

ClosureTurf® and HydroTurf® DELIVERY, HANDLING & STORAGE GUIDELINES



W**G** **WatershedGeo®**
Unearthing Solutions

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1.0 Introduction

This document provides guidance for the delivery, handling, and storage for the components of Watershed Geo's ClosureTurf® and HydroTurf® technologies.

ClosureTurf is a patented, 3-component technology, that serves as a final cover system for landfills and solid waste sites. These components are as follows (from the bottom up):

- Component 1 – Geomembrane Liner, typically, Agru America Super GripNet, MicroDrain or MicroSpike
- Component 2 – Engineered Turf
- Component 3 – Sand Infill Material (alternatively, HydroBinder infill may also be used in ClosureTurf)

HydroTurf is a patented, 3-component technology, that serves as a revetment system which provides erosion control for channels, steep chutes, dams, levee, slopes, outfall structures, and basins. These components are as follows (from the bottom up):

- Component 1 – Geomembrane Liner, typically, Agru America Super GripNet, MicroDrain or MicroSpike (component used in HydroTurf CS)
- Component 2 – Engineered Turf
- Component 3 – HydroBinder Infill

2.0 Purpose and Scope

The ClosureTurf and HydroTurf Delivery, Handling and Storage Guidelines have been prepared to provide the Owner/Engineer/Contractor/Installer general guidance on the proper handling and storage of the components for the ClosureTurf and HydroTurf Systems. This document should be used in conjunction with the Project Specifications, Product Data Sheets, Health and Safety Manual, Installation Guidelines, and industry standards for the proper delivery, handling and storage of these technologies in order to mitigate risks of damage and safety.

This manual is based on our experience and is a basic guideline only. Watershed Geo cannot anticipate the many ways this product may be delivered, stored and handled. It is the responsibility of the Owner/Engineer/Contractor/Installer to properly unload, handle and store the materials. Also, Watershed Geo cannot anticipate the varied and changing site conditions including, but not limited to, terrain, weather, climate and access.

3.0 Engineered Turf

Instructions for the proper Delivery, Handling and Storage of ClosureTurf® and HydroTurf® are in the Installation Guidelines Manual as well as Section 01 19 73 of the CSI Specifications. Both are available upon request.

A. Offloading Guidelines

- Rolls of material shall be unloaded with equipment that will not damage the Engineered Turf.
- Fabric-straps, spreader bars, stinger bars, or other approved equipment shall be used for handling Engineered Turf rolls.
- A carpet probe / pole attachment that will be able to handle the roll dimensions and weight of the Engineered Turf shall be used (please refer to the product data sheets for the roll dimensions and weight).

B. Storage Guidelines

- Materials should be stored in a flat, dry and well drained area.

- The surface shall be free of sharp rocks or other objects that could damage the materials.
- Waterproofing tarps may need to be considered if rolls are on-site longer than one (1) year. Rolls of turf will be delivered with a white UV resistant wrapping. They should be covered with tarps at the one (1) year mark.
- Engineered Turf rolls may be stacked up to three (3) rolls high.
- Product segregation by components, upon delivery, is suggested.

C. Long Term Storage Guidelines

- If rolls must be stored (exposed to UV) for longer than five years, they should be covered by a UV resistant material. This covering should be replaced as necessary.
- Provide secure, UV resistant (indoor) storage for the slings that were provided during shipment.

	Core Size and Type	# of Rolls per Enclosed Van	# of Rolls per Flatbed	# of Rolls per Container
ClosureTurf® CT	4 inch PVC Core	27	9	18
ClosureTurf® CT-X	4 inch PVC Core	27	9	18
ClosureTurf® CT-HD	4 inch PVC Core	18	9	18
HydroTurf® CS	4 inch PVC Core	27	9	18
HydroTurf® Z	4 inch PVC Core	36	9	18



4.0 Geomembrane

A. Handling:

- Prior to unloading, and during deployment, care must be taken that the equipment to be used to unload or handle the material at the jobsite is adequate for the task.
- Rolls should not be moved any more than necessary to avoid possible damage.
- When moving rolls, ensure that the roll is elevated enough to avoid scraping the roll on the ground.
- When removing rolls from a container, care shall be taken so as not to scrape the roll against the top, bottom or sides of the container.
- Care should be taken to avoid damage to the core ends.



Geomembrane on flatbed semi



Removal of geomembrane



Trucks staged for unloading



Placement of geomembrane

CLOSURETURF® AND HYDROTURF® DELIVERY, HANDLING & STORAGE GUIDELINES

B. Storage:

- Roll storage space should be provided in a location or locations close to the area to be covered to minimize additional handling.
- The storage area should be protected from puncture, theft, vehicular traffic, vandalism, chemical exposure, excessive heat and other hazards which might create a source of potential damage to the liner.
- The surface on which the liner will rest should be a flat, firm, prepared surface free of debris and sharp objects (Do NOT store liner on top of wooden pallets).
- If available, geotextile should be placed under the liner rolls to cushion & protect them.
- MicroDrain® and Super GripNet® should not be stacked no more than two (2) high. MicroSpike® can be stacked no more than three (3) high.
- The ends of cardboard cored rolls should be capped, or taped with weather-resistant tape. If capped, secure the caps with suitable adhesive weather – resistant tape.
- At a minimum, rolls at both ends of a stack should be chocked. Make sure the chocks are large enough to perform the task, and do not dig in to the rolls.
- If Long Term: If rolls must be stored (exposed to UV) for longer than 5 years, they should be covered by a UV resistant material. This covering should be replaced as necessary.
- If Long Term: Provide secure, UV resistant (indoor) storage for the slings that were provided during shipment.

	Core Size and Type	# of Rolls per Flatbed	# of Rolls per Container
Super GripNet®	6"Ø Recycled PE	6	4
MicroDrain®	6"Ø Recycled PE	6	4
MicroSpike®	6"Ø Recycled PE	12	12

5.0 HydroBinder®

Both the Bulk bags and 80 lb. bags are placed on skids/pallets and wrapped in plastic.

A. Delivery:

- HydroBinder is delivered to the site on flatbed trucks.

B. Packaging:

- 3,000 lb. Bulk bags
- 80 lb. bags

C. Storage:

- Watershed Geo suggests that the HydroBinder material be tarped or stored inside when onsite and kept dry.

	# of Skids/Pallets per Flatbed
3,000 lb. Bulk Bags	16
80 lb. bags (42 bags per pallet)	16



80 lb. HydroBinder® bag



HydroBinder® storage



HydroBinder® bulk bags on flatbed trucks

6.0 Example Storage Layouts



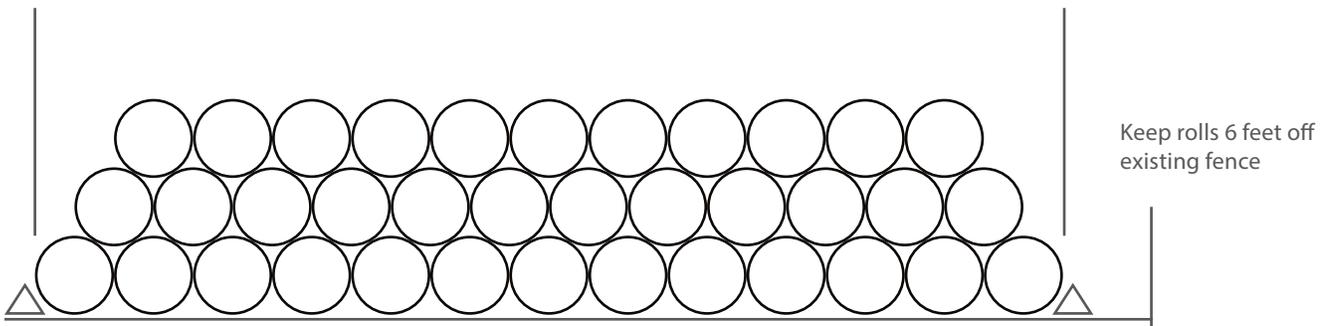
Geomembrane liner stacked



Geomembrane liner stacked

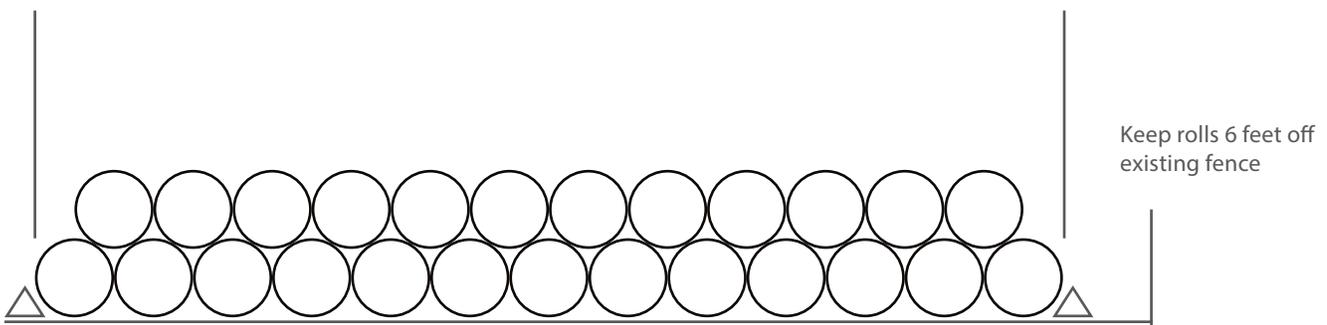
Engineered Turf Component Storage:

Example: Stack 3 Rolls High

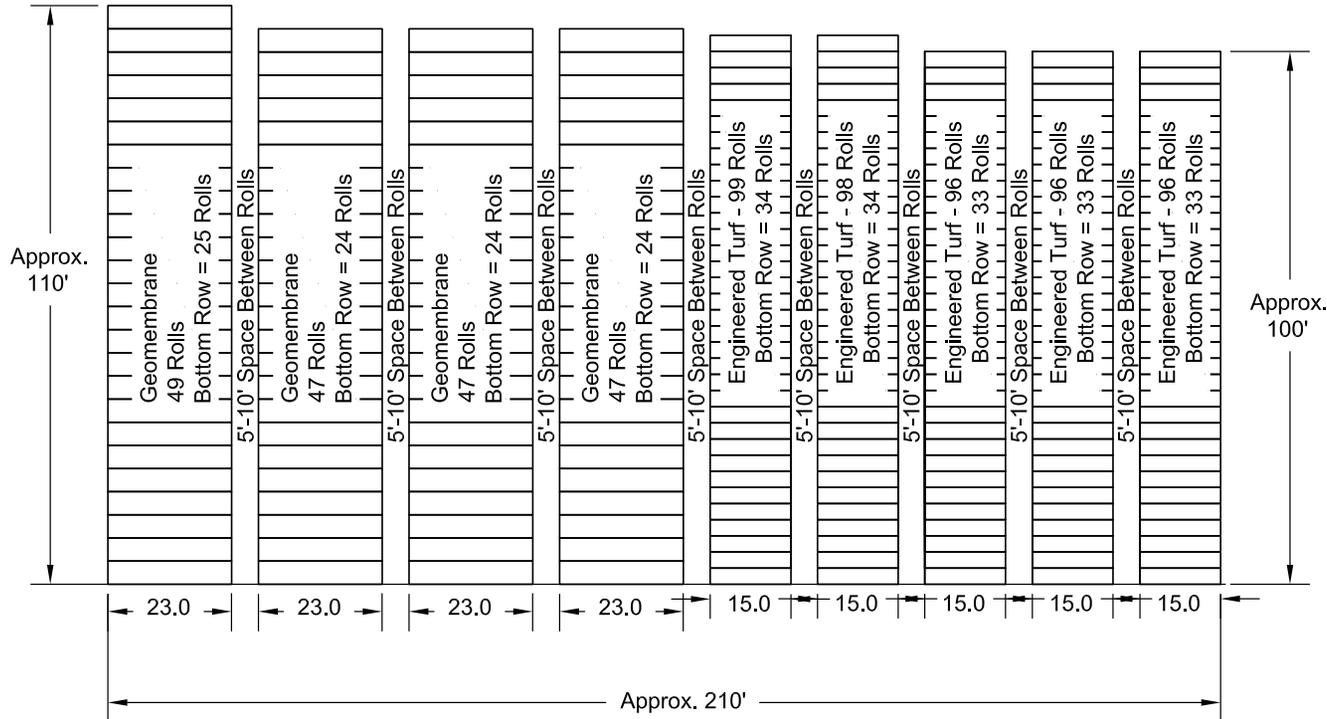


SuperGripnet and MicroDrain Geomembrane Storage:

Example: Stack 2 Rolls High



**Nominal 50 Acre Super Gripnet® or MicroDrain® Laydown
Geomembrane Stacked 2 High Max.
Engineered Turf Stacked 3 High Max.**



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Notes:

1. Please verify latest revision of drawing by checking at www.watershedgeo.com.
2. Geomembrane nominal roll diameter = 4.3 ft.
3. Engineered Turf nominal roll diameter = 3 ft.



**ClosureTurf®
Geomembrane/
Engineered Turf
Laydown Area**

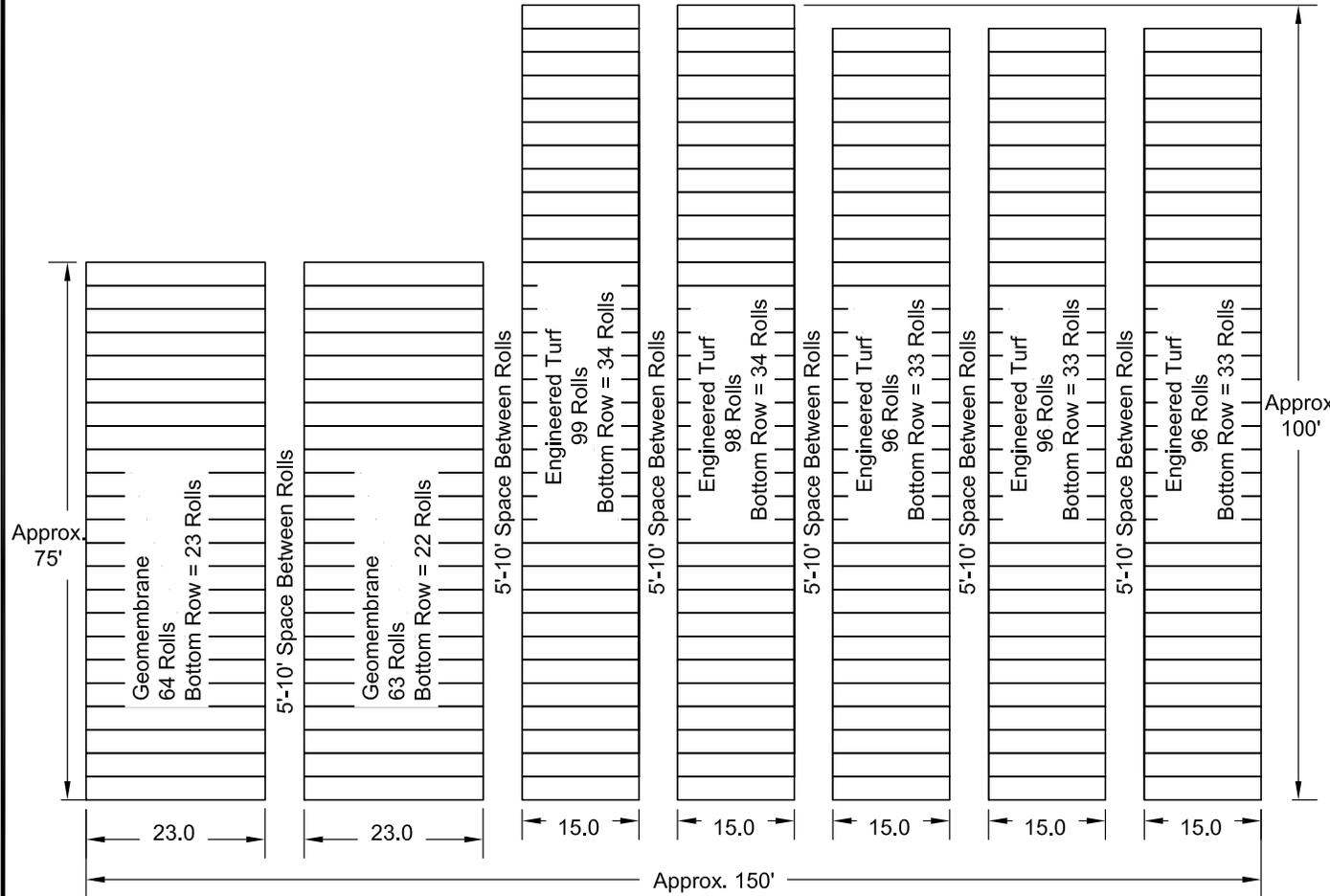
TITLE

FILE No. 2020-100-CT-11-R2

REV. 2 SCALE AS SHOWN

CADD T.s.R. 09-2020

**Nominal 50 Acre MicroSpike® Laydown
Geomembrane Stacked 3 High Max.
Engineered Turf Stacked 3 High Max.**



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Notes:

1. Please verify latest revision of drawing by checking at www.watershedgeo.com.
2. Geomembrane nominal roll diameter = 3 ft.
3. Engineered Turf nominal roll diameter = 3 ft.



**ClosureTurf®
Geomembrane/
Engineered Turf
Laydown Area**

FILE No. 2020-100-CT-11-R2		
REV. 2	SCALE	AS SHOWN
CADD	T.s.R.	09-2020

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7.0 Limitations

This document has been prepared to provide the Owner, Design Engineer, Construction Quality Assurance Professional of Record, and the Contractor / Installer with a general guidance for delivery, handling and storage of HydroTurf and ClosureTurf materials. All information, recommendations and suggestions appearing in this document concerning the use of our products are based upon experience, tests and data believed to be reliable; however, this information should not be used or relied upon for any specific application without independent professional examination and verification of its accuracy, suitability and applicability. Since the actual use by others is beyond our control, no guarantee or warranty of any kind, expressed or implied, is made by Watershed

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