

delivered via email
mbattite@lexingtonma.gov

01 November 2024

Ms. Melissa Battite, CPRP

Director of Recreation and Community Programs
Town of Lexington
39 Marrett Road
Lexington, MA 02420

Re: Compliance with Town of Lexington Synthetic Turf Supplementary Conditions

Dear **Ms. Battite**:

The following information summarizes how the Lincoln Park Field 1 Replacement project has met the conditions set forth in the Town of Lexington Synthetic Turf Supplementary Conditions (STSC) dated October 3, 2023. The items requiring documentation are listed below with the required information and grouped by topic for easier review.

EXISTING FIELD SYNTHETIC TURF RECYCLING *(items highlighted in yellow in attached STSC Doc.)*

1.01.G.4 Contractor shall provide a full, detailed accounting of the fate of the removed turf materials.

1.07.B.1.d.iii Letter of certification that the existing synthetic turf carpet has been repurposed and all associated Chain of Custody documentation

1.07.B.8 Provide Final Waste Progress Report which benchmarks the project against the goal of minimizing waste and the Construction Waste Management Plan submitted at the beginning of the project. The report shall include, at a minimum, the amount of infill recused on the project (if applicable), proof of disposition of the infill (if not utilized on this project), carpet, and padding, and the amount of material recused offsite and landfilled, by weight and type.

3.02.B. To the extent practicable and if applicable, all sand and crumb rubber infill shall be removed with machinery that can simultaneously remove and convey the infill from the synthetic turf carpet into supersacks. To the extent possible, sand and crumb rubber infill should be prevented from entering the surfaces around the field, including but not limited to drainage areas and adjacent soils down gradient of the field. The turf installer shall provide in writing the chain of custody for the removed sand and rubber infill, certifying that the infill will be repurposed and eventually used on another synthetic turf field for infill or other applications or disposal which do

not result in the incineration of materials. This certification shall be provided to the Owner's Representative and Town of Lexington as a condition for payment.

3.02.C. The existing synthetic turf carpet and fiber shall be removed. The turf installer shall provide in writing the chain of custody for the carpet and fiber, certifying how much of the carpet and fiber will be repurposed. Disposal of the synthetic turf carpet and fiber in an incinerator or waste-to-energy facility will not be permitted. This certification shall be provided to the Owner's Representative and Town of Lexington as a condition of payment.

Heimlich Landscaping & Construction Corp. was the General Contractor for this project. Heimlich's subcontractor handling the removal (Geosurfaces Northeast) used Trident Transport for the removal of materials from the site. Trident provided a letter on June 6, 2024, confirming that the turf and infill was responsibly repurposed. The letter has greater detail about the various repurposing, but they confirmed that no turf or infill was directed to a landfill. In my review this satisfied the STSC Items 1.01G.4, 1.07.B.1.d.iii, 1.07.B.8, and 3.02.B&C. Please note that based on the repurposing being completed by the subcontractor, the infill did not need to be removed from the turf carpet. Heimlich requested their first payment application at the end of June which included payment for removal and based on my review of the removal documentation received as noted above I recommended payment. Please find the Trident Transport June 6, 2024 letter attached.

TURF COMPONENT DISCLOSURE LETTER (items highlighted in green in attached STSC document)

1.07.B.1.d.i Disclosure from component manufacturers - cradle to field installation - of any and all of the TURA designated hazardous materials used in field component manufacture, production, installation including, but not limited to, Polymer Processing Aids, Machinery lubricants, plasticizers, elastomers, UV protective coatings, fire retardant coatings, microbial inhibitors, and paint and paint protective coatings. Contractor must inform suppliers of their obligation to investigate the presence of any such materials in the purchased product by making sufficient queries of their suppliers. Claims of confidentiality must be substantiated.

We received the turf component disclosure in compliance with the Town of Lexington Synthetic Turf Supplementary Conditions Item 1.07.B.1.d.i. The letter states that all turf components are PFAS free and have been tested by 3rd parties. We did note in our review comments that we acknowledge the letter, and that final approval will be based upon the testing completed after turf manufacturing. Please find the Tencate Grass dated June 27, 2024.

PROPOSED TURF TESTING (items highlighted in blue in attached STSC document)

1.07.B.1.d.ii There are at least seven definitions currently used to define per and polyfluoroalkyl substances (PFAS). By defining and testing for only the six PFAS that are currently regulated in

Massachusetts, or even a few others, the remaining thousands of PFAS are not accounted for. All PFAS contain organofluorine(s). By using a screening method that identifies the group of chemicals that contain organofluorine, a more complete assessment of the PFAS present in turf materials is obtained. The presence of PFAS in a product or product component as measured using the total organic fluorine method, as described in the linked pdf, shall be documented.

<https://cdnmedia.euofins.com/apac/media/601777/environote-1080-tof.pdf>

Testing shall be conducted after the manufacturing process.

The synthetic turf carpet manufacturer, Tencate Grass, completed the Total Organic Fluorine (TOF) test as required per the Supplementary Conditions with test results showing non-detect for Total Organic Fluorine. As all PFAS are a type of organofluorine, with results showing non-detect, there is no indication that PFAS is present in the turf upon manufacturing.

Tencate does take pride in the removal of PFAS from their manufacturing process. In fact Tencate originally ran a pre-test Total Fluorine test not expecting any fluorine to be detected, however a small amount was at 77ppm. Tencate then ran the TOF test which showed no detection of Total Organic Fluorine in compliance with the specifications. Tencate Grass provided the attached letter dated October 20, 2024 documenting the testing processes and results.

Following receipt of the October 20, 2024 letter documenting compliance with the Supplementary Conditions, the turf installer was allowed to begin the installation of the synthetic turf field.

In my review of all documents, I find the submitted information showing compliance with the Town of Lexington's Synthetic Turf Supplementary Conditions.

If you have any questions or comments on the enclosed information, please do not hesitate to contact me directly at (781) 355-7040 or by email at meb@activitas.com.

Respectfully:

ACTIVITAS



Megan Buczynski, PE
Principal Civil Engineer

Attachments: Town of Lexington Synthetic Turf Supplementary Conditions dated 10.6.23
Trident Transport Letter dated June 6, 2024
Tencate Grass Letter dated June 27, 2024
Tencate Grass Letter dated October 20, 2024
Tencate Grass Letter dated September 27, 2024 (referenced in 10/20 letter)

TOWN OF LEXINGTON SYNTHETIC TURF SUPPLEMENTARY CONDITIONS

The Town of Lexington formed a Working Group for review of Infilled Synthetic Turf project components and requirements for public projects replacing and/or using turf within Town. The following are supplemental items and requirements to Specification Section 321823.29 *Infilled Synthetic Turf* of these Project Documents.

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

- G. WASTE MANAGEMENT GOALS: Town of Lexington endeavors to minimize waste, but recognizes that there are currently no acceptable methods of recycling of synthetic turf components. The Town further endeavors to minimize the negative impacts of used synthetic turf disposal.

1. Reduce Waste: This project shall generate the least amount of waste feasible and methods shall be used to minimize waste due to error, poor planning, breakage, mishandling, contamination, use of unnecessary materials, or similar factors.

2. Reuse: The Contractor shall reuse materials to the greatest extent possible; salvage reusable materials for resale, for reuse on this project, or for storage for use on future projects. Return reusable items (ex: pallets, tubing or unused products) to the material suppliers.

3. Waste disposal via incineration or waste-to-energy is not permitted. So-called 'advanced recycling' or 'chemical recycling' are not forms of actual recycling and are not permitted. Processes such as gasification or pyrolysis are also not forms of recycling and are not permitted.

4. Contractor shall provide a full, detailed accounting of the fate of removed turf materials.

1.07 SUBMITTALS

B.1.d Submit the following in accordance with the Conditions of the Contract:

- i. Disclosure from component manufacturers - cradle to field installation - of any and all of the TURA designated hazardous materials used in field component manufacture, production, installation including, but not limited to, Polymer Processing Aids, Machinery lubricants, plasticizers, elastomers, UV protective coatings, fire retardant coatings, microbial inhibitors, and paint and paint protective coatings. Contractor must inform suppliers of their obligation to investigate the presence of any such materials in the purchased product by

TOWN OF LEXINGTON SYNTHETIC TURF SUPPLEMENTARY CONDITIONS

making sufficient queries of their suppliers. Claims of confidentiality must be substantiated.

- ii. There are at least seven definitions currently used to define per and polyfluoroalkyl substances (PFAS). By defining and testing for only the six PFAS that are currently regulated in Massachusetts, or even a few others, the remaining thousands of PFAS are not accounted for. All PFAS contain organofluorine(s). By using a screening method that identifies the group of chemicals that contain organofluorine, a more complete assessment of the PFAS present in turf materials is obtained. The presence of PFAS in a product or product component as measured using the total organic fluorine method, as described in the linked pdf, shall be documented. <https://cdnmedia.eurofins.com/apac/media/601777/environment-1080-tof.pdf> Testing shall be conducted after the manufacturing process.
- iii. Letter of certification that the existing synthetic turf carpet has been repurposed and all associated Chain of Custody documentation

- B.8. Provide Final Waste Progress Report which benchmarks the project against the goal of minimizing waste and the Construction Waste Management Plan submitted at the beginning of the project. The report shall include, at a minimum, the amount of infill recused on the project (if applicable), proof of disposition of the infill (if not utilized on this project), carpet, and padding, and the amount of material recused offsite and landfilled, by weight and type.

PART 3- EXECUTION

3.02 REMOVAL OF EXISTING SYNTHETIC TURF CARPET AND INFILL

A. Contractor shall cut, roll and temporarily store pieces of turf carpet and infill as indicated on the Drawings to be delivered to the Owner by others.

B. To the extent practicable and if applicable, all sand and crumb rubber infill shall be removed with machinery that can simultaneously remove and convey the infill from the synthetic turf carpet into supersacks. To the extent possible, sand and crumb rubber infill should be prevented from entering the surfaces around the field, including but not limited to drainage areas and adjacent soils down gradient of the field. The turf installer shall provide in writing the chain of custody for the removed sand and rubber infill, certifying that the infill will be repurposed and eventually used on another synthetic turf field for infill or other applications or disposal which do

TOWN OF LEXINGTON SYNTHETIC TURF SUPPLEMENTARY CONDITIONS

not result in the incineration of materials. This certification shall be provided to the Owner's Representative and Town of Lexington as a condition for payment.

C. The existing synthetic turf carpet and fiber shall be removed. The turf installer shall provide in writing the chain of custody for the carpet and fiber, certifying how much of the carpet and fiber will be repurposed. Disposal of the synthetic turf carpet and fiber in an incinerator or waste-to-energy facility will not be permitted. This certification shall be provided to the Owner's Representative and Town of Lexington as a condition of payment.

10.6.23

TRIDENT

Joe Carusello
Geosurfaces
P: 905-961-4100
EMAIL: j.carusello@geosurfaces.com
Re: Lincoln Park Synthetic Turf Repurposing

June 6, 2024

Geosurfaces Team,

This letter is to confirm that the synthetic turf removed from Lincoln Park in Lexington, MA was responsibly repurposed. A total of 87,500 square feet of turf was removed with infill (estimated at 6 lbs per square foot) from the Lincoln Park jobsite. The synthetic turf with infill will be used for landscaping purposes and to resurface athletic fields in Norwich CT (06360). Any additional material will be resold for residential/commercial use. No turf from the project will be directed to landfill facilities.

The steps involved in responsibly repurposing the material are outlined below:

- 1-Sourcing the end user for the turf (paintball facility, pet shelter, youth sports association, etc...).
- 2-Installer loads the turf on flatbed semi-trucks.
- 3-Driver secures the turf rolls by strapping them down.
- 4-Driving turf to the end user.
- 5-Unloading the truck at the delivery site.

Sincerely,

Zach Correll

Managing Senior Director of Sales
Trident Transport





Tencate Grass America | Greenfields USA
1131 Broadway St,
Dayton, TN 37343

6/27/2024

To whom it may concern,

This letter is to certify that TenCate artificial turf products, and all components therein, are PFAS free. All system components including the primary backing, yarn, and urethane are manufactured in house and without any PFAS chemicals present. All components are tested and verified by third parties to be PFAS free.

Respectfully,

Colin Veditz
Technical Quality Control Manager
Tencate Grass America | Greenfields USA

October 20, 2024

Megan Buczynski

As you know, TenCate recently had a pre-test sample which exceeded any expected total fluorine result and wanted to follow up on our actions since this finding. This result of 77 ppm, as stated in my last letter was baffling on our end, but also cause for concern, so we took diligent and swift actions to assure we did not have an issue with the presence of fluorine or PFAS in our facility, and that the result was due to contamination of sample taking or laboratory handling.

The function of these tests is to assure our customer is not receiving any material from our manufacturing facility containing PFAS. We have run testing on all our raw components and in-questioned finished yarn batch to confirm. The previous test from PTL was for total fluorine, which simply measures any substance with fluorine in the sample. We decided to run additional testing at a third-party laboratory to assure there is no total organic fluorine (carbon containing fluorine, which is all PFAS) and total fluorine (all fluorine). Our previous testing has never shown a presence of fluorine, and we regularly test our product using both test standards. This is not a 're-test', but an extra test to verify we did not have any PFAS containing fluorine molecules.

A bit of background for the testing:

Organic Fluorine – Combustion – Ion Chromatography (CIC)

An auto-sampler introduces a solid sample into a pyrolysis tube, which is at high temperature (700-1100C) and under constant Argon gas purge. After the fluoride compounds are pyrolyzed (thermally decomposed), they are combusted and oxidized by O₂ gas and collected into an absorption solvent. A fixed volume of absorption solvent is then automatically injected into an ion chromatograph, where the fluoride is measured. The process is summarized by the following formula:

Organic F (in sample) → HF and F₂ (in combustion gas) → F⁻ (in absorption solvent) → to IC

**Note, CaF₂ should be stable up to 1000 °C assuming a dry environment. However, in the presence of moisture, CaF₂ can release HF and form Calcium Oxide.*

Total Fluorine - Neutron Activation Analysis (NAA)

Neutron Activation Analysis measures fluorine content in a solid by irradiating the sample with neutrons. This process induces nuclear reactions, producing radioactive isotopes that emit gamma rays. These gamma rays are detected and analyzed, where the intensity of these gamma rays is directly proportional to the fluorine concentration in the sample.

Our "total fluorine" result show that we are not adding large amounts of inorganic fluorine either (non-PFAS), but we did test a sample 'anti-block' to show that a known fluorine containing inorganic material will measure under detection limit for total organic fluorine and there is a chance in any given batch that inorganic fluorine can be present that is not PFAS, or organic fluorine. Our results show that none of our fibers, nor raw materials have any detectable Total organic fluorine, which indicate our proud declaration of having no added PFAS is accurate and correct. Please see the below table:

Sample	Organic Fluorine (CIC)	Total Fluorine (NAA)
Yarn 120272 YN 5040 XP Blade Plus (M24001289)	Under detection limit (<3ppm)	Under detection limit (<36 ppm)
Yarn 120272 YN 5040 XP Blade Plus (M24001259)	Under detection limit (<3ppm)	Under detection limit (<45 ppm)
Yarn 120840 YN 10050 XPS Plus (M24001248)	Under detection limit (<3ppm)	Under detection limit (<33 ppm)
UV Stabilizer	Under detection limit (<3ppm)	Under detection limit (<3.4 ppm)
Process Aid	Under detection limit (<3ppm)	Under detection limit (<30 ppm)
Anti-Stat	Under detection limit (<3ppm)	Under detection limit (<2.2 ppm)
Pigment 1	Under detection limit (<3ppm)	Under detection limit (<1300 ppm)
Pigment 2	Under detection limit (<3ppm)	Under detection limit (<300 ppm)
Antiblock reference 1	Under detection limit (<3ppm)	2344ppm
Antiblock reference 2	Under detection limit (<3ppm)	1270ppm

We feel confident that our material has no detectable total organic fluorine, and no PFAS material, and would love to discuss these findings with you. Please call with any questions, at 508-838-1144.

Regards,

Mark A. Haft



North American Vice President of Innovation, Engineering, and Technology
TenCate North America

September 27, 2024

To Megan Buczynski

We have retested the previous test of total organic fluorine at the same testing laboratory, and found it confirmed the first test result for having positive total fluorine of 77 ppm. We feel this is a contamination of some sort and are having it retested at 2 other test labs. Even with this result of 77 ppm, which we feel is a contamination issue, the result falls below the recommended limit for total organic fluorine (TOF) (which is more stringent of a test than total fluorine is) set forth by the state of California of 100 ppm of TOF. This is the most stringent TOF policy that we know of in the world currently. TenCate wants to reiterate that although no studies have linked artificial turf to human health hazards, we have eliminated all PFAS products in our material. The process aid we use is non-PFAS (and non-fluorinated) as is every other raw ingredient. We also want to restate that fluorine is not the same as PFAS, and total fluorine content is not an indicator that PFAS is present. We have tested the same product for other fields for individual PFAS and found no detectable PFAS using EPA method 537.

At TenCate we believe that true progress goes hand in hand with environmental stewardship. As a forward-thinking organization, we are deeply committed to sustainable practices to go along with our technological advancements in turf quality. In this vein, we have driven many projects in sustainability which includes:

- The use of 5% recycled yarn in all batches from our extrusion facility in Dayton, TN, USA.
- Currently in the process of getting our ISCC+ certification for the above.
- Have UL Zero Waste to Landfill Gold certification which shows we divert 95% of all scrap from landfill and are re-using, recycling and repurposing manufacturing waste.
- Started a circular economy initiative in which we recycle end of life fields starting in 2023 and to date have recycled 47 fields back into constituent materials for reuse in our resin
- Completely removed any intentionally added PFAS materials from our processes as of October 1, 2023.

In addition to these advances, we have also attained ISO 9001, 14001 and 45001 certifications for our North American manufacturing facilities, which ensures our products follow our world-class leading standards in quality, environmental practices, and ensures a safe working environment for all our employees. We stand poised to react to all regulatory requirements in the future, and TenCate understands that sustainability is not just a goal but a responsibility that guides our decisions, shapes our strategies and defines our contributions to the communities we serve.

Regards,

Mark A. Haft

A handwritten signature in cursive script that reads "Mark A. Haft".

North American Vice President of Technology, Innovation and Engineering
TenCate North Americas