



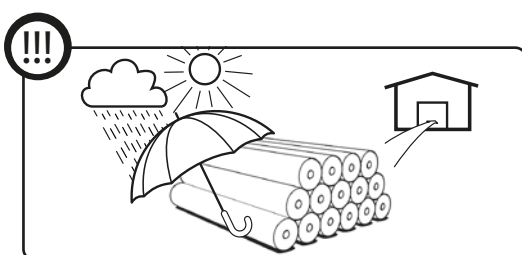
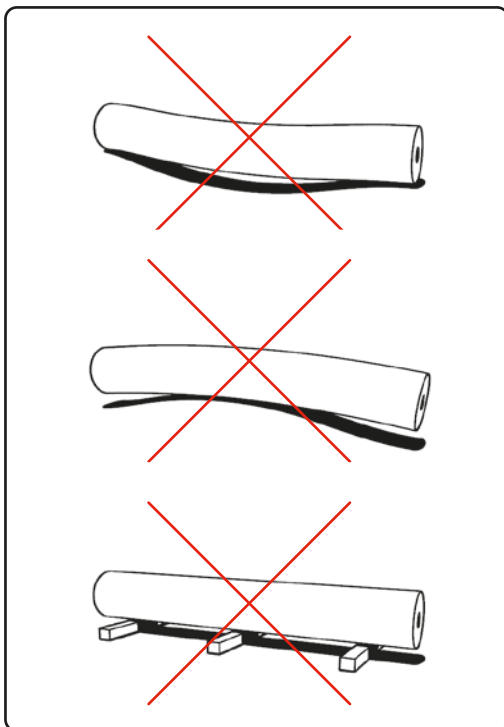
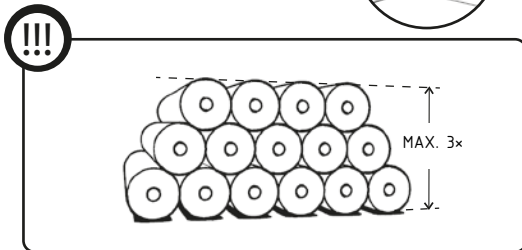
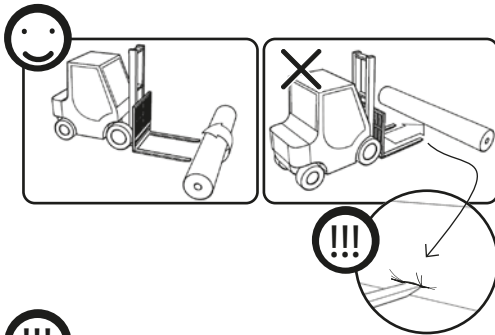
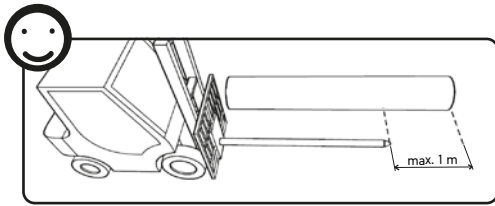
AGILITY INSTALLATION AND MAINTENANCE MANUAL

Contents

1.	Storage and Handling	5
1.1.	Type and Means of Handling	5
1.2.	Storage Guidelines	5
2.	Sub-base Construction	6
3.	Shock Pad	7
4.	Installation of Artificial Turf with Shock Pad	8
4.1.	Climatic Conditions	8
4.2.	Instructions for Artificial Turf Installation	8
4.3.	Laying of Artificial Turf with Shock Pad	9
4.3.1.	Preparation	9
4.3.2.	Gluing	10
5.	Tools Required for Installation	12
6.	Maintenance of Artificial Turf	13
6.1.	Keeping a Maintenance Log	13
6.2.	Cleaning of the Turf	13
6.3.	Snow Removal	13
7.	Artificial Turf Inspection	13
8.	Conditions of Use JUTAgrass® Artificial Turf	14
9.	Appendix – Cross-Section Example	15
9.1.	Structure with Crushed Aggregate	15
10.	Instruction Sheet	17

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This document serves as a basic source of information for planners, contractors, and investors. It does not replace project documentation (or contractual documents) and is intended as a recommendation only. In light of the continuous improvement of products and technological processes, the information contained herein may be changed by JUTA a.s. without prior notice.



1. Storage and Handling

Compliance with the following guidelines prevents the possibility of damage and preserves the quality and properties of the product.

1.1. Type and Means of Handling

- For unloading and handling of the rolls, we recommend using lifting equipment with a steel spike of at least 3 m in length.
- If only lifting equipment with forks is available, we recommend rolling the turf rolls onto the forks to avoid puncturing.
- Special care must be taken during loading, unloading, and other handling of the material to prevent mechanical damage. We recommend performing loading and unloading using equipment with a steel spike and a ramp to minimize the risk of damage.

- During transport, it must be ensured that the tension straps are properly padded to avoid damaging the material.

Note: When following the above recommendations, generally applicable occupational safety regulations must also be observed.

1.2. Storage Guidelines

- Artificial turf should ideally be stored in covered, dry, dust-free, and well-ventilated rooms – for a maximum of 6 months.
- If the rolls are stored outdoors, they must be adequately protected from sunlight, wind, and rain.
- Rolls must be stored on a firm, stable, level, and well-drained surface (e.g., asphalt or concrete) – in a maximum of 3 layers stacked on top of each other.
- Each roll must be supported along its entire length. During storage, the rolls must not be subjected to any mechanical loads (especially bending), in order to avoid damage, deformation, or quality degradation.
- The recommended storage temperature is between 5 °C and 25 °C with relative humidity of up to 60%.
- The storage temperature of the material must not fall below -20 °C or exceed 40 °C. If lower or higher temperatures are expected, the material must be adequately protected (e.g., with covers).
- If rolls are stored outdoors but installed indoors, they must be brought into the installation area at least 24 hours before installation for acclimatization (this is especially important in cold weather; the relaxation time depends on climatic conditions).
- Stored rolls must not be exposed to thermal stress or direct sunlight.
- Artificial turf must not be stored together with chemicals or other substances whose chemical compatibility with the material is not guaranteed.
- The storage duration should be limited to the necessary minimum.

Failure to follow the above rules can lead to damage and devaluation of the artificial turf. Using appropriate handling and transport equipment and following proper procedures during transport, storage, and handling preserves the quality of JUTAgrass products. **Claims for damage due to improper handling or storage cannot be accepted.**

2. Subbase Construction

The requirements and composition of the subbase construction are determined by the planner or architect based on a geotechnical report and corresponding assessment. The following requirements are based on the standard DIN 18035-7.

Flatness Requirements for the individual subbase layers

(measured using a 4 m straightedge)

Existing soil	± 30 mm
Base layer	± 20 mm
Levelling layer	± 10 mm

Minimum Compaction Level for the individual subbase layers

	Deformation Modulus Static - E_{v2}
Subgrade	25 MPa
Structural layers	45 MPa
Verification of Layer Properties	Static Test

A prerequisite for executing construction works on paved areas is compliance with the minimum subgrade deformation modulus value of $E_{def,2} = 25$ MPa. Verification of the deformation modulus must be carried out by static plate load testing in accordance with applicable standards.

The formation level (subgrade) must be constructed to the specified transverse and longitudinal gradients and elevation tolerances, and in full accordance with the layout and alignment design. The subgrade must provide effective drainage (if required) and must exhibit a smooth, even, and homogeneous surface that satisfies surface regularity requirements. In the entire thickness of the active zone, the prescribed compaction degree of min. 95 % PS (Proctor Standard) must be maintained. On the subgrade, the minimum value of the deformation modulus from the second loading cycle must reach $E_{def,2} = 25$ MPa. Before carrying out the construction layers, the earth subgrade must be cleaned, and the work on laying the construction layers must not be started without the acceptance of the subgrade.

Technical data sheets, certificates, test reports, and declarations of conformity must be attached to all materials used. The bulk materials used for construction layers must comply with the standard requirements for the construction of sports fields.

The base under the artificial turf must be firm, continuous, bonded, without sharp edges and protrusions, local irregularities, and without any chemical or mechanical impurities. If the base does not meet these requirements, it must be adjusted.

At the end of this manual, possible structures of sports field constructions suitable for artificial turf installation are provided. If the artificial turf is installed on another type of sub-base construction, the JUTAgrass technical department must be contacted.

The contractor of the sub-base construction is responsible for its execution in accordance with the required technical standards and the project documentation.

The construction supervisor should continuously check and approve the following parameters of the sub-base construction:

- Inspection of correct execution and compliance with the project documentation of the drainage system, including:
 - inspection of excavations, spacing of drainage pipes, length and depth of piping, and pipe gradient (permissible deviations of drainage pipe gradient: max. deviation ± 30 mm in cohesive soil and ± 15 mm in dusty soil)
 - inspection of joints and drainage components
 - inspection of pipe laying and backfilling
- The individual layers of the sub-base construction are executed in the required thicknesses and fractions.
- The directions and slopes within the sub-base construction correspond to the project requirements.
- The layers of the sub-base construction meet the requirements for the degree of compaction, moisture, deformation modulus, flatness, etc.
- On the prepared sub-base, there are no sharp edges, puddles (poor drainage system), ruts from construction machinery, or traces of auxiliary leveling materials that need to be filled and compacted.
- In the case of installation on an asphalt slab, the surface must be properly ventilated. This process takes approximately 10–14 days from the installation of the last asphalt layer, depending on the climatic conditions.

Before starting the installation of the artificial turf, the contractor is required to take over the sub-base construction (in terms of surface quality). A written record of the acceptance of the sub-base must be drawn up and signed by all parties involved.

Upon acceptance of the sub-base construction, the manufacturer of the artificial turf recommends an inspection according to the following points:

- Inspection of subgrade permeability according to DIN EN 18035-6
- The layers of the sub-base construction meet the requirements for the degree of compaction, deformation modulus, and flatness.
- The directions and slopes within the sub-base construction correspond to the project requirements.

3. Shock Pad

For greater playing comfort, a special 10 mm thick shock pad is installed underneath the artificial turf. The shock pad must be secured to the sub-base to prevent any displacement of the material. The specific attachment method depends on the type of sub-base used; therefore, the method of fixing the pad must be determined before the start of the installation itself. In the case of a concrete or asphalt surface, the pad can be fully bonded to the base. For an aggregate sub-base, perimeter anchoring must be designed.

4. Artificial Turf Installation

4.1. Climatic Conditions

The overall quality and compactness of the surface depend on installation under suitable climatic conditions. After unpacking and unrolling the artificial turf, it is essential to allow the rolls to rest (relax), so that they adapt to the ambient temperature and release any internal tension. Turf relaxation is particularly important when temperatures are very high or very low, or when there are large fluctuations between them (day/night). When the turf temperature is below 10 °C and there is a lack of sunlight, it is important to allow the turf to rest for a sufficiently long period. We recommend carrying out turf installation (unrolling) at temperatures above 10 °C. At lower temperatures, the turf becomes stiffer, less flexible, and more difficult to handle during installation. The gluing of turf strips and line marking must be carried out under the conditions specified by the adhesive manufacturer (≥ 0 °C, humidity max. 65% – in exceptional cases up to 80%). The application of sand infill must not take place during rain or snowfall.

4.2. Instructions for Artificial Turf Installation

When installing artificial turf, hereinafter referred to as AT, the following instructions must be observed:

- During the installation of individual strips, only such construction machinery may be used that does not damage the sub-base construction and follows these rules:
 - It must move slowly.
 - The lifting capacity of the machine must be sufficient in relation to the weight of the rolls.
 - It must move in curves with sufficient radii.
 - It must not start or brake abruptly.
 - It must be equipped with low-pressure, wide tires with a low profile, where the tire pressure does not exceed 0.75 kg/cm².
 - The maximum permitted axle load of the machinery is 1,000 kg.
- When handling a roll of artificial turf by rolling, it is necessary to pay attention to the winding direction.
- If the rolls are stored outdoors and the installation itself takes place indoors, the rolls must be moved to the installation site well in advance for acclimatization (particularly important in cold weather).
- AT rolls must be unrolled in a controlled and safe manner (e.g., using machinery such as a TurfRoller).
- All damages to the AT occurring during installation must be properly repaired.
- For a potential claim, it is necessary to provide photo documentation, the roll label, and immediately inform the responsible person, who will contact the manufacturer. It is forbidden to further work with the material subject to the claim (cutting, gluing).

The following safety measures must also be observed:

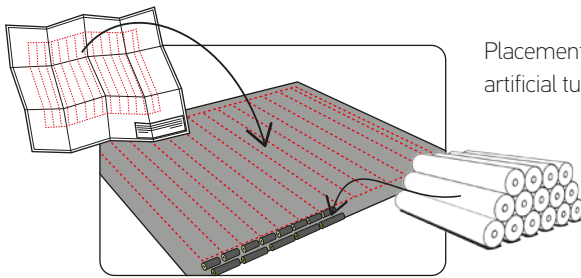
- No smoking on or near the AT.
- No handling or placing of hot objects on or near the AT.
- No cutting or grinding of metals on or near the AT.
- No welding of metals or handling of open flames on or near the AT.

4.3. Laying of Artificial Turf with Shock Pad

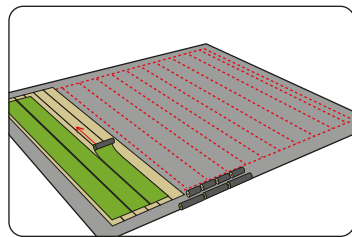
Before laying the artificial turf, it is necessary to inspect the sub-base construction and prepare a written record of this inspection.

4.3.1. Preparation

Placement and orientation of individual rolls on the surface according to the artificial turf and shock pad installation plan for the specific sports field.



Placement and orientation of individual rolls on the surface according to the artificial turf and shock pad installation plan for the specific sports field.

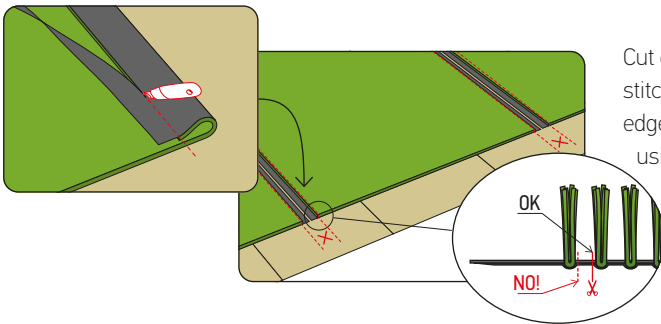


Before installing the shock pad, check the available options for securing the pad to the sub-base.

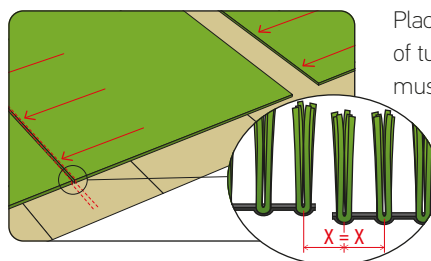
The installation of the shock pad can be carried out simultaneously with the installation of the artificial turf. The pad is supplied in rolls, which are unrolled to the required length with an overlap of 30 cm. During unrolling, the pad must be shaken to release internal tension (as the material is wound under tension). The individual strips of the pad are laid tightly next to each other.

All turf strips must be oriented in the same direction.

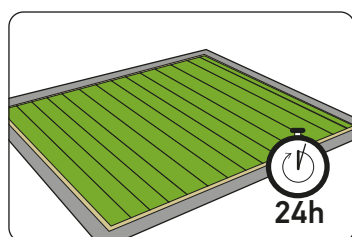
Before starting cutting, check the quality of the turf. If visible defects are found on the rolls, the installation must not continue until these defects are removed.



Cut off the edges with fabric from each strip of turf, including the outer row of stitches. Make the cut at the inner side of the remaining stitch. To cut off the edge, fold the turf back approximately 30 cm. Perform the cut on the backside using a special cutter or a sharp snap-off knife.



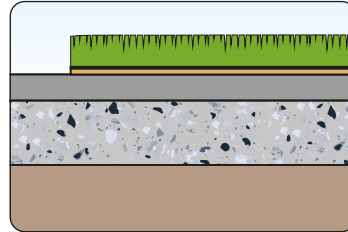
Place the cut strips of turf together. Leave a gap between the individual strips of turf not exceeding the width between the rows of fibers. The strips of turf must not overlap; they must be sufficiently stretched, without waves or irregularities.



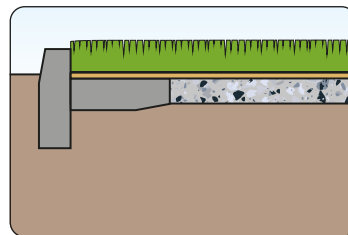
After unrolling the roll, the turf must be allowed to acclimatize; the relaxation time depends on climatic conditions, the method, and the length of storage. The recommended relaxation time is 24 hours. Make sure that no creases appear in the turf during installation.

4.3.2. Gluing

On solid sub-bases such as concrete or asphalt, the shock pad must always be fully bonded using a certified adhesive. In these cases, no additional stabilization measures are required along the edges of the area.



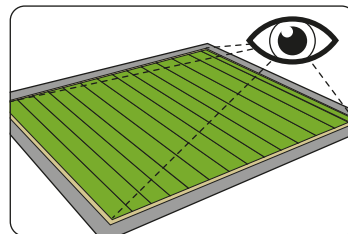
If the turf is installed on a sub-base that does not allow full-surface bonding, it is essential to properly fix the pad along the edges of the area to stabilize both the pad and the turf surface, preventing layer movement on the sub-base. Edge stabilization can be achieved, for example, by fully bonding the pad to well-secured paving elements capable of absorbing the axial forces within the turf system.



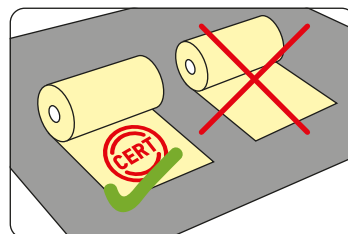
Always use adhesives approved by the artificial turf manufacturer for bonding the pad to the sub-base. The pad can be glued progressively, simultaneously with the installation of the turf.



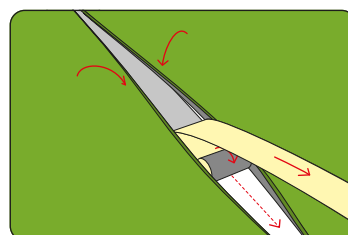
Before gluing, it is necessary to check again the tension of the turf and the width of the gap between the turf strips.

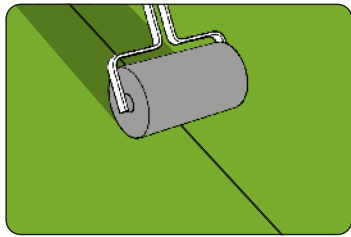


Make the turf joints using a single-sided adhesive tape approved by the artificial turf manufacturer.

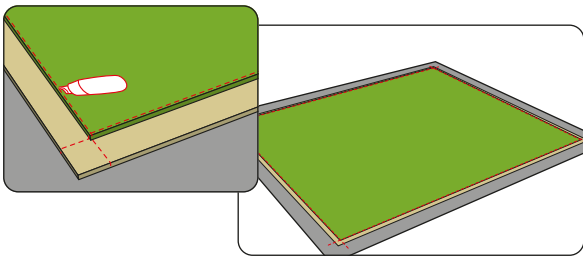


Insert the tape between the turf strips, remove the protective film, and gradually unroll the tape. Carefully press both turf edges into the adhesive mass and press them down firmly. Throughout the gluing process, ensure the tape remains centered. It is very important that the temperature of the applied tape is at least 15 °C during installation. The turf must be dry; otherwise, proper bonding of the materials will not be achieved.

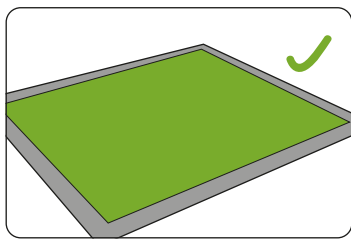




For a perfect bonding of the surfaces, the joint must be rolled.



After gluing the surface, trim the overlaps of the pad and turf to the final dimensions of the area.



The surface can be loaded immediately.

5. Tools Required for Installation

A basic set of tools is designated for the installation of artificial turf, intended for handling, cutting, stretching, and gluing the turf. The set should include the following tools:

1 Pressing tool for gluing



2 Pliers



3 Edge cutter



4 Turf cutter



5 Spare blades



6 Special knife



7 Measuring tape



8 Puller



6. Maintenance of Artificial Turf

Systematic and professionally performed maintenance of artificial turf is a basic requirement for its proper operation and for preserving both its physical and functional long-term durability. The intensity of maintenance depends on the frequency of use, the type and degree of contamination (e.g., falling blossoms, leaves, and needles), and the condition of adjacent areas. All activities related to maintenance must be carried out efficiently, thoroughly, and regularly.

Proper maintenance is the basis for:

- surface quality
- playing properties
- long service life
- safety

6.1. Keeping a Maintenance Log

The logbook is a very important method for recording the maintenance and use of the field. The logbooks allow the operator to record the date, type of activity, and duration of ongoing maintenance, staff training, equipment used, etc.

Maintenance is based on simple principles

- keeping the surface clean
- repairing minor defects before they become more serious

The maintenance instructions for artificial turf must be strictly followed to ensure long service life and functionality.

Keeping and archiving the logbook for the lifetime of the product is a condition for the recognition of the product warranty.

6.2. Brushing and Cleaning of the Turf

The main purpose of brushing is to prevent the fibers from laying down. This keeps the surface softer and prevents the formation of an unwanted flat appearance. Turf cleaning for agility purposes is carried out using special cleaning machines that combine vacuuming with rotary brushing. For removing hair under normal use, an industrial vacuum cleaner can be used.

6.3. Snow Removal

When mechanically removing snow, increased caution must be taken to avoid damaging the artificial surface. A front blade with a rubber edge or a snow blower can be used for snow removal. The blade or blower must be set above the turf surface and equipped with guide wheels.

7. Artificial Turf Inspection

Artificial turf wears out through regular use, as well as due to weather conditions, emissions, etc. Damage can occur mainly through improper use (unsuitable footwear), activities for which the turf was not designed, and insufficient maintenance.

To detect in time whether the turf is damaged or at risk of extensive damage, it must be regularly inspected. Detected defects must be removed immediately.

8. Conditions of Use JUTAgrass® Artificial Turf

The following standards must be observed when using sports fields with artificial turf.

- To prevent dirt from being carried onto the playing surface by footwear, cleaning zones (such as mats, brush grates, etc.) must be installed.
- Only suitable footwear that does not damage or pull out the fibers may be used. It is forbidden to use shoes with metal soles, studs, or spikes, shoes with soles containing metal cores, or regular walking shoes. Footwear without tread poses a high risk of injury.
- The sports field must be used exclusively for the purposes for which it was designed, and not for other activities or sports such as javelin or discus throwing, roller skating, etc.
- The use of chemical agents not approved by JUTA a.s. is prohibited on artificial turf. Some chemical products may have negative effects on the lifespan of synthetic turf; therefore, we recommend consulting their use in advance with JUTA a.s.

Entry onto the artificial turf is permitted only for maintenance machinery intended for turf care and approved by a specialized company or JUTA a.s. The artificial turf must not come into contact with petroleum-based substances, including vehicle fuels. Refueling must always be carried out outside the playing surface. In the event of a spill, all leaked liquid must be immediately covered with sand or sawdust and then completely removed.

Vehicles moving on the turf surface must be equipped with low-pressure, wide tires with a low profile, where the tire pressure does not exceed 0.75 kg/cm². When driving, a low speed must be maintained in curves and a large turning radius must be observed. Sudden braking or acceleration must be avoided.

If driving heavy equipment is unavoidable, the artificial turf must be covered along the path to ensure sufficient weight distribution and prevent overloading of the surface. Furthermore, the material used to cover the turf must be carefully selected to avoid damaging the fibers. For freely accessible facilities or public areas, construction measures must prevent vehicle entry and uncontrolled use of the sports field.

Activities that are not part of sports use are prohibited on the artificial turf surface unless construction modifications, such as covering, are carried out. During such activities, the point loads on the artificial turf system cannot be controlled, which may result in damage.

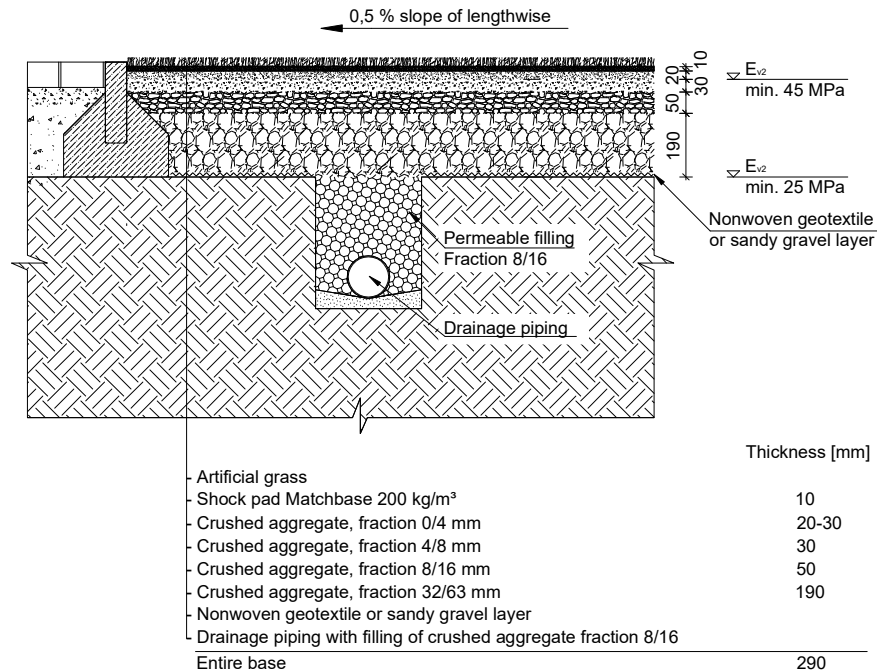
WARNING!

**It is forbidden to handle open flames, smoke,
or set off fireworks on or near the turf.**












To ensure the long service life of the artificial turf, the maintenance instructions provided in this manual must be followed.

9. Appendix – Cross-Section Example

9.1. Structure with Crushed Aggregate



Explanatory notes for materials:

	Crushed aggregate Fraction 0/4 mm		Permeable filling Fraction 8/16		Concrete pavement
	Crushed aggregate Fraction 4/8 mm		Sand		Binder course
	Crushed aggregate Fraction 8/16 mm		Existing sub-grade		Crushed aggregate
	Crushed aggregate Fraction 32/63 mm		Plain concrete		

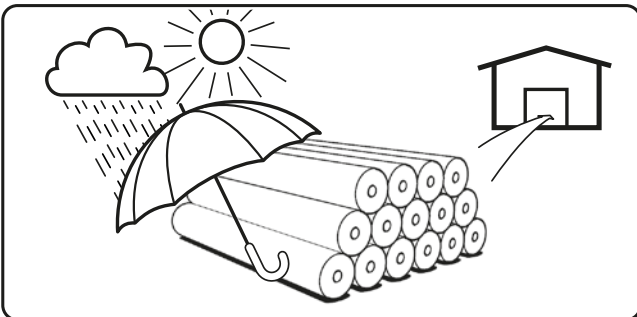
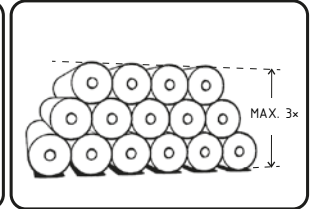
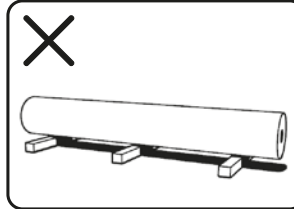
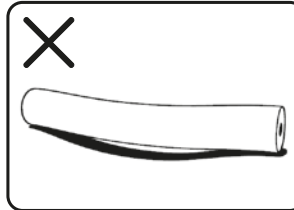
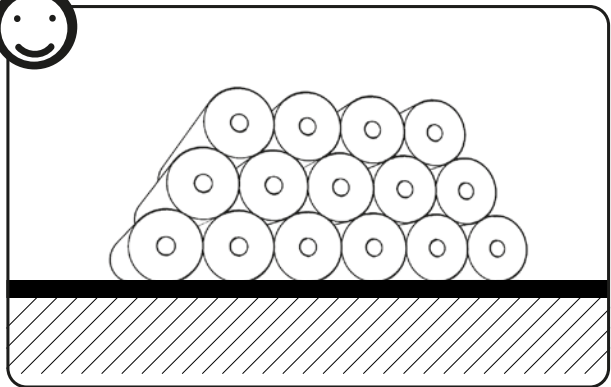
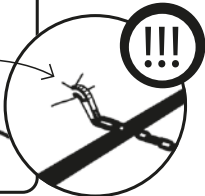
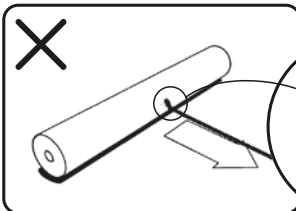
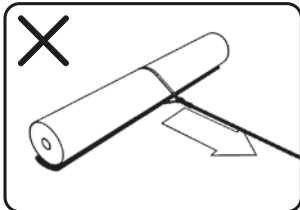
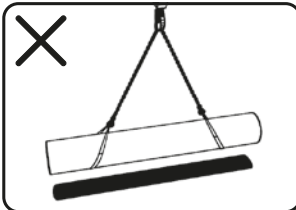
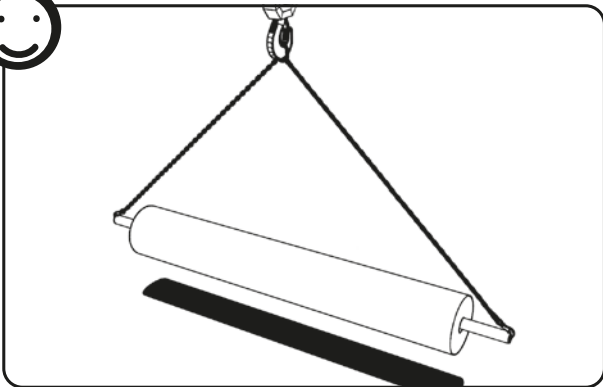
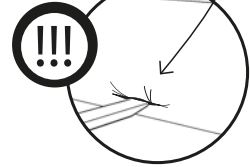
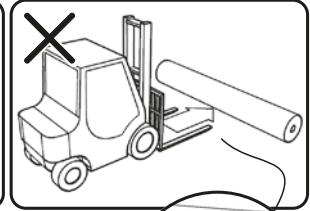
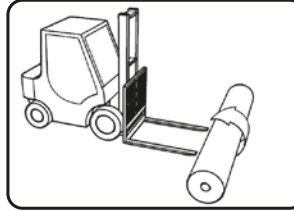
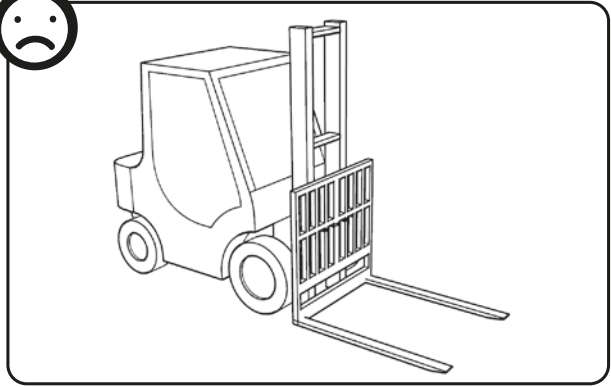
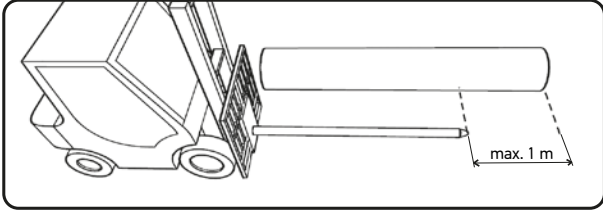
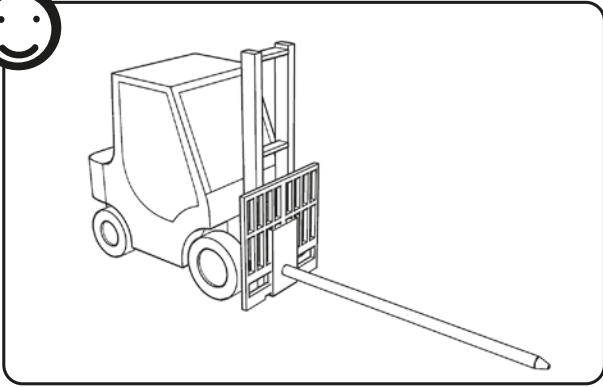
Technical conditions:

- Specified according to DIN 18035-7:2014-05; EN 15330-1
- Surface planarity (measured with 4m straightedge)
 - existing subgrade ± 30 mm
 - construction layer ± 20 mm
 - levelling layer ± 10 mm
- Technical data sheets, certificates, test reports, and declarations of performance must be provided for all materials used.
- Granular materials used for the structural layers must comply with the requirements and standards for the construction of sports fields.
- A geotechnical survey and assessment is required.
- Sub-base must be drained in accordance with the project documentation.
- The substructure layers must be compacted separately, layer by layer, according to their respective aggregate fractions.
 - Minimum degree of compaction for individual layers:
 - existing sub-grade - $E_{def,2} = \text{min. } 25 \text{ MPa}$ verified by static plate load test
 - constructional layers - $E_{def,2} = \text{min. } 45 \text{ MPa}$ verified by static plate load test
- If the final layer is made of crushed aggregate 0/4 mm, it must be compacted in a moist condition.

Note:

- This section depicts a compositional design of our turf system
 - The composition has standard dimensions
 - Actual dimensions will be adjusted according to geotechnical assessment for which the project designer or architect bears responsibility

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