



GEOTEXTILE PRODUCTS

INSTALLATION QUALITY ASSURANCE MANUAL

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1.0 INTRODUCTION

This manual provides an overview of the GSE Installation Quality Assurance procedures consistent with industry accepted practices to ensure that the nonwoven geotextile products installed will best perform for its intended purpose. In addition, all installation work will be performed in strict accordance per the customer's specifications. Please read the procedures below completely before you begin. If you need further clarification, contact the GSE Engineering Support Staff for assistance. Remember safety first and use safe practices always on every project.

2.0 MATERIAL

GSE nonwoven geotextiles are tough and durable materials packaged to withstand normal wear and tear on a typical construction site. However, as with any construction material, all nonwoven geotextiles should be handled with care and stored properly to ensure that the material properties required for a project are retained to serve long-term project needs. In general, GSE recommends that American Society of Testing and Material (ASTM) standard D 4873 "Standard Guide for Identification, Storage and Handling of Geosynthetic Rolls & Samples" be followed in its entirety. Specific recommendations by GSE are elaborated in the following sections.

3.0 MATERIAL DELIVERY

- A. Upon arrival on site, QA personnel will inventory all materials on-site.
- B. Roll numbers of the nonwoven geotextile will be logged on the Inventory Check List (Appendix A) and cross-referenced with the Bill of Lading.
- C. Copies of the Inventory Check List and signed Bill of Lading should be sent to GSE corporate head quarters while the on-site QA personnel retains the original copies.
- D. Any visible damage to roll materials should be noted on the roll and Inventory Check List.

4.0 SITE UNLOADING PROCEDURES

- A. A forklift or front end loader fitted with a tapered pole is recommended for loading and unloading nonwoven geotextile rolls.
- B. The pole should be long enough to extend at least 2/3 (10 feet) of the way into the nonwoven geotextile roll core to avoid the possibility of buckling or breaking the core.
- C. Nonwoven geotextile rolls may also be lifted from flatbed trailers using straps hoisted by a crane or loader.
- D. No more than three rolls should be lifted at the same time. For special length rolls, 1,000 feet or longer, each roll should be handled one at a time.

5.0 SITE HANDLING & STORAGE PROCEDURES

- A. Nonwoven geotextile rolls should be lifted off of the ground when moving.
- B. Nonwoven geotextile should be deployed as closely as possible to the designated location minimizing dragging against the ground surface.
- C. Operations of heavy construction equipment directly on the nonwoven geotextile should be avoided.
- D. Nonwoven geotextiles should be stored in a flat, dry and well drained area. All sources of contamination, such as oil, grease, soil and aggregate should be separated from the materials.
- E. During on-site storage, nonwoven geotextile rolls should be protected from moisture, sunlight, theft and vandalism.
- F. The protective wrapping should not be removed until the nonwoven geotextile is ready to be installed.
- G. If stored outdoors for long durations, the nonwoven geotextile should be elevated from the ground surface and covered with a tarpaulin or other opaque plastics.

6.0 ULTRAVIOLET LIGHT EXPOSURE

When left exposed to ultraviolet light, all nonwoven geotextiles slowly degrade, losing strength in the process. It is highly recommended not to expose GSE nonwoven geotextiles to sunlight prior to installation. Once installed, GSE geotextiles should be covered with designated overlying material. The nonwoven geotextile should not be left exposed to sunlight for more than 15 days.

7.0 INSTALLATION

GSE nonwoven geotextiles should be installed only after the underlying material or subgrade has been properly inspected and approved. The nonwoven geotextiles should be installed to the grade and location specified in project specifications. The project construction quality assurance and construction quality control (CQA/CQC) guidelines must be followed during the installation. An additional important resource for construction guidelines for all geosynthetics is “Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities” by United States Environmental Protection Agency (Ref. EPA/600/R-93/182).

GSE recommends minimum geotextile overlap distance from 12 inch to 24 inch, in both machine and transverse directions, unless the project CQA/CQC guidelines specify otherwise.

Care should be taken not to entrap stones or excessive moisture in the nonwoven geotextile during placement. In the presence of wind, all geotextiles should be weighed with temporary ballasting such as sandbags. On slopes, the nonwoven geotextile should be securely anchored and then rolled down the slope in such a manner as indicated by good construction practices and safety considerations.

Prior to the placement of overlying materials, a Certificate of Acceptance (Appendix B) must be signed by a responsible party and an installer’s representative. All overlying materials on the nonwoven geotextile should be placed such that:

- The nonwoven geotextile and the underlying material are not damaged.
- Any movement of the nonwoven geotextile is kept to a minimum.
- Excess stresses in the nonwoven geotextile are kept to a minimum.

8.0 SEAMING QUALITY & METHOD

GSE nonwoven geotextiles can be seamed using sewing, hot wedge welding or flame. The quality of a seam depends on seaming equipment, operator experience and site conditions, such as temperature and humidity. Laboratory testing has shown that sewn and hot wedge weld seam provide comparable seam quality, while flame welding is much dependent on operator experience. In general, it is possible to obtain seam efficiency (defined as strength of seam divided by strength of geotextile of up to 80%), if controls are established and implemented. Seaming procedures are typically included in project specifications.

Appendix B: Certificate of Acceptance

GSE Environmental
 19103 Gundle Road
 Houston, Texas 77073

[T] 800.435.2008

[F] 281.875.6010

Job.: _____

Project: _____

Client: _____

Bill To: _____

Job Description: _____

% Complete of Total Job: _____

Material	Estimated Square Feet	Final Quantity/Description

I, the undersigned, duly representative of:

Do hereby take over and accept the work described above from the date hereof and confirm to the best of my knowledge the work has been completed in accordance with specifications and the terms and conditions of the contract.

Name	Signature	Title	Date
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Certificate accepted by GSE Environmental Representative.

Name	Signature	Title	Date
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GSE is a leading manufacturer and marketer of geosynthetic lining products and services. We've built a reputation of reliability through our dedication to providing consistency of product, price and protection to our global customers.

Our commitment to innovation, our focus on quality and our industry expertise allow us the flexibility to collaborate with our clients to develop a custom, purpose-fit solution.

For more information on this product and others, please visit us at GSEworld.com, call 800.435.2008 or contact your local sales office.

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