of the water in the base. In high-temperature weather, the evaporation of water is conducive to reducing surface temperature, dust and static, and improving the wear resistance and life span of the grass.




Artificial turf cross-section diagram

◆ **Other base types**

The subgrade soil of the original field shall be excavated, leveled and compacted. The compaction degree of the subgrade soil shall not be less than 95%, and the slope shall be made reasonably according to the field conditions.

Gravel cushion: the laying thickness is about 100-150mm.

8% cement stone powder stable layer: laying thickness is about 100-120mm. Or lay the sand stone of about 100mm thick.

Crush until flatness.

Based on the above three basic subbase structure types, the basic practices of grass cross-section diagrams can be adjusted according to the different conditions of each field and different requirements in the design drawings. The construction materials and thickness can be adjusted.



## 2.4 Football field base acceptance criteria

**The acceptance standard of FIFA to the base**

| TEST | STANDARD | REQUIREMENT |
|---|---|---|
| SLOPE | WR/FIFA REQUIREMENT | ≤1% |
| SURFACE REGULARITY | FIFA Handbook2015 | ≤6mm |
| WATER PERMEABILITY | EN 12616 | ≥360mm/h |

The base shall have intense and stable performance.
No sand, oil, dust, impurities; the surface is even and solid without cracks, rotten edge and pockmark surface, and joints are straight and smooth.
It is better to leave a 6000mm×6000mm cutting block seam, and 5mm seam width.

# 3 Drainage system

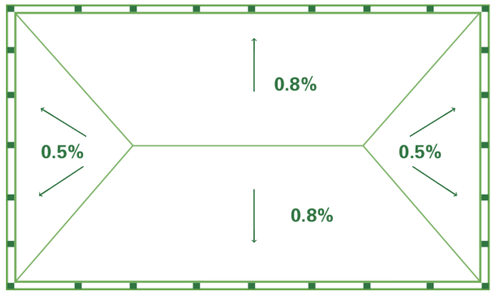
**Drainage: surface drainage (horizontal), base seepage (vertical)**

## 3.1 Field surface drainage

The most common way to drainage is mainly through slope making, drainage ditch setting . It can remove about 80% of the water in all the field.

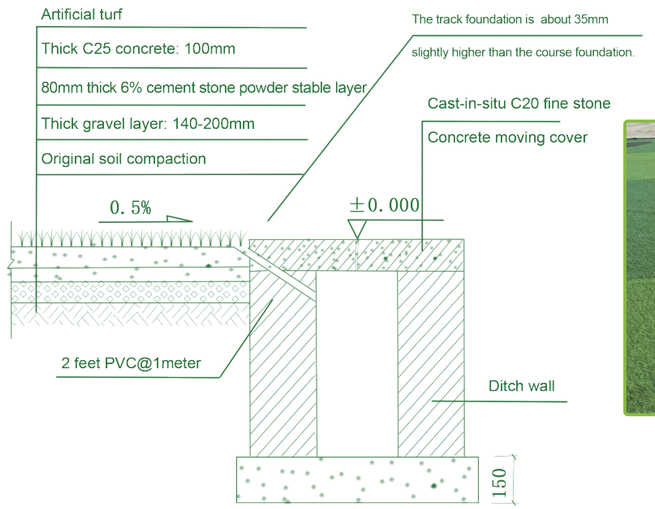
### ◆ Drainage slope

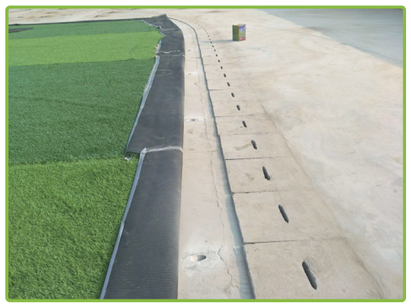
The slope can be appropriately lowered for good drainage surfaces ; and it can be appropriately increased for poor drainage surfaces. Considering the usability , FIFA requires a horizontal slope of no more than 1%, and a vertical slope of as little as possible to meet drainage requirements.
The main drainage way of concrete base and asphalt base is surface drainage.




### ◆ Pitch level

It is about 3-4cm lower than the cover plate of the drain, and the drainpipe is set to lead to the drain. The specification and space of drainage pipe shall be determined according to the field area and water amount .



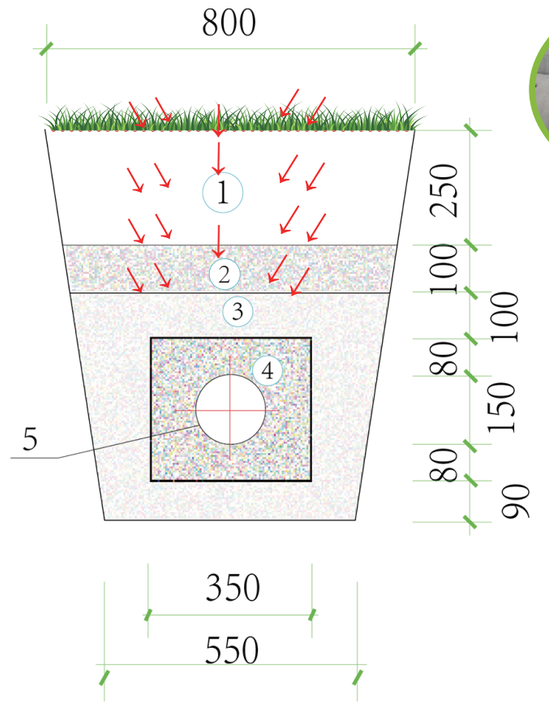



The main drainage way of asphalt and concrete base: field surface drainage.



## 3.2 Base seepage method （ vertical ）

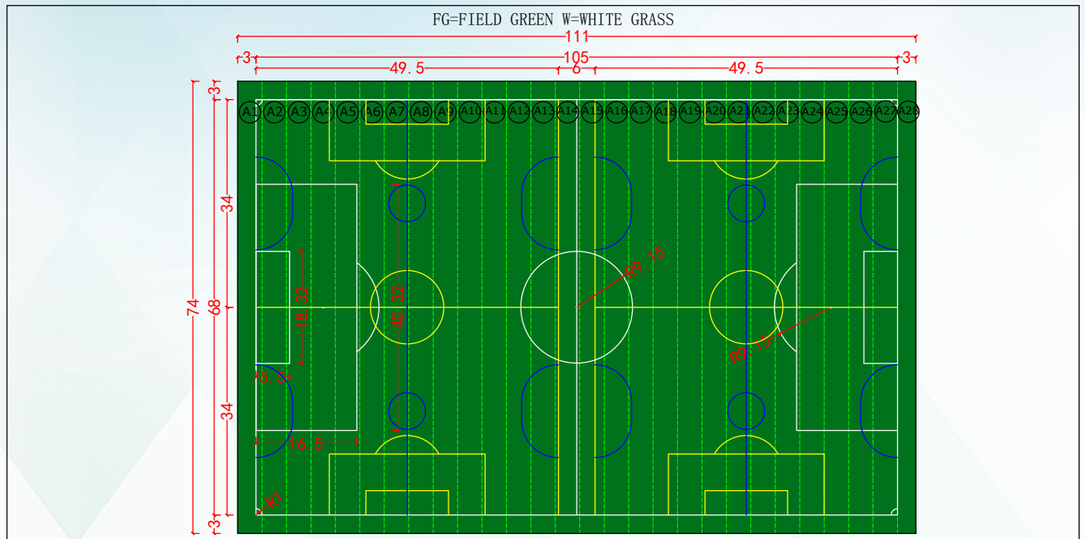
The base seepage method relies on two aspects to discharge water.
One is that surface water seeps into the ground through loose subsoil The other is to drain water through the blind ditch or drainage pipe in the subbase. (Less used: compacted soil or poor drainage foundation can be used as an auxiliary.)
Other types of base except for concrete base and asphalt base can drain through surface drainage, but also the vertical drainage.
Water is usually collected in a number of parallel branches, which are collected into the pipe and then discharged into a ditch or rainwater system. The space of parallel branches should be as even as possible, not too large, generally about 10 meters. Filter pipe is generally used with filter holes of plastic pipe, concrete pipe, cast iron pipe. The filter tube diameter is generally DN150-200, and the filter hole is generally 20mm. The outside of the filter tube is generally wrapped with non-woven cloth and other materials to prevent the filter hole from blocking.
The drainage way of cement stabilized gravel base or sand base: field surface drainage and base seepage method.




1. Sand
2. coarse sand
3. slag or stone
4.pebble or slag
5.concrete pipe
Perforation aperture: 20mm
Hole space:100mm

Blind ditch sample of filter tube

# 4 Installation instruction sheet




| Roll No. | Specification |
|---|---|
| A1 | (3.0FG+0.12W+0.88FG) *74M*1roll |
| A2-A13、A15-A26 | 4.0FG*74M*24rolls |
| A14 | (3.44FG+0.12W+0.44FG) *74M*1roll |
| A27 | (3.88FG+0.12W) *74M*1roll |
| A28 | (3.0FG+1.0W) *74M*1roll |
| Seaming Tape | 2800M |
| Glue | 1120KG |

| | | | | | |
|---|---|---|---|---|---|
| Project Name | | | | Drawing Title | Artificial Grass Field Installation Drawing |
| Designed By | | Approved | | BELLINTURF | |
| Contact | | Scale | 1:1 | | |
| Unit | M | Date | | Qingdao Bellinturf Industrial Co., Ltd | |

The white line in the design drawing represents the 11-player field;
Yellow line for 7-player field; blue line for 5-player field.

**Size requirements for 11-player FIFA football field :**
**FIFA quality dimension within the white line of the field: length: 90-120m, width: 45-90m.**
**FIFA quality Pro dimension within the white line of the field: length: 100-110 m, width: 64-75 m.**
**Common size of a 7-player football field: length: 60-70M; width: 45-50 M.**
**Common size of a 5-player football field: length 38-42 M; width: 20-25 M.**
**According to the size of each field, a 7-player football field can be designed in an 11-player football field, and a 5-player football field can be designed in that of 7-player.**

# 5 Accessories instructions

## 5.1 Grass glue

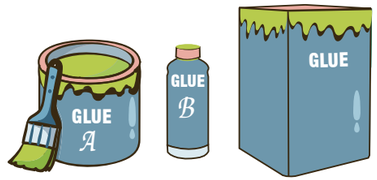
According to the nature of the field and environmental requirements, two-component grass glue possesses a better environmentally friendly performance, meeting the requirements of environmental testing with a long curing time.

### ◆ Glue usage

**[1]** The adhesive surface should be flat, dry, no bump phenomenon, no oil, dust, impurities, etc., otherwise the effect will be poor.

**[2]** Use brush or scraper to brush the adhesive surface from inside to outside evenly, and then wait for natural drying, when the adhesive layer is slightly non-sticky, it is time for adhesive construction.

**[3]** Align the adhesive surface at one time, extrude from inside to outside (remove air), and compress repeatedly with rubber hammer or press machine equipment.



Special glue for installation

### ◆ Note

**According to the difference of workers' construction proficiency, operating habits, the width of glue coating, and the glue proportion, viscosity, curing time and others, the amount of glue usage will be different (especially the temperature of two-component glue is greatly affected).**

## 5.2 Joint tape

**Black, white and self-adhesive joint tape are mainly used.**

### ◆ Usage position

Used for bonding the seaming bottom of the adjacent two rolls of artificial turf and the bottom of the function line.

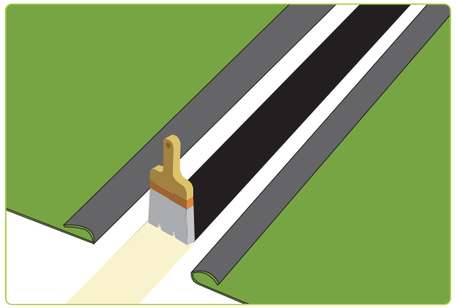
### ◆ Regular specification

0.2/0.3 meter wide.

### ◆ Application method

**[1]** At the seaming part of the grass, glue the joint point on the seaming bottom to make the joint of the grass in the center of the joint.

**[2]** Apply the grass glue evenly with a brush or scraper on the joint tape and the grass that needs to be bonded. When the adhesive layer is slightly non-sticky, carry out the adhesive construction.





# 6 Shockpad installation

## 6.1 Elastic shock pad

### ◆ 6.1.1

Whether to use shockpad is decided by the grass system requirements. The shockpad is installed under the artificial grass.

### ◆ 6.1.2 Elastic shockpad function:

The shockpad provides more durable shock absorption performance for the whole artificial grass system; provide the grass system with better vibration absorption performance, which can reduce the sports injury and fall phenomenon; increase the elasticity of artificial turf field to make it closer to good natural turf.

### ◆ 6.1.3 Elastic shock pad installation:

With different materials used by different shock pad manufacturers, the shock pad paving and bonding methods may be different. The following is the paving introduction to one type of the shockpads.

According to the order of grass installation : from one end of the field, install along the base line in turn , and the shock pad shall be kept parallel to the base line. First, glue 6 rolls of shock pads together, and then unroll two rolls of turf on the shock pad. After each three rolls of shock pad is laid, another roll of turf shall be installed in turn.

There are 8-10cm uninstalled areas around the perimeter and shock pad of the field (the turf in this area is more firmly bonded to the base directly).

- Shock pad is light-weight material, in order to prevent from being blown up by strong wind, according to each three rolls of shock pad, then one roll of turf for installation. If the shock pad is not straight, please slightly adjust it from the other direction. When adjusting the position, it shouldn't be pulled by brute force. It must be shifted in one direction. Under normal circumstances, the adjustment of the position needs more than two people to complete, to prevent damage, break, snap and other situations.

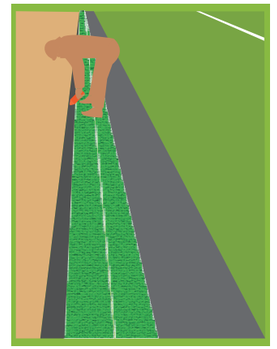
- When the shock pad is installed, shock pad and shockpad jointing mainly has the following three bonding ways:

（1）With special adhesive cloth provided by manufacturers, start gluing from the top of adhesive cloth, and adhesive cloth is placed at intervals of about 2 meters.

（2）Use common splicing tape full of adhesive. Adopt the construction method in the same direction as the grass, and stick the joint between each two shock pads with splicing tape, which is basically full of glue (for the non-infilled grass, in order to prevent the shock pad from contracting and deforming greatly and causing cracks in the grass, it is recommended to use this connection mode).

（3）Use grass glue points. For asphalt or concrete foundation, grass glue can be used for point bonding fixation every 2 meters in the process of shock pad installation (for winter construction site, due to low temperature, poor adhesion of adhesive cloth or splicing tape, adhesion is difficult, it is recommended to use glue for bonding).

The advantage of glue is that the shock pad can be completely installed and then grass; the disadvantage is that after the shock pad is bonded, if there are quality problems, it is difficult to move the shock pad .

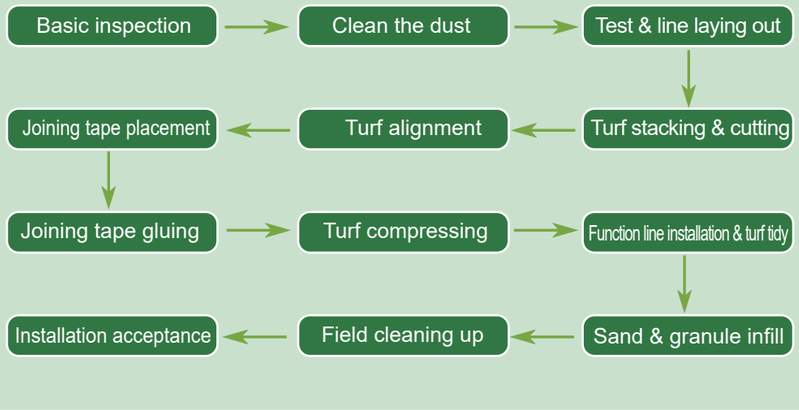


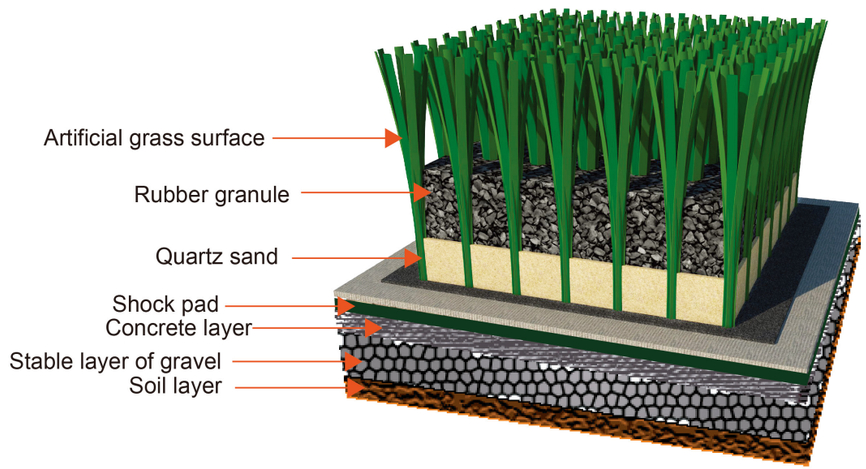
- After installation of the shock pad and grass, cut off the extra shock pad material at the edge (make sure there are 8-10cm unpaved areas around the site border and the shock pad), and use glue to firmly glue the grass around the site border to the foundation ground. If there is any damage to the cushion, it should be repaired and then bonded.

- As the shock pad material is relatively light, the temperature difference in the morning and evening will form ground steam, which is easy to make the shock pad arch and the formation of uneven phenomenon. It is a normal phenomenon.

# 7 Football turf installation

## 7.1 Installation Procedure






## 7.2 Artificial turf installation before the base acceptance

◆ **Cement concrete base requirements:**

- NO peeling or sand caused by cracks and freezing.
- Base flatness: the error of 3-meter ruler is less than 6mm.
- A certain slope is needed to meet field drainage requirements.
- The base surface should be kept clean and dry in order to ensure the surface layer
- has enough bonding strength.

## 7.3 Preparation

◆ **Cement concrete base：**

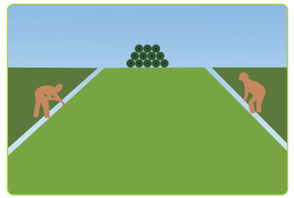
Clear the field, ensuring the base surface be free of sand, stones and other sundries. The qualified site should be closed as far as possible to avoid the impact of the construction quality and progress due to non-construction personnel in the construction.

Check the size of the construction field to see if it meets the requirements of the design drawing of artificial turf paving.

Check whether the size and roll number of artificial turf meets the requirements of design drawings; Check the turf for damage. If the turf size and roll number do not meet the requirements of the drawing, or the turf is damaged, the relevant responsible party must be contacted in time to solve the problem.

According to the size of the design drawing, find out the center point and center line of the field, The location of the center circle semicircle and the function line of the two sides forbidden area shall be found out according to the center point and center line. Tools for laying out lines: ink bucket, marker, steel measuring tape, cement nail, spade, etc.

## 7.4 Football turf installation

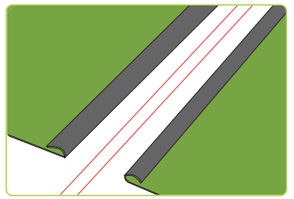


◆ **7.4.1**

According to the installation drawing of artificial turf , use a crane or forklift or special equipment to place all turf on one side of the field as required by the drawing. Installation personnel should be 24 hours in advance to unfold the lawn to smooth, and let the turf naturally extend to the factory state.

◆ **7.4.2**

In order to ensure the effect of installation, when the turf is installed, the consistency of yarn lodging direction should try to be ensured after each roll is unfolded.



◆ **7.4.3**

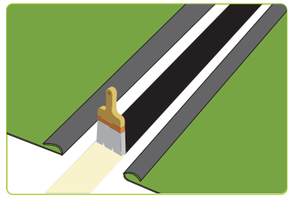
After the turf is unrolled, the white function lines outside the turf should be cut off and set aside for use before the formal installation.

◆ **7.4.4**

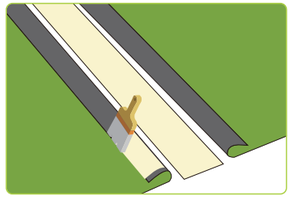
Trim the grass before the formal installation adhesion, cut off the excess base fabric on both sides of the grass, and ensure that the edge is straight after cutting (It is necessary to pay attention not to damage the grass while grass cutting ).

◆ **7.4.5**
When artificial grass installing, the seam of each adjacent two rolls of grass should be as close as possible. (Seaming width shall not be more than 3mm).

◆ **7.4.6**
Roll up the edge of each roll of grass to both sides by 30cm-40cm respectively. The 30cm-wide joining tape was unrolled along the seam of the grass and placed under the grass. Grass seam should be placed in the center of the joining tape as far as possible.



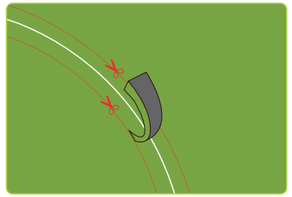
◆ **7.4.7**
Use a scraper or brush glue evenly on the joining tape and the grass edges (grass glue width is not less than 8 cm advisable). Wait for glue to produce cohesive force before bond (generally wait for 10-30 minutes, mucilage to reach 80-90% dry with the hand not stick ). Adhesion is required to align fastening at one time. Do not move the glued grass back and forth after bonding.



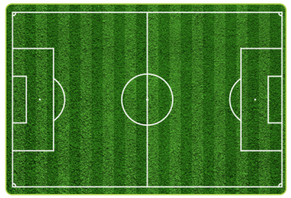
◆ **NOTE**
During the process of installation, avoid glue daub or drip on the grass yarn, which will pollute the grass and make it difficult to clean up. If the glue drops to the grass yarn, wait for the glue to solidify, and clean up with a rag dip thinner wipe in time.
After the grass is bonded, a special rubber hammer is used to hammer down the grass from the bonding point to both sides to make the surface fully bonded and compacted.

◆ **7.4.8**
Point glue between the joint tape and the basic surface, which can save glue, at the same time, the suspension state of the grass is good for drainage and release the displacement caused by heat bilges cold shrink in the grass using .

◆ **7.4.9**
No Joint tape is used between the artificial grass around the field and the basic surface layer, and it is fixed by glue bonding directly.



◆ **7.4.10**
Line markings installation: According to the width of the line markings of the field, first cut the line markings that have not been woven and those need to be installed separately. The cut-out functional lines need to be glued on the back of the grass for the use of installation.
After the grass is basically spliced, draw the line again to determine the location of each function line and point, then cut off the green grass at the position of line marking, and take out the cut-off green grass.
Put the joint tape on the line markings of the cut green grass.Glue the grass on both sides with the grass scraping glue first, then put the previously cut white grass in, compress, and beat with the rubber hammer to make the joint bond tightly. It is difficult to draw arcs in corners or narrow areas . White line marking can be cut into small pieces and then pieced together one by one.



◆ **7.4.11**
After the grass was all bonded, begin to comb with a grass brush to comb the fallen grass up.

◆ **7.4.12**
The glue curing time is generally three days, and the final strength of the test is generally five to ten days. During the glue curing period, attention should be paid to maintenance, and the site should not be used in advance to cause grass movement, resulting in joint cracking and other problems.

◆ **7.4.13**
Precautions for artificial grass installation: The environment temperature should be above 5℃. In the process of grass installation, if there is rain or snow, the grass construction should stop immediately, and cover the installed and uninstalled grass with rain cloth to solidify the glue. In general, as long as the grass bonding is completed, even if the immediate rain, it also has little influence on bond strength. In the process of grass installation, any damage to the grass must be repaired in time, and it is strictly prohibited for construction personnel to smoke near the field. Open fires are strictly prohibited in and around the field.



## 8 Quartz sand and rubber granules infilling

◆ **8.1** After all grass installation is completed and accepted, quartz sand and rubber granules are infilled.

◆ **8.2** The infilling amount of quartz sand is determined by different grass systems.

◆ **8.3** Quartz sand should be infilled from one end of the field, from outside to inside along the length direction of the grass, until it reaches the other end to complete the infilling of the whole field. Quartz sand infilling should be uniform and even, and is divided into multiple times and multilayer infilling. Each filling must be repeated and combed with professional carding equipment, so that quartz sand can be filled to the root of the grass silk as required, and the filling is dense and smooth, while ensuring that the grass silk is not buried by sand.

◆ **8.4** After all the quartz sand is infilled, use a grass comber to comb all the grass yarn up and comb them vertically and horizontally once.

◆ **8.5** After sand infilling is completed, rubber granules are filled. Infilling method is the same with quartz sand's:The infilling amount of rubber granules is determined by different grass systems.granules infilling should be uniform, even, and is divided into multiple times and multilayer infilling. After infilling, it is necessary to check whether the granules are smooth and sufficient.

Sand infilling & Artificial combing after sand infilling

◆ **8.6** After the infilling is completed, comb the grass vertically and horizontally with a grass comber, and comb all the grass yarn up.

◆ **8.7** After the completion of quartz sand and rubber granules infilling , the free pile height shall be about 15mm.

◆ **8.8** Material requirements of quartz sand and rubber granules: quartz sand should be smooth, no sharp edges and corners, uniform granules, clean surface without dust, strong wear resistance with a silicon rate of more than 95% of the natural casting sand. If quartz sand is too sharp, it will make the grass yarn crack; with too much impurity the grass infill will be harden. Rubber granules material is excellent with good elasticity, and clean without dust. Granules should not be too hard, otherwise they will lose elasticity and the test will not meet the requirements; cannot be too soft as well, otherwise if the movement intensity increases , too soft granules will also become softer under the action of summer illumination and high temperature, and the

◆ **8.9** After the completion of construction, remove the cut grass, joining tape, glue barrels, and other construction waste from the whole field.

Granule filling

## 8 Quartz sand and rubber granules infilling

FIFA Field Materials Infilled Ratio

| Number | Name | Pile Height | FIFA Certification Level | Infills | | |
|---|---|---|---|---|---|---|
| | | | | Quartz Sand/KG | Rubber Granules/KG | Shock Pad |
| 1 | BELLIN-Evolution60160 | 60 | quality+Pro | 16 | 18 | / |
| 2 | BELLIN-Diamond60126 | 60 | quality | 20 | 16 | / |
| 3 | BELLIN-Evolution60120 | 60 | quality | 20 | 17 | / |
| 4 | BELLIN-STEM60120U | 60 | quality | 20 | 16 | / |
| 5 | BELLIN-STEM60120 | 60 | quality | 20 | 16 | / |
| 6 | Bellin-Evolution Pro 60120 | 60 | Pro | 18 | 18 | |
| 7 | BELLIN-Diamond60084T | 60 | quality | 20 | 16 | / |
| 8 | BELLIN-STEM60080T | 60 | quality+Pro | 20 | 18 | / |
| 9 | BELLIN-Xtreme60072 | 60 | Pro | 18 | 17 | |
| 10 | BELLIN-Diamond 55126 U | 55 | quality+Pro | 10 | 16 | / |
| 11 | BELLIN-Stem50120 +shockpad | 50 | quality+Pro | 35 | 7 | JZD000005-A |

## 9 Field inspection and acceptance

- **9.1** Artificial grass yarn color shall be uniform; sideline, bottom line and functional line pavement shall be smooth, straight with uniform color and no color difference.
- **9.2** The width, size and positioning of each function line and point line are accurate, and the error shall not exceed 2cm. The functional area size meets the requirements of the design drawing.
- **9.3** There is no obvious gap between the two grass joints, compact bond, no open glue.
- **9.4** The filling of quartz sand and rubber granules is full and uniform, and the flatness error range of the field shall not exceed 10mm by using a 3-meter ruler.
- **9.5** Any phenomenon such as arching, wrinkle, cracking or degumming occurring on the uneven ground is not allowed.



## 10 Maintenance

It will take a week or so for the grass to solidify and the grass yarn to stabilize after the artificial grass is installed.
It is recommended that during this period, do not hold any sports events as far as possible, and make sure no heavy equipment and unnecessary traffic vehicles enter the venue.
To protect the grass fibers and increase the life span of artificial grass, it is recommended not to wear flat shoes for extensive frequent activities on the completed site.If it is necessary to carry out large-scale activities on the artificial grass, the non-flammable blanket or other hard materials shall be used to cover the artificial grass for protection.

### 10.1 Daily basic maintenance

#### ◆ 10.1.1 Field clean

Clean up the field debris (leaves, crumbs, cigarette butts, garbage, yarn, plastic bags, etc.) after finishing using field every day. In high strength area, check the displacement and loss of the granules.
Cleaning tools: soft brooms, rubber-protective rakes, portable blowers, vacuum cleaners, etc.

#### ◆ 10.1.2 Field carding

After the use of the field, check whether the uniform distribution of infill materials and the field flatness are affected. In high-intensity use areas, such as the restricted area of a football field, the infill amount may be reduced compared with other areas. In this case, the infill distribution can be more even through the comprehensive combing of the field including vertical and horizontal directions.
Carding method: For areas with poor flatness, the grass carder is used to comb laterally for one or two times starting from one end, and then longitudinally for one or two times until the field is flat enough to meet the use requirements.

#### ◆ 10.1.3 In hot days, spraying or sprinkling water before use is recommended.

In order to reduce the temperature and dust of the grass, to remove static electricity, and improve the wear resistance and life span of the grass yarn, in hot summer weather, it is better to wet the field with appropriate amount of water before use.

#### ◆ 10.1.4 Stain removing

1.Blood- Remove with soap water, etc.
2.Oil stain- Try wiping by the use of a cloth with alcohol.
3. Gum-Try wiping by the use of a cloth with vinegar continuously until it is clean. It is recommended to use white vinegar for the effect will be better.

### 10.2 Professional maintenance

#### ◆ 10.2.1 Check and repair

Check the grass joints and other parts to see if there are any problems such as glue opening and loosening. Repair and deal with any problems in time.
Maintenance measures: open and clean the glue-cracking or loose parts of the grass, and then evenly apply the grass glue on the joining tape and the grass that needs to be bonded with a scraper or a brush. After the glue has bonded, the grass on both sides should be glued together.
Check whether the artificial grass yarn has split, powder, a large number of grass yarn fell-off, and other problems. It is recommended to conduct field inspection once or twice a month.

#### ◆ 10.2.2 Grass carding

After the long-term use of the field, special grass carding equipment can be used to comb the entire field to keep it even. It can not only ensure the smoothness of the field, prevent the compaction of granules and quartz sand, but also achieve a better combing effect.
Carding method: use the grass carder to comb horizontally for one or two times starting from one end of the field, and then comb vertically for one or two times. For the area with poor evenness, it can be combed several times until the evenness of the field meets the use requirements.
It is recommended to comb the grass 2 - 4 times a year.

#### ◆ 10.2.3 Hardening correction

In the case of the lack of daily basic maintenance work or fulfillment, the infill is compacted in water for long time and is easy to form a hardening. Professional mechanical equipment must be used for hardening correction to improve field performance.
Tools: brush with more rigid bristles, rotary brush.
Hardening judgment: if quartz sand, rubber granules and other fillers become hard or a large number of fillers stick together, indicating that hardening has occurred.
It is suggested that after 2-3 years of use, the field infilling situation should be evaluated and checked. If there is any hardening problem, professional treatment should be carried out.

# 10 Maintenance

### ◆ 10.2.4 Infill supplement

Quartz sand and rubber granules are the main factors affecting the flatness of artificial turf. Long use time, coupled with rain erosion and other factors, will cause the loss of quartz sand and filling granules. If it is not replenished in time, the surface smoothness of artificial turf will not be guaranteed, thus affecting the sports performance of the turf, and even affecting the physical health of athletes.

It is recommended to check the use of the field every 3-6 months or so, and to timely supplement the areas with large loss of quartz sand and filling granules , so as to avoid the short life span of the grass and the poor use effect caused by the loss of filler.

Supplementary quantity: the supplementary quantity is determined according to the loss of rubber granules, generally to the following quartz sand being covered, no leakage of sand is appropriate.

### ◆ 10.2.5 Snow and ice removal

Snow and ice are usually allowed to melt. If snow must be removed, it is recommended to use a rubber scraper, snow blower, or rotary brush. Also, prohibit the use of rock salts and chemicals, which may cause damage to the grass fibers. The snow removal time should be as close as possible to the race or before use to reduce the possibility of secondary snow. When using snow removal equipment, a height of 5-10mm should be reserved to prevent grass on the surface of the field from being damaged during snow removal. The remaining snow can wait for the sun to melt. Be careful not to cover the snow with objects or they may freeze together and be difficult to remove.

Ice removal: Heavy equipment is used to crush the ice on the field before cleaning the broken ice.

Regular maintenance can guarantee the life span and performance of artificial turf, on the contrary, if the maintenance is not proper, it may seriously shorten the service life of the field, and even increase the potential safety hazards of sports and use. Therefore, the greater the intensity of field use is, the more field maintenance is needed.

**Suggestion sheet for maintenance period of football field artificial turf**

| PERIOD | MAINTENANCE CONTENT |
|---|---|
| Daily maintenance | 1. According to the weather before use to determine whether need watering<br>2. Clean up the fallen leaves, debris, cigarette butts, garbage, yarn, plastic bags and other rubbish.<br>3. Check and comb the filling materials in uneven areas.<br>4. Check whether there are any problems such as glue opening, etc. |
| Weekly maintenance | 1.Overall check the seam for glue opening, looseness, etc.<br>2.Check whether there is split, yarn pulverization, etc.<br>3.Remove weeds, dirt, moss, etc. |
| Monthly maintenance | 1. Check the field flatness.<br>2. Check if there is glue opening, or a large number of yarn fall-off problem, etc.<br>3. Check if there is any grass breakage.<br>4. Grass combing. |
| Semiannual maintenance | 1. Whole grass combing<br>2. Loose harden area<br>3. Add filling material |



# 11 Test Report

**FIFA**

As FIFA-licensed manufacturer and solution provider, Bellinturf provides turf solutions including professional turf systems, consulting service and field design for different level of football applications. FIFA certified pitches with Bellinturf football turf systems have been installed throughout Europe, Asia, America, Africa and so on.

**FIH**

As a FIH certified manufacturer and sports turf innovator, Bellinturf hockey turf systems meet diversified requirements for different levels of applications including top-level professional hockey games and competitions. From Global to National level, Bellinturf hockey turf systems are the suitable choice.

**ITF**

Bellinturf produces tennis court grass, which plays a great role in all conditions for international and national tennis matches, tennis clubs, school and home courts.

**WR**

At present, Bellinturf has passed the WR test for a number of turf systems.


**ISO**

ISO9001 ISO14001 ISO45001 which means that Bellinturf is a normalized, standardized, and scientific modern enterprise.

**CE**

CE is a security certification mark and is regarded as the manufacturer's passport to open and enter the European market.

**BSCI**

Bellinturf is unswervingly committed to creating superior quality for customers, so does Bellinturf Vietnam. With the strict standards of factory certification 1 BSCI (overall rating: B, which is very difficult to get), Bellinturf Vietnam is undoubtedly become your best choice.

Overall Rating :**B**

**SEDEX**

**QSA**