Synthetic Turf™ COUNCIL | TECHNICAL GUIDELINES

A GUIDELINE TO

RECYCLE, REUSE, REPURPOSE AND REMOVE SYNTHETIC TURF SYSTEMS

OCTOBER 2017

WWW.SYNTHETICTURFCOUNCIL.ORG

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DISCLAIMER

A Guideline to Recycle, Reuse, Repurpose and Remove Synthetic Turf Systems (this "Document") provides options and guidelines (collectively, the "Guidelines") to consider when making choices whether and how to recycle, reuse, repurpose and/or remove the synthetic turf. The Guidelines, however, are not exhaustive and there is a range of possibilities that may need to be considered that are not covered in this Document. The Guidelines are not, and should not be considered as, standards. This Document does not imply, suggest or in any way guarantee that performance issues could not arise if any or all of the Guidelines are followed and does not imply or suggest that if any or all of the Guidelines are not followed that performance issues will arise. The Guidelines are not intended to be and are not to be considered as safety standards and this Document does not imply that injuries or health issues are less likely to occur if the Guidelines are followed or more likely to occur if any or all of the Guidelines are not followed.

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INTRODUCTION

The Synthetic Turf Council (STC) is the world's largest organization representing the synthetic turf industry with over 200-member companies from over 10 countries. Founded in 2003, the STC serves as the global forum to promote, develop, grow and advocate for the synthetic turf industry. Due to a heightened sense of environmental awareness, many field owners, school boards, athletic directors, government agencies and municipal officials turn to synthetic turf systems for the water savings, reduced maintenance, longevity and safety benefits.

The goal of this document, *A Guideline to Recycle, Reuse, Repurpose and Remove Synthetic Turf Systems*, is to help the reader better understand the range of processes for identifying and managing the removal and disposition of a synthetic turf system once it may have reached the end of its useful life, or End-of-Life (EOL).

The diversity of members and encouragement of innovative technologies are reasons why the STC continues to advance the interests of the industry while solving the challenges presented by its customers. Some members provide innovative practices and programs that empower users to reduce their carbon footprint and landfill dependence.

Synthetic turf systems have a limited lifespan that ranges between 8 – 10 years. By the end of the decade, it is estimated that 750 or more synthetic turf fields will be removed annually in the United States. At an average of 80,000 sq. ft. of turf and 400,000 lbs. of infill per field, the amount of material to be handled is enormous. Synthetic turf systems are comprised of several component materials (e.g. turf, shock pad or underlayment) that most often must be separated to be recycled. Infill does not usually need to be separated to be reused or repurposed. The diversity of such component materials presents technical, economic and logistical challenges unlike other commonly recycled materials, such as plastic bottles, carpet and plastic bags. The STC encourages responsible parties to consider options to recycle, reuse and repurpose the synthetic turf systems.

This Guideline focuses more on synthetic turf sport fields than landscape and recreation applications as the sport fields systems constitute a higher volume of material. To that end, the STC believes it is important that all owners and responsible parties of synthetic turf systems utilize this Guideline as a resource to employ EOL opportunities to recycle, reuse and/or repurpose the synthetic turf systems.

TERMS AND EXAMPLES

The STC encourages the owners of existing synthetic turf system applications to recycle, reuse and repurpose the system components whenever possible. This Guideline best represents the intent of the STC's goals and objectives to implement best management practices in removing the synthetic turf and its components from various applications. The STC recommends that the responsible parties consider the following terms and examples of the terms in considering EOL options.

Recycle: A series of activities by which material that has reached the end of its current use is processed into material and utilized in the production of new products. Processing typically involves removal of contaminants and/or size reduction to satisfy specifications.

> *Example: The infill is recovered from a synthetic turf field during deconstruction. The infill is processed to remove rock, dirt and other contaminants; graded and tested to satisfy mesh size and distribution specifications; and then used as a feedstock to make a new product.*

Reuse: A discarded material or product is used in its original form for the same function as it was when new. The discarded material or product may be processed, typically by cleaning, repairing or otherwise refurbishing, with inspection and/or testing to confirm that it is suitable for continued use.

> *Example: A portion of the infill in a synthetic turf field is recovered during deconstruction. The infill is then processed to remove a portion of the contaminants; inspected and/or tested to confirm it meets specifications; and then is placed in a new or replacement field, whether on the same or a different site.*

Repurpose: A discarded material or product is used in its original form, but for a different function than when it was new. The discarded material or product may be processed, typically by cleaning, repairing or otherwise refurbishing; inspection and/or testing to confirm that it is suitable for continued use.

> *Example: A portion of the discarded turf is recovered from a synthetic turf field during the deconstruction phase. It is cleaned, repaired and used in a commercial or residential landscape application, batting cage, or soil amendment.*

RESPONSIBLE PARTIES

The project owner has ultimate responsibility of ensuring that the synthetic turf system is recycled, reused, repurposed and/or disposed of in a responsible manner. It is understood that owners most often rely on the consultant, contractor, turf manufacturer or vendor for information and direction in the planning stages of replacing the turf and its system components. The generator and its parties are responsible for understanding federal, state/provincial, municipal/local environmental laws before the synthetic turf system is removed. To avoid surprises, the STC recommends that owners consider working with an independent professional, consultant or knowledgeable industry representative.

A typical synthetic turf sports field is about 80,000 square feet (7,432 square meters). Infill can range from 3-9 lbs./ft^2 with an average of 5 lbs./ft^2, therefore existing fields range from 240,000 ± 720,000 lbs. of material to be removed from the surface of a field depending on the size of the field. Most of the fields installed in the United States use a combination of silica sand/tire crumb rubber or all crumb rubber infill. An average field is comprised of 400,000 lbs. of infill (5 lbs./ft^2) and 40,000 lbs. of turf (0.5 lbs./ft^2). An 80,000 ft2 sports field would translate in volume to ± 400 cubic yards (yd^3), or the equivalent of almost fourteen 30 cubic yard dumpsters of infill. The volume of the turf removed from the field depends on how it is collected (rolled, cut up or shredded) and will be considerable in volume. One thousand deconstructed fields represent 80 million square feet of turf weighing 40 million pounds and 400 million pounds of infill.

The first infilled (or so-called third generation) synthetic turf sports field was installed in the United States in 1997. By the of 2012, there were over 8,000 synthetic turf sports fields in use. Depending on its usage, exposure to intense sunlight, maintenance and other factors, a synthetic turf sports field will last 8 to 10 years before reaching the end of its useful life. Other factors that influence a sports field's useful life may include environmental exposure, severe overuse and/or improper use. Industry stakeholders have estimated the approximate number of synthetic turf sports fields that are deconstructed annually from 2013 through 2018 include: 2013 (365 fields); 2014 (570 fields); 2015 (325 fields); 2016 (450 fields); 2017 (600 fields); and 2018 (750 fields).

As an owner and/or responsible party of a synthetic turf sports field, it is imperative to know the type of synthetic turf system and manufacturer of the surface you will be replacing. If you do not have product information on the system, carpet, infill, shock pad, or other component, consider contacting the original manufacturer for this information. If there are any questions about the source of these materials, consider material testing in preparation of recycle, reuse, and repurpose options.

For field builders, sub-contractors and recyclers, the challenge of how to manage the synthetic turf system disposal options presents an opportunity to build upon the assortment of technologies and processes being developed to reduce landfill dependence. The industry continues to identify the best and most economical approaches to remove and process synthetic turf components that may have reached their EOL.

This document addresses questions often asked by field owners, school boards, athletic directors, government agencies and municipal officials such as:

- What choices are available to recycle, reuse and/or repurpose the components of the synthetic turf system?
- What are the economic, environmental and social factors that influence the EOL options?
- What tests, if any, will be required for the material to be recycled, reused or repurposed?
- What materials and/or components would be considered the appropriate EOL option?
- When is it time to make the decision to recycle, reuse, repurpose or landfill?
- What removal documentation may be required?

END-OF-LIFE OPTIONS FOR SYNTHETIC TURF SYSTEMS

Most often there is more than one option to recycle, reuse and repurpose the diverse synthetic turf system component materials before landfilling. There are economic, environmental and social responsibility factors to be considered by the owners and responsible parties before making an EOL decision about the materials. Many of the STC members utilize sustainable materials and processes that work to minimize any negative impact on the natural environment. The preferred way would be to find a recycler, donate or sell the material for another use. Matching donor surplus material with recipient needs, meets the objective of social responsibility.

Aside from benefitting society and the environment, donating the material can reduce capital expenditures and result in tax receipts and possibly contribute to a projects Leadership in Energy and Environmental Design (LEED) points. This Guideline provides a baseline of information to help better understand the materials and where to find sustainable solutions.

The following diagram, "Synthetic Turf System End-of-Life Options" is a simplified view of the decisions required and options available for a synthetic turf system removal. It shows the steps required to convert the synthetic turf materials into a form that is useful for recycling. Converting synthetic turf to a recyclable material that is useable cannot be accomplished at the point of removal. The cost of shipping is one of the biggest challenges associated with synthetic turf reclamation. Logistics, timing and the possible cost of testing the material to recycle and reuse may need to be considered.

STC member companies continue to develop new processes and offer more choices to collect,

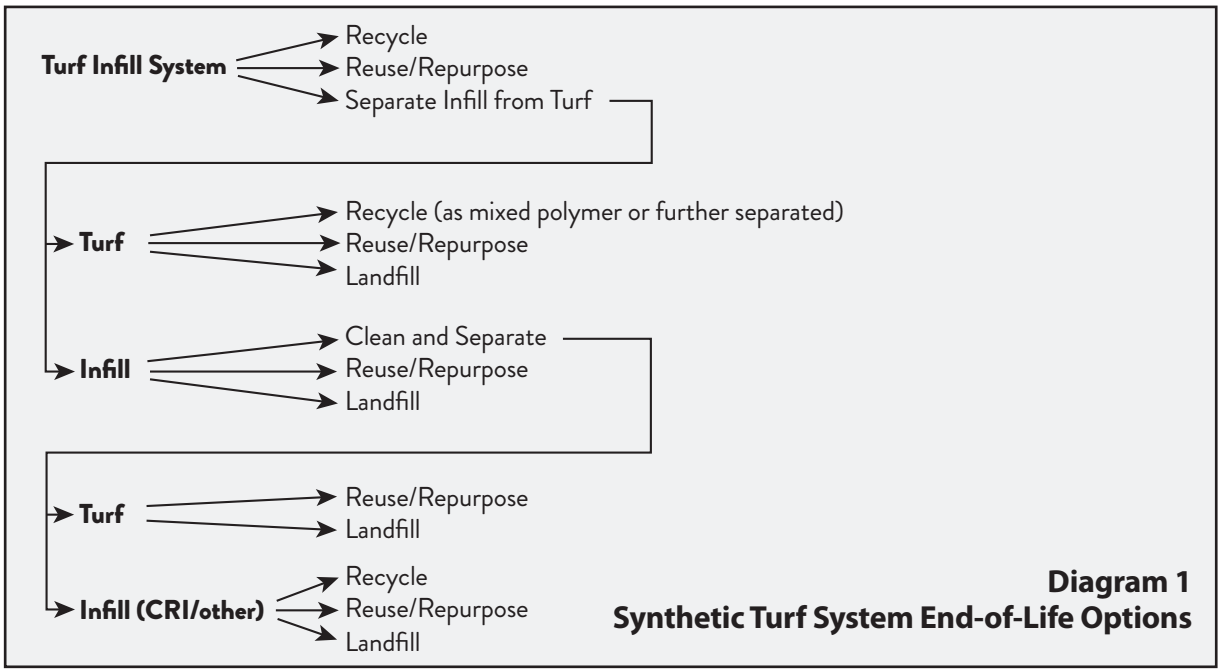

Diagram 1
Synthetic Turf System End-of-Life Options

separate, recycle, reuse and repurpose the synthetic turf systems. Some companies provide services to aid in the removal of the synthetic turf system; clean and warehouse turf that is suitable for reuse or repurpose; and/or provide logistics and transportation assistance. The removal of fields increases the options for handling, recycling and reusing the system components. Some specialty equipment removes the turf and its infill intact. Turf received in rolls can be processed into plastic pellets that are suitable for injection molding, rotational molding and profile extrusion. During the past 10 years, reused synthetic turf has become a popular option for residential and municipal landscape, roof gardens, pet parks, playgrounds, airport median strips and other landscape and recreation applications.

Further separation may be required to separate sand and debris from the infill depending on the EOL option. After the synthetic turf has been separated from the infill, the turf can be used in some post-consumer recycled products (e.g. plastic bags, carpet, turf backing and posts).

As with any recycle, reuse and recovery effort, the diversity of component materials may represent economic or technical challenges. Synthetic turf includes a variety of polymers such as polyethylene, polypropylene, polyester, nylon, styrene butadiene rubber and polyurethane. Polyester is the primary material for non-woven turf backing. Natural materials such as silica sand and calcium carbonate are present. The industry continues to research and identify the most economical and responsible way to process all turf components such as turf plastics, infill(s) and underlayment pads that need to be removed, recycled and reused.

Testing and/or separate assessments of some component materials (e.g. safety pad, drainage mat/tile, infill) when reusing and/or adding in combination with a new turf system. Some tests may include shock absorption, assessment of deformation and other performance criteria. For additional information, please refer to the *STC Guidelines for Synthetic Turf Performance* for performance testing information.

FIELD CONSIDERATIONS

The industry has developed specialized equipment to remove synthetic turf sports fields by cutting the material into sections, rolling it into easily transportable bundles and, in some cases, removing most of the infill. Synthetic turf for landscape and recreation use is not so easily removed and bundled because of its irregular shape.

It is important that the owner and responsible parties have a clear understanding of the project requirements to remove and/or replace system components including:

- What is the field base (e.g. drain board, aggregate, type of underlayment?)
- Is the turf adhered to the base?
- Is the base stable enough to work on without being disturbed/displaced?

- Who determines if the base is stable to work on without being disturbed or displaced?
- Who will be held responsible for damage for the base if it occurs during removal and installation of the new system?
- What are the field conditions (e.g. stability, infiltration rate)?
- What testing or documentation will be utilized to protect the contractor against future claims?
- What is the term of responsibility for the contractor for base performance after the work is completed?

The carbon footprint of a particular option (such as trucking at long distances) may be integrated into the decision-making process and lead responsible parties to invalidate such a specific option and look towards others. It is important to investigate all recycling and reuse options in the region before choosing to landfill the system components.

SYNTHETIC TURF SYSTEM COMPONENTS

This Guideline identifies the various synthetic turf system components that may be considered for options to be recycled or reused, including synthetic turf, infill, and shock pad and underlayment systems. See Table 2.

TABLE 2
SYNTHETIC TURF SYSTEM COMPONENTS

	Recycle Options	Reuse Options	Waste to Energy Options
Synthetic Turf			
Polyethylene	✔	✔	✹
Polypropylene	✔	✔	✹
Nylon	✔	✔	✹
Infill			
Crumb Rubber	✔	✔	✔
EPDM	✔	✹	✹
TPE	✔	✔	✹
Organic Infill	✔	✔	
Silica Sand	✔	✔	
Coated Silica Sand	✔	✔	
Shock Pad Underlayments			
PVC/NBR foam	✔	✔	✹
Polypropylene Composite	✔	✔	
Post-Consumer Tire Rubber	✔	✔	
Elastic Layer Underlayments			
Post-Consumer Tire Rubber	✔		✹
Combination Drainage Mats /Shock Pad Underlayments			
Expanded Polypropylene	✔	✔	✹
Cross-linked Polyethylene	✔	✔	✹
Drainage Mats and Strip Drains			
Polypropylene	✔	✔	✹
TPO		✔	

✹ Technically feasible but not commercially practiced.

SYNTHETIC TURF

Once the synthetic turf has been separated and processed it may be used for recycling, reuse or repurpose. Synthetic turf is produced from several polymers. Even perfectly clean turf contains a mix of LLDPE (linear low-density polyethylene), PP (polypropylene) and a coating of either polyurethane, hot melt polyolefin, or latex. Linear low-density polyethylene is used to produce most turf fibers, the largest component of turf. Nylon and polypropylene are also used, but to a much smaller degree. Polypropylene is typically used for the backing material, but backing is a smaller component than turf fiber. Heterogeneous polymer alloys can potentially be used as recycled content in some processes, but will have mechanical properties that are different and likely inferior to virgin or recycled polymers from single components. Options to reuse the synthetic turf system material include:

- Baseball: Batting cages, in front of dugouts, bullpens, indoor practice and hitting facilities;
- Golf: Driving ranges, lining for sand traps for erosion control, tee lines, driving mats;
- Sports Fields: grass field sidelines, running track protective strips, band practice field, indoor typical use practice and play fields;
- Landscape and Recreation: Play areas, small landscape areas, highway erosion control, dog runs, pet parks, and equestrian stables.

INFILL

Synthetic turf component infills may include crumb rubber, sand, thermoplastic elastomers (TPE), ethylene propylene diene monomer (EPDM) and a variety of organic infills. Infill can be extracted, recycled, reused and repurposed from an existing field. The owner may reuse the extracted infill in a new synthetic turf field or existing field. In many cases, additional new infill may be added to the quantity of reused infill on a replacement field. Fields certified by an international sports governing body (e.g. FIFA, World Rugby) may or may not allow for reused material in the new turf system. In some cases, infill may have to be tested and/or verified that it meets the requirements of an approved product and/or system. Sometimes reusing or repurposing the infill may represent a cost saving to the owner. Reusing the infill may allow a project to qualify for the additional LEED credits beyond those awarded for the first use of the infill.

It is recommended that the owner or responsible party should evaluate the following:

- A reliable sample collection method;
- Type of infill and compatibility with the new turf system;
- Contaminants and debris that may have accumulated over time;
- Performance properties (e.g. exposure to the elements, wear and debris);

- Testing of infill in accordance with applicable standards and certification guidelines;
- Percentage of supplementary infill;
- Testing of proposed system as required for the application (see *STC Guidelines for Synthetic Turf Performance*);
- Metallic, non-ferrous and organic components; and
- Applicable industry patents and warranties.

CRUMB RUBBER

Crumb Rubber is derived from scrap passenger and truck tires that are ground up and size reduced to a range of mesh sizes through a recycled ambient (8-20 mesh) or cryo-genic (10-30 mesh). Crumb rubber, historically the most widely used infill in the synthetic sports fields and landscape installations, can be coated with colorants, sealers, or anti-microbial substances to provide specific benefits. Crumb rubber infill can be extracted and reused in other end use applications or synthetic turf systems.

In most cases, the crumb rubber and sand will need to be separated before reusing the crumb rubber in the manufacturer of tire-derived products. The crumb rubber may also need to be cleaned and screened to further remove unwanted fine particulates and to reduce the size of the crumb rubber. Different turf systems use varied sizes and proportions of rubber and may require evaluation of compatibility with a proposed turf system. In most cases, however, it has not been necessary to separate the rubber and sand when reusing the materials again in most existing fields.

EPDM AND TPE

EPDM (ethylene propylene diene monomer) and TPE (thermo plastic elastomer) are polymeric elastomers with fillers that offer high resistance to abrasion and wear under a reasonably elevated temperature. The products normally have a UV stabilizer to give long-term weathering. These products will vary from one manufacturer to another. It is suggested to review independent testing regarding heavy metals, temperature, UV resistance and other tests that are required. EPDM and TPE are available in a variety of colors and have proven durability in all types of climates. Both products can be recycled or reused.

ORGANIC INFILL

Plant-based organic infill comes in several formats including, but not limited to: blended coconut fibers and cork; coconut fibers only; cork only; and walnut shells.

SILICA SAND

Well-graded silica sand is one of the original infill materials utilized in synthetic turf systems. This natural mineral is non-toxic and chemically stable subject to the percent purity of the silica sand. Silica sand

that has agglomerated particles or are calcareous should not be used. Silica sand is typically tan, off-tan, or white in color. The preference in particle shape for this industry is round or sub-round. Silica sand can be used in conjunction with many other infills on the market to provide a safe and realistic playing surface.

COATED SILICA SAND

Coated silica sand may consist of an acrylic, urethane, ceramic or other polymer that covers the sand grain in whole. The polymer that coats the sand particle should not wash off once installed and provides UV for long-term durability. The original silica sand, before being coated, is a hard grain, round to sub-round, non-agglomerated, non-calcareous material.

SHOCK PADS AND UNDERLAYMENTS

Underlayments, described as shock pads, elastic or e-layers, integrated drainage systems, drainage mats and strip drains, each have their own purpose. The following provides examples of use and options for EOL.

SHOCK PADS

Shock pads offer an added level of protection and consistent playability to the playing surface and are designed to contribute to a safe g-max level throughout a synthetic turf field's life. Roll out or panel systems are available and can be permeable or impermeable. Some shock pads can replace all or portions of the stone base and provide both shock attenuation and drainage, while others are used in combination with a traditional stone and drainage base. Pads can be placed directly over asphalt or cement stabilized surfaces.

Various materials that are used in shock pads include PVC/NBR (polyvinylchloride/nitrile butyl rubber) foam, polypropylene, composites, polyurethane, virgin materials and post-consumer tire rubber. Some manufacturers of shock pads will accept re-covered product for recycling. Select pads can also be reused for other uses such as golf mats and farm animal mats. Some shock pads last more than one turf lifecycle of 8 – 12 years.

ELASTIC LAYERS OR E-LAYERS

Elastic layers or E-Layers are poured in-place applications. The product is permeable and is typically comprised of tire rubber granulate with a polyurethane binder, or the same combined with small gravel particles. E-layers can vary in thickness across the surface and do not have seams. Artificial turf can be either loosely laid on top, or glued to the e-layer (i.e., for field hockey). Materials include post-consumer tire rubber used in combination with a polyurethane binder.

Although E-layers are not currently being recycled, they may be able to be reused, or repaired and reused depending on initial quality and binder content.

INTEGRATED DRAINAGE UNDERLAYMENT

Drainage pad underlayments are designed to replace the stone base and act as both a base support and drainage system for turf. Roll out or panel systems are utilized. Materials used for the various product offerings include expanded polypropylene or cross-linked polyethylene. Some products can be recycled and incorporated into a new drainage pad, while others may be reused or repurposed into other products. Some drainage pads can be used for multiple turf life cycles.

DRAINAGE MATS AND STRIP DRAINS

Drainage mats and strip drains are designed to act as both a base support and a single-sided drainage system for turf. Materials used for the various products include polystyrene, polypropylene and TPO (thermoplastic olefin). Polypropylene products can be reused and recycled.

CHAIN OF CUSTODY CERTIFICATION

Once decisions have been made to recycle, reuse, repurpose or landfill the synthetic turf system components, the STC recommends the responsible parties complete a two-part Chain of Custody Certification (COC) that includes the following:

Part 1: Chain of Custody Certification – Project Parties and Materials

The template provides chronological documentation from the project owner to the contractor, disposition company and verification agent identifying a transfer of material from person to person.

Part 2: Chain of Custody Certification – EOL Management

The template provides chronological documentation by load and EOL option (e.g. Recycle, Reuse, Repurpose, disposal).

When using the STC's Chain of Custody Certification templates, the STC recommends following the sequence in which you intend to remove the materials. For example, if you are removing a synthetic turf field with infill and a shock pad, you would begin by documenting the loads of infill removed, then the synthetic turf and finally the shock pad.

The following four pages include two different project scenarios that represent examples of how to complete the COC Part 1 and Part 2 for Project Scenario One and Project Scenario Two.

PROJECT SCENARIO ONE

Part 1: Chain of Custody - Project Parties and Materials

Example 1A: Documenting the removal of an intact field (turf and infill) at George Washington High School for RECYCLYING and REPURPOSING

The "Chain of Custody Certification—Project Parties and Materials" form includes the project parties and materials that will be moved to specific destinations. The intention in this example is to remove an intact 40,000 sq. ft. field.

First, estimate total weight: 5.5 lbs. per sq. ft. x 40,000 sq. ft. field = 220,000 lbs. The weight/area value is given as an example and each specific system has its own value which should be used in the calculations.

Note that 20,000 sq. feet will be RECYCLED (new use; posts) and 20,000 sq. ft. will be REPURPOSED (i.e. same material, different use; e.g. batting cage).

Part 1: Chain Of Custody Certification - Project Parties and Materials **Example 1A**

PROJECT NAME: **George Washington High School**

Complete Required Project Parties and Project Materials Information

Project Parties	Business Organization	Contact Person	Phone Number	Address	City	ST.
Owner	George Washington HS	Joe Smith	333-333-3333	123 East Main Street	Homer	CT
General Contractor	XYZ Construction Company	Mike Franks	444-444-4444	456 Walker Drive	Providence	RI
Disposition Company	ABC Recycling Company	Steven Dobbs	555-555-5555	789 Franklin Road	East Haven	CT
Verification Agent	John Doe Architects	John Doe	666-666-6666	10 Dyer Street	New Haven	CT

Project Material(s) Totals-Area & Weight	Identify Material	Recycle		Reuse		Repurpose		Landfill	
		Area ft²	Lbs.	Area ft²	Lbs.	Area ft²	Lbs.	Area ft²	Lbs.
Turf Type(s)	Turf name/type	20,000	10,000	0	0	20,000	10,000	0	0
Infill(s)	Crumb rubber infill + sand	20,000	100,000	0	0	20,000	100,000	0	0
Shockpad/Underlayment(s)									
Total		Total	110,000	Total	0	Total	110,000	Total	0

Authorization Party	Authorized Signature	Printed Name & Email Address	Date	Phone Number
Owner	*Joe Smith*	Joe Smith sample@email.com	6/10/17	333-333-3333
General Contractor	*Michael Franks*	Michael Franks sample@email.com	6/10/17	444-444-4445
Disposition Company	*Steven Dobbs*	Steven Dobbs sample@email.com	6/10/17	555-555-5566
Verification Agent	*John Doe*	John Doe sample@email.com	6/10/17	666-666-6661
EOL Option Disposition:	Recycle: Posts; Repurpose - Batting Cage on Site			
Calculation Notes:	Turf = .5 lbs/sq.ft. x project total square ft. (40,000 sq. ft.) = 20,000 lbs.			
	Infill (crumb rubber & sand) = 5.5 lbs/sq. ft. x project total sq. ft. (40,000 sq. ft.) = 200,000 lbs.			

PROJECT SCENARIO ONE

Part 2: Chain of Custody Certification – EOL Management

Example 1B: Documenting the EOL management of the project materials

The "Chain of Custody Certification—EOL Management" form includes the end-of-life (EOL) options for each component per shipping load and requires a third-party verification signature to verify the delivery of the material to the specified EOL option.

First, choose the end of life option: Recycle; and select deposition material: Turf and Infill. Next, provide the corresponding information in each column.

Part 2: Chain of Custody Certification - EOL Management **Example 1B**

PROJECT NAME: George Washington High School

Choose the End of Life Options. Identify project material and EOL Product(s)/Application(s). Complete corresponding information in each column.

Require Verification Agent Signature of EOL delivery.

Load No.	End of Life Option(s)	Identify Material(s)			Ship Date	Ship to Company Name or Site Name (EOL Option)	Bill of Lading or Seal/Container #	Total lbs.	Date Verified Completed	Verification Agent Signature
		Turf	Infill	Pad						
1	Recycle	X	X		6/15/17	ABC Container Company	123456	40,000	6/17/17	John Doe
	Reuse									
	Repurpose									
	Landfill									
Identify End Of Life Product(s)/Application(s): Recycled Posts/Infill/Sand										
2	Recycle	X	X		6/16/17	ABC Container Company	123457	40,000	6/18/17	John Doe
	Reuse									
	Repurpose									
	Landfill									
Identify End Of Life Product(s)/Application(s): Recycled Posts/Infill/Sand										
3	Recycle	X	X		6/17/17	ABC Container Company	123458	30,000	6/19/17	John Doe
	Reuse									
	Repurpose									
	Landfill									
Identify End Of Life Product(s)/Application(s): Recycled Posts/Infill/Sand										
4	Recycle									
	Reuse									
	Repurpose	x	x		6/23/2017	George Washington HS	onstie	**110,000**	6/27/17	John Doe
	Landfill									
Identify End Of Life Product(s)/Application(s): Recycled Posts/Infill/Sand										

PROJECT SCENARIO TWO

Part 1: Chain of Custody - Project Parties and Materials

Example 2A: Documenting the removal of an intact field (turf and infill) at Lincoln Middle School for LANDFILLING, REUSE and RECYCLYING

The intention here is to remove, by materials, a 90,000-sq. ft. field. First, estimate total weights of individual material(s): Infill is estimated at 5 lb. per sq. ft. of sand and rubber. Total = 5 lb. per sq. ft. x 90,000 sq. ft. = 450,000 lbs. The first half or 225,000 lbs. will be REUSED in Lincoln Middle School's new replacement field (Example 2A). The remaining half or 225,000 lbs. will be sent to a LANDFILL (Example 2B).

Next, estimate the synthetic turf weight. Synthetic turf weight is estimated at .5 lbs. per sq. ft. Total synthetic turf weight = 4.5 lbs. per sq. ft. x 90,000 sq. ft. or 45,000 lbs. which will be shipped from site for RECYCLING (Example 2A).

Part 1: Chain Of Custody Certification - Project Parties and Materials **Example 2A**

PROJECT NAME: **Lincoln Middle School**

Complete Required Project Parties and Project Materials Information

Project Parties	Business Organization	Contact Person	Phone Number	Address	City	ST.
Owner	Lincoln CSD	Joe Smith	333-333-3333	1234 East Main Street	Homer	CT
General Contractor	HHC Construction Company	Mike Franks	444-444-4444	138 Walker Drive	Providence	RI
Disposition Company	Clean Recycling	Steven Dobbs	555-555-5555	1453 Franklin Road	East Haven	CT
Verification Agent	John Doe Architects	John Doe	666-666-6666	2523 Dyer Street	New Haven	CT

Project Material(s)	Identify Material	Recycle		Reuse		Repurpose		Landfill	
Totals -Area & Weight		**Area ft²**	**Lbs.**	**Area ft²**	**Lbs.**	**Area ft²**	**Lbs.**	**Area ft²**	**Lbs.**
Turf Type(s)	Competitive Edge Turf	90,000	45,000	0	0	0	0	0	0
Infill(s)	Crumb Rubber Infill & Sand	0	0	45,000	225,000	0	0	45,000	225,000
Shock Pad									
Total		Total	45,000	Total	225,000	Total	0	Total	225,000

Authorization Party	Authorized Signature	Printed Name & Email Address	Date	Phone Number
Owner	*Joe Smith*	Joe Smith sample@email.com	8/10/17	333-333-3333
General Contractor	*Michael Franks*	Michael Franks sample@email.com	8/10/17	444-444-4445
Disposition Company	*Steven Dobbs*	Steven Dobbs sample@email.com	8/10/17	555-555-5566
Verification Agent	*John Doe*	John Doe sample@email.com	8/10/17	666-666-6661
EOL Option Disposition:	Recycle 100% Turf for Posts; Reuse 50% Infill/Sand in Replacement Field at Lincoln Centeral SD; Landfill 50% Infill/Sand.			
Calculation Notes:	Turf = .5 lbs./sq.. x project total square ft. (90,000 sq. ft.) = 45,000 lbs. = 100% "Recycle"			
	Infill (crumb rubber & sand) = 5 lbs./sq. ft. x project total sq. ft. (90,000 sq. ft.) = 450,000 lbs. = 50% Reuse; 50% Landfill			

PROJECT SCENARIO TWO

Part 2: Chain of Custody Certification – EOL Management

Example 2B: Documenting the EOL management of the project materials delivered to a landfil

Choose the end of life option: Landfill; and select deposition material: Infill. Complete the form with the corresponding information and third-party verification signature to verify the delivery of the material to the specified EOL option, in this case, the landfill.

Part 2: Chain of Custody Certification - EOL Management **Example 2B**

PROJECT NAME: Lincoln Middle School

Choose the End of Life Options. Identify project material and EOL Product(s)/Application(s). Complete corresponding information in each column. Require Verification Agent Signature of EOL delivery.

Load No.	End of Life Option(s)	Identify Material(s)			Ship Date	Ship to Company Name or Site Name (EOL Option)	Bill of Lading or Seal/Container #	Total lbs.	Date Verified Completed	Verification Agent Signature
		Turf	Infill	Pad						
1	Recycle									
	Reuse									
	Repurpose									
	Landfill		X		6/13/17	ABC Transport	UB1234	44,000	6/13/17	John Doe
Identify End Of Life Product(s)/Application(s): Landfill 50% of Project Infill/Sand										
2	Recycle									
	Reuse									
	Repurpose									
	Landfill		X		6/13/17	ABC Transport	UB1235	44,000	6/13/17	John Doe
Identify End Of Life Product(s)/Application(s): Landfill 50% of Project Infill/Sand										
3	Recycle									
	Reuse									
	Repurpose									
	Landfill		X		6/14/17	ABC Transport	UB1236	44,000	6/14/17	John Doe
Identify End Of Life Product(s)/Application(s): Landfill 50% of Project Infill/Sand										
4	Recycle									
	Reuse									
	Repurpose									
	Landfill		X		6/14/17	ABC Transport	UB1237	44,000	6/14/17	John Doe
Identify End Of Life Product(s)/Application(s): Landfill 50% of Project Infill/Sand										

CHAIN OF CUSTODY CERTIFICATION TEMPLATES (PARTS 1 & 2)

The STC guideline templates for Chain of Custody Certification—Project Parties and Materials (Part 1) and End of Life (EOL) Management (Part 2) are available for free download in .XLSX format here:

Part 1: Chain of Custody Certification-Project Parties and Materials—Download Now (.XLSX)

http://www.syntheticturfcouncil.org/resource/resmgr/guidelines/STC_Template_FORM_-_COC_PM.xlsx

Part 2: Chain of Custody Certification-EOL Management—Download Now (.XLSX)

http://www.syntheticturfcouncil.org/resource/resmgr/guidelines/STC_Template_FORM_-_EOL_MGM.xlsx

LOOKING AHEAD

Innovative technologies are being developed for higher end uses for recycled and reused turf every day. The members of the Synthetic Turf Council plan to lead this effort to develop better and more environmentally friendly options for the second life of synthetic turf surfaces.

Synthetic Turf™
COUNCIL

The Synthetic Turf Council (STC) is the world's largest organization representing the synthetic turf industry, representing over 200 companies with operations in 10 countries. Founded in 2003, the STC assists buyers and end users with the selection, use and maintenance of synthetic turf systems in sports field, golf, municipal parks, airports, landscape and residential applications. It is a resource for current, credible and independent research on the safety and environmental impact of synthetic turf, as well as technical guidance on the selection, installation, maintenance and environmentally responsible disposal of synthetic turf. Membership includes builders, landscape architects, testing labs, maintenance providers, manufacturers, suppliers, installation contractors, infill material suppliers and other specialty service companies. For more information, visit www.syntheticturfcouncil.org.

To find STC member companies that provide field removal, recycle, and reuse services, please visit the STC Online Buyers' Guide & Member Directory at http://stc.officialbuyersguide.net.

SYNTHETIC TURF COUNCIL (STC) GUIDELINES

- A Guideline to Recycle, Reuse, Repurpose and Remove Synthetic Turf Systems
- Considerations When Buying Synthetic Grass for Landscape Use
- Guidelines for Crumb Rubber Infill Used in Synthetic Turf Fields
- Guidelines for Maintenance of Infilled Synthetic Turf Sports Fields
- Guidelines for Minimizing the Risk of Heat Related Illness
- Guidelines for Synthetic Turf Base Systems
- Guidelines for Synthetic Turf Performance
- Suggested Environmental Guidelines for Infill
- Suggested Guidelines for the Essential Elements of Synthetic Turf Systems

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ONLINE BUYER'S GUIDE AND
MEMBER DIRECTORY
stc.officialbuyersguide.net

SYNTHETICTURFCOUNCIL.ORG