



SPORTS FIELD SURFACING - ARTIFICIAL TURF, BASE AND DRAINAGE

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

- A. It shall be the responsibility of Artificial Turf Installer to provide all labor, materials, equipment and tools necessary for the complete installation of a rubber granule filled synthetic turf system. The work shall include the following items:
1. Install Artificial Turf system with fibers approximately two inches (2") high.
 2. Install a 100%, post-consumer granulated rubber infill to manufacturer recommendation. Granulated rubber material is to be clean and free of metal or other contaminants.
 3. Install all inlaid or painted lines markings and artwork as specified by the owner.
- B. It shall be the responsibility of the Grading, Base and Drainage Contractor to provide all labor, materials, equipment and tools necessary for the complete installation of a vertically draining porous stone base, drainage system and perimeter edge attachment detail. The scope of the project shall consist of but not necessarily be limited to the following:
1. A vertically draining porous aggregate base consisting of two layers of specifically sized stone. The finishing layer is specifically designed to provide a tight uniform finish surface over the base layer without settlement.
 2. A water evacuation system consisting of panel drains in a barber pole design with a properly sized perimeter drain connected to an existing storm system.
 3. An appropriately designed perimeter edge detail of recycled plastic, treated wood or concrete. Install a concrete twelve-inch by twelve-inch (12" x 12") anchor curb. Secure 2" x 4" TREX boards to concrete curb.

1.2 REFERENCE SPECIFICATIONS AND STANDARDS:

- A. Materials and methods of construction shall comply with the latest provisions of the following standards:
1. ASTM F355-01: Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials (Procedure A).
 2. ASTM D2859: Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials (Pill Flammability).
 3. Toxic Characteristic Leaching Procedure (TCLP) by Method 6010B.



1.3 SUBMITTALS:

A. The Artificial Turf Installer shall be required to submit the following:

1. A list of five (5) completed projects and references of the Artificial Turf system installation of similar size and scope within the past 5 years.
2. One 12" x 12" boxed sample of Artificial Turf system, with proper infill, representing the exact system and materials, which will be installed in this project.
3. The Artificial Turf Installer shall supply a turf layout where rolls of synthetic turf shall be laid perpendicular to the sidelines of the field and arranged in strips running the entire width of the playing field. Head seams are not acceptable.
4. Upon completion of the Artificial Turf system owner will receive a CARE KIT. This CARE KIT spells out care and maintenance instructions.
5. A factory certification document from the supervising technician executing the 'lay and glue' portion of the Scope of Work.
6. The Artificial Turf Installer shall provide the necessary testing data to the owner that the finished field meets or exceeds the required shock attenuation property (G-Max) of less than 135 G's and will not exceed that level throughout the warranty period.

B. The Grading, Base and Drainage Contractor shall be required to submit the following:

1. A list of three (3) completed projects and references involving grading and drainage of similar size and scope within the past 5 years.

1.4 TESTING OF MATERIALS:

A. Provide test results from an independent testing laboratory which meet these standards:

1. ASTM F355-01: Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials (Procedure A).
 - a. Finished field meets or exceeds the required shock attenuation property (G-Max) of less than 135 G's.
2. ASTM D2859: Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials (Pill Flammability).
3. Toxic Characteristic Leaching Procedure (TCLP) by Method 6010B.

1.5 WORKMANSHIP AND QUALITY ASSURANCE:

A. Manufacturer of the Artificial Turf system shall be a firm specializing and experienced in manufacturing products specified within this section.



- B. The Artificial Turf is to be installed per Manufacturer's plans and specifications.
- C. All Artificial Turf and components shall be provided by a single source.
- D. The complete installation of the Artificial Turf system, as described in the scope of these specifications, shall be carried out by Installer with the experience and proven ability to complete the project.
- E. The Grading, Base and Drainage Contractor or qualified subcontractor must be equipped and experienced in import/export aggregate and fill materials, installation of subsurface drainage systems and of Laser fine grading.

1.6 DELIVERY AND STORAGE OF MATERIALS:

- A. Artificial Turf will be delivered to the jobsite in rolls 15' in length, wrapped in plastic. Rubber infill will be delivered on pallets to the job site.
- B. Products shall be stored in a dry, secure area.
- C. Guarantee/Warranty of the Material and Workmanship
 - 1. The Artificial Turf installed under this contract will be warranted for a period of eight (8) years from the date of manufacturing against defects in material or workmanship, resulting in premature wear, deterioration and excessive fading/UV degradation during ordinary and normal use of the product(s). Vandalism and force majeure will not be covered.
 - a. Artificial Turf Installer will warranty all labor for a period of one (1) year after completion
 - b. Options for a warranty insurance policy must be made available to owner.
 - 2. When defective material or workmanship is discovered requiring repair or replacement, all such repair work or replacement work shall be done by the Artificial Turf Installer at its own expense after written notification is given of such required repairs. However, if the Artificial Turf Installer fails to comply with the requirements of the above guarantee within reasonable time after notification is given, the owner shall proceed to have the repairs made by others at the Artificial Turf Installer's expense.
 - a. Any unsafe conditions that arise shall be secured and maintained by the installer until all required repairs or replacements have been completed.
 - b. All resurfacing will conform in kind and quality to the specifications set forth in the plans and specifications, and will be free of defects in workmanship and material.



PART 2 – PRODUCTS

2.1 DESCRIPTION OF ARTIFICIAL TURF SYSTEM:

- A. Artificial Turf surface shall be SportPRO 42 as manufactured by Artificial Turf Supply, LLC or equal. Artificial Turf surface shall have all of the following requirements independently and collectively:
1. Fiber: The fiber shall be 100% Wearnaxx polyethylene. No other fiber will be accepted. The fiber shall be non-abrasive polyethylene measuring a minimum of two inches (2”) with cool plus technology. The fiber shall be a proven athletic caliber yarn designed specifically for outdoor use and treated with UV inhibitor and stabilizers to resist the effects of ultraviolet degradation, heat, foot traffic, water and airborne pollutants. The fiber shall contain no toxic substances or heavy metals. Polyethylene blades that are web or honeycomb fibrillated shall not be accepted.
 2. Weight: The product face weight will be 42 ounces per square yard. With backing, the total weight of the product will be a minimum of 75 ounces per square yard.
 3. Tufting: The tufting gauge will be 3/8”, pile height 2”.
 4. Backing: The backing shall be a heat and UV resistant multi-layer product.
 - a. The First layer is an 18 pic polyback construction 7 ounces per square yard (Stabilized primary backing consisting of polyester, fiberglass and polyurethane) and shall provide dimensional stability in all directions to prevent stretching, and distortion upon installation.
 - b. The Second layer is a 26 ounce per square yard, urethane layer.
 - c. The Third layer is an optional EnvironCell 16 ounce fleece backing.
 5. Permeability: Artificial Turf Product shall meet or exceed vertical drainage capacity of thirty (30) inches of water per hour.
 6. Seams: Primary seaming system shall be a comprised of a Geotextile fabric and a urethane based glue as the bond.
 7. Synthetic Nailing Strip: A synthetic 2” x 4”, TREX, Poly-Tuf HDPE or equivalent nailing strip shall be used at all points where the Artificial Turf system meets a sidewalk or other concrete surface and around each post of the installed field equipment.
 8. Infill material: Infill system shall be 100% clean granulated rubber; free of all toxics and metals. The mesh size of the granulated rubber will be 10/20, 14/20 or 14/30. No sand will be permitted in the infill material. Depth of material at completion of placement shall be at least 1.75” (+/- 0.125”) and as required to reach the required initial and term G-max ratings. Crumb rubber granules applied at a recommended rate of 4lbs/sq.ft.



2.2 DESCRIPTION OF POROUS STONE BASE AND DRAINAGE:

A. Geotextile Membrane:

1. Provide a semi-pervious geotextile fabric, Mirafi 140 N or equal. An impervious liner can also be used in certain soil conditions.

B. Stone Aggregate:

1. The stone shall be installed in two layers:
 - a. 4” Open Graded Stone (OGS) base aggregate.
 - b. 2” finish aggregate.
2. The aggregate shall conform to the following:

Sieve Size	BASE (OGS)	FINISH
	% Passing	% Passing
1.24”	100	
3/4”	70-100	
3/8”	35-50	
1/4”		100
1/8”		80-100
#4	20-35	
#8		40-65
#16	12-20	15-35
#100	5-9	5-9
#200	1-5	1-5

C. Drainage Piping:

1. Panel drains - 1” x 12” Multiflow™ or equal.
 - a. Performance Drain: AirField AirDrain, AlveoSport Pad, Brock Power Base or equivalent shall be used for enhanced drainage. This will be needed to achieve maximum drainage and performance of system. (optional)
2. Perimeter drain - properly sized to 8” to 12” diameter, of corrugated perforated plastic pipe, ADS 120 or equal.

- D. Synthetic Nailing Strip: A synthetic 2” x 4”, TREX, Poly-Tuf HDPE or equivalent nailing strip shall be used at all points where the Artificial Turf system meets a sidewalk or other concrete surface and around each post of the installed field equipment.



PART 3 – EXECUTION

3.1 EXCAVATION AND SUBGRADE:

- A. In accordance with the plans approved by the Owner, the entire area shall be excavated. It shall be the Bidders responsibility to stockpile enough suitable material from the existing topsoil to be reused, as necessary, in the restoration process.
- B. All other excavated material shall be properly disposed of, off site or a designated area by owner. The Bidder shall provide the Owner with a cubic yard number for the removal and replacement, with suitable compactable material, of unclassified material.
- C. The sub grade shall slope .5% to 1% toward the perimeter drain and shall not vary more than 1/2" in any 10' direction. The entire excavated area shall be proof rolled to check for any soft spots or un-compacted areas. The sub grade shall test and must achieve a minimum of 95% compaction.
- D. The geotextile fabric shall be installed over a compacted and prepared sub grade. Seams shall be overlapped a minimum of 12". The geotextile shall extend into and completely wrap the perimeter drainage ditch.

3.2 DRAINAGE SYSTEM:

- A. Multiflow™ 1" x 12" panel drains shall be installed and secured over the geotextile, 30' on center, diagonally across the playing field in a barber pole design. The drains shall be terminated at the perimeter drain.
- B. A properly sized perimeter drain, 8" to 12" in diameter, shall be installed in a properly excavated ditch, lined with geotextile. The CPPP (corrugated perforated plastic pipe) shall be sloped .05" per lineal foot toward the exit point to the existing storm drain.
- C. One or more 2' x 2' catch basins may be installed at directional changes in the line, at the depth necessary to meet the elevation of the existing storm water evacuation line.

3.3 VERTICALLY DRAINING POROUS STONE BASE:

- A. The base (OGS) aggregate layer shall be installed with care to avoid damaging the geotextile or the strip drains. The stone shall conform to the sieve in Section 2.2, B, 2. The base (OGS) layer shall be 4" thick. The surface planarity shall not vary more than 3/8" in any 10' direction.
- B. The finish aggregate layer is 2" thick and shall be installed in a single layer. The stone shall conform to the sieve in Section 2.2, B, 2. The surface planarity must not vary more than 1/4" in any 10' direction. Enough finish stone shall be installed to insure a full 2" above the base (OGS) aggregate. All stone layers must be rolled in both directions to obtain maximum compaction and settlement.



3.4 PREPARATION:

- A. The perimeter of the area shall be defined with a composite nailer board. Secure nailer boards into adjacent concrete or asphalt, or hold in place with rebar or landscape spikes.
- B. Cleaning – The entire surface shall be clean and free of any foreign material.

3.5 ARTIFICIAL TURF:

- A. The carpet rolls are to be installed directly over the aggregate base. Care should be taken to avoid disturbing the planarity and compaction of the prepared base.
- B. Artificial Turf shall be arranged in strips per approved Artificial Turf layout. Adjacent strips of Artificial Turf are to be seamed together using a geotextile fabric and a urethane based glues as the bond. All seams shall be flat, taugt and permanent and shall be undetectable in appearance, feel and performance.
- C. The infill installation shall be started immediately following the completion of the turf installation. The infill material shall be spread evenly with a large fertilizer type spreader (minimum four feet (4') wide). Between applications, the in filled area shall be brushed with a motorized rotary nylon broom. Minimum infill depth shall be one and three-quarter inches (1 3/4") and as required to reach the required G-max ratings. Crumb rubber granules applied at a recommended rate of 4lbs/sq.ft.
- D. The Artificial Turf system is anchored to the curb supplied at the perimeter. If using nailer boards, 1" stainless steel staples will be used to secure the turf to the boards. Staples will be placed every 1 inch. The Artificial Turf system must be carefully trimmed, secured and in filled around goal posts, sleeves, other projections and turf penetrations.
- E. Field markings shall be installed per plan as specified.
- F. Artificial Turf Installer shall be responsible for the protection of the Artificial Turf surface during the installation process. Artificial Turf Installer shall be responsible for the protection of the surface during the curing period upon completion of the installation.

END OF SECTION